

The subfamily Steninae Macleay, 1825 (Coleoptera: Staphylinidae) of Japan Part 1. *Dianous* and *Stenus* (*S. comma* group to *S. guttalis* group)

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Abstract This is the first part of a monographic study of the subfamilial-level clade Steninae Macleay, 1825 of Japan (Puthz: Contribution No. 348 on Steninae; Naomi: Contribution No. 56 on Steninae). It treats taxonomically the genus *Dianous*, Leach, 1819 (3 species groups and 6 species) and genus *Stenus* Latreille, 1797 (30 species groups and 117 species), with detailed illustrations of taxonomically important characters and habitus photos of Japanese species, in order for unambiguously identifying the species and also for aiding in understanding the phylogenetic system of Steninae names. Following 7 *Stenus* species, *S. intumescens* (Honshu: Nagano Pref.); *S. displicatus* (Honshu: Nara and Mie Prefs.); *S. varicosus* (Honshu: Hyogo); *S. ancyleus* (Honshu: Nagano Pref.); *S. oliverbetzi* (Honshu: Ibaraki, Saitama and Chiba Prefs.); *S. kamezawai* (Honshu: Nara Pref.); and *S. mystiformis* (Shikoku: Tokushima and Ehime Prefs. and Kyushu: Miyazaki and Kumamoto Prefs.) are described as new to science. The name *Stenus nomurai* (Naomi: 1988c) is here resurrected from a subjective junior synonym of *S. mikado* (Hromádka: 1979a); and likewise, the name *Stenus weisei* (Bernhauer: 1912) is also from a subjective junior synonym of *S. sedatus* (Sharp: 1889). *Dianous uedai* Naomi, 2010b is newly placed in synonym with *D. moritai* Naomi, 1997e; and likewise, *D. viridicatus* Naomi, 1997e with *D. japonicus* Sawada, 1960; *S. hiroyukii* Puthz, 2001d with *S. melanarius* Stephens, 1833; *S. abbreviatus* Naomi, 2015b with *S. mikado* Hromádka, 1979a. *Stenus pilosiventris* Bernhauer, 1915, *S. finalis* Ryvkin, 2011, *S. spurius* Benick, 1929, and *S. sibiricus* Sahlberg, 1880 are newly recorded from Japan.

Introduction

The subfamilial-level clade Steninae Macleay, 1825, which is characteristic in having the very large eyes being prominent laterally, belongs to the staphylinine group (sensu Lawrence & Newton, 1982) of Staphylinidae. The Steninae (comprising 3131 species; Puthz in litt.) presently consists of two genera *Dianous*, Leach, 1819 and *Stenus* Latreille, 1797 (Puthz, 1981a); and the 3rd undescribed genus of Steninae is known from Australia (Clarke & Grebennikov, 2009). The Steninae seems to be presently confirmed as being monophyletic by having a series of larval and adult autapomorphies (e.g., adult: position of the antennal insertion on frons between eyes; possession of the paired pygidial defence glands lying lateral from the rectum; larva: antennomeres 1 and 2 markedly elongate) (Thayer, 2005; Clarke & Grebennikov, 2009).

Stenus (comprising 2896 species; Puthz in litt.) is an extremely speciose clade, virtually, one

of the species-richest genera in the animal kingdom. The *Stenus* beetles are inhabitants of different environments (e.g., moist humus, plant debris, leaf litter, plant leaves; Betz, 1998). *Stenus* is distributed world-wide except for New Zealand (Puthz, 1970a, 1971a, 2008a). It is considered to be obviously monophyletic by a set of autapomorphies (Clarke & Grebennikov, 2009) represented by a protruding elongate labium that has a function as an adhesive prey-capture apparatus (Weinreich, 1968; Puthz, 1981a; Betz, 1996). On the other hand, *Dianous* comprises 262 species (Puthz, 2016a); and the beetles are mostly inhabitants of bryomadicolous environments (Vaillant, 1955) but a few are inhabitants of such different environments as bark of trees, dead leaves and dry mosses in open forests (Puthz, 1988, 2000). *Dianous* is distributed only in the Northern hemisphere, with its major distributional range in the Southeast Asia (including China and India) (Puthz, 1981a, 2016a; Shi & Zhou, 2011a, b). It is, however, problematic as to the matter with whether or not it has good autapomorphies (e.g., Puthz, 1981). For example, in *Dianous* species, the labium is only slightly protrusile, without adhesive prey-capture apparatus; this is seemingly plesiomorphic relative to the condition that *Stenus* shows, suggesting that the *Dianous* is a paraphyletic group (Puthz, 1981).

Although the 3rd undescribed Stenine genus of southern Australia was not treated in their study, Koerner *et al.* (2013) first hypothesized the evolutionary origin of *Dianous* within the *Stenus*, based on the molecular phylogenetic approach, using the COI gene in 30 *Stenus* and 12 *Dianous* species. Their results obviously suggest a secondary loss of the specialized prey-capture apparatus from *Dianous*. On the other hand, Schierling *et al.* (2013) showed that there are three chemotaxonomic groups in Steninae (basal piperidine group; pyridine group; and the most evolved epoxy-piperidine group); and also that *Dianous coeruleus* belongs to the basal piperidine group. However, by using three genes (COI, 16S rRNA and Histone) in 17 *Stenus* and 4 *Dianous* species, Lang *et al.* (2015) provided further insights into the molecular phylogeny of Steninae: Those 4 *Dianous* species are nested within the basal piperidine *Stenus* group cluster. This result supports the hypothesis of Koerner *et al.* (2013) concerning the evolutionary origin of *Dianous* within the clade *Stenus*. In order for confirming their hypothesis, however, further studies will be needed based on the larger number of species including those of the Australian 3rd genus.

The genus *Stenus* Latreille, 1797 has long been divided into 6 subgenera since the second half of 19th century, only on the basis of several convenient characters. All of these subgenera formally recognized under the traditional classification of *Stenus* are at base non-natural (i.e. “paraphyletic” or “polyphyletic” in the Hennigian sense). (For further information on *Stenus* taxonomy, see introductory part of ‘Genus *Stenus*’ in the descriptive section.) Modern stenologists now acknowledge that the traditional subgeneric classification simply hinders construction and development of the truly phylogenetic system of *Stenus* names. Puthz (2008a) suggested to discard the traditional subgeneric classification and decided to gather *Stenus* species into virtually monophyletic species groups. Some colleagues have already begun to directly gather *Stenus* species into monophyletic species groups, without using the traditional subgeneric names such as *Parastenus*, *Hemistenus* and *Hypostenus* (e.g., Tang, Zhao and Puthz, 2008; Naomi, 2012).

As necessary steps for systematizing the *Stenus* of the world into monophyletic species groups, Puthz have published a series of reviews on *Stenus* taxonomy. First of all, a general taxonomic review of *Stenus* at the level of species groups of the world was published by Puthz (2008a), where the 157 named species groups are enumerated and taxonomically surveyed. After that, several review-papers about the *Stenus* are followed: First, the *Stenus* from Africa and Madagascar was reviewed by Puthz (2011a), showing that the *Stenus* from there comprises about 350

species. Second, the *Stenus* from Oriental region was reviewed by Puthz (2013), resulting that the *Stenus* from there comprises about 650 species. Third, the *Stenus* of Melanesian subregion (comprising 152 species) was reviewed by Puthz (2016b,c). See (Puthz 2006a, 2015b, 2016d, and forthcoming) regarding the revisions on the *Stenus* of Neotropical region; and see Puthz (1970a, 2010a) regarding the Steninae fauna of Austral region.

As far as the *Dianous* is concerned, Puthz (1981a, 2000, 2015a, 2016a) studied at base the species of this genus world-wide, and showed that the genus is phylogenetically divided into two groups (group I and II). For further information on *Dianous* taxonomy, see introductory part of 'Genus *Dianous*' in the descriptive section.

Keeping in our mind the on-going development of establishing the phylogenetic framework of Steninae taxonomy by the afore-mentioned (Puthz, 1971a, 1981a, 2000, 2008a, 2011a, 2013, 2015a, 2016a) and related papers (e.g., Naomi, 2006a, 2012; Puthz, 2014, 2015b), this paper aims at clarifying the Japanese fauna of Steninae. The Steninae fauna of Japan presently consist of *Dianous* (3 species groups and 6 species) and *Stenus* (347 species and 34 species groups); see also the section of "History of Taxonomic Studies on the Japanese Steninae". Notice that the *Dianous* is here taxonomically recognized as a genus in Steninae until the phylogeny of Steninae is adequately clarified. As the first part of a monographic study of Japanese Steninae, this paper treats taxonomically the *Dianous* (all species groups and species) and *Stenus* (30 species groups [i.e., *S. comma* group to *S. guttalis* group] and 117 species), with the detailed illustrations of taxonomically important characters and the habitus photos of Japanese species, in order for unambiguously identifying the species and also for aiding in understanding the phylogenetic system of Steninae names.

Materials of the Steninae treated

The holotypes of the most species of *Stenus* and *Dianous* treated are examined by Puthz and / or Naomi. The beetles of Steninae examined for the present study are collected by Nomura, Naomi and our coleopterist colleagues. Depositories of the types and other specimens examined are as follows:

Institutions:

EUM: Ehime University, Matsuyama

DEIM: Deutsches Entomologisches Institut, Münchberg

FMC: Field Museum of Natural History, Chicago

IRSNB: Institut Royal des Sciences Naturelles de Belgique, Bruxelles

KUF: Kyushu University, Fukuoka

KUMF: Kyushu University Museum, Fukuoka

MHNG: Muséum d'histoire naturelle, Genève

CBM: Natural History Museum and Institute, Chiba

MNB: Museum für Naturkunde, Humboldt Universität, Berlin

NHML: Natural History Museum, London

NHMW: Naturhistorisches Museum, Wien

NMNHW: National Museum of Natural History, Washington, D. C.

NMNST: National Museum of Nature and Science, Tsukuba

OMNH: Osaka Museum of Natural History, Osaka

SMF: Senckenberg Museum, Frankfurt a. M.

SMNS: Staatliches Museum für Naturkunde, Stuttgart

TUAA: Tokyo University of Agriculture, Atsugi

ZIRAS: Zoological Institute of the Russian Academy of Science, St. Petersburg

ZMH: Zoological Museum, Helsinki

ZMMSU: Zoological Museum of the Moscow State University, Moscow

Private collections:

cH: Collection of Lubomir Hromádka, Praha

cI: Collection of Tateo Ito, Kyoto

cK: Collection of Hiromu Kamezawa, Saitama

cN: Collection of Shun-Ichiro Naomi, Chiba

cP: Collection of Volker Puthz, Schlitz (which is to be deposited in SMNS)

cSa: Collection of Kohei Sawada, Ohsaka

cS in NMNST: Collection of Aleš Smetana deposited in NMNST

In cases of the Steninae specimens whose depository is not indicated in “*Material examined*”, the specimens presently belong to the collection of Naomi. However, “cN” is added after some specimens (e.g., paratypes) examined when its addition is considered better for clearly showing their depositories.

Methods of the Dissection for Observation and Illustration

Postabdomen and aedeagus

Dried specimens are used for dissecting the postabdomen (i.e., 8th to 10th abdominal segments) and aedeagus and also for observing their morphology. Before doing a dissection, a specimen (to be dissected) is boiled in water during several minutes for softening the body, and is dissected under the binocular Wild M8. The postabdomen and aedeagus separated are mounted in Euparal (Chroma-Gessellschaft) on a plastic card, which is to be pinned under the specimen, from which those parts are dismembered. The postabdomen and aedeagus embedding in the Euparal are illustrated under the microscope Olympus CH-2, using ocular mesh.

Spermatheca

Dried specimens are used also for dissecting and observing the spermatheca. A female specimen is first boiled in water during several minutes for softening the body. After the postabdomen is separated from other parts of the body, it is boiled again in a KOH solution (about 5%) during several minutes for dissolving the fat bodies around the spermatheca so that we can clearly observe the spermatheca. Before doing illustrations, the gonocoxites, together with a spermatheca, are separated from the terga 9 and 10, for making it easy to illustrate the spermatheca. An important point here is to see that, in some cases where the spermatheca is *not very strongly sclerotized* (i.e., not robust) *nor pigmented*, the spermatheca (especially its RT-duct) is more or less deformed and/or at least partially melted away when it is embedded into the Euparal. Given this, *the spermatheca be soaked in a drop of water on the slide glass, covered by a cover glass, and then observed and illustrated under the microscope, before embedding it into the Euparal.* Maruyama (2006: 4) also recommended a similar procedure of illustrating the Aleocharine spermatheca.

The spermatheca of a *Stenus* species can be illustrated only in cases where it is more or less

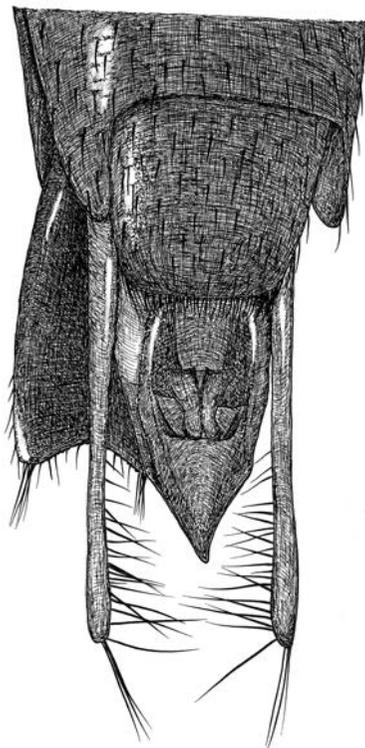


Fig. 1. *Stenus comma* LeConte. Postabdomen with the aedeagus partially outthrust posteriorly.

sclerotized so that we can observe it under the microscope. The entirely membranous spermatheca of *Stenus* (e.g., those in *S. comma* group, *S. humilis* group, etc.) is mostly or completely melted away, before the fat bodies around the spermatheca are dissolved while it is soaked into a KOH solution. Thus, those entirely membranous spermathecae of *Stenus* cannot be illustrated because of the technical difficulty in observing them.

Characters Used for the Taxonomy of Steninae

Characters used for the taxonomy of Steninae are described in this section. External structures of body, which are common in male and female, are first described. Separately taken up and described are the external structures of body (abdominal ventrite modifications of male; postabdomen; and cleaning comb) and the internal structures of body (aedeagus and its endophallic structures; and spermatheca). Homology of some endophallic sclerites are also briefly discussed.

External structures of body

For many of the species groups in Steninae, the shapes (or general structures) of head, prothorax, elytra and abdomen (Fig. 1) are more or less unique; and thus those shapes are useful for understanding, to which group a Stenine beetle belongs; and so is the body length. The body is unicolorous (dark red or dark brown or black) in most species, but it is sometimes bicolorous as in *S. flavidulus* (Fig. 135C), and brilliantly metallic, for example, in most New Guinean species (e.g., Puthz, 1972a, 2016b, c). It has metallic lustre in *S. comma* group (Fig. 127F–K), *S. clavicornis* group (Fig. 128A, B), etc. Elytra are unicolorous in general, but they are sometimes spot-

ted with a pair of yellow to yellowish red, round maculae in *S. comma* (Fig. 127F), *S. bicolon* (Fig. 135I), etc. Legs are unicolorous, namely, entirely yellow or yellowish brown, e.g. in *S. depressus* (Fig. 133E); or entirely black, e.g., in *S. comma* (Fig. 127F); or they are bicolorous, yellowish red to yellowish brown with knees more or less infuscate, e.g. in *S. distans* (Fig. 128I), or bicolorous in different color pattern, e.g. in *S. cicindeloides* (Fig. 134H).

Head has eyes which are prominent laterally. Vertexal area between the eyes are usually more or less concave, with paired longitudinal depressions or grooves; median longitudinal area between the depressions are weakly convex or swollen in most species. However, the vertexal area is almost simply flat (i.e. hardly convex nor provided with paired longitudinal grooves) in *S. piliferus* group, simply convex or swollen in different species groups. Basically, the morphology of mouthparts are not so important for grouping the *Stenus* species, but different forms of the paraglossae of labium are identified as valuable for grouping the species (e.g., Puthz, 2011b, figs. 1–4, 2013, figs. 14–17). Three different forms of paraglossae are observed in *Stenus* species from the Japan and adjacent regions. First, the species of *S. sharpi* group has elongate-oval paraglossae (*S. sharpi*, Fig. 2bA–D). Second, the species of *S. abdominalis* group have conical or elongate-conical paraglossae (e.g., *S. bicolon posticus*, Fig. 2bH–I; *S. coronatus*, Fig. 2bF–G). See also Fig. 2bE for the other example of elongate-conical paraglossae of the Oriental species (*S. cf. luteolunatus*). Third, the species of many other species groups in *Stenus* show the common (i.e., ovoidal or oval) condition of paraglossae (e.g., *S. biguttatus*, Fig. 2aA; *S. juno*, Fig. 2aB; *S. cicindeloides*, Fig. 2aC, D; *S. gestroi*, Fig. 2aE, F; *S. guttalis*, Fig. 2aG).

Pronotum is strongly convex dorsally, often with a median longitudinal depression or impunctate area, and it is exceptionally with lateral spines (*S. prospector* Fauvel, 1907) or with dorsal protuberances (in the *S. coelogaster* group, e.g., *S. monstrosicollis* Bernhauer, 1915). Fore wings (i.e., elytra) have the developed humeri (Fig. 128A) or are narrowed anteriorly (Figs. 127D, 129H–L), and they are exceptionally with lateral spines (*S. spinipennis* Puthz, 2006c, fig. 85). Hind wings are developed (or macropterous) or atrophied (or brachypterous) in each species, but some species (e.g., *S. hirtiventris*) show both conditions. Legs are short (Fig. 134A) through moderately long (Fig. 134E) to long (Fig. 134F, G) or very long (Fig. 134J–L). The tarsomeres are simple in structure. Otherwise, the 4th tarsomere is often strongly bilobed; and the 2nd and 3rd are also sometimes bilobed in various degrees. The tarsomeres are each usually symmetrical in structure, but they are sometimes bilobed in an asymmetrical manner; for example, the 3rd tarsomere is weakly, asymmetrically bilobed, with its mesial lap longer than lateral one in *S. piliferus* group, etc.; see Betz (2003) and Puthz (2006d) for further information.

Abdomen is narrowed posteriorly (Fig. 133L) or subparallel-sided (Fig. 135I); it is more or less flat above (Fig. 133E–G), moderately convex dorsally, or almost cylindrical (Fig. 134A–L, etc.). Lateroventrites are very narrow or narrow through moderately wide to very wide, but they are very often completely missing. The lateroventrite turns ventromesially (Fig. 3B) or dorsomesially (Fig. 3D); or they are horizontal in position (Fig. 3C).

The surface of body is usually covered with punctures; and interstices between the punctures are covered with reticulate-microsculptures, or they are smooth and shining. Shape, density and size of the punctures are different from one body part to another in usual. For example, the punctures on elytra are larger than those on abdomen. Shape, density and size of the punctures are also different from one species to another in most cases, but the punctate conditions on body tend to be similar among the species of a same species group. The surface of body is covered also with pubescence (or short setae) or almost glabrous in usual, but it is rarely covered with long, suberect setae in *S. hirtiventris* (Fig. 132I), *S. hirtellus* (Fig. 133J), *S. sedatus* (Fig. 134F), *S.*

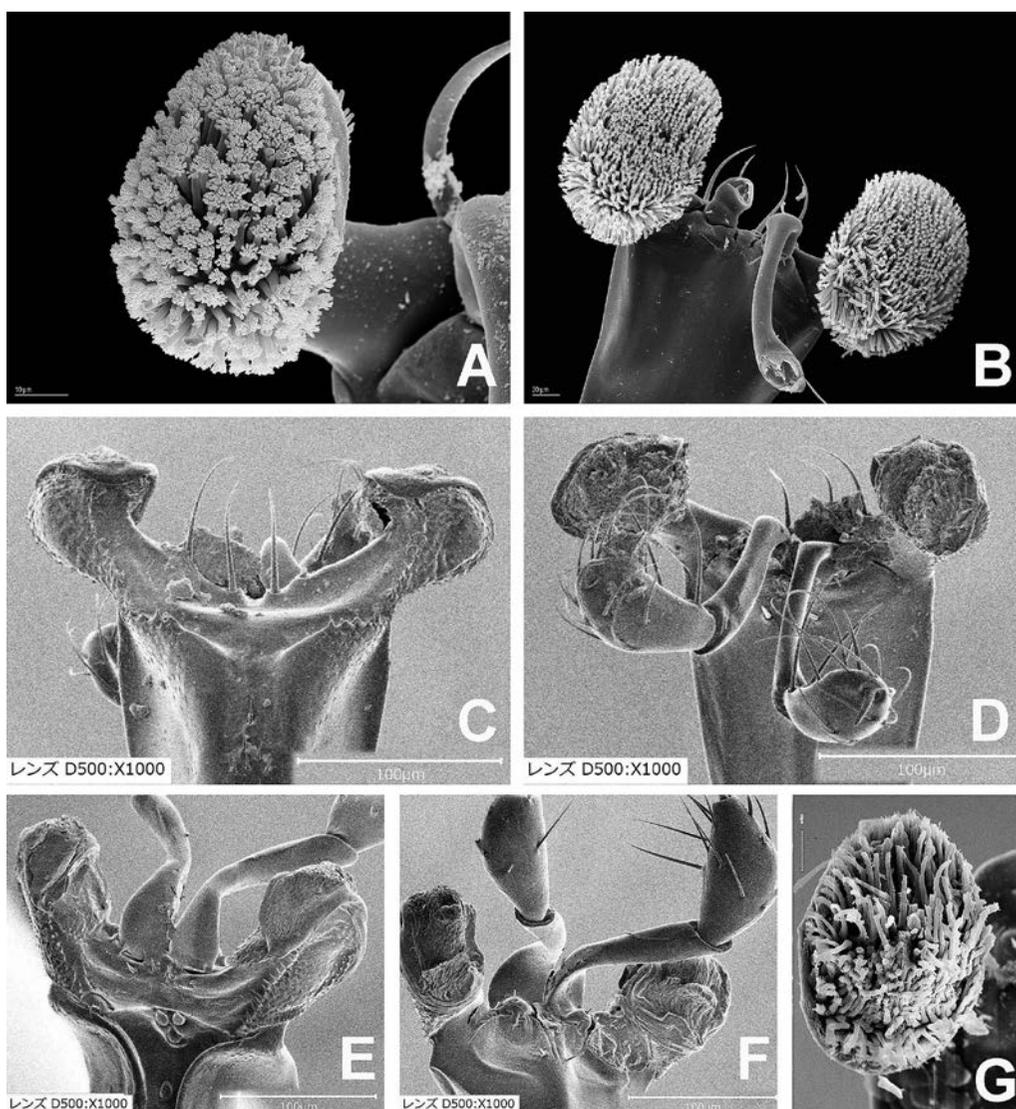


Fig. 2a. A, *Stenus biguttatus* (Linnaeus); B, *S. juno* Paykull; C, D, *S. cicindeloides* (Schaller); E, F, *S. gestroi* Fauvel; G, *S. guttalis* Fauvel. A, B, D, F, G, paraglossae (ventral view); C, E, ditto (dorsal view).

weisei (Fig. 134G) and in *S. cirrus* group.

Abdominal ventrite modifications of male

Several posterior ventrites of male abdomen are more or less morphologically modified by flatness (or flat area), depressions, ridges, emargination, protrusion, setation and punctation. Examples of the modifications in the case of abdominal ventrites (shown in Fig. 3A) are the flat area (5th ventrite), shallow depression with dense punctures (6th ventrite), moderately deep depression with lateral ridges, posterolateral protrusions, and also with dense setae (7th ventrite), median shallow depression (8th ventrite) and emarginations of various degrees (5th to 8th ventrites).

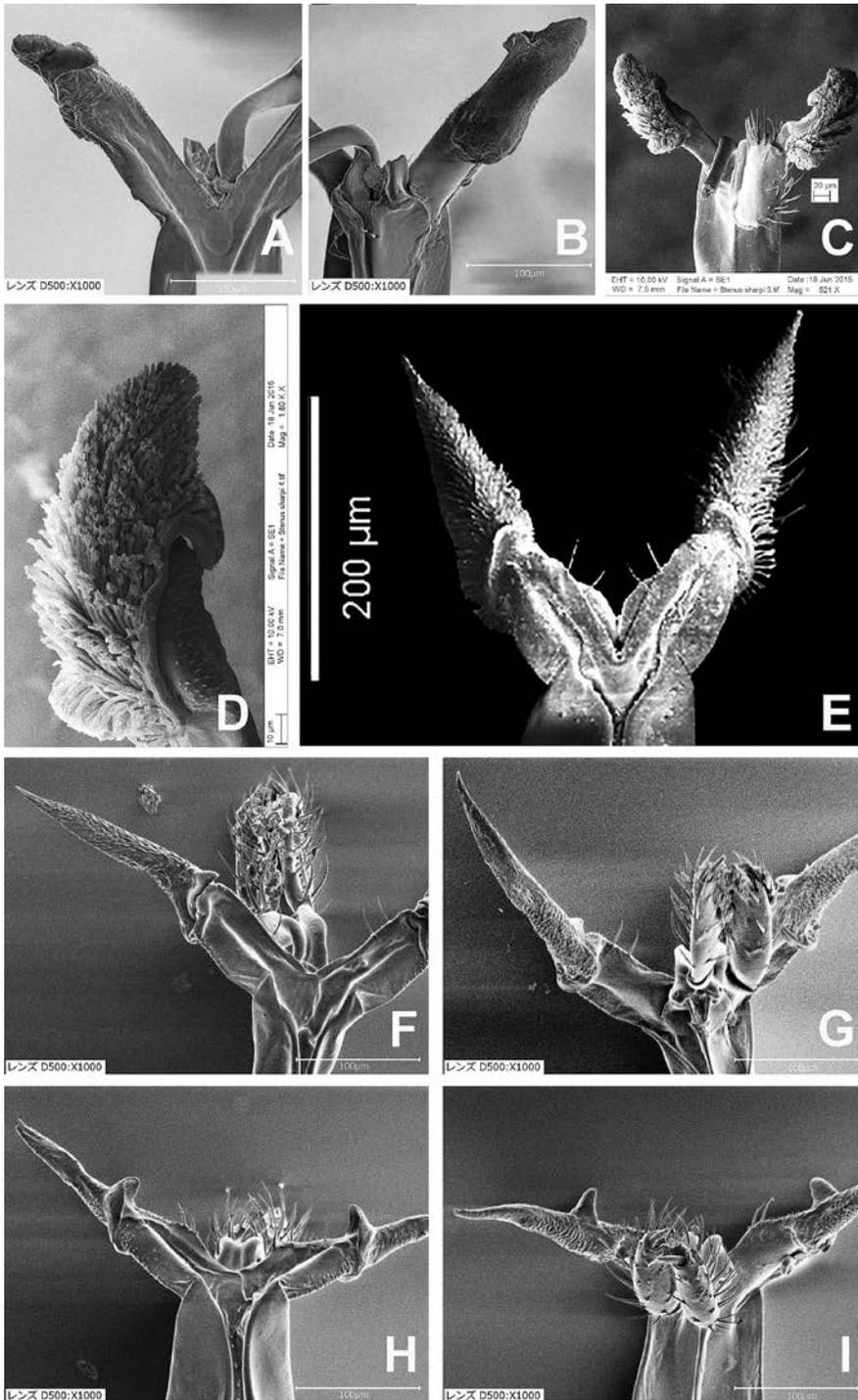


Fig. 2b. A–D, *S. sharpi*; E, *S. cf. luteolunatus* Puthz, 1972e; F, G, *S. coronatus* Benick; H, I, *S. bicolon posticus* Fauvel. A, E, F, H, paragoniae (dorsal view); B–D, G, I, ditto (ventral view).

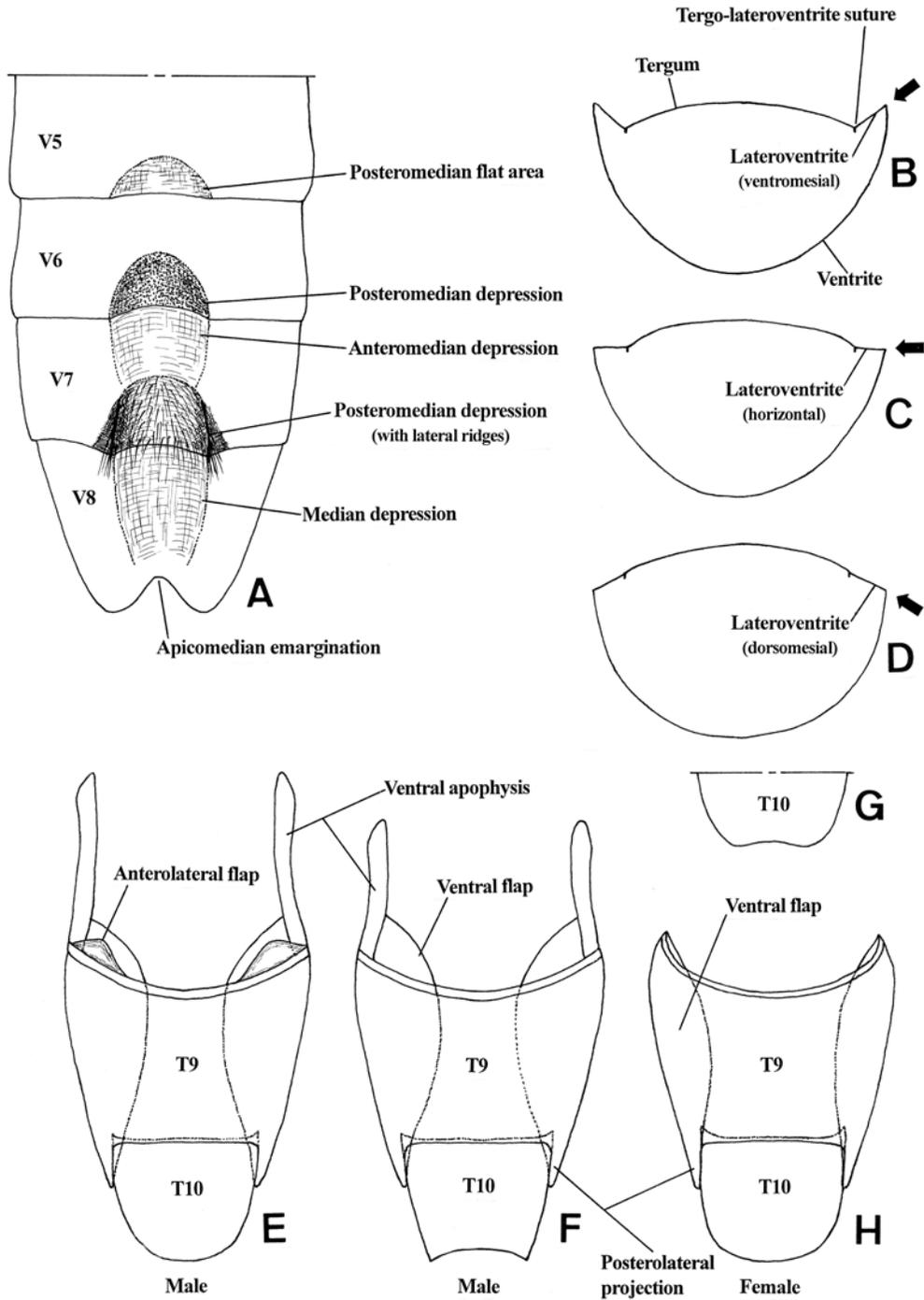


Fig. 3. Diagrams. A, 5th to 8th ventrites of male showing secondary modifications (ventral view); B–D, abdominal segment showing the location of a lateroventrite (caudal view); E, F, 9th and 10th terga of male (dorsal view); G, apex of 10th tergum of male and female (dorsal view); H, 9th and 10th terga of female (dorsal view).

Postabdomen of male

Eighth tergum. Eighth tergum of male is widely rounded apically in usual, but in *S. flavidulus*, it has a wide apical emargination (Fig. 112G). In the species of *S. similis* group (e.g., Puthz, 2008a: 174), *S. coelogaster* group, and *S. bispinus* group, it has an apicomedian tuft of setae.

Ninth tergum. Ninth tergum of male is dorsal in position, but the lateral parts always more or less extend ventrally to form ventral flaps (Fig. 3E, F). The anterior rim is stout, and a little thicker than in female (Fig. 3H); and the anterior rim is anterolaterally continuous to the *ventral apophysis* (Fig. 3E, F). Small flaps are also sometimes found in a pair at the lateral parts of the anterior rim (Fig. 3E, F: *anterolateral flap*). The anterolateral flaps are very long in some species of *S. piliferus* group; and they are very thick in some species of *S. clavicornis* group, or very thick and spatulate in *S. juno*. The 9th tergum projects posterolaterally to form the *posterolateral projection* (Fig. 3E, F), so that the posteromedian part forms an emargination, which is usually wide and transverse. Along the posterior margin of 9th tergum, a cleaning comb is found in some *Stenus* species; (see the subsection “Cleaning comb in the postabdomen”).

Ninth ventrite. Ninth ventrite of male is composed of the single, median ventral plate (Fig. 4A, E), which is *in-situ* partly wrapped laterally by the ventral flaps of 9th tergum. Ninth ventrite is usually elongate, and basally with the *stem*. When the lateral side of a stem is incised (Fig. 4E: *basilateral emargination*), the basilateral part of 9th ventrite projects anteriorly to form the *basilateral process* (Fig. 4E). The 9th ventrite is provided apicolaterally with paired teeth (Fig. 4A: *apicolateral tooth*) and tufts of setae (Fig. 4A: *apicolateral setae*). The apicolateral teeth are each long (Fig. 4A), short (Fig. 4B), thin and incurved (or falcate; Fig. 4C); or they are missing in some cases (Fig. 4D; e.g., *S. comma* group). The posterior margin of 9th ventrite is almost straight (Fig. 4A) or weakly rounded posteriorly (i.e., rounded toward the caudal direction; Fig. 4C); or the 9th ventrite is weakly emarginate posteriorly (Fig. 4D, E). The posterior margin is smooth (e.g., Fig. 4A) or weakly serrate (Fig. 4B, D). Notice here that, regarding the structure of the posterior part of 9th ventrite, other diverse forms are found in *Stenus* from other zoogeographical regions (e.g., Puthz, 2013, figs. 50–57, 60–69). The ventral surface of 9th ventrite has posteriorly the *pubescent area* (Fig. 4A, E); and the *macrosetae* in pair are often found in the pubescent area (Fig. 4A, E).

Tenth tergum. Tenth tergum of male is the simple, median plate which is dorsal in position; and it is always smaller than the 9th tergum (Fig. 3E, F). The 10th tergum is short in usual but sometimes elongate (e.g., *S. circularis* group, Fig. 65B; *S. melanarius* group, Fig. 69A). The posterior area is diverse in shape (e.g., Puthz, 2013, figs. 147–166). In Japanese species, the 10th tergum is posteriorly rounded or entire (Fig. 3E); or it is weakly emarginate posteromedially (Fig. 3G), or rarely with the wide posterior emargination (Fig. 3F; *S. rorellus* group, Fig. 97B).

Postabdomen of female

Eighth tergum. As in male, 8th tergum of female is widely rounded apically in usual, but it has a wide, apical emargination in *S. flavidulus*. In the species of *S. similis* group (e.g., Puthz, 2008a: 174), *S. coelogaster* group, and *S. bispinus* group, it has an apicomedian tuft of setae, as in male (Puthz, 2008a).

Ninth tergum. Ninth tergum of female is dorsal in position, and the lateral parts extend ventrally to form ventral flaps, which are obviously smaller than in male (Fig. 3H). The 9th tergum has the thin anterior rim, without ventral apophysis (Fig. 3H). The 9th tergum projects posterolaterally to form the *posterolateral projection* (Fig. 3H) and also posterior emargination, as in male. Along the posterior margin of 9th tergum, a cleaning comb is found in some *Stenus* species, as in

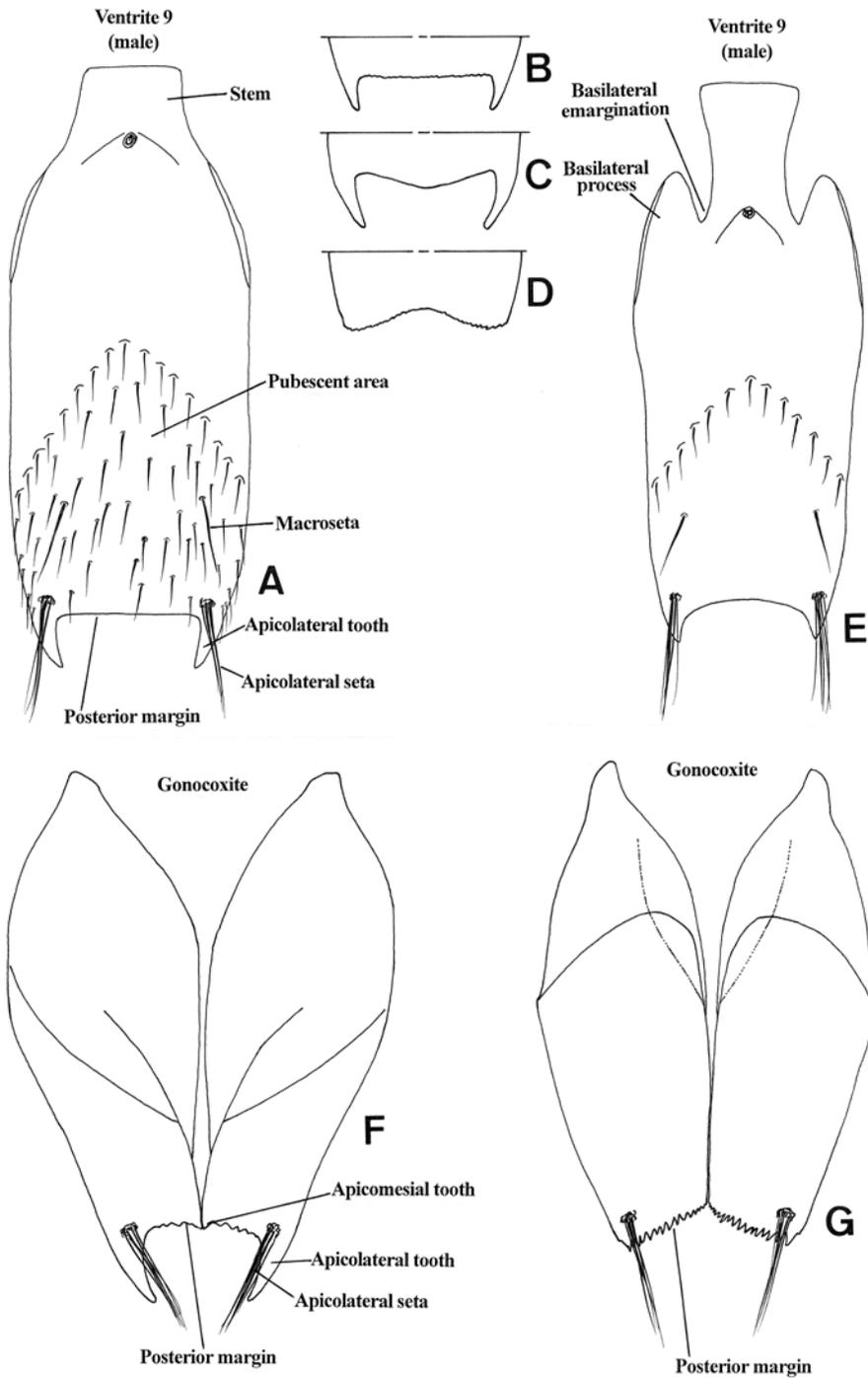


Fig. 4. Diagrams. A, E, 9th ventrite of male (ventral view); B–D, apex of 9th ventrite of male (ventral view); F, G, gonocoxite of female (ventral view).

male; (see the subsection “Cleaning comb in the postabdomen”).

Gonocoxites. In Staphylinidae, gonocoxites (elements of 9th abdominal segment) each consist of a proximal sclerite, distal sclerite and stylus (Naomi, 1989e); and in Steninae, such primitive conditions are found in some *Dianous* species (e.g., Figs. 8B, 9E). In many *Stenus* species, the proximal and distal sclerites are at least partially fused to form an elongate sclerite, although demarcation line between the proximal and distal sclerites retains to some degrees (Fig. 4F). The gonocoxal stylus completely disappears in *Stenus*; (notice however it is at least theoretically possible that a pointed apicolateral tooth can be regarded as a morphological production as a result of fusing the stylus with distal gonocoxal sclerite). Thus, in Steninae, the gonocoxal element of each side is usually represented by a single, elongate sclerite (e.g., Fig. 4F), so that we here simply call it ‘*gonocoxite*’ for descriptive purpose.

The gonocoxites are usually composed of paired plates (Fig. 4F, G), which are ventral in position; and they are *in-situ* contiguous mesially as in Fig. 4F, G, and partly wrapped laterally by the ventral flaps of 9th tergum. The gonocoxite is apicomediaally rounded, obtusely angulate, or provided with a tooth (Fig. 4F: *apicomediaal tooth*); and it is apicolaterally with a tooth (Fig. 4A: *apicolateral tooth*) and tufts of setae (Fig. 4A: *apicolateral setae*). The apicolateral tooth is simply short or long; or they are falcate, e.g. in *S. concinnus* (Fig. 92A), *S. hirtellus* (Fig. 94E); or they are missing (Fig. 4G), e.g. in *S. comma* group (Fig. 14G). The posterior margin of gonocoxite is smooth, regularly (Fig. 4G) or irregularly (Fig. 4F) serrate.

Tenth tergum. Tenth tergum of female is the simple, median plate which is dorsal in position as in male; and it is always smaller than the 9th tergum (Fig. 3H). The 10th tergum is short in usual but sometimes elongate (e.g., *S. circularis* group, Fig. 65C; *S. melanarius* group). The 10th tergum is rounded posteriorly (Fig. 3H); or it is weakly emarginate posteromedially (Fig. 3G), or rarely with the wide, posterior emargination (e.g., *S. rorellus* group, Fig. 97C).

Cleaning comb in the postabdomen

The fringes of spinules (or microtrichiae) are frequently found at or toward the posterior margins of abdominal terga in Coleoptera (Hammond, 1979). For example, in almost all Staphylinidae, the beetles of winged species bear a single fringe of spinules on the posterior margin of 7th tergum (Hammond, 1979; Blum, 1979). The fringes of staphylinids or other beetles have been referred to as “Hautsaum” (Szekessy, 1939), “fringing setae” (Kistner, 1976), etc. The fringe has primarily a function of alar toiletry although it also has another function of unfolding the alae (Hammond, 1979: 137). The type, number and position of alar toiletry fringe varies from one group to another.

As pointed by Hammond (1979), additional fringes occur in some groups of *Stenus* (see also Hammond, 1975, fig. 9d). In *Stenus*, there exists a regular line of thick, straight setae of same length along the posterior margin of 9th tergum of male and female (e.g., Fig. 97B, C); here we refer to it as (*alar*) *cleaning comb*. An important point here is that, in the case of *Stenus*, a cleaning comb is not composed of spinules, but distinctly of setae with sockets. Such line of thick setae is found in all Japanese macropterous species of *S. seminiger* group, *S. piliferus* group, *S. rorellus* group, *S. cylindricollis* group, *S. coelogaster* group, *S. wasmanni* group, *S. pulcher* group, *S. bispinus* group and *S. sharpi* group, and 3 species of *S. gibbicollis* group (i.e., *S. nomurai*, *S. varicosus* and *S. mikado*). However, as far as we know, one brachypterous species (*S. sharpi*) retain the comb in the 9th tergum; see “Remarks” of *S. sharpi* in the section of “Descriptions” regarding the further information on it.

A similar line of thick setae is found along the posterior margin of 10th tergum in the male

(Fig. 8F) and female (Fig. 8G) of *Dianous*. Given the structure of those setae, we here hypothesize that it is also a candidate of cleaning comb.

Aedeagus

Aedeagus is composed of *median lobe* and paired *parameres* (Fig. 5A); notice here that in the aedeagus of Steninae, *dorsal* (or *parameral*) side is *in-situ* the side where the parameral bases attach (Fig. 1) and the *basal foramen* is open, while *ventral* (or *non-parameral*) side is the side where the *apical foramen* is open (Fig. 5A). Several sclerotized structures (sclerites, bands, tubes, etc.) are found inside the median lobe, which are here called “endophallic structures”.

Median lobe. Median lobe is more or less bulbous and weakly sclerotized basally, laterally with sclerotized rim (Fig. 5A: *lateral sclerotized rim*), apicolaterally with or without angulate corner (Fig. 5A: *apicolateral corner*), and apically with sclerotized area (Fig. 5A: *apical sclerotized area*). The apical sclerotized area is highly diverse morphologically; and it is sometimes with a *median longitudinal keel* (ventral) and / or *apicomedian projection* (Fig. 5A). The dorsal side of median lobe is strongly sclerotized and largely concave medially (Fig. 1), while its ventral side is more or less convex, and it is wrapped laterally with the moderately sclerotized wall (Fig. 5A: *ventral wall*). The basal foramen is a relatively small, round hole surrounded by the sclerotized rim, the posteromedian part of which is provided with a sclerotized protuberance (Fig. 5A: *posteromedian protuberance*). On the other hand, the apical foramen is large and both posteriorly and laterally surrounded with sclerotized rim, but the anterior rim is rather indistinct because it is membranous and hardly pigmented (Fig. 5A).

The median lobe is highly diverse morphologically in Steninae, so that it is one of the most important characters for species identification. In general, it is bilateral-symmetrically built, but it has asymmetrical shape in the Neotropical *S. aeneas* group (Puthz, 1984c) and also in the Neotropical species *S. perpulcher* Solsky, 1875 (Puthz, 2000a). Although its varied forms are not specified here, some peculiar structural modifications found in *S. humilis* group are described below: At the apical part of median lobe (where the sclerotization is weak), often found is a unique subtransparent area (but not a hole), which is characteristically round, ovoidal or elliptical in shape when seen ventrally (Fig. 5B, C). The weakly sclerotized area is here called “*apicomedian subtransparent area*” (Fig. 5B, C). There exist a pair of small teeth (or humps) usually at the mesial edges of the sclerotized, ventro-lateral rims of median lobe (Fig. 5B, C). The tooth is, when seen ventrally, almost located at the apicolateral part of median lobe (i.e., a little before the apicolateral corner of the apical sclerotized area of median lobe). Given the location of the tooth in the median lobe, the tooth is here called “*apicolateral tooth*” in usual (Fig. 5B, C), but when the apex of apicolateral tooth is almost rounded, it is called “*apicolateral hump*”. The apicolateral tooth turns mesially in usual (Fig. 5B) but in some species it turns laterally (Fig. 5C), for example, in *S. wasamatanus* (Fig. 51B) and *S. displicatus* (Fig. 56E).

Endophallic structures. Ejaculatory duct enters into median lobe from its basal foramen, and then goes into the basal room of basal tube where a spermatophore may be shaped. Before ejaculatory duct enters into the basal room, it goes through a sclerotized ring (Fig. 5A: *basal ring*) in some species; and the ring can be distinctly observed, e.g. in *S. bifoveolatus* (Fig. 87F), *S. hirtellus* (Fig. 94D), *S. oblitus* (Fig. 95B). The function of the ring is unknown, but it may be to protect the ejaculatory duct from its deformation by physical pressure. In *S. humilis* group, a basal-ring-like structure is found in common (Figs. 40E, 41C). Given its position and shape, the ring seems to be homologous with the basal ring that we observed, e.g. in *S. hirtellus*, but presently we cannot ascertain whether the ring is located inside a highly membranous basal room, or out-

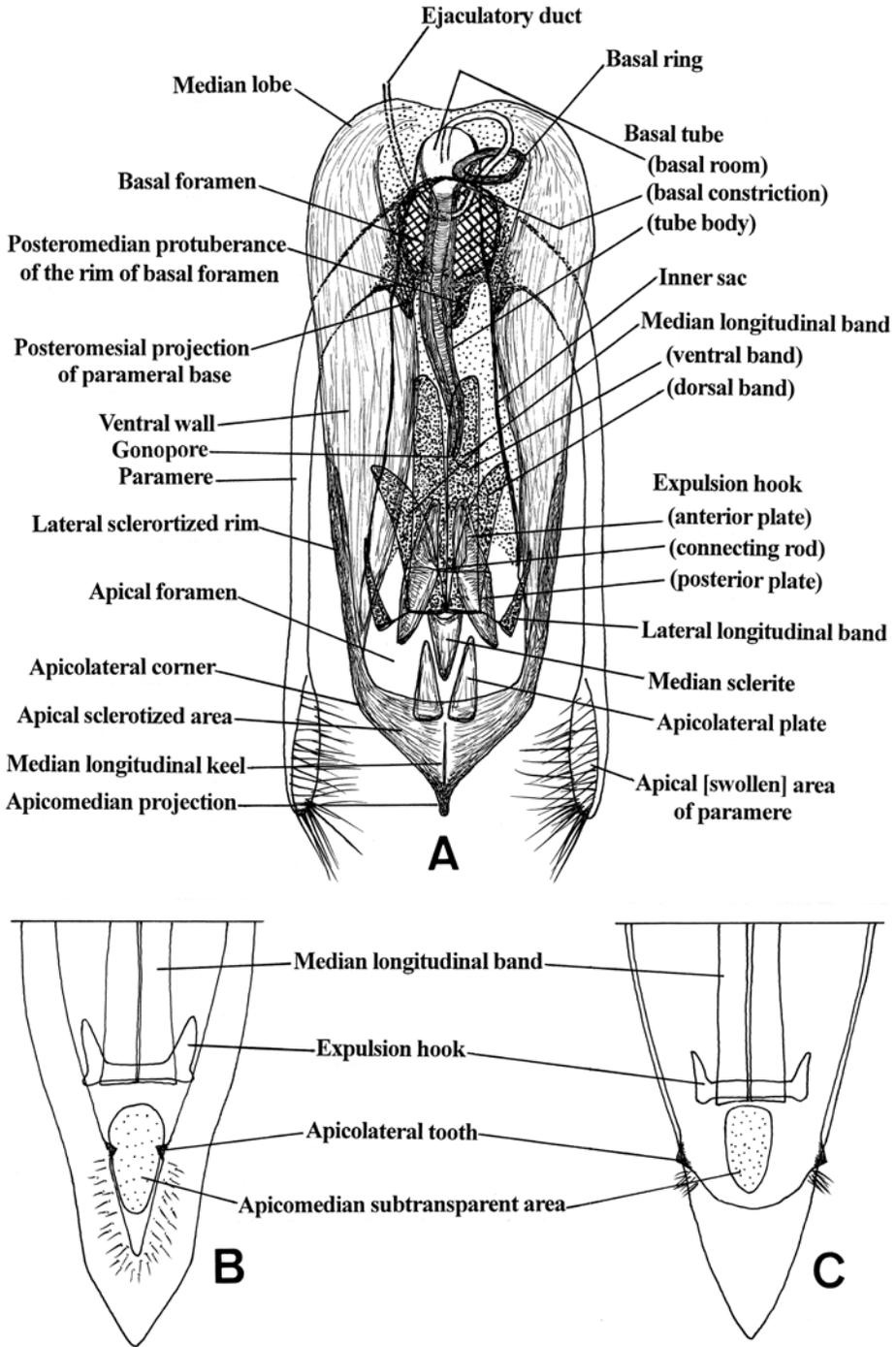


Fig. 5. Diagrams. A, aedeagus with endophallic structures (but not groundplan of the aedeagus of Steninae); B, C, posterior part of aedeagal median lobe, showing its specialized structures such as apicolateral teeth.

side it.

Under the *in-situ* condition, a rod-like tube exists at the base of median lobe, so that it is here called *basal tube* (Fig. 5A); it has been also called “copulatory piece”, “flagellum”, “endophallus”, etc. in descriptive studies. The basal tube is morphologically diverse; and for example it exists as a sclerotized (but more or less flexible) flagellum (e.g. *S. flagellifer* group), as a spiculate flexible (and submembranous) tube (e.g., *S. confertus*, Fig. 97F; Puthz, 2013, fig. 222), or as a stiff, sclerotized tube (common in *Stenus*, Fig. 5A). When it is stiff, the basal tube is composed of *basal room* and *tube body* (Naomi, 2006), with *basal constriction* often existing as the demarcation between them (Fig. 5A).

The *inner sac* is an eversible sac which connects the base of basal tube with the rim of apical foramen of median lobe (Fig. 6D). The inner sac completely wraps the basal tube in usual (Fig. 5A); and it is inverted during a copulation because the basal tube is outthrust as an intromittent organ (Fig. 6). The inner sac is completely membranous and non-pigmented in many cases so that it is not observable, but it sometimes is submembranous and weakly pigmented; or it is densely covered with spinules and / or small tubercles in some species of *S. gibbicollis* group (Fig. 76C), *S. piliferus* group (Fig. 96C), etc. In *S. comma* group, the inner sac around the basal tube is weakly sclerotized and also uniquely formed so that it is here called “cloak-like sclerite”. It seems that the shape of the cloak-like sclerite (Fig. 17A, B) is more or less specific for every species of this species group (e.g., Figs. 18F, 19D; Puthz, 2008b, figs. 1, 10–15). In some species of *S. pallitarsis* group (Figs. 87F, 88A), interestingly, the inner sac is strongly sclerotized.

Followings are probably considered accessory structures of the endophallic inner sac. *Median longitudinal bands* (Fig. 5A–C) are paired bands which are located ventrally relative to the basal tube; and they are always firmly bent dorsoventrally near the anterior margin of apical sclerotized area. The dorsally bent part of a band is here called *dorsal band*, while the ventrally bent part of a band is *ventral band* (Fig. 5A). *Lateral longitudinal bands* are paired bands which are located lateral to the median longitudinal bands (Fig. 5A); they are usually small, narrow, short and observable only in some species. *Expulsion hooks* are located dorsally relative to the basal tube (Fig. 5A); they are usually paired, separated and connected each other by a transverse rod (Fig. 5A: *connecting rod*). Each hook is composed of anterior and posterior plates (Fig. 5A), but these plates are often fused into a simple sclerite or plate. The expulsion hooks are also sometimes fused to form a single median hook, e.g. in *S. comma* group (Fig. 14D), *S. humilis* group (Fig. 5B, C; Fig. 38F), *S. flavipes* group (Fig. 90A); or they are atrophied into small sclerites, e.g. in *S. oblitus* (Fig. 95B). *Median sclerite* rarely exists between expulsion hooks (Fig. 5A), when seen ventrally; and it is dorsal in position relative to median longitudinal bands. It is sometimes franked anterolaterally with *apicolateral plates* (Fig. 5A). Regarding the further information of endophallic median sclerite and apicolateral plates, see subsection “Homology of some endophallic sclerites”.

The important endophallic elements for outthrusting the basal tube by male during a coitus are expulsion hooks and median longitudinal bands (Puthz, 1971a: figs. 27–30). Since understanding of the functions of those endophallic elements aids us in understanding their morphological structures, we also provide the illustrations as to how to outthrust the basal tube by male (Fig. 6A–D). The endophallic elements of a median lobe are *in-situ* located as in Fig. 6A; notice here that the median longitudinal bands are each firmly bent dorsoventrally. When the expulsion hooks begin to turn over ventrally by using the posterior end of each expulsion hook as a fulcrum, they virtually put the median longitudinal bands a bit toward ventral direction (Fig. 6B). Then, the median longitudinal bands each become loose so that the ventral and dorsal bands are

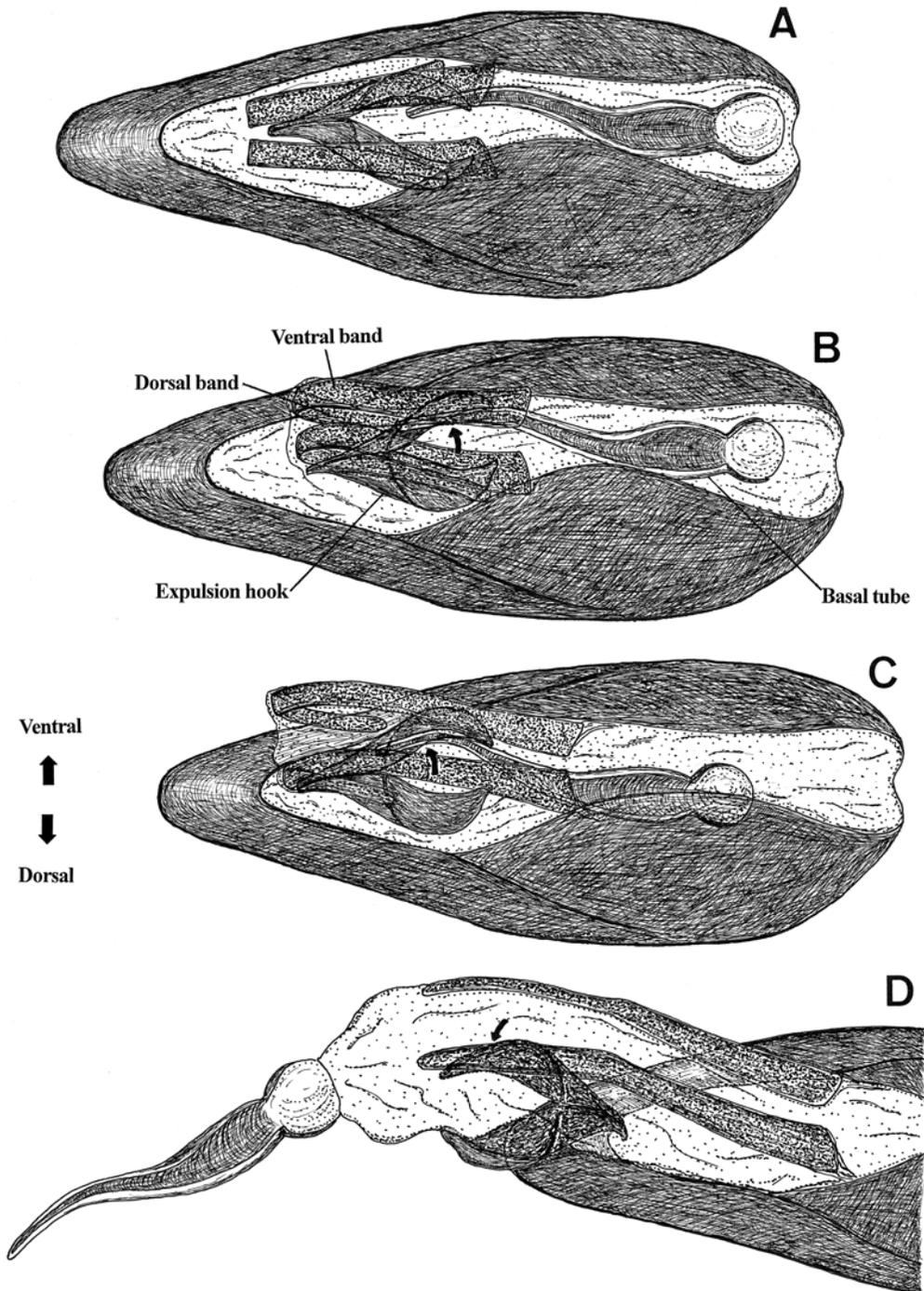


Fig. 6. Diagrams showing how to outthrust the endophallic basal tube by male during a coitus. A, *in-situ* condition of endophallic structures; B, expulsion hooks begin to slightly turn over ventrally so that median longitudinal band becomes loose; C, median longitudinal band gradually stretches posteriorly out, by posteriorly rolling out its dorsal band; D, basal tube is completely outthrust.

separated dorsoventrally (Fig. 6B). In proportion to the degree to which the expulsion hooks turn over ventrally, the median longitudinal bands gradually stretch posteriorly out, by posteriorly rolling out the dorsal bands (Fig. 6C). The posterior rolling-out of dorsal bands is considered to occur probably in accordance with the reverse movement of inner sac, which results in outthrusting the basal tube (Fig. 6D); notice here that the anterior end of an expulsion hook in *in-situ* condition (Fig. 6A) is located at the most posterior end of the hook when the basal tube is completely outthrust (Fig. 6D; Puthz, 1971a).

Parameres. Parameres are paired and rod-like (Fig. 5A); they are symmetrical but very rarely asymmetrical (e.g., *S. operosus* Erichson, 1840; see Puthz, 1971a, fig. 18). Each paramere is connected with median lobe by the lateral or anterolateral side of the sclerotized rim of basal foramen; and it extends posteriorly a little before, at or beyond the apex of median lobe. The paramere is usually composed of the base, stem and apical area. The base is more or less thick and stout in usual, and sometimes is provided with *posteromesial projection* (Fig. 5A). The stem is thin, moderately thick or very thick; and it is almost straight, weakly incurved or sinuous, or uniquely, strongly sinuous, e.g. in *S. riukiensis* (Fig. 66A). The apical area is more or less swollen mesially so that we can call it “*apical swollen area*” also (Fig. 5A; see also Naomi, 2006a). The apical area is furnished sparsely or densely with setae; and the setae occur at the apicalmost part (Fig. 19A), and also on the mesial surface (Fig. 45A), or along the mesial margin (Fig. 31A), of apical area. The setae occurring there are uniformly short or moderately long; they are otherwise various in length. In *S. glaber* Benick, 1938 (*S. tenuimarginalis* group; Puthz, 2013, fig. 313) and *S. lorifer* Puthz, 1981c (*S. pulcher* group), the surface of parameral seta is densely tuberculate.

Homology of some endophallic sclerites

It is in fact difficult for coleopterists to homologize some small endophallic sclerites in *Stenus*, so that we here discuss the matter with median sclerite (Fig. 5A), apicolateral plates (Fig. 5A) and “ventral sclerites”.

Median sclerite. The endophallic median sclerite (Fig. 5A) always exists together with expulsion hook(s) (Fig. 5A); and it is usually arrowhead-like and sclerotized. It is found only in *S. raddei* (Fig. 70C), *S. shogun* (Fig. 71A), *S. bifoveolatus* (Fig. 87A), *S. latitarsis* (Fig. 88A) and *S. currax* (Fig. 113C) within the Japanese species of *Stenus*. The difficulty in identifying the median sclerite is that it is very similar both in structure and position to a fused condition of expulsion hook. For example, the arrowhead-like sclerite in the endophallus of *S. sexualis* (Fig. 65A) (and also of *S. concavifrons* Puthz, 2003a, figs. 9, 10) is not the median sclerite but it is a fused expulsion hook. This is evidently so because the incomplete fused area is found at its anteromedial part; in other words, it is a partially fused expulsion hook in *S. sexualis* and its allied species. This is true also of the endophallus of *S. gestroi* (Fig. 125B; Puthz, 2011b, fig. 13).

Apicolateral plates. The endophallic apicolateral plates (Fig. 5A) are found only in *S. sexualis* (Fig. 65A), *S. bifoveolatus* (Fig. 87A), *S. latitarsis* (Fig. 88A) and *S. currax* (Fig. 113C) within the Japanese species of *Stenus*. A morphological problem seems to be that the position of apicolateral plates are different from one species to another. In *S. sexualis* the apicolateral plates are dorsal in position relative to median longitudinal bands, and located at the lateral sides of the fused expulsion hook (Fig. 65A), while they are located almost posterior to the expulsion hooks in *S. bifoveolatus* (Fig. 87A) and *S. latitarsis* (Fig. 88A). They are dorsal in position relative to the lateral longitudinal bands in *S. currax* (Fig. 113C). This may suggest that they are not homologous, but they are simply sclerites that have evolved independently in the groups that possess

those sclerites. However, they are here tentatively called “apicolateral plates”, given that they all are in general positioned at the apicolateral portions of aedeagal median lobe.

Ventral sclerites. There scarcely exist “ventral sclerites” in the endophallus of *Stenus*, because median longitudinal bands (ventral bands; Fig. 5A) well develop at its ventral side. When we observe the endophallus of *S. similis* group (e.g., *S. sedatus*, *S. weisei*, *S. cicindeloides*, *S. kiesenwetteri*), however, we find a pair of spindle-shaped or ovoidal sclerites there. They are sclerites that are, for example, designated by “a” in Fig. 102G, which are referred to as “Ausstülpfinger” by Puthz (2008: 174). An important point here is that they are not expulsion hooks nor apicolateral plates, given their ventral positions. They are located at or near the base of expulsion hooks when seen ventrally, but they are obviously ventral to the expulsion hooks (Fig. 104F). Furthermore, they are uniquely sculptured as on the surface of inner sac (Puthz, 2008: figs. 61–63).

Discussion. As secondary derivatives from the surface of inner sac, there seems to exist such small sclerites (or plates) as median sclerite (Fig. 5A), apicolateral plates (Fig. 5A) and aforementioned “ventral sclerites” (e.g., Fig. 104F) in *Stenus*, in addition to expulsion hooks (which are commonly found). When judging from location and structure of the sclerites in question, they each seem to play a role as sclerite that has an expulsive function, as the expulsion hooks do. In cases where a *Stenus* species possesses both expulsion hooks and other expulsive sclerites (such as apicolateral plates), it may be possible to mention that it is equipped with double expulsion sclerites, suggesting that the *Stenus* species has a potential that multiply such sclerites during the morphogenesis of aedeagal median lobe. Interestingly, the endophallic expulsive sclerites (treated here) are sporadically found only in a few species in different species groups of *Stenus*. As far as the Japanese *Stenus* is concerned, the species that all possess median sclerite, apicolateral plates as well as expulsion hooks are *S. bifoveolatus* and *S. latitarsis* (*S. pallitarsis* group) and *S. currax* (*S. bispinus* group).

Spermatheca

Spermathecae are highly diverse morphologically in *Stenus*; and at least three different forms are recognized (Fig. 7A–C). The basic form of spermatheca is composed of capsule, RT-duct, spermathecal duct, basal valve, basal sclerotized duct and basal porch (= *infundibulum*; Puthz, 2005: 4), in addition to spermathecal gland (Fig. 7A; Naomi, 2006b). The major characteristics are as follows: the basal valve is developed just distal to the basal sclerotized duct in usual; and the RT-duct is usually thicker than spermathecal duct. The spermathecal duct is very short (Fig. 92F), short (Fig. 94C), moderately long (Fig. 121F) to very long (Naomi, 2006b, fig. 27; *S. cephalotes* group); and it is loosely (Fig. 121F), moderately (Fig. 123G) or tightly (Fig. 113G) coiled. The basic form is commonly found in *Stenus*, including, e.g. *S. gibbicollis* group, *S. pallitarsis* group, *S. asyura* group, *S. cephalotes* group.

The *guttalis*-form of spermatheca is composed basically of distal duct (C-shaped; thick), proximal duct (irregularly coiled; more or less thin) and basal porch, in addition to spermathecal gland (Fig. 7B). The distal duct is composed of capsule, RT-duct and thick distal part of spermathecal duct, while the proximal duct is composed of thin proximal part of spermathecal duct. It is not understood whether or not the basal valve exists in this *guttalis*-form. Major characteristic is as follows: the spermathecal duct is strongly bent just at the boundary between the C-shaped distal duct and proximal duct, where opening of the large (or small) spermathecal gland is located (Fig. 7B). This *guttalis*-form is found in, e.g. *S. gestroi* group (Fig. 125C), *S. guttalis* group (Fig. 126A), *S. javanus* group (Fig. 66B).

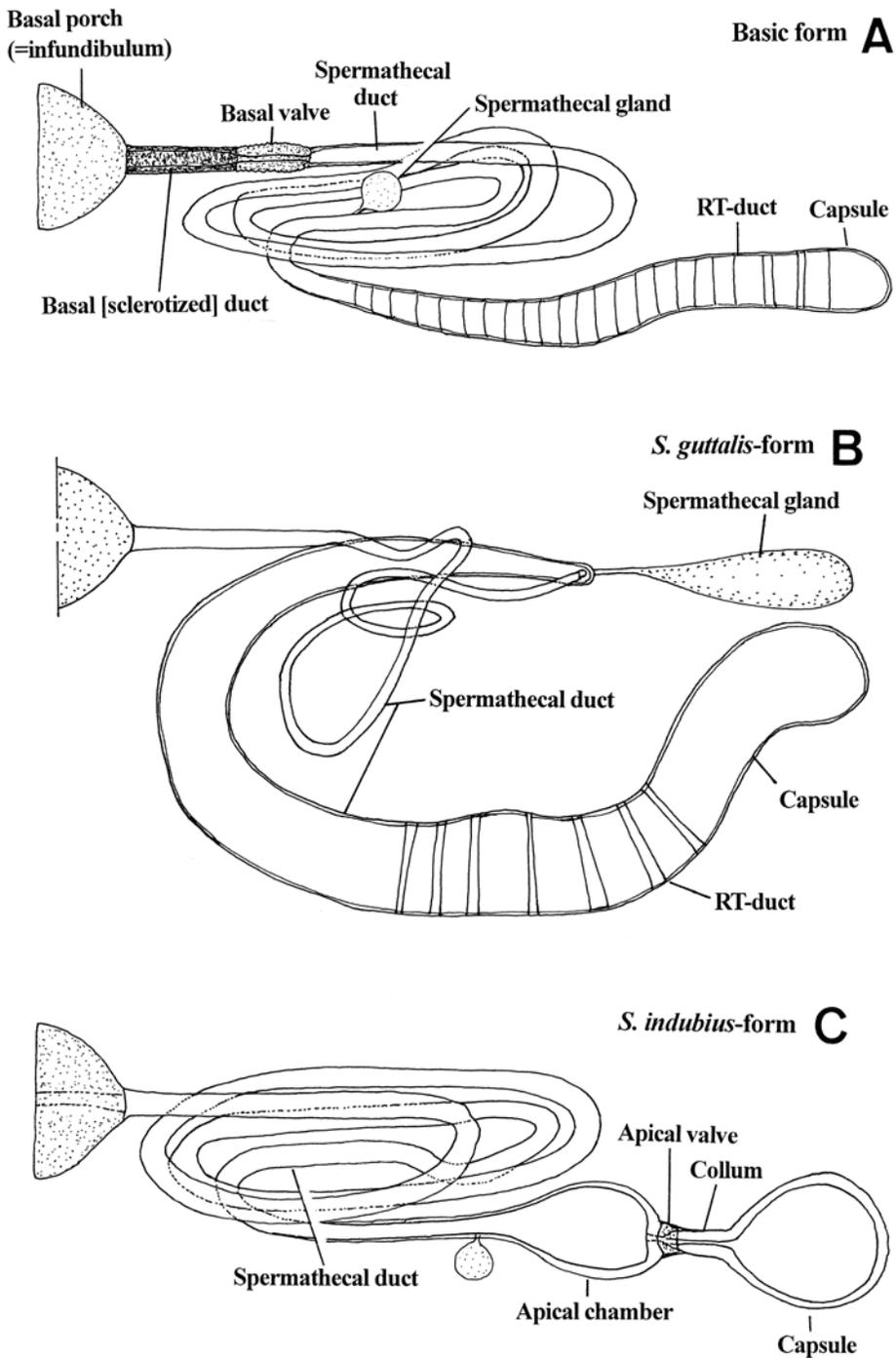


Fig. 7. Diagrams of spermatheca with its gland. A, basic form; B, *S. guttalis*-form; C, *S. indubius*-form.

The *indubius*-form of spermatheca is composed of capsule, collum, apical valve, apical chamber, spermathecal duct and basal porch in addition to spermathecal gland (Fig. 7C); notice here that the apical valve (+ collum) are virtually homologous to the RT-duct of the basic form

(Naomi, 2006a, b) and *guttalis*-form. The basal valve is probably missing in the *indubius*-form. Major characteristics are as follows: the capsule and apical chamber are each large and spherical; and the duct between the capsule and apical chamber is strongly constricted to form the short collum; the apical valve is situated between the base of collum and apical chamber. In *S. electristigma* (Puthz, 2013, fig. 309), opening of the spermathecal gland is located on the lateral surface of the duct a little proximal from the apical chamber. The spermathecal duct is very short, short, moderately long (Fig. 7C) or long. The *indubius*-form is found in *S. indubius* group, etc.

Methods of descriptions and illustrations

Japanese species of the *S. comma* group to *S. guttalis* group of Steninae are revised taxonomically in this monograph. First, species groups are each briefly characterized by describing important diagnostic characters, but notice here that the characterization of each species group is often based mainly on Japanese species in such a way that it may not be applied to species of other zoogeographical regions in some cases. In order to show specifically examples of some important diagnostic characters of a species group, one or more figures are cited for each of those diagnostic characters. Second, a key to the Japanese species of each species group is also provided. Third, for each species treated, the afore-mentioned characters are described and illustrated. Regarding photos of the habitus of most species treated, see “Habitus Figures” placed at the end of this monograph.

Method of descriptions

Items for the description of each species are composed of (1) historical records on the studies of the Stenine species; (2) “Type material”, “Type material examined”, “Other material examined”; (3) “Distribution”; (4) “Redescription” or “Description”; (5) “Biology and Ecology”; (6) “Remarks”; and (7) “Etymology”. Annotations about some items for the descriptions of species are as follows:

(1) Historical records on the studies of Stenine species in and after 2001 only are cited at base; see Herman’s (2001) Catalog for the records before 2001. Some important records of studies before 2001 are however cited, because readers can easily understand history of the studies of a species in question by seeing them.

(2) (a) When information on the type specimens of a species is described based on the type specimens examined by Puthz and/or by Naomi, then title of the item is “Type material examined”. (b) When information on the type specimens of a species is described based on one or more previously published papers of the species in question (e.g., Sharp, 1874), then title of the item is “Type material”. In cases where type material of a species in question comprise Syntype(s), the number of Syntype(s) are not necessarily clarified in the “Type material”, because the number is sometimes not described nor traced in the paper, in which the species was first described as new to science and/or later studied.

(7) When (re)describing the Stenine species treated, the item “Etymology” is added in the following three cases: (a) The specific epithet of a known species is derived from a Japanese term; (b) it is from the name of person; and (c) a specific epithet is that of a new species.

Method of illustrations

All illustrations are *real* at base in the section “Descriptions”. This is to say that those illustrations are not schematic nor imaginary by illustrating a combining set of typical conditions of

the parts of a taxonomic character illustrated. Thus, there will be (not many but at least a few) cases where the non-typical conditions are illustrated with respect to some parts of a character of a species. Such situations are difficult to avoid especially in cases where the species in question is very rare so that we cannot obtain the Steninae beetle specimens that show an ideal condition of a character for illustration. In such cases, infraspecific variations of the character in question are described and also discussed when needed.

For each species treated, the abdominal secondary modifications of male, 9th tergum and ventrite of male, 10th tergum of male, aedeagus with its endophallic structures including expulsion hooks and basal tubes, (apical part of) gonocoxite and spermatheca are illustrated at base, when male and female specimens of the species are at hand, and also available for illustrations. Other characters such as 8th ventrite of female, 9th tergum of female and 10th tergum of female are also illustrated when the illustrations are considered necessary. Notice here that the aedeagus (and thus endophallic structures also) are always illustrated from ventral side, because we can observe more easily its endophallic structures than from dorsal side. In the caption of a figure where an endophallic structure is illustrated from dorsal side, add “(dorsal view)” just after the name of structure which is to be illustrated.

We did our best for carefully illustrating those taxonomic characters that we had better illustrate for species identification. However, for simplifying procedure of the time-consuming task of illustrating the taxonomic characters of so many species as treated in this monograph, we omitted to illustrate some things or elements of a character illustrated. For the components (i.e., tergum and ventrite) of abdomen, the pubescence, punctures and microsculptures are not illustrated in most cases of the species treated. In the 9th ventrite of male, the setae occurring at and near the anterior margin of a pubescent area are illustrated in order for demarcating the pubescent area (Fig. 4E); and the macrosetae as well as the apicolateral setae are also illustrated (Fig. 4E). Out of the setae on the gonocoxite, the apicolateral setae only are illustrated (Fig. 4F, G), but they are not done so when they are missing in the specimens illustrated. On the endophallic median longitudinal band, a uniform pattern of small dense dots is found in common. Those dots on the band are not illustrated at base except for the cases where the distribution of the dots on the band shows a unique pattern so that it may form the character of a species in question.

History of Taxonomic Studies on the Japanese Steninae

In this section, the history of taxonomic studies on the Japanese Steninae are to be described, which aims at showing how the Japanese fauna of Steninae have been clarified by the coleopterists after the publication of “The Staphylinidae of Japan” by D. Sharp in 1874. The whole period of those taxonomic activities from 1874 to the present is divided into the following 3 periods: 1st period from Sharp’s (1874, 1889) studies on the Japanese Staphylinidae to the publication of a catalog of the Japanese Staphylinidae (part 1) by Shibata (1976); 2nd period beginning with the publication of Shibata’s (1976) catalog to the publication of a list of species of Japanese Steninae by Puthz & Naomi (2003); and 3rd period beginning with the publication of Puthz & Naomi’s (2003) list to the present. As far as the descriptive studies are concerned, detailed taxonomic treatments such as synonymization of species and first record of species from Japan are basically not mentioned here for saving the space, so that we hope that for further details, readers consult “Remarks” of each species treated in the section “Descriptions”.

First period

The Steninae of Japan was first studied by Sharp (1874), based on a set of specimens collected in Japan by G. Lewis; and he described the following 15 new species (*Stenus tenuipes*, *S. alienus*, *S. verecundus*, *S. rufescens*, *S. currax*, *S. macies*, *S. lewisius*, *S. puberulus*, *S. japonicus*, *S. sexualis*, *S. rugipennis*, *S. cicideoides* [as *S. cicindela*], *S. hirtellus*, *S. oblitus* and *S. dissimilis*). Sharp (1889) studied again the Steninae of Japan, based on the other set of specimens collected in Japan by G. Lewis; and he described the following 17 new species (*S. anthracinus*, *S. indagator* [as *S. lentus*], *S. distans*, *S. laborator*, *S. hirtiventris*, *S. bicolon*, *S. sharpi* [as *S. palpalis*], *S. latitarsis*, *S. mysticus*, *S. indubius*, *S. cephalotes*, *S. confertus*, *S. concinnus*, *S. mercator*, *S. sedatus*, *S. velox* and *S. flavidulus*). The Steninae fauna of Japan (comprising 32 species in total) was, as described above, first clarified at a stretch by David Sharp at the second half of 19th century.

After the Sharp's studies, the Steninae of Japan has been only sparsely studied during the next ca. 80 years by Bernhauer, Cameron, Sawada, Nakane, Puthz, etc. For example, Bernhauer (1907) described a new species *S. sauteri*; and Cameron (1930) described a new species *S. kobensis*. Nakane (1963a) described a new species *S. takara* (= *S. gestroi*). Puthz (1968b) described two new *Stenus* species (*S. zimmermanni*; and *S. zipanguensis* [= *S. coronatus zipanguensis*]), and first discovered *S. ruralis* Erichson from Japan. Puthz (1973a) described a new species *S. riukiuiensis*; and Puthz (1974) first discovered *S. calliceps* Bernhauer from Japan. As far as *Dianous* is concerned, Sawada (1960) first discovered *Dianous* from Japan and described 3 new *Dianous* species.

A standard illustrated encyclopedia of Japanese Coleoptera titled *Iconographia Insectorum Japonicorum Colore naturali edita* (Volume II) was published in Japanese in 1963; and Nakane (1963b) redescribed there 9 *Stenus* species (*S. alienus*, *S. anthracinus*, *S. rufescens*, *S. currax*, *S. cicideoides* [as *S. cicindela*], *S. mercator*, *S. flavidulus*, *S. distans* and *S. gestroi* [as *S. takara*]) and 2 *Dianous* species (*D. japonicus* and *D. shibatai*).

Second period

In 1976, Shibata started to publish a catalog of the Staphylinidae of Japan, which is substantial (and very useful at that time) in surveying the Steninae fauna of Japan. Shibata (1976) published a list of Japanese Steninae in the 1st part of his catalog, in which he actually enumerated 42 species (excepting the species whose names were considered junior synonyms). Given that several Japanese coleopterists started their full-scale studies and field surveys for clarifying the Japanese fauna of Staphylinidae (including Steninae), using Shibata's catalog, the mid 1970's can be retrospectively regarded as the dawn of 2nd period for clarifying the Japanese fauna of Steninae.

The Japanese Steninae have been still studied under the traditional framework of Steninae taxonomy based on 6 subgenera during the 2nd period, where many new Stenine species have been described by Puthz, Hromádka, Watanabe and Naomi. Many of the new species described belong to *S. cephalotes* group and *S. asyura* group, but difficulties exist as to the descriptive studies on these species groups at this period. First, the species which should belong to *S. cephalotes* group or *S. asyura* group are broadly put into subgenus *Hypostenus*, because most of those species have no "tergo-sternal suture" nor "paratergites"; notice here that those species are only recently classified into two different species groups (as *S. cephalotes* group and *S. asyura* group) by Naomi (2012). To make the matter worse, some species of *S. cephalotes* group and *S. asyura* group have "tergo-sternal suture" and/or "paratergites" so that those species were simply put into

Parastenus. In other words, the members of each of these two species groups are artificially classified into two different subgenera (*Hypostenus* and *Parastenus*).

Main taxonomic activities during the 2nd period are as follows: From the end of 1970's to the beginning of 1980's, Hromádka has published a series of papers on Japanese *Stenus* (Hromádka, 1979a-d; 1980, 1982), based on a set of specimens collected by K. Sawada. He described 15 *Stenus* species which belong to various species groups including *S. indubius* group and *S. cephalotes* group; and he also redescribed *S. testaceopiceus* as a Japanese species. Hromádka (1990a, b) also described 2 new *Stenus* species of *S. asyura* group from Japan. Puthz (1987) described a new species, *S. shogun*; and Puthz (1992) first discovered *S. kiesenwetteri* from Japan. Puthz (1993a,b) described 14 new species, most of which belong to *S. cephalotes* group and *S. asyura* group. And furthermore, Puthz (2001b-d) described 7 new *Stenus* species, which belong to *S. humilis* group, *S. cirrus* group, etc.

Since the members of *S. humilis* group, *S. cirrus* group, *S. asyura* group, *S. indubius* group and *S. cephalotes* group comprise many endemic species in Japan, Naomi, together with his coleopterist colleagues, has studied taxonomically the Japanese Steninae since 1986, paying special emphasis on these groups. As the results, the following number of new species / subspecies are described in those groups: 12 (*S. humilis* group) by Naomi (1988c, 1990d, 1997f, 1998) and Naomi & Puthz (1994a); 7 (*S. cirrus* group) by Naomi (1988e, 1997d, 1998b), Naomi & Puthz (1994c, 1996), and see also Naomi (1988f); 27 (*S. asyura* group) by Naomi (1987, 1988g, 1989b,c, 1990a,b,d, 1997c, 1998b) and Naomi & Puthz (1994b, 1996); 4 (*S. indubius* group) by Naomi (1987, 1997c), Naomi & Takeda (1991) and Naomi & Puthz (1996); and 38 (*S. cephalotes* group) by Naomi (1987, 1988e, 1989b-d, 1990a,b, 1997b, 1998a,b), Naomi & Nomura (1990), Naomi & Puthz (1993, 1994b,c) and see also Naomi (1997a). Other descriptive studies by Naomi are as follows: 2 new species of *S. gibbicollis* group (Naomi, 1988c); 3 new species of *S. claviconis* group (Naomi, 1988d, 1990d); 1 new species of *S. crassus* group (Naomi, 1989a); 1 new species of *S. pallitarsis* group (Naomi, 1988b); 1 new species of *S. similis* group (Naomi, 1997b; with Puthz); and 1 new species of *S. coelogaster* (Naomi, 1990c).

As far as *Dianous* is concerned, Watanabe (1984) described 1 new species (*D. coeruleascens* group). From Nansei Islands, Naomi (1988a) described 1 new species of *D. chinensis* group, and Naomi (1997e) described 1 new species of *D. calceatus* group.

A standard illustrated encyclopedia of Japanese Coleoptera titled *The Coleoptera of Japan in Color* was published in Japanese in 1985; and Watanabe (1985) redescribed there 14 *Stenus* species (*S. alienus*, *S. tenuipes*, *S. anthracinus*, *S. kobensis*, *S. macies*, *S. distans*, *S. lewisius*, *S. melanarius* (as *S. melanarius vercundus*), *S. zimmermanni*, *S. cicindeloides*, *S. mercator*, *S. flavidulus*, *S. rufescens*, and *S. rugipennis*, and 2 *Dianous* species (*D. amamiensis* and *D. shibatai*).

Third period

Third period will be considered the period where, in addition to the continued descriptive studies, staphylinists have been successful in illuminating the outline of the Japanese fauna of Steninae, which comprise 34 species groups, as listed below. As far as the studies on the level of species group is concerned, *S. asyura* group was first characterized by using the structure of aedeagus, etc., and *S. rufescens* group was synonymized with *S. cephalotes* group by Naomi (2012). *S. macies* was first recognized as belonging to *S. seminiger* group in this monograph.

Main descriptive studies during the 3rd period have been conducted by Puthz, Naomi, Nomura, Watanabe, Ito, Shimada and Kamezawa, which are summarized as follows: Puthz (2003b) described 2 new *Stenus* species: *S. alter* (*S. cephalotes* group) and *S. hayashii* (*S. asyura*

group). Naomi, together with his colleagues, continues to have studied Japanese Steninae and have described the following number of new *Stenus* species: 1 (*S. comma* group) by Naomi & Watanabe (2015); 1 (*S. clavicornis* group) by Naomi & Ito (2015b); 6 (*S. humilis* group) by Naomi (2004c), Naomi & Shimada (2008) and Naomi & Ito (2014); 1 (*S. incanus* group) by Naomi & Nomura (2015a); 2 (*S. abdominalis* group) by Naomi (2015a) and Naomi & Watanabe (2015); 7 (*S. cirrus* group) by Naomi (2004d, 2015b), Naomi & Ito (2015a) and Naomi & Nomura (2015a); 31 (*S. asyura* group) by Naomi (2004a,b,e, 2010a, 2015a,c), Naomi & Nomura (2015b), Naomi, Nomura & Kamezawa (2015), and Naomi & Watanabe (2015); 15 (*S. indubius* group) by Naomi (2006b, 2015b) with coauthor of Puthz for several new species; and 31 (*S. cephalotes* group) by Naomi (2006b, 2007, 2011a, 2012, 2015a,c), Naomi & Shimada (2008), Naomi & Nomura (2015b), Naomi, Nomura & Kamezawa (2015), and Naomi & Watanabe (2015).

Based on the afore-mentioned and related studies on the Japanese Steninae, two lists of the species of Japanese Steninae were published. Puthz & Naomi (2003) published a preliminary list of the species of Japanese Steninae (comprising 213 species: 9 *Dianous* species and 204 *Stenus* species) in the Newsletter of the Staphylinidological Society of Japan (No. 20). Although it is only a small 3-paged list, its publication seems to have had a heuristic influence on the analytical studies of Japanese Steninae fauna by staphylinists, because a subclade as *S. asyura* group (which presently comprises 70 species) was first vaguely but adequately recognized between *S. indubius* group and *S. cephalotes* group in the list. This list was lately published as a revised version by Naomi & Puthz (2013), in which 258 species (9 *Dianous* species and 249 *Stenus* species) are listed.

Steninae fauna of Japan

By the afore-mentioned taxonomic studies and relevant activities (including field researches) on Japanese Steninae, beginning with the studies by Sharp (1874) to the present, the Steninae fauna of Japan is presently recognized as consisting of *Dianous* (3 species groups and 6 species) and *Stenus* (347 species and 34 species groups), the species groups of which are listed below, together with the number of species. Species groups of *Stenus* not treated in this monograph are bracketed. Note here the following two things. First, the number of total species 347 include the number of undescribed species (26) and the number of several (described) subspecies which are comparable for the level of species (Naomi, unpublished). Second, *S. asyura* group and *S. cephalotes* group each may be subdivided into two or more species groups when they are further studied in detail.

Genus *Dianous* Leach, 1819

Species group of *D. calceatus* Puthz: 1 species

Species group of *D. chinensis* Bernhauer: 1 species

Species group of *D. coerulescens* Gyllenhal: 4 species

Genus *Stenus* Latreille, 1797

Species group of *S. comma* LeConte: 7 species

Species group of *S. seminiger* Champion: 1 species

Species group of *S. clavicornis* (Scopoli): 15 species

Species group of *S. humilis* Erichson: 27 species

- Species group of *S. circularis* (Gravenhorst): 1 species
 Species group of *S. javanus* Cameron: 1 species
 Species group of *S. palposus* Zetterstedt: 1 species
 Species group of *S. melanarius* Stephens: 2 species
 Species group of *S. canaliculatus* Gyllenhal: 2 species
 Species group of *S. incanus* Erichson: 2 species
 Species group of *S. gibbicollis* Sahlberg: 5 species
 Species group of *S. crassus* Stephens: 5 species
 Species group of *S. opticus* Gravenhorst: 1 species
 Species group of *S. pubescens* Stephens: 1 species
 Species group of *S. pallitarsis* Stephens: 3 species
 Species group of *S. flavipes* Stephens: 3 species
 Species group of *S. piliferus* Motschulsky: 5 species
 Species group of *S. rorellus* Fauvel: 2 species
 Species group of *S. similis* (Herbst): 6 species
 Species group of *S. cylindricollis* Boheman: 3 species
 Species group of *S. coelogaster* Champion: 1 species
 Species group of *S. wasmanni* Fauvel: 1 species
 Species group of *S. pulcher* Motschulsky: 1 species
 Species group of *S. bispinus* Motschulsky: 1 species
 Species group of *S. alpicola* Fauvel: 2 species
 Species group of *S. virgula* Fauvel: 1 species
 Species group of *S. abdominalis* Fauvel: 8 species
 Species group of *S. sharpi* Bernhauer et Schubert: 1 species
 Species group of *S. gestroi* Fauvel: 1 species
 Species group of *S. guttalis* Fauvel: 1 species
 (Species group of *S. cirrus* Benick: 17 species)
 (Species group of *S. asyura* Naomi: 70 species incl. 1 undescribed species)
 (Species group of *S. indubius* Sharp: 27 species)
 (Species group of *S. cephalotes* Sharp: 116 species (incl. 25 undescribed species))

Descriptions

Subfamily **Steninae** Macleay, 1825

Genus ***Dianous*** Leach, 1819

Dianous Leach, 1819: 173 (type species: *Stenus coeruleus* Gyllenhal, fixed by original description and monotypy).

Diagnostic characters. Adults: Eyes each not occupying the whole lateral side of head (Fig. 127A, B); head basically with its post ocular area, which is strongly narrowed posteriorly (Fig. 127A, B); 9th ventrite (Fig. 8A) and gonocoxites (Fig. 8B) each furnished with a pair of very long apicolateral tufts of setae (Ganglbauer, 1895; Puthz, 1981a); spermatheca not observable. Larvae: Mala longer than 1st segment of maxillary palpus; ligula densely pubescent (Kasule, 1966; Puthz, 1981a).

Taxonomy. The genus *Dianous* (comprising 262 species; Puthz, 2016a) is tentatively divided into two phylogenetic groups (Puthz, 2000, 2015a, 2016a): Group I (with 76 species) is charac-

terized by the frons concave between eyes, with its median area not elevated, and the eyes being very large so that the temples are very short or nearly missing, while group II (with 186 species) is characterized by the frons with its median area elevated and also with two lateral, longitudinal furrows, and the eyes being mostly smaller than in group I so that the temples are distinctly found. The group II is furthermore divided into 9 species groups (*D. calceatus* group; *D. uniformis* group; *D. luteoguttatus* group; *D. bimaculatus* group; *D. lobigerus* group; *D. aereus* group; *D. chinensis* group; *D. ocellatus* group; and *D. coerulescens* group) and *incertae sedis* (near *Dianous* group I) (Puthz, 2016a).

As for the Japanese fauna of *Dianous*, Naomi (1988a) created 3 species groups of *Dianous* (i.e., *D. yoshidai* group; *D. amamiensis* group; and *D. japonicus* group). However, following the phylogenetic system of *Dianous* names created by Puthz (2000), the *D. yoshidai* group is here actually considered a synonym of the *D. chinensis* group, while the *D. japonicus* group and *D. amamiensis* group are considered synonyms of the *D. coerulescens* group.

Morphology. The morphology of *Dianous* has been adequately described in Puthz (1981a, 2000); see these papers regarding the detailed morphology of this genus. Only small remarks are here added on the morphological evolution of *Dianous*.

When considering *Dianous* from the morphological viewpoint, it is very interesting to see that it shows a heterobathmic (or mosaic) evolution of morphological characters. Namely, the *Dianous* seems to be rather apomorphic in having the specialized or advanced conditions of some characters: The tarsi with tarsal shoes (Puthz, 2000, figs. 1–5), the apicolateral tufts of setae very long in 9th ventrite of male (Fig. 8A) and also in gonocoxites of female (Fig. 8B), the endophallic basal tube often with its basal room very large (Puthz, 2000, figs. 39, 40, 44–46), etc. On the other hand, the *Dianous* seems to show primitive conditions in some characters, when compared with *Stenus*. For example, the eyes are smaller and less prominent laterally, which do not occupy the whole lateral side of head (Ganglbauer, 1895: 548). The aedeagi of *Dianous* are much more uniform both in external and endophallic structures (Puthz, 2000: 422), when compared with *Stenus*. Furthermore, some *Dianous* species have the gonocoxites which each distinctly comprise the proximal and distal sclerites and stylus (Figs. 8B, 9E).

Since the *Dianous* seems to be phylogenetically positioned within the genus *Stenus* (Koerner *et al.*, 2013), it seems most reasonable to hypothesize that those primitive structures have reappeared in *Dianous* by reversal evolution to the extant species (in which those primitive ones are found), as do the short (i.e., primitive) conditions of prementum in *Dianous*-labium.

Biology and Ecology. The *Dianous* species are basically hygrobionts (Puthz, 1981a, 2000). The *Dianous* beetles live in the vicinity of the headwaters of mountain streams, where the volume of water is less and the fall is steeper, so that the spray is sprinkled over the mossy boulders (Champion, 1919). The beetles (of *D. robustus* Cameron, 1924; India) cling to and move over a vertical rock face down which runs a steady film of water; and some beetles stand although the water is up to the knees, or a few ones are seen totally submerged (de Rougemont, 1985: 139). In some cases, however, the *Dianous* beetles live in different habitats (Puthz, 2000: 426). For example, *D. corticicola* Puthz, 1972d (Vietnam) was found under the bark of trees; *D. concretus* Puthz, 1988a (Malaysia) was found in dead leaves and dry mosses in open forests (Puthz, 1988a); and *D. sucininotatus* Puthz, 2000, etc. (Taiwan) were found in wet mosses grown on rotten woods, and also in debris in forests, etc.

The Japanese species of *Dianous* all are basically hygrobionts, also; and the beetles basically inhabit wet stones with mosses located in or near the mountain torrents. *D. shibatai* is a hygrobiont, but the beetles of this species are also found under humid dead leaves (Puthz, 1981a), on

semi-arid sandy lot and humid mountainous roads in natural forests.

Key to the Japanese species of *Dianous*

- 1(2) First segment of metatarsus distinctly longer than the following three segments combined *D. moritai* Naomi
- 2(1) First segment of metatarsus about as long as or shorter than the following three segments combined.
- 3(6) Head distinctly narrower than elytra.
- 4(5) Antennae and legs yellowish brown to reddish brown; aedeagal median lobe bilobed (Fig. 9B) *D. yoshidai* Naomi
- 5(4) Antennae and legs black; aedeagal median lobe pointed apically with a small apicomedian projection (Fig. 10A) *D. amamiensis* Sawada
- 6(3) Head not narrower than elytra.
- 7(10) Head about as wide as elytra; lateroventrites wider, ventromesial in position; 8th ventrite of male posteromedially with an arcuate emargination.
- 8(9) Ninth ventrite of male with apicolateral teeth short, bluntly pointed (Fig. 11B); aedeagal median lobe with apical sclerotized area triangular, acutely pointed posteromedially (Fig. 11D) *D. iwakisanus* Watanabe
- 9(8) Ninth ventrite of male without (distinct) apicolateral teeth (Fig. 12G); aedeagal median lobe with apical sclerotized area various in shape, not very acutely pointed (Fig. 12A–E) *D. japonicus* Sawada
- 10(7) Head distinctly wider than elytra; lateroventrites narrower, dorsomesial in position; 8th ventrite of male posteromedially with an V-shaped emargination (Fig. 13F) *D. shibatai* Sawada

Species group of *D. calceatus* Puthz

D. calceatus group consists of 1 species in Japan. Diagnostic characters are as follows: Eyes relatively small; temple at least half the length of eye; tarsi each mostly with tarsal shoe which comprises willow-leaf-like setae (Puthz, 2000, figs. 1–3), 1st metatarsomere longer than two to four metatarsomeres combined, 4th metatarsomere simple or asymmetrical; 8th ventrite of female entire (Fig. 8E) or emarginate apically; and aedeagal median lobe usually almost conically narrowed apically (Fig. 8C) (Puthz, 2000).

Dianous moritai Naomi (Figs. 8A–G, 127A)

Dianous moritai Naomi, 1997e: 1; Herman, 2001: 2025; Naomi & Puthz, 2013: 137.

Dianous uedai Naomi, 2010b: 41; Naomi & Puthz, 2013: 137. **New synonym.**

Type material examined. Holotype of *D. moritai*: ♀ (CBM), Sumiyo River, Nishinakama, Amami Is., Nansei Isls., 7. v. 1981, S. Morita leg. Paratypes of *D. uedai* Naomi, 1 ♂ 2 ♀ (cN), 1 ♂ (cP), Sumiyo-mura, Amami Is., Kagoshima Pref., 28. v. 2004, K. Takanashi leg.

Distribution. Japan (Nansei Isls.: Amami Is.).

Redescription. Male and female: Macropterous; body large, 7.6–8.0 mm (fore body 4.0–4.3

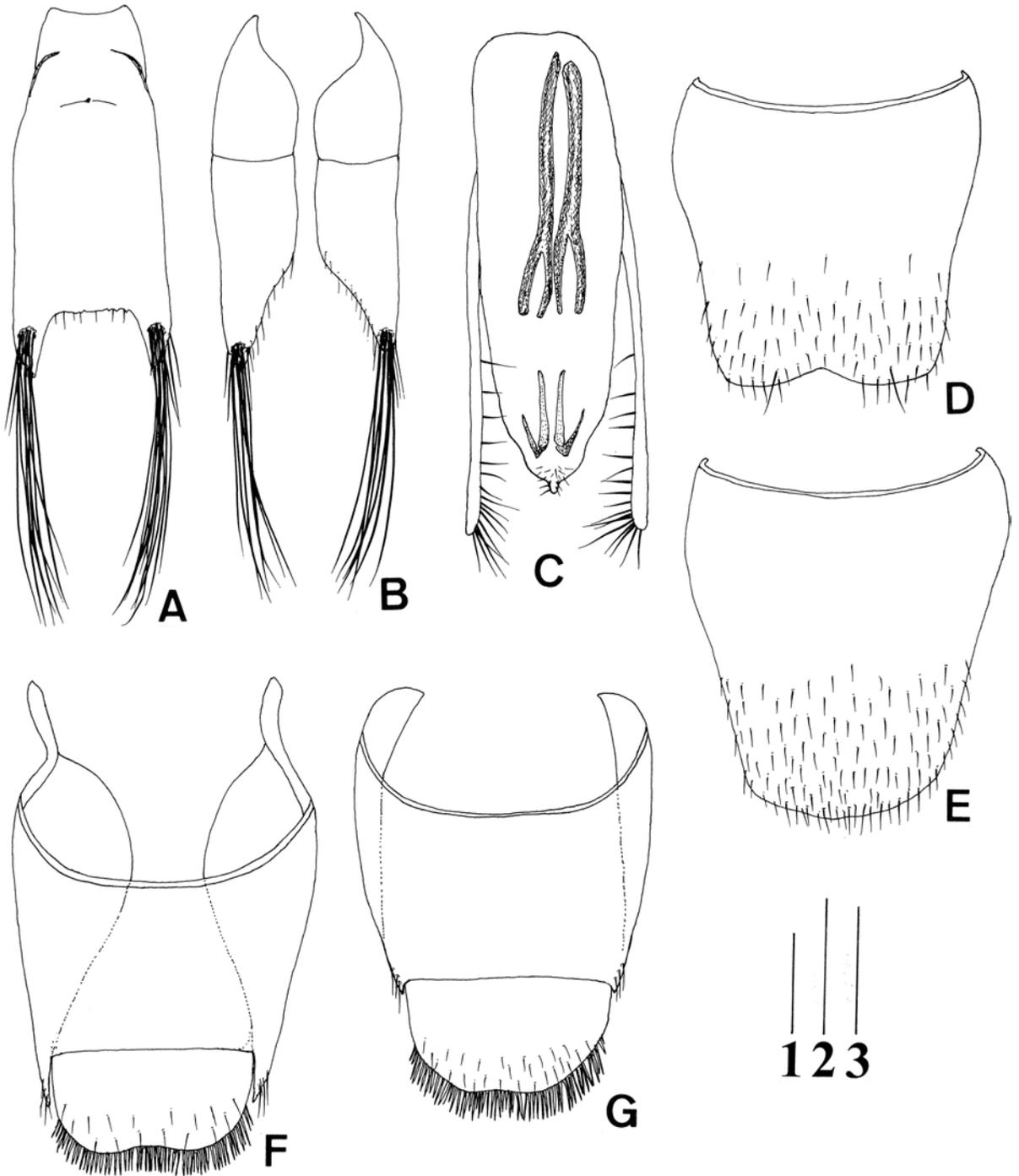


Fig. 8. *Dianous moritai* Naomi (Sumiyo, Amami Is.). A, 9th ventrite of male; B, gonocoxites; C, aedeagus; D, 8th ventrite of male; E, 8th ventrite of female; F, 9th and 10th terga of male; G, 9th and 10th terga of female. Scale 1: 0.25 mm for A, B, D, E; scale 2: 0.3 mm for C; scale 3: 0.25 mm for F, G.

mm) in length, rather slender, moderately to weakly shining. Head black, partially with varicolored (purple to dark blue) reflection; labrum black, with reddish anterior margin; antennae black through dark brown to reddish brown; maxillary palpi dark reddish brown to reddish brown; pronotum black but entirely with metallic bluish tinge; elytra black; legs black to dark brown, with apical tarsal segments yellowish brown to reddish brown; abdomen with 3rd to 6th lateroventrites black, 3rd to 8th terga black but entirely with metallic bluish tinge. Head large, broader than long, strongly narrowed posteriorly behind eyes; eyes relatively small but well convex, a little longer than postocular areas; clypeofrontal area broad, moderately convex at middle; interocular area rather broad, very weakly concave, with antennal tubercles short but distinct, dorsal tentorial pits distinct, located just behind antennal tubercles; postocular areas gently rounded. Punctures on head round, very dense, small, regular, but punctures very sparse on the median part of clypeofrontal area; interstices between punctures distinctly microsculptured on anterior part of head, indistinctly or faintly so on posterior part of head. Antennae very slender, extending posteriorly beyond half of elytra. Pronotum well convex above, longer than broad, with a thin line running along each of anterior and posterior margins of pronotum; surface with a pair of large foveae at sides of central part, without median longitudinal line; punctures extremely fine, very sparse; interstices between punctures minutely, evenly microsculptured. Mesoscutellum almost triangular in shape, covered densely with minute setiferous punctures. Elytra large, elongate, distinctly longer than wide, moderately convex, gently rounded laterally; surface somewhat uneven, densely covered with very fine punctures; interstices between punctures moderately shining, devoid of microsculpture or obsoletely microsculptured. Legs long, slender; 4th tarsomere not bilobed, with its dorsal surface covered with yellowish white, long setae. Abdomen elongate; terga each well convex right and left; 3rd tergum with punctures very fine and sparse, their diameter distinctly smaller than interstice, interstices between punctures with faint reticulate microsculpture; punctures becoming denser posteriorly from 3rd to 7th terga; punctures on 8th tergum, however, distinctly larger than those on 7th but rather sparse. Lateroventrites almost horizontal in position, moderate in width, densely punctate.

Male: Seventh ventrite posteromedially with a shallow, arcuate emargination; 8th ventrite (Fig. 8D) posteromedially with a shallow, relatively broad emargination; 9th tergum (Fig. 8F) elongate, with ventral apophyses short; 9th ventrite (Fig. 8A) with apicolateral teeth robust, large, pointed, with apicolateral setae very long; 10th tergum (Fig. 8F) posteromedially with a very shallow, arcuate emargination, posterior margin densely furnished with a line of yellowish, short thick setae. Aedeagal median lobe (Fig. 8C) almost elongate-elliptical, weakly sinuate around apicolateral corners, covered very sparsely with very minute setae at the apicalmost part, with a minute apicomedian projection. Endophallus (Fig. 8C) with median longitudinal bands rather short, thin; lateral longitudinal bands very short, thin; basal tube very large, composed of paired Y-shaped rods. Parameres (Fig. 8C) slender, thin, extending posteriorly much beyond apex of median lobe; stem furnished sparsely with several setae; apical area not distinctly differentiated, apicomedia with 8 to 9 setae of moderate length.

Female: Eighth ventrite (Fig. 8E) entire; 9th tergum (Fig. 8G) almost truncate posteriorly, without ventral struts; 9th gonocoxites (Fig. 8B) each composed of proximal and distal sclerites; distal sclerite narrowed apically behind the middle, bluntly pointed, furnished with apicolateral setae very long; 10th tergum (Fig. 8G) with posterior margin almost straight or very weakly bisinuate, densely furnished with a line of yellowish, short thick setae. Spermatheca not observable.

Biology and ecology. *Dianous moritai* is distributed only in the mountainous regions of

Amami Is. The beetles inhabit wet stones with mosses located in or near the mountain torrents.

Remarks. *Dianous moritai* is a very rare, conspicuous and large species. The holotype specimen of *D. uedai* seems to be a teneral individual of *D. moritai*; and thus *D. uedai* Naomi be newly placed in synonymy with *D. moritai* Naomi. *D. moritai* is closely allied to *D. arachnipes* Puthz, 1971b, but this species is separable from the latter by the body black with pronotum and abdomen tinged with bluish metallic luster, the head with interocular area less strongly convex, the eyes less strongly convex, the pronotum smoothly convex dorsally, the elytra with surface weakly uneven, the 8th ventrite of female entire (Fig. 8E), the aedeagal median lobe more slender, with its posterior half less strongly narrowed posteriorly (Fig. 8C), the endophallic basal tube very large, composed of a pair of Y-shaped rods (Fig. 8C), and the median longitudinal bands longer, broader (Fig. 8C).

Etymology. This species is named in honour of Mr. S. Morita (Tokyo) who collected the holotype specimen.

Species group of *D. chinensis* Bernhauer

D. chinensis group consists of 1 species in Japan. Diagnostic characters are as follows: Eyes large; temple less than half the length of eye; legs with 4th tarsomere simple or moderately bilobed; 9th ventrite of male serrate or acute apicolaterally (Fig. 9C); aedeagal median lobe broad apically or broadly bifurcate apically (Fig. 9B); paramere with two sets of setae of different length (Fig. 9B); and 8th ventrite of female with apicomedial projection rounded or obtusely pointed (Fig. 9F) (Puthz, 2000).

Dianous yoshidai Naomi

(Figs. 9A–F, 127B)

Dianous yoshidai Naomi, 1988a: 51; Herman, 2001: 2033; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♀ (KUF), Kanpira fall, Iriomote Is., Okinawa Pref., 12. iv. 1986, M. Yoshida leg.

Other material examined. [NANSEI-ISLS]: 2 ♂1 ♀, Kampira-fall, Iriomote Is., Okinawa Pref., 8. iii. 2002, Y. Hirano leg.; 1 ♂1 ♀, same locality, 16. iii. 1997, K. Toyoda leg.; 3 ♂3 ♀, same locality, 23. iii. 1998, M. Maruyama leg.; 3 ♂1 ♀, Ootomi-rindo, Iriomote Is., Okinawa Pref., 27. iii. 1994, M. Kimura leg.; 1 ♂2 ♀, Nishi-funatsuki, Ootomi-rindo, Iriomote Is., Okinawa Pref., 28. iii. 1999, T. Ito & Ohkawa leg.; 2 ♀, Nakamagawa-rindo, Iriomote Is., Okinawa Pref., 29. xii. 1997, Y. Kurosa leg.

Distribution. Japan (Nansei Isls: Iriomote Is.).

Redescription. Male and female: Macropterous; body 4.6–5.8 mm (fore body 2.7–2.9 mm) in length, moderately shining, with large elytra. Body entirely black, with dark blue reflection; antennae black, with apical segments dark red; mouth parts dark red except for reddish brown mandibles; legs black with dark blue reflection, but tibiae dark red. Head relatively small, strongly narrowed posteriorly behind eyes; eyes well convex laterally; interocular area transverse, not concave, with a pair of distinct longitudinal sulci; surface with setiferous punctures round to elliptical, dense, distinct. Labrum transverse, with anterior margin rounded. Antennae long, very slender, with sparse setae. Pronotum well convex dorsally; surface with a shallow, indistinct U-shaped depression behind the middle; punctures round, various in size, distinct,

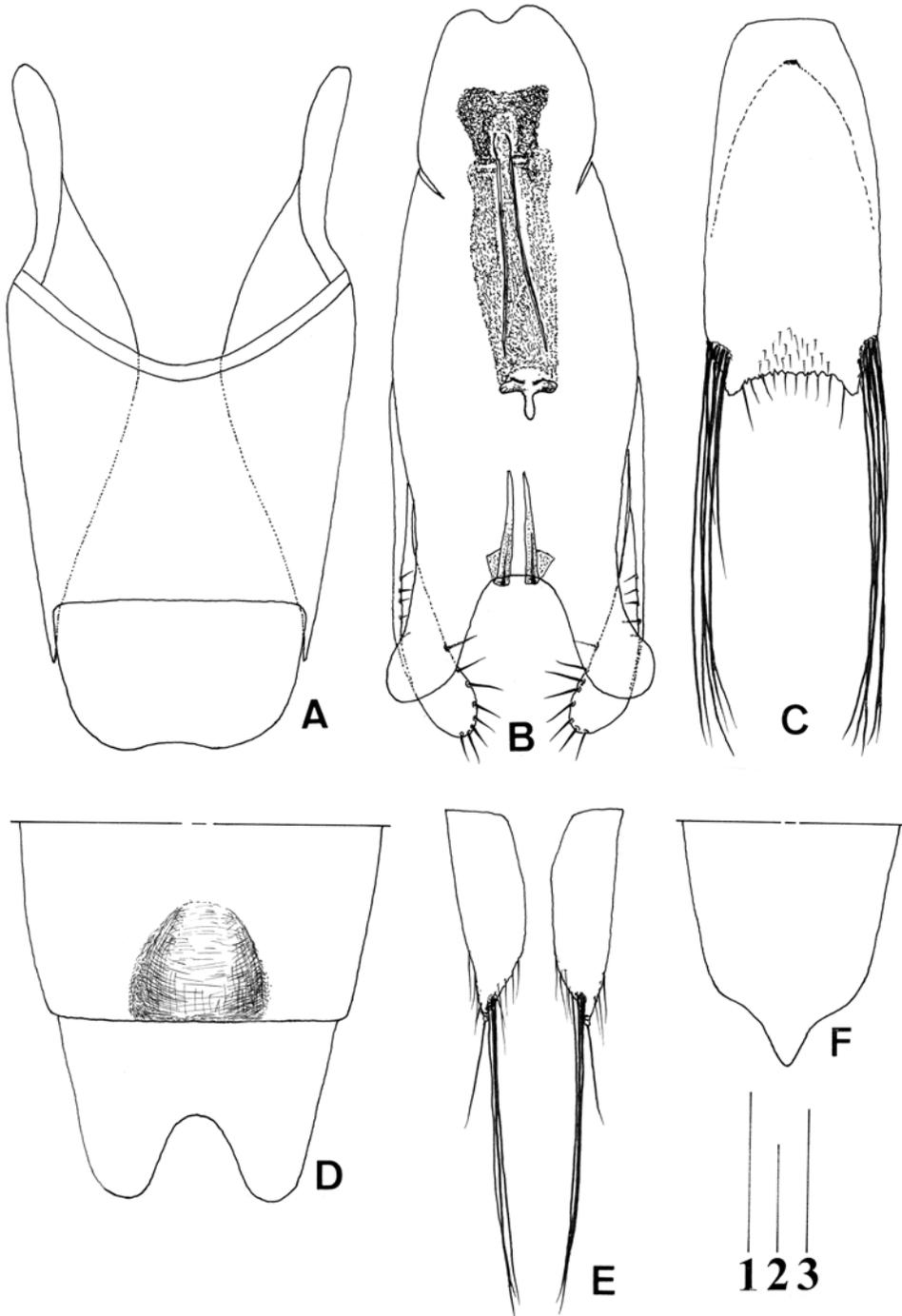


Fig. 9. *Dianous yoshidai* Naomi (Ohtomi, Iriomote Is.). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, 7th and 8th ventrites of male; E, posterior parts of gonocoxites; F, apex of 8th ventrite of female. Scale 1: 0.2 mm for A, B; scale 2: 0.2 mm for C, E; scale 3: 0.3 mm for D, F.

sometimes several punctures fused. Elytra well developed; surface almost even, with punctures very dense, various in size and shape, sometimes rugous; punctures on each elytron running from anteromesial to mediolateral direction before the middle, while behind the middle they run from mediolateral to posteromesial direction. Legs moderately long; 4th tarsomere weakly bilobed. Abdomen uniformly narrowed posteriorly; terga each well convex right and left; punctures fine, distinct, nearly regular from 3rd to 8th segments throughout, but punctures on the 3rd a little sparser than on the 8th. Lateroventrites ventromesial in position, wide, covered regularly with fine punctures.

Male: Sixth ventrite posteromedially with a flat area which is very weakly emarginate; 7th ventrite (Fig. 9D) posteromedially with a semicircular depression which is very shallowly emarginate; 8th ventrite (Fig. 9D) posteromedially with a large, deep emargination; 9th tergum (Fig. 9A) elongate, with ventral apophyses relatively short; 9th ventrite (Fig. 9C) irregularly serrate posteriorly, with apicolateral teeth robust, pointed, apicolateral setae very long; 10th tergum (Fig. 9A) posteromedially with a very shallow emargination. Aedeagal median lobe (Fig. 9B) broadest near the middle, weakly constricted before the bilobed apical part, each apical lobe rounded apically. Endophallic median longitudinal bands (Fig. 9B) rather short, thin; expulsion hooks atrophied, fused to form a small T-shaped structure; basal tube stored in inner sac that is densely covered with very fine denticles, basal room very small, with weak, distinct basal constriction, tube body rod-like, gradually broadened apically. Parameres (Fig. 9B) moderately incurved apically, gradually broadened toward apex which is rounded; each paramere furnished with 8 setae of moderate length on apical and apicodorsal margins, and also with 5 or more setae on basiventral margin of apical area.

Female: Eighth ventrite (Fig. 9F) narrowed near the apex to form blunt apicolateral corners, with apicomedian projection relatively large; gonocoxal distal sclerites (Fig. 9E) each elongate, narrowed apically behind the apical 1/3, pointed, with apicolateral setae very long, stylus (Fig. 9E) very small, tuberculiform, with a long seta. Spermatheca not observable.

Biology and ecology. *Dianous yoshidai* is distributed only in the plains and mountainous regions of Iriomote Is. The beetles inhabit wet stones with mosses located in or near the mountain torrents.

Remarks. Given the structural similarity that their aedeagi share, *Dianous yoshidai* is closely allied to *D. atrocyaneus* Puthz, 2000 from Taiwan, but this species is separable from the latter by the body smaller, the 8th ventrite of male with a deeper emargination (Fig. 9D), the aedeagal median lobe a little broader apically (Fig. 9B), the endophallic median longitudinal bands narrower (Fig. 9B), and the expulsion hook distinctly shorter (Fig. 9B).

Etymology. This species is named in honour of Mr. Mutuo Yoshida, an entomologist in Japan.

Species group of *D. coerulescens* Gyllenhal

D. coerulescens group consists of 4 species in Japan. Diagnostic characters are as follows: Eyes large; temples less than half the length of eyes; legs with 4th tarsomere simple or bilobed; 9th ventrite of male rounded, serrate apicolaterally (Fig. 10C) or acute apicolaterally (Fig. 11B); aedeagal median lobe with apical part more or less triangular in shape (Fig. 11D); paramere apicomediaally with a group of setae (Fig. 11D); 8th ventrite of female rounded, angulate (Fig. 10F) or slightly projecting apicomediaally (Puthz, 2000).

Dianous amamiensis Sawada
(Figs. 10A–F, 127 C)

Dianous amamiensis Sawada, 1960: 11; Herman, 2001: 2011; Naomi & Puthz, 2013: 137.

Type material. Holotype: ♀ (cSa), type locality: Koniya, Amami Is., Kagoshima Pref.

Other material examined. [NANSEI-ISLS]: 6 ♂3 ♀, Naze C., Amami Is., Kagoshima Pref., 19. iv. 1993, R. Kuranishi leg.; 2 ♂, Koniya, Amami Is., Kagoshima Pref., 27. iii. 1979, Y. Tsuda leg.; 1 ♀, Materia fall, Yamato, Amami Is., Kagoshima Pref., 19. iii. 1999, T. Ito & Ohkawa leg.; 1 ♀, Yamatohama, Amami Is., Kagoshima Pref., 24. iii. 1978, S. Naomi leg.; 4 ♂4 ♀, Akirigami River, Toku Is., Kagoshima Pref., 14. iv. 1996, R. Kuranishi leg.; 1 ♂, Kametoku, Toku Is., Kagoshima Pref., 8. iv. 1998, M. Kimura leg.; 1 ♂, Tete, Toku Is., Kagoshima Pref., 4. v. 1988, S. Nomura leg.

Distribution. Japan (Nansei Isls.: Amami Is., Toku Is.).

Redescription. Male and female: Macropterous; body 4.5–4.6 mm (fore body 2.6–2.7 mm) in length, moderately shining, with large elytra. Body entirely black but elytra sometimes with a pair of vague, yellowish spots; pronotum and elytra often with dark blue coppery reflection; mouth parts (except for black labrum), antennae and legs yellowish brown to reddish brown. Head relatively small, narrowed posteriorly behind eyes; eyes well convex laterally; interocular area not concave but a little higher in level than eyes at posteromedian swollen part, with a pair of distinct longitudinal sulci; surface with setiferous punctures round to elliptical, moderately dense (but sometimes very dense), distinct. Labrum very transverse. Antennae long, very slender, with sparse setae. Pronotum well convex above; surface indistinctly with a large, shallow V-shaped depression behind the middle, and with a small, elongate fovea a little behind the central area of pronotum; punctures dense, subrugous. Elytra well developed; surface almost even, with punctures rugous, various in shape, density and size; punctures on each elytron running from anteromesial to mediolateral direction before the middle, while behind the middle they run from mediolateral to posteromesial direction. Legs moderately long; 4th tarsomere moderately bilobed. Abdomen narrowed posteriorly, well convex above; punctures very fine, regular, distinct from 3rd to 8th segments throughout, but punctures on 3rd a little larger than on 8th. Lateroventrites ventromesial in position, becoming distinctly narrower posteriorly from 3rd to 6th segments, covered regularly with fine, distinct punctures.

Male: Seventh ventrite posteromedially with a flat area which is very weakly emarginate; 8th ventrite (Fig. 10E) posteromedially with a large, broad emargination; 9th tergum (Fig. 10B) elongate, with ventral apophyses short; 9th ventrite (Fig. 10C) rounded apicolaterally, very weakly serrate posteriorly, with apicolateral setae very long; 10th tergum (Fig. 10B) transverse, posteromedially with a very shallow emargination. Aedeagal median lobe (Fig. 10A) rounded at apicolateral corners, pointed apically with a small apicomedian projection; apical sclerotized area with very short setae along marginal areas. Endophallus (Fig. 10A) with median longitudinal bands short; expulsion hooks fused to form a small Y-shaped sclerite; basal tube simple, baculiform, comprising two thin shafts when seen ventrally. Parameres (Fig. 10A) thin; stem mesially with a few short setae; apical area weakly swollen mesially, furnished apicomesially with 14 to 15 setae of moderate length.

Female: Eighth ventrite (Fig. 10F) bluntly pointed apicomediaally; gonocoxal distal sclerite (Fig. 10D) rounded apicolaterally, hardly or very minutely serrate posteriorly, with apicolateral setae very long; stylus missing. Spermatheca not observable.

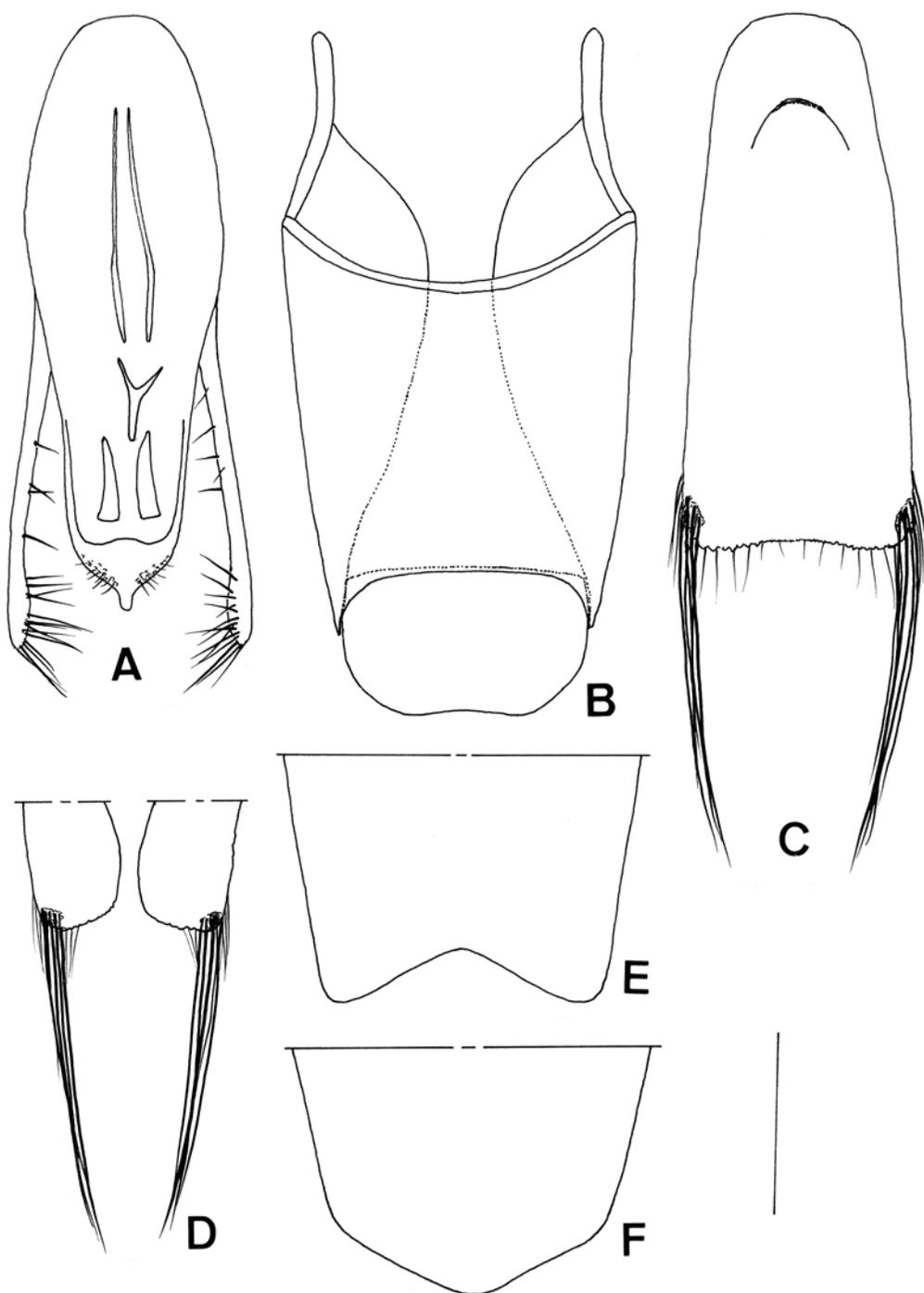


Fig. 10. *Dianous amamiensis* Sawada (A, C, E, Akirigami, Toku Is.; B, D, F, Naze, Amami Is.). A, aedeagus; B, 9th and 10th terga of male; C, 9th ventrite of male; D, apices of gonocoxites; E, apex of 8th ventrite of male; F, apex of 8th ventrite of female. Scale: 0.2mm.

Biology and ecology. *Dianous amamiensis* is distributed only in the plains and mountainous regions of Amami and Toku Isls.; it is here first reported from Toku Is. The beetles inhabit wet stones with mosses located in or near the mountain torrents.

Remarks. *Dianous amamiensis* is allied to *D. sucinigtatus* Puthz, 2000, but this species is separable from the latter by the body smaller (4.5–4.6 mm), the lateroventrites broader, covered with denser punctures, the aedeagal median lobe narrower in apical half, pointed apically with a small protuberance (Fig. 3A), and the parameres furnished apically with shorter setae (Fig. 10A).

***Dianous iwakisanus* Watanabe**

(Fig. 11A–E)

Dianous iwakisanus Watanabe, 1984: 134; Herman, 2001: 2022; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♂ (TUAA), labelled “[HOLOTYPE] *Dianous iwakisanus* Y. Watanabe, 1984 / (Mt. Iwaki) Aomori, Japan, 26. viii. 1969, Coll. T. Kiuti”.

Distribution. Japan (Honshu: Aomori Pref.).

Redescription. Male: Brachypterous; body 4.3–4.8 mm (fore body 2.2–2.5 mm) in length, moderately shining. Head and abdomen black; prothorax and elytra dark bronze; antennae black but 9th to 11th segments red to reddish brown; labrum and legs black. Head large, with a pair of narrow, distinct longitudinal depressions; punctures round, relatively dense. Pronotum with surface uneven, with a large, shallow, indistinct V-shaped depression; punctures round, dense, somewhat irregular. Elytra with sutural area weakly elevated; punctures round, dense, irregular, sometimes subrugous. Legs moderately long; 4th tarsomere weakly bilobed. Abdomen with terga well convex above; punctures very small and sparse. Lateroventrites ventromesial in position, wide, covered with small, sparse and setiferous punctures.

Seventh ventrite posteromedially with a flat area which is very weakly, arcuately emarginate; 8th ventrite (Fig. 11A) posteromedially with a very large, broad emargination; 9th tergum (Fig. 11C) with ventral apophyses short; 9th ventrite (Fig. 11B) not serrate and very weakly rounded posteriorly, with apicolateral teeth wide, short, pointed, apicolateral setae very long; 10th tergum (Fig. 11C) truncate posteriorly. Aedeagal median lobe (Fig. 11D) almost elongate-ovoidal basally, narrowed apically, angulate apicolaterally, very acutely pointed at apex, furnished with several setae along apicolateral margins, with apical sclerotized area triangular in shape, sporadically covered with pores. Endophallus with median longitudinal bands invisible; expulsion hooks missing; inner sac partially with thin, sclerotized rims (Fig. 11E); basal tube (Fig. 11E) elongate, sclerotized except for submembranous median part, almost baculiform with its apical part weakly swollen laterally. Parameres (Fig. 11D) elongate, extending posteriorly much beyond apex of median lobe; stem weakly sinuate mesially, and also mesially with several setae; apical area furnished mesially with dense setae.

Female: Unknown.

Biology and ecology. *Dianous iwakisanus* is presently known only from the mountainous regions of Mt. Iwaki located at the most northern part of Honshu. The beetles inhabit wet stones with mosses located in or near the mountain torrents.

Remarks. *Dianous iwakisanus* is closely allied to *D. japonicus*, but this species is separable from the latter by the 9th ventrite of male very weakly rounded posteriorly, with apicolateral setae shorter (Fig. 11B); the aedeagal median lobe more strongly pointed apically (Fig. 11D); the endophallic basal tube well sclerotized except for the submembranous median part (Fig. 11E);

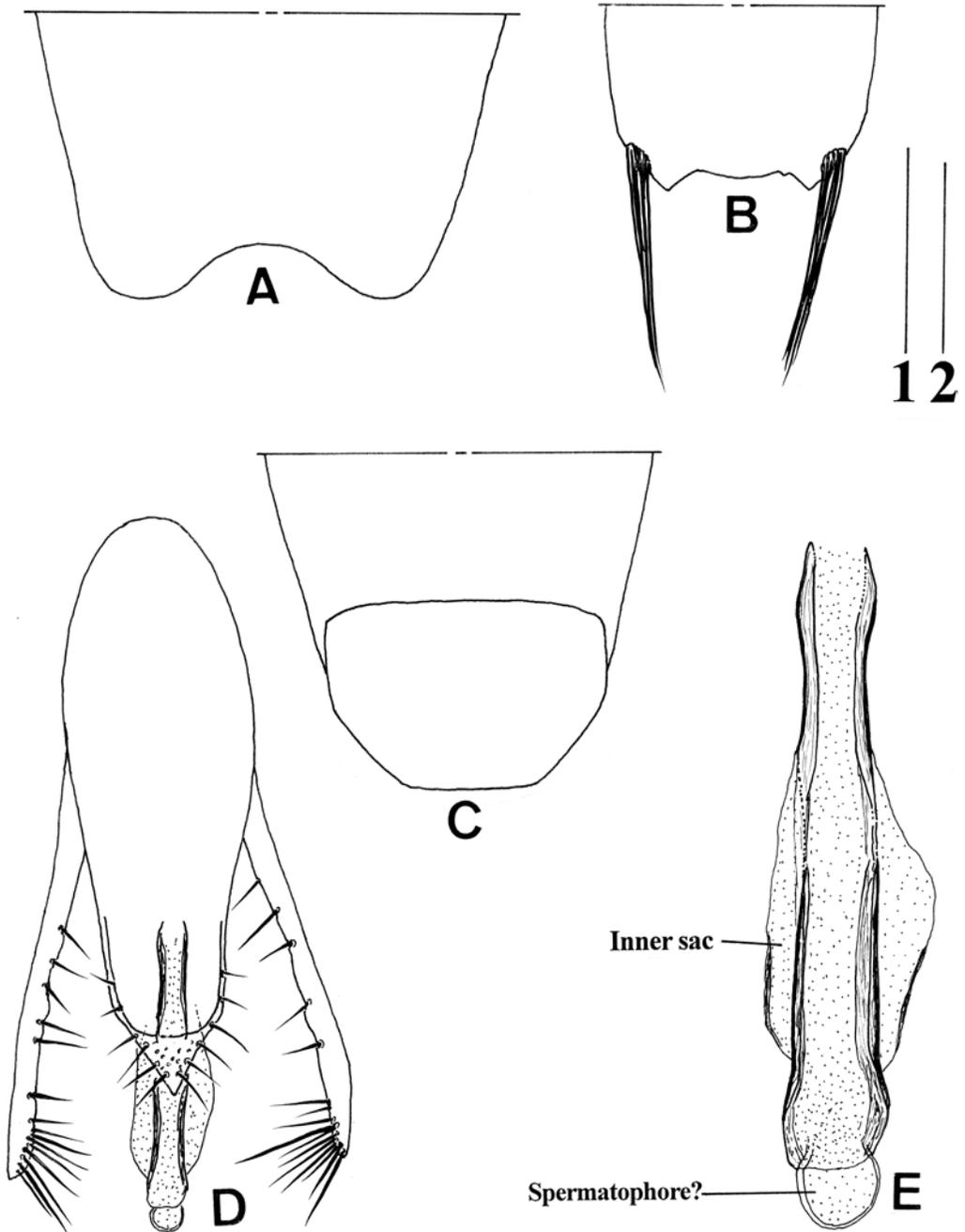


Fig. 11. *Dianous iwakisanus* Watanabe (Iwaki, Aomori). A, apex of 8th ventrite of male; B, apex of 9th ventrite of male; C, 9th and 10th terga of male; D, aedeagus; E, endophallic structures. Scale 1: 0.2 mm for D, 0.1 mm for E; scale 2: 0.2 mm for A–C.

and the paramere longer (Fig. 11D).

Dianous japonicus Sawada

(Figs. 12A–I, 127D)

Dianous japonicus Sawada, 1960: 9; Herman, 2001: 2022; Naomi & Puthz, 2013: 137.
Dianous gongen Watanabe, 1984: 131; Herman, 2001: 2020; Naomi & Puthz, 2013: 137.
Dianous morimotoi Naomi, 1988a: 48; Naomi, 2011b: 65; Herman, 2001: 2025.
Dianous septentrionalis Naomi, 1988a: 50; Herman, 2001: 2022.
Dianous viridicatus Naomi, 1997e: 3; Herman, 2001: 2032; Naomi & Puthz, 2013: 137. **New synonym.**

Type material. Holotype: ♀ (cSa), type locality: Tani, V. Jinryo, Tokushima Pref.

Type material examined. Holotype of *D. gongen*: ♂ (NMNST) labelled [HOLOTYPE] *Dianous gongen* Y. Watanabe, 1984 / Mt. Ushiroeboshi, Mt. Zao, Miyagi Pref., 10. vi. 1976, Coll. Y. Watanabe. Allotype of *D. gongen*: ♀ (NMNST) labelled [ALLOTYPE] *Dianous gongen* Y. Watanabe, 1984 / Mt. Ushiroeboshi, Mt. Zao, Miyagi Pref., 10. vi. 1976, Coll. Y. Watanabe. Paratypes of *D. septentrionalis*: 2 ♂6 ♀ (cN), Kawara-bo, Mt. Hayachine, Iwate Pref., 22–24. vi. 1980, S. Naomi leg.; 12 ♂5 ♀ (cN), Zenjin, Mt. Chokai, Akita Pref., 19–20. vi. 1980, S. Naomi leg.

Other material examined. [HONSHU]: 1 ♀, Kita-hakkoda, Aomori C., Aomori Pref., 28. v. 1990, T. Shimizu leg.; 1 ♀, Matsukusa Pass, Shimohei-gun, Iwate Pref., 29. vii. 2002, M. Nishikawa leg.; 3 ♂, Ohtaki River, Miyagi Pref., 5. vi. 1978, M. Sato leg.; 2 ♀, Mts. Zao Miyagi Pref., 22–25. viii. 1978, M. Sato leg.; 1 ♀, Yokokawa, Shichigashuku, Miyagi Pref., 16. iv. 1995, H. Yoshitake leg.; 2 ♂, Near-Atsumi, Yamagata Pref., 16. vi. 1960, Y. Shibata leg.; 1 ♂, Mts. Azuma, Yonezawa, Yamagata Pref., 20. vii. 1986, K. Kusakari leg.; 2 ♂, Sasagamine, Mt. Myoko, Niigata Pref., 14–15. vi. 1980, S. Naomi leg.; 1 ♂1 ♀, Shiga-kogen, Nagano Pref., 3–6. viii. 1982, M. Sato leg.; 1 ♀, Near Kamaike, Otari-mura, Nagano Pref., 4. vi. 1994, T. Kishimoto leg.; 1 ♀, Nigure-gawa, Fukui Pref., 11. vii. 1982, H. Sasaji leg.; 1 ♀, Umenoki-ootsu, Shiga Pref., 6. vii. 1980, T. Ogata leg.; 1 ♂, Kanzaki, Miyama, Gifu Pref., 7. viii. 1995, Y. Takai leg.; 1 ♂, Kurumijima, Asahi, Gifu Pref., 8–9. vi. 1993, Y. Takai leg.; 3 ♂7 ♀, Near Seryo Pass, Kifune, Kyoto, 6. viii. 1980, Y. Shibata leg.; 1 ♂, Mt. Daisen, Tottori Pref., 30. v. 1990, R. Kuranishi leg.; 2 ♂1 ♀, Mt. Hyonosen, Inaba, Tottori Pref., 5. v. 1979, T. & S. Kinoshita leg.; 1 ♀, Kenashizen, Shinsho-mura, Okayama Pref., 4. v. 1989, O. Yamaji leg.; 1 ♀, Okutsu-cho, Okayama Pref., 4. viii. 1977, Y. Tsuda leg. [SHIKOKU]: 2 ♂2 ♀, Mt. Kumoso, Kamiyama-cho, Tokushima Pref., 1. vi. 1996, M. Yoshida leg.; 1 ♀, Konji, Nyuta-cho, Tokushima Pref., 6. xi. 1993, M. Sakai leg. [KYUSHU]: 1 ♂, Mt. Sefuri, Sefuri-mura, Saga Pref., 5. vi. 2002, T. Watanabe leg.; 1 ♀, Mt. Tara, Tara-machi, Nagasaki Pref., 3. Vi. 2002, T. Watanabe leg.; 1 ♀, Shiiba Pass, Fukuoka Pref., 11. v. 1986, T. Watanabe leg.

Distribution. Japan (Honshu, Shikoku, Kyushu).

Redescription. Male and female: Brachypterous species; body 3.5–5.4 mm (fore body 1.8–2.7 mm) in length, moderately shining. Body entirely black but often with reflection of various color (dark bluish green or bronze to dark coppery); antennae black with apical segments dark red; mouth parts and legs dark red to black. Head large, interocular area not concave but with a pair of longitudinal depressions (shallow, indistinctly demarcated, but sometimes distinctly so); punctures round, moderately dense to dense, small, distinct. Pronotum with surface uneven, with a large, shallow, indistinct V-shaped depression; punctures round, dense, irregular, sometimes subrugous. Elytra with surface weakly uneven; punctures round, dense, irregular, sometimes sub-

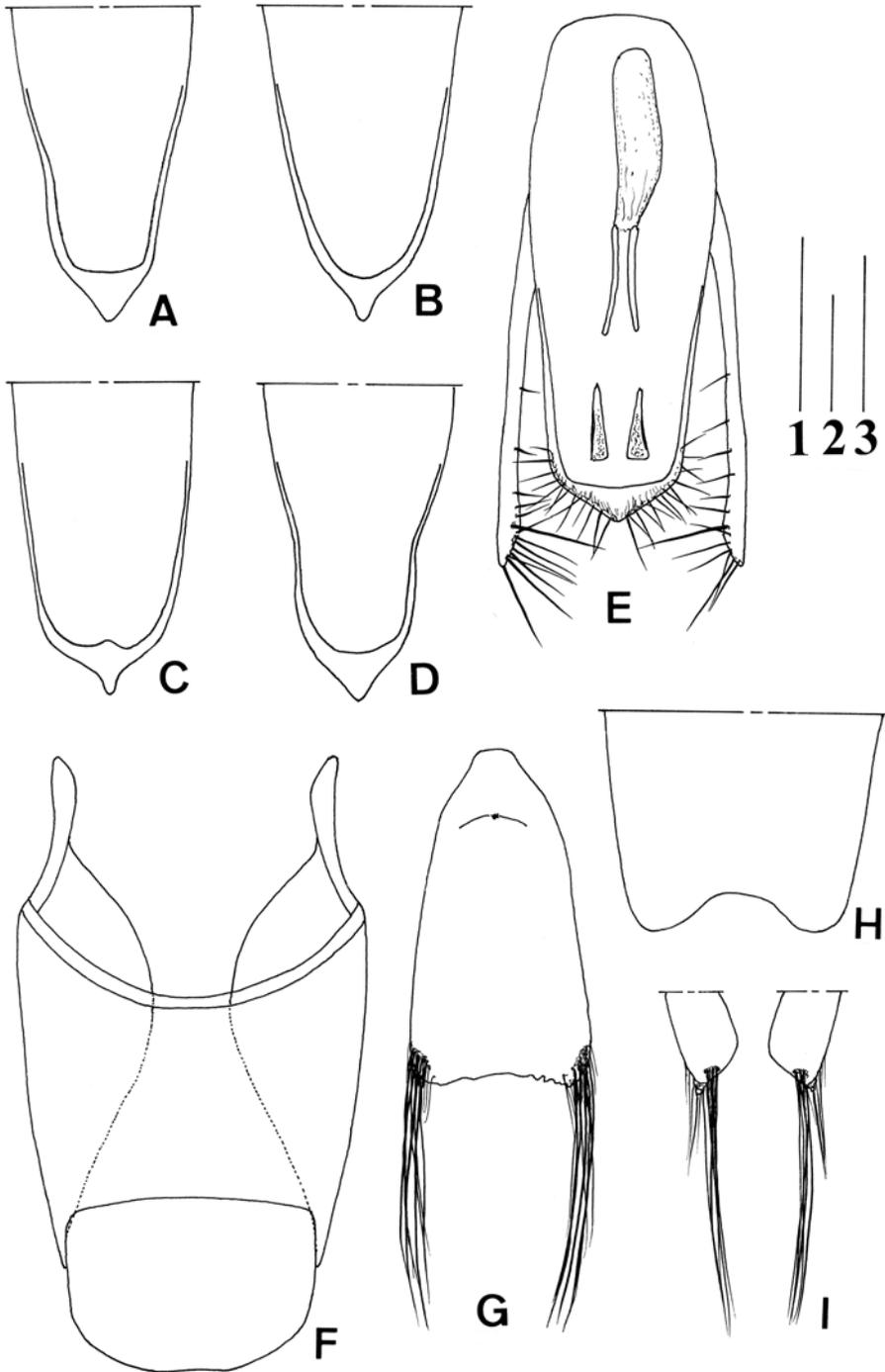


Fig. 12. *Dianous japonicus* Sawada (A, Hayachine, Iwate; B, Azuma, Yamagata; C, Shiga-kogen, Nagano; D, Kifune, Kyoto; E-I, Kumoso, Tokushima). A-D, posterior halves of aedeagi showing variations on the shape of apical part; E, aedeagus; F, 9th and 10th terga of male; G, 9th ventrite of male; H, apex of 8th ventrite of male; I, apices of gonocoxites. Scale 1: 0.2 mm for A-F; scale 2: 0.2 mm for G, I; scale 3: 0.3 mm for H.

rugous. Legs moderately long; 4th tarsomere weakly bilobed. Abdomen with terga well convex above; punctures very small, sparse. Lateroventrites ventromesial in position, broad, with small, sparse and setiferous punctures.

Male: Sixth ventrite very shallowly emarginate; 7th ventrite posteromedially with a very shallow, semicircular depression, which is very weakly emarginate; 8th ventrite (Fig. 12H) posteromedially with a very large, broad emargination; 9th tergum (Fig. 12F) with ventral apophyses relatively short; 9th ventrite almost rounded apicolaterally (Fig. 12G) but often bluntly angulate or shortly bluntly projecting, hardly serrate posteriorly (Fig. 12G) or finely, irregularly serrate posterolaterally, with apicolateral setae very long; 10th tergum (Fig. 12F) posteromedially with a very shallow emargination. Aedeagal median lobe with its apical part and apical sclerotized area highly various in shape (Fig. 12A–E), furnished with setae along apical and apicolateral margins (Fig. 12E). Endophallus rather simple, median longitudinal bands (Fig. 12E) short, small, each narrowed apically in usual, very often with lateral sclerotized rim; expulsion hooks missing; basal tube (Fig. 12E) short, composed only of two thin shafts, connected anteriorly with submembranous elongate sac (basal room?). Parameres (Fig. 12E) slender, thin; stem mesially with a few short setae; apical area short, indistinct, very weakly swollen mesially, furnished apicomediaally with sparse long setae.

Female: Eighth ventrite narrowed near the apex to form blunt apicolateral corners, with its apicomedian part nearly rounded, bluntly or acutely pointed; gonocoxal distal sclerite (Fig. 12I) angulate apicomediaally, with apicolateral setae very long; stylus (Fig. 12I) very small, tuberculiform, with a long seta. Spermatheca not observable.

Biology and ecology. *Dianous japonicus* is distributed in the mountainous regions. The beetles inhabit wet stones with mosses located in or near the mountain torrents.

Remarks. *Dianous japonicus* is widely distributed from the northern part of Honshu through its central and western parts to Shikoku and northern part of Kyushu throughout; and it is not rare (though not common) in Japan, but rather rare in the western distributional range (i.e., Shikoku and Kyushu). *D. japonicus* was first described by Sawada (1960) based only on one female specimen from Tani, V. Jinryo, Tokushima Pref., Shikoku. Present study distinctly shows that this species has considerable infraspecific variations regarding several taxonomic characters (e.g., body coloration; shape of the longitudinal depressions on interocular area; punctuation on the pronotum and elytra; shape of the 8th ventrite of female; shape of the 9th ventrite of male; and shape of the aedeagus).

Out of the characters that show infraspecific variations, the apical part of aedeagal median lobe is tremendously variable in shape; and in general the northern populations of *D. japonicus* (Tohoku district) have narrow apical part of median lobe (Fig. 12A) while its southern populations (Shikoku and Kyushu) have broad apical part of median lobe (Fig. 12E) (see also Naomi, 2011b). There exist other types of variations regarding the median lobe. For example, some populations have the median lobe with a moderate constriction behind the middle (Fig. 12D), whereas some other populations have the median lobe with its short, apicomedian projection (Fig. 12B, C). There are however also found various intermediate conditions linked between those types of median lobe. Body coloration is another important character that is diverse in its conditions among local populations of *D. japonicus*. The Honshu populations have in general entirely black body color with or without dark coppery reflection, but the populations of Kii Peninsula show black body color distinctly with dark bluish green or bronze reflection. The populations of Shikoku and Kyushu also often have the similar coloration as in the populations of Kii Peninsula in that the body has dark bluish green or bronze reflection. As far as other characters

(that show infraspecific variations) are concerned, we here omit describing the geographical patterns of variations because they are highly complex so that it is not so valuable to describe them in detail.

When seen retrospectively, the existence of afore-mentioned morphological variations (among *D. japonicus* populations) certainly urged staphylinists to describe some of its local populations as new (Watanabe, 1984; Naomi, 1988a, 1997e). However, no distinct external and aedeagal characters exist enough to taxonomically distinguish one local population from others; and furthermore there is at base no variation regarding the structure of endophallus (Fig. 5E) among different local populations of *D. japonicus*. Thus, the local populations that have more or less unique characters (e.g., a unique shape of aedeagus) should not be regarded as those that are worth considering species. This is also the case of *D. viridicatus* that Naomi (1997e) described as new from Kii Peninsula. Given this, *D. viridicatus* Naomi be newly placed in synonymy with *D. japonicus* Sawada. As things turned out, *D. japonicus* seems to be a staphylinid species with its high infraspecific variations regarding several morphological characters mentioned above.

D. japonicus is closely allied to *D. iwakisanus* but this species is separable from the latter by the 9th ventrite of male shallowly, broadly emarginate posteriorly, with apicolateral setae longer (Fig. 12G); the aedeagal median lobe less strongly pointed apically (Fig. 12A–E); the endophallic basal tube short, uniformly sclerotized (Fig. 12E); and the paramere shorter (Fig. 12E).

Dianous shibatai Sawada

(Figs. 13A–F, 127E)

Dianous shibatai Sawada, 1960: 10; Herman, 2001: 2029; Puthz, 2001c, 42; Naomi & Puthz, 2013: 137.

Type material. Holotype: ♀ (cSa), type locality: Inagoyu, Nagano Pref.

Other material examined. [HONSHU]: 1 ♂, Houo Lodge, Mt. Houo, Yamanashi Pref., 17. viii. 1988, A. Yoshida leg.; 1 ♀, same locality, 30. ix. 1988, K. Hosoda leg.; 1 ♀, same locality, 18. vi. 1989, K. Hosoda leg.; 1 ♀, same locality, 24. vii. 1989, T. Kato leg.; 1 ♀, same locality, 14. viii. 1989, T. Ito leg.; 1 ♀, same locality, 25. viii. 1989, K. Hosoda leg.; 1 ♂, same locality, 18. viii. 1989, K. Hosoda leg.; 1 ♀, same locality, 23. vi. 1990, K. Hosoda leg.; 1 ♂, same locality, 16. vii. 1990, K. Hosoda leg.; 1 ♀, same locality, 14. viii. 1990, K. Hosoda leg.; 1 ♀, same locality, 4. viii. 1992, K. Hosoda leg.; 1 ♂, same locality, 13. viii. 1992, K. Hosoda leg.; 1 ♀, same locality, 26. viii. 1992, K. Hosoda leg.; 1 ♀, Senzusei-zan, Shirane-cho, Yamanashi Pref., 2. viii. 1992, K. Haga leg.; 2 ♂, Mt. Ryogami, Ryogami Vil., Saitama Pref., 10. v. 1997, M. Maruyama leg.; 1 ♀, same locality, 10. v. 1997, T. Kishimoto leg.; 1 ♀, Oku-Nikko, Tochigi Pref., 29. vii. 1999, V. Puthz leg.

Distribution. Japan (Honshu).

Redescription. Male: Brachypterous; body 4.8–5.7 mm (fore body 2.7–3.2 mm) in length, elongate, moderately shining. Body black, often with bluish or greenish coppery reflection; mouth parts and legs dark red to black; antennae black with apical segments dark red. Head wider than elytra, large, with a pair of longitudinal sulci which run almost in parallel and moderately deep; surface with setiferous punctures round, moderately dense to dense. Pronotum well convex above; surface strongly uneven, with a large, shallow, indistinct V-shaped depression; punctures dense, rough, irregular. Elytra narrowed basally, with sutural area elevated; surface strongly uneven, with punctures rough, irregular, subrugous. Legs moderately long; 4th tarso-

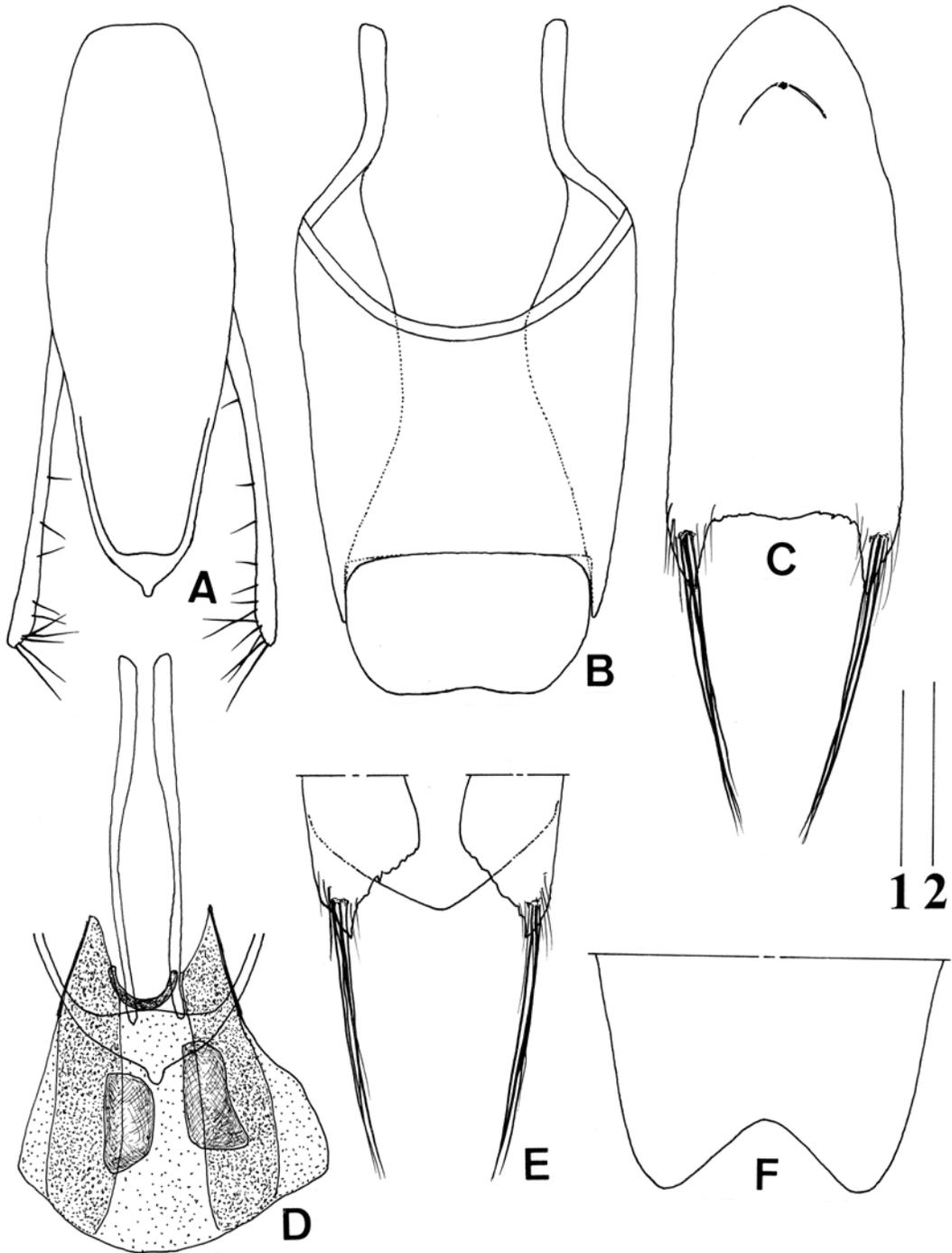


Fig. 13. *Dianous shibatai* Sawada (A–D, F, Houo, Yamanashi; E, Shirane, Yamanashi). A, aedeagus; B, 9th and 10th terga of male; C, 9th ventrite of male; D, apex of aedeagal median lobe with endophallic structures; E, apices of gonocoxites, F, apex of 8th ventrite of male. Scale 1: 0.2 mm for A–C, E, 0.1 mm for D; scale 2: 0.5 mm for F.

mere weakly bilobed. Abdomen well convex above; punctures very small, sparse, regular. Latroventrites in 4th to 6th segments more or less dorsomesial in position, punctate.

Seventh ventrite posteromedially with a flat area which is very weakly emarginate; 8th ventrite (Fig. 13F) posteriorly with a very large, V-shaped emargination; 9th tergum (Fig. 13B) elongate, with ventral apophyses thin, moderately long; 9th ventrite (Fig. 13C) hardly serrate at posterior margin, median part of which is weakly arcuate posteriorly, with apicolateral teeth stout, pointed, apicolateral setae very long; 10th tergum (Fig. 13B) transverse, very shallowly emarginate. Aedeagal median lobe (Fig. 13A) elongate, gently rounded at apicolateral corners, pointed apically with a small apicomedian projection. Endophallus with median longitudinal bands (Fig. 13D) short, broad; expulsion hooks (Fig. 13D) comprising a pair of subtrapezoidal sclerites which are weakly sclerotized; basal tube (Fig. 13D) simple, baculiform. Parameres (Fig. 13A) thin, slender; stem mesially with a few short setae; apical area very weakly swollen mesially but indistinct, furnished mesially with 7 to 8 setae of various length.

Female: Eighth ventrite bluntly pointed posteromedially; gonocoxal distal sclerite (Fig. 13E) acutely pointed, weakly, irregularly serrate at apicomerial margin, with apicolateral setae very long; 10th tergum (Fig. 13E) bluntly pointed posteromedially, which is rather different in shape from the male. Spermatheca not observable.

Biology and ecology. *D. shibatai* is a rare *Dianous* species; and it is distributed only in the mountainous regions of central Honshu (Chubu district). The beetles inhabit wet stones with mosses located in or near the mountain torrents, but in Mt. Houo, Yamanashi, they are sometimes found under humid dead leaves, and also on semi-arid sandy lot (about 2400 m) as well as humid mountainous roads in natural forests.

Remarks. *Dianous shibatai* is allied to *D. japonicus* and *D. iwakisanus* but this species is clearly separable from the latter by the 8th ventrite of male with a large, V-shaped emargination (Fig. 13F); the 9th tergum longer (Fig. 13B); the 9th ventrite of male with apicolateral teeth larger, more strongly pointed (Fig. 13C); the gonocoxal distal sclerite pointed, without stylus (Fig. 13E); the aedeagal median lobe with apicomerial projection (Fig. 13A); the endophallic median longitudinal band larger and broader (Fig. 13D); and the expulsion hooks comprising a pair of subtrapezoidal sclerites (Fig. 13D).

Etymology. This species was named in honour of Mr. Taichi Shibata, a coleopterist in Japan.

Genus *Stenus* Latreille, 1797

Stenus Latreille, 1797: 77 (type species: *Staphylinus junio* Paykull, fixed by subsequent monotypy).

Diagnostic characters. Adults: Eyes being so large that each eye occupies the whole lateral side of head (Fig. 128A, B); head without its postocular area (Fig. 128A, B); 9th ventrite (Fig. 23C) and gonocoxites (Fig. 23G) each furnished with a pair of shorter (i.e., short, moderately long or long, but not very long) apicolateral tufts of setae (Ganglbauer, 1895; Puthz, 1981a) excepting South American species; spermatheca strongly sclerotized or not so. Larvae: Mala shorter than 1st segment of maxillary palpus; ligula not or inconspicuously pubescent (Kasule, 1966; Puthz, 1981a).

Taxonomy. Traditionally, the genus *Stenus* (comprising 2896 species; Puthz in litt.) has long been divided into 6 subgenera (i.e., *Stenus*, *Nestus*, *Tesnus*, *Hemistenus*, *Hypostenus* and *Parastenus*) since the second half of 19th century, only on the basis of several convenient characters

(e.g., presence / absence of the “paratergites” and tergo-sternal sutures in abdomen; and bifurcate / non-furcate conditions of the 4th tarsomeres of legs). Ádám (1987) proposed a generic name *Metastenus* with its genotype *Stenus binotatus* (Ljungh, 1904), which belongs to the subgenus *Hemistenus* (auct.). Puthz (1999) downgraded it as a subgeneric name of *Stenus*. After that, Ádám (2001) proposed a replacement name *Metatesnus* for the *Metastenus* because the name *Metastenus* is the objective junior homonym of *Metastenus* Walker, 1834 (a name of Hymenoptera).

Some subgeneric names of *Stenus* have been inextricably confused before Ádám (1987) proposed a generic name *Metastenus* as follows: Motschulsky (1860) proposed a subgeneric name *Hemistenus*; and its genotype *Stenus gilvipes* Motschulsky, 1857a was subsequently fixed by Blackwelder (1952). Rey (1884) proposed a subgeneric name *Mesostenus* (and its genotype is *Stenus impressus* Germar, 1824). Since the name *Mesostenus* was preoccupied by Gravenhorst (1829), Heyden (1905) proposed a replacement name *Parastenus* for the *Mesostenus* (and its genotype is *Stenus impressus* Germar, 1824). It is unfortunate that *Stenus gilvipes* Motschulsky, 1857a (i.e., name of the type species of *Hemistenus* Motschulsky, 1860) is a junior synonym of *Stenus impressus* Germar, 1824 (i.e., name of the type species of *Parastenus* Heyden, 1905).

Since Ádám (2001) proposed the name *Metatesnus*, with its genotype *Stenus binotatus* (Ljungh, 1904), two subgeneric name changes of *Stenus* should be needed as follows: First, the *Hemistenus* (auct.) be renamed *Metatesnus* Ádám, 2001; and thus, second, the *Parastenus* be necessarily renamed *Hemistenus* (sensu Motschulsky, 1860) since the *Hemistenus* is the senior synonym of *Parastenus* [see Herman, 2001: 2041].

Özdikmen & Darılmaz (2008) proposed a replacement name *Adamostenus* for *Metastenus* (Ádám: 1987). Puthz (2009a) synonymized the name *Adamostenus* with *Metatesnus* because *Adamostenus* is the objective junior synonym of *Metatesnus* (Puthz, 2009a). *Nestus* (Rey: 1884) was synonymized with *Stenus* (Latreille: 1797) by Puthz (2001a), but the *Nestus* was revalidated as a subgeneric name of *Stenus* by Ryvkin (2011). Thus, currently, the genus *Stenus* is divided into the following 6 subgenera: *Stenus* s. str., *Hemistenus* Motschulsky, 1860, *Nestus* Rey, 1884, *Tesnus* Rey, 1884, *Hypostenus* Rey, 1884, and *Metatesnus* Ádám, 2001.

As mentioned in the introduction, however, we here systematize the Steninae of Japan, based on the species groups, without adopting the traditional subgeneric classification of *Stenus*, although we certainly notice that some species groups adopted are still mixed groups (e.g., *S. pulcher* group; Puthz, 2013, p.1352). Regarding concise descriptions and characterizations of the species groups of *Stenus*, to which the Japanese species belong, see Puthz (1968a, 1970a,c,d, 1972a,b, 1980b, 1985, 1988a,b, 1998, 2002, 2003a,c, 2008a,b, 2011a,b, 2013), Naomi (2006a, 2012) and Ryvkin (2012).

Morphology. The morphology of *Stenus* has been described in detail in previous papers. See Puthz (1971a, 2008a, 2013) on the general morphology of *Stenus*; Weinreich (1968) and Betz (1996) on the morphology of labium as adhesive-capture apparatus; Betz (2002, 2003) on the morphology of tarsus; Blum (1979) on the morphology of abdominal musculature; Naomi (2006a,b) on the morphology of aedeagus and spermatheca.

Paleontology. The clade *Stenus* is considered to have originated in the Mesozoic (Lower Cretaceous), according to the known fossil records of *Stenus* species, which was reviewed by Puthz (2008a, 2010b). Presently, there have been known 23 fossil *Stenus* species world-wide (Puthz, 2008a, 2010b); note here that the number of fossil species do not include undescribed fossil *Stenus* species which were recently found in Burmesian amber (ca. 100–110 Mya). Out of them, the oldest fossil *Stenus* species is *S. imputribilis* Ryvkin, 1988 (*Stenus* s. str.), which was discovered

from the Cretaceous deposits of East Russia (Cretaceous ca. 90–110 Mya). Another fossil *Stenus* from about same old age is *S. inexpectatus* Schlüter, 1978 (*Tesnus?*), which was discovered from an amber of the Northwestern France. Fifteen fossil *Stenus* species from the Baltic amber were researched, 8 species of which were described as new to science in Puthz (2010b). See Puthz (2010b) for further information on fossil *Stenus* species.

Biology and Ecology. The *Stenus* species are divided into the following 4 groups according to their habitat preferences: (a) inhabitants of leaf litter; (b) surface runners on open grounds; (c) inhabitants of littoral environments; and (d) plant climbers. So are the Japanese *Stenus* species. The *Stenus* species of different habitat preferences are here briefly described in order. Regarding life forms and related ecological traits of some European *Stenus* species, see Betz (1998) and Betz & Fuhrmann (2001).

(a) Inhabitants of leaf litter. Out of the Japanese *Stenus* (347 species), most species of *S. humilis* group, *S. cirrus* group, *S. asyura* group, *S. indubius* group and *S. cephalotes* group (about 250 species) are litter dwellers; and these *Stenus* beetles inhabit leaf litter, leaf debris and/or humus with mosses, which keep moderate humidity. They inhabit leaf litter heaped in the woods and forests, which stand from near the seashore and plains, through in the low and high mountainous regions, to the timber limit at alpine zone. For example, the beetles of *S. kiyosumiensis* Naomi & Takeda, 1991 inhabit litter in the woods near seashore or in the forests of low mountainous regions, while the beetles of *S. fujimontis* Puthz, 2001c inhabit litter heaped in the shrub at the timber limit of Mt. Fuji (ca. 2300 m). It was reported that the beetles of *S. alpicola* group (as relicts of glacial periods) inhabit grass litter and mosses in the wilderness at alpine zone (Puthz, 2003c); and they also inhabit leaf litter and mosses in the larch and other plant communities in the subarctic zone (Ryvkin, 2000). However, no solid information has been obtained regarding habitats of the Japanese species of this group. It is very often common in Japan that two or more species of different species groups live together in the same litter of the same woods or forests. These litter dwellers usually move slowly and clumsily; and those of *S. humilis* group move very slowly.

(b) Surface runners on open grounds. Habitats of some *Stenus* species are open or bare lands, paddy fields and stony riverbanks, all of which are semi-arid environments. *S. alienus* is a representative *Stenus* species as surface runners in Japan, just as *S. comma* is in Europe (Betz, 1998; Betz & Fuhrmann, 2001). The beetles of *S. alienus* are commonly found on the more or less dried paddy fields and open lands in plains and low mountainous regions. The beetles of *S. lewisius* and *S. puberulus* inhabit stony riverbanks in plains; and the beetles walk around and often go under stones. The beetles of *S. tomitaorum* inhabit open grasslands in Hokkaido. The surface runners usually move moderately or agilely.

(c) Inhabitants of littoral environments. Habitats of many *Stenus* species of the groups treated in this monograph are littoral (i.e., waterside) environments. Those beetles inhabit moist or wet plant debris and leaf litter of grasses (e.g., reeds and sedges) grown near the rivers or ponds. The representative species are *S. anthracinus*, *S. juno*, *S. sauteri*, *S. miyama*, *S. bohemicus*, *S. aquilonalis*, *S. mercator*, *S. cicindeloides*, *S. flavidulus*, etc. All species of *S. pubescens* group, *S. pallitarsis* group, and *S. flavipes* group are also littoral environment dwellers. *S. melanarius* seem to have a broad array of habitat preferences; and the beetles actually inhabit not only the aforementioned littoral environments, but also the vicinity of running waters of mountainous areas (as in *Dianous* species), and they also live under sea algae at seashores. The inhabitants of littoral environments are usually move slowly.

(d) Plant climbers. The members of *S. cylindricollis* group, *S. coelogaster* group (Puthz,

2013: 1330), and *S. bispinus* group are arboreal species, which is to say that these beetles inhabit positively (i.e., prefer inhabiting) tree leaves and stems during (at least some periods of) their lives. Thus, these beetles are very often collected by coleopterists who aim at collecting the Cerambycids by beating the alive or dead twigs and branches of broadleaved trees. This is highly likely in cases where these beetles are collected at the evergreen forests in subtropical Nansei Islands (e.g., Iriomote Is., Ishigaki Is.). All species of *S. pubescens* group, *S. pallitarsis* group, *S. flavipes* group, and also *S. flavidulus* are, as mentioned above, dwellers of littoral environments. However, these beetles can be also considered plant climbers, given that they inhabit also emergent vegetation of standing water, and they very often walk among leaves and stems of the plants (e.g., reeds) (Toyoda, 1999; Naomi & Ito, 2014). These plant climbers usually move moderately quickly.

Species group of *S. comma* LeConte

S. comma group consists of 7 species in Japan; see Puthz (1981b, 2008b) regarding a characterization and taxonomy on the East Asian species of this group. Diagnostic characters are as follows: Legs with 4th tarsomere simple; lateroventrites distinctly ventromesial in position, moderately broad to broad; 9th ventrite of male usually without apicolateral teeth and macrosetae (Figs. 14B); aedeagal median lobe usually with apical sclerotized area sub-pentagonal in shape, apicolateral corners distinctly angulate (Fig. 14A); endophallic basal tube with tube body arrowhead-shaped, which is partially covered with a cloak-like sclerite (Fig. 17A); gonocoxite serrate posteriorly, without apicolateral teeth (Figs. 14G); spermatheca not observable.

Key to the Japanese species of *S. comma* group

- 1(8) Elytra each with a yellowish spot.
- 2(5) Tenth tergum of male very shallowly emarginate posteriorly; apex of aedeagal paramere with long setae which turn posteriorly (Fig. 14A); endophallic median longitudinal bands with dorsal bands broader; expulsion hooks fused, medium-sized, distinctly protruding anterolaterally (Fig. 14D).
- 3(4) Elytral yellowish spots larger (Fig. 127F); abdomen with lateroventrites broader; 6th ventrite of male posteromedially with a broad but short flat area (Fig. 14C); aedeagal median lobe distinctly angulate apicolaterally (Fig. 14A); endophallic cloak-like sclerite longer (Fig. 14E) *S. comma* LeConte
- 4(3) Elytral yellowish spots smaller (Fig. 127G); abdomen with lateroventrites narrower; 6th ventrite of male posteromedially with a semicircular depression (Fig. 15C); aedeagal median lobe weakly angulate (Fig. 15A) or rounded (Fig. 15G) apicolaterally; endophallic cloak-like sclerite shorter (Fig. 15D) *S. tenuipes* Sharp
- 5(2) Tenth tergum of male entire; apex of aedeagal paramere without long setae which turn posteriorly (Fig. 17C); endophallic median longitudinal bands with dorsal bands narrower (Fig. 17C); expulsion hooks fused, atrophied to be a smaller sclerite.
- 6(7) Legs dark red to black; 7th ventrite of male posteromedially with a smaller depression (Fig. 16E); aedeagal median lobe less strongly angulate apicolaterally, with apical triangular area shorter (Fig. 17C); endophallic expulsion hooks fused to be a nearly Y-shaped sclerite (Fig. 17C) *S. biguttatus* Linnaeus
- 7(6) Legs yellowish brown to reddish brown; 7th ventrite of male posteromedially with a larger

- depression (Fig. 18G); aedeagal median lobe more strongly angulate apicolaterally, with apical triangular area longer (Fig. 18C); endophallic expulsion hooks fused to be a nearly heart-shaped sclerite (Fig. 18C) *S. alienus* Sharp
- 8(1) Elytra each without yellowish spot.
- 9(12) Head larger (Fig. 127J); 6th ventrite posteromedially modified in male (Fig. 20B); aedeagal median lobe with apical sclerotized area shorter, not covered with setiferous pores (Fig. 19A); paramere apicomediaally with setae long to very long (Fig. 19A).
- 10(11) Body narrower; anteromedian parts of elytra commonly punctate; 6th and 7th ventrites of male each posteromedially with a depression smaller, shallower (Fig. 19F); median lobe broader, usually with a small hump at apicolateral corner (Fig. 19A).... *S. anthracinus* Sharp
- 11(10) Body broader; anteromedian parts of elytra with punctures arranged from anteromesial to posterolateral direction; 6th and 7th ventrites each posteromedially with a depression larger, deeper (Fig. 20B); median lobe narrower, simply angulate apicolaterally (Fig. 20A) *S. puthzorum* Naomi & Watanabe
- 12(9) Head smaller (Fig. 127K) ; 6th ventrite posteromedially not modified in male; aedeagal median lobe with apical sclerotized area longer, distinctly covered with setiferous pores (Fig. 21A); paramere apicomediaally with setae short to moderately long (Fig. 21A) *S. kobensis* Cameron

***Stenus comma* LeConte**

(Figs. 14A–G, 127F)

Stenus comma LeConte, 1863: 50; Herman, 2001: 2135; Naomi, 1997e: 5; Naomi & Puthz, 2013: 137.

Type material. Type locality: Middle and western States of the U. S. A.

Other material examined. [HOKKAIDO]: 3 ♂2 ♀, Sekihoku Pass, 27. viii. 1977, M. Sato leg.; 1 ♂1 ♀, Touro Lake, 18. vi. 1976, M. Sato leg.; 1 ♂1 ♀, Piribetsu River, Honbetsu-cho, 12. vii. 1995, K. Haga leg.; 1 ♂1 ♀, Sounkyo, 11. vii. 1985, N. Yasuda leg.; 3 ♀, Iwabokki, Kushiro Marsh, 26. viii. 1990, M. Sakai leg.; 2 ♀, Shoro nr Kushiro, 26. vi. 1981, S. Morita leg.; 2 ♂, Nukabira, Kamishihoro-cho, 6. vii. 1987, K. Yahiro leg.; 1 ♀, Ohtsu, Toyokoro-cho, 27. v. 1990, K. Haga leg.; 1 ♀, Oketo, 26. viii. 1992, T. Kato leg.; 1 ♀, Ashoro, 13. vi. 1984, O. Tadauchi leg. [CHINA]: 3 ♀ (cS), China SW Gansu, road Luqu-Waxu, km 5, 3300 m, 12–13. vii. 1994, K. W. Anton leg.; 1 ♀ (cS), China, Gansu, Hua er Ge, 5 km SSW Luqu, 3400 m, 13. vii. 1994, A. Smetana leg.; 1 ♀ (cS), China, Sichuan 70 km N Zoige, 3400 m, 14. vii. 1994, A. Smetana leg.; 2 ♀ (cS), China, Gansu, Xinlong Shan, cca 70 km S Lanzhou, 2225–2380 m, 7. viii. 1994, A. Smetana leg.; 1 ♀ (cS), China, Gansu, Yonghai cca 20 km SW Yuzhong 2700–2800 m, 9. viii. 1994, A. Smetana leg.

Distribution. Japan (Hokkaido); Korea, China, Mongolia, Russia, Europe, Canada, USA.

Redescription. Male and female: Macropterous; body 4.8–6.2 mm (fore-body 2.6–2.8 mm) in length, robust, with antennae relatively short. Body entirely black, with metallic reflection; elytra each with a yellowish spot; labrum, antennae and legs black. Head concave between eyes, with a median longitudinal convex area; punctures round to elliptical, very dense, small, distinct. Pronotum with surface uneven, with a median fovea behind the middle; punctures round to elliptical, very dense, small, deep. Elytra with surface weakly uneven; punctures round to elliptical, very dense. Legs relatively long; 4th tarsomere simple. Abdomen narrowed posteriorly; punctures

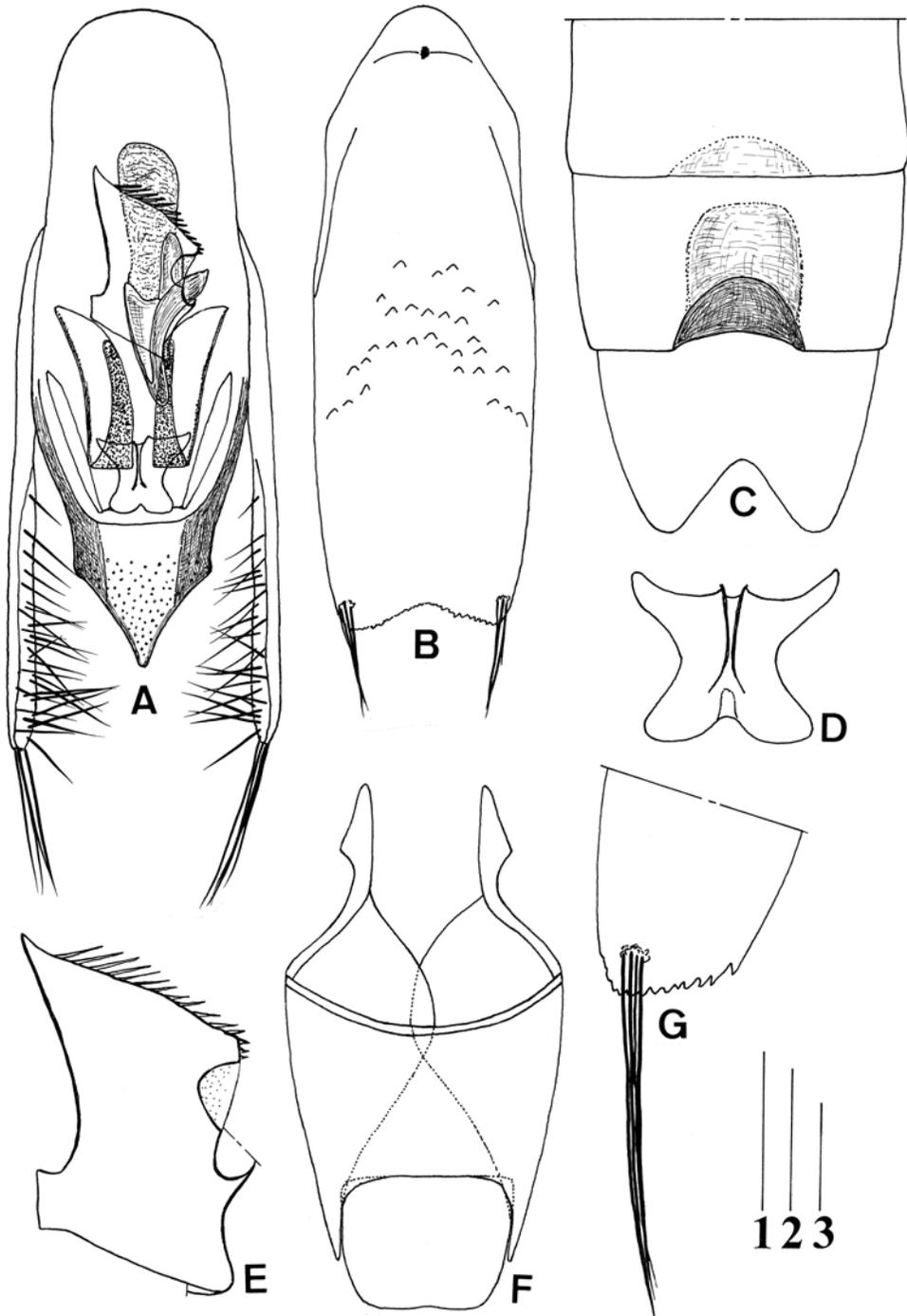


Fig. 14. *Stenus comma* LeConte (Touro, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 6th to 8th ventrites of male; D, endophallic expulsion hook; E, endophallic cloak-like structure; F, 9th and 10th terga of male; G, apex of gonocoxite. Scale 1: 0.2 mm for A, B, 0.1 mm for D, E, G; scale 2: 0.3 mm for C; scale 3: 0.2 mm for F.

round, dense, small and regular in anterior segments, while punctures in posterior segments moderately dense, very small and regular. Lateroventrites ventromesial in position, rather wide, densely, finely punctate.

Male: Sixth ventrite (Fig. 14C) posteromedially with a broad, short flat area; 7th ventrite (Fig. 14C) posteromedially with a deep semicircular depression, which is arcuately emarginate, and also medially with a shallow depression which is contiguous with the posteromedian depression; 8th ventrite (Fig. 14C) posteriorly with a large V-shaped emargination; 9th tergum (Fig. 14F) with ventral apophyses short, broadened laterally at subapical part; 9th ventrite (Fig. 14B) rounded apicolaterally, emarginate posteriorly, with apicolateral setae short; 10th tergum (Fig. 14F) very shallowly emarginate. Aedeagal median lobe (Fig. 14A) robust, distinctly angulate apicolaterally, almost triangular behind the apicolateral corners, apical sclerotized area posteriorly covered with small pores. Endophallic median longitudinal bands (Fig. 14A) short, with ventral bands narrow, covered with dot-like sculptures, dorsal bands very broad; expulsion hooks (Fig. 14A, D) partially fused to form a nearly X-shaped sclerite, which projects apicolaterally; basal tube (Fig. 14A) with sclerotized part of basal room composed only of left shaft, basal constriction distinct, tube body arrowhead-shaped; cloak-like sclerite relatively long (Fig. 14E). Parameres (Fig. 14A) almost straight, each rounded apically; apical area very long, furnished mesially with 25 to 26 setae of short to moderate length, and also most apically with 4 to 5 very long setae which turn posteriorly.

Female: Eighth ventrite bluntly pointed or angulate posteromedially; gonocoxites (Fig. 14G) each almost rounded apicolaterally, distinctly serrate posteriorly, with apicolateral setae very long. Spermatheca not observable.

Biology and ecology. *Stenus comma* is distributed in the plains and mountainous regions in Japan. The beetles inhabit open lands and forests near there, but collecting records show that they also inhabit leaf litter heaped near the shores of rivers, lakes and marshes in Japan.

Remarks. *S. comma* was first recorded from Japan (Hokkaido) by Naomi (1997e). After the first record in Hokkaido, it was found that this species is relatively common there. Among the Japanese members of *S. comma* group, *S. comma* is allied to *S. tenuipes*, but it is separable from the latter by the elytral yellowish spots larger, the abdomen with broader lateroventrites, the 6th ventrite of male posteromedially with a broad but short flat area (Fig. 14C), the 7th ventrite of male posteromedially with a smaller semicircular depression (Fig. 14C), the aedeagal median lobe distinctly angulate apicolaterally (Fig. 14A), and the cloak-like sclerite longer (Fig. 14E). See Puthz (2008b: 185; figs. 24–29) regarding variation of the shape of the apical part of aedeagal median lobe.

***Stenus tenuipes* Sharp**
(Figs. 15A–G, 127G)

Stenus tenuipes Sharp, 1874: 80; Herman, 2001: 2416; Naomi & Puthz, 2013: 137.

Stenus biguttatus Linnaeus, 1758: Sharp, 1889: 325.

Stenus comma LeConte, 1863: Naomi, 1988d: 55.

Type material. Syntypes (NHML), type localities: Hiogo, Kiu Kiang, China.

Other material examined. [HOKKAIDO]: 1 ♂, Kojyo-hama, Shiraoi, 16. vii. 1953, Y. Watanebe leg.; 1 ♂, Kitamoshiri, Horokanai-cho, 27. vii. 1998, K. Haga leg.; 1 ♂, Piribetsu River, Honbetsu-cho, 12. vii. 1995, K. Haga leg.; 1 ♂, Sekihoku Pass, 27. viii. 1977, M. Sato

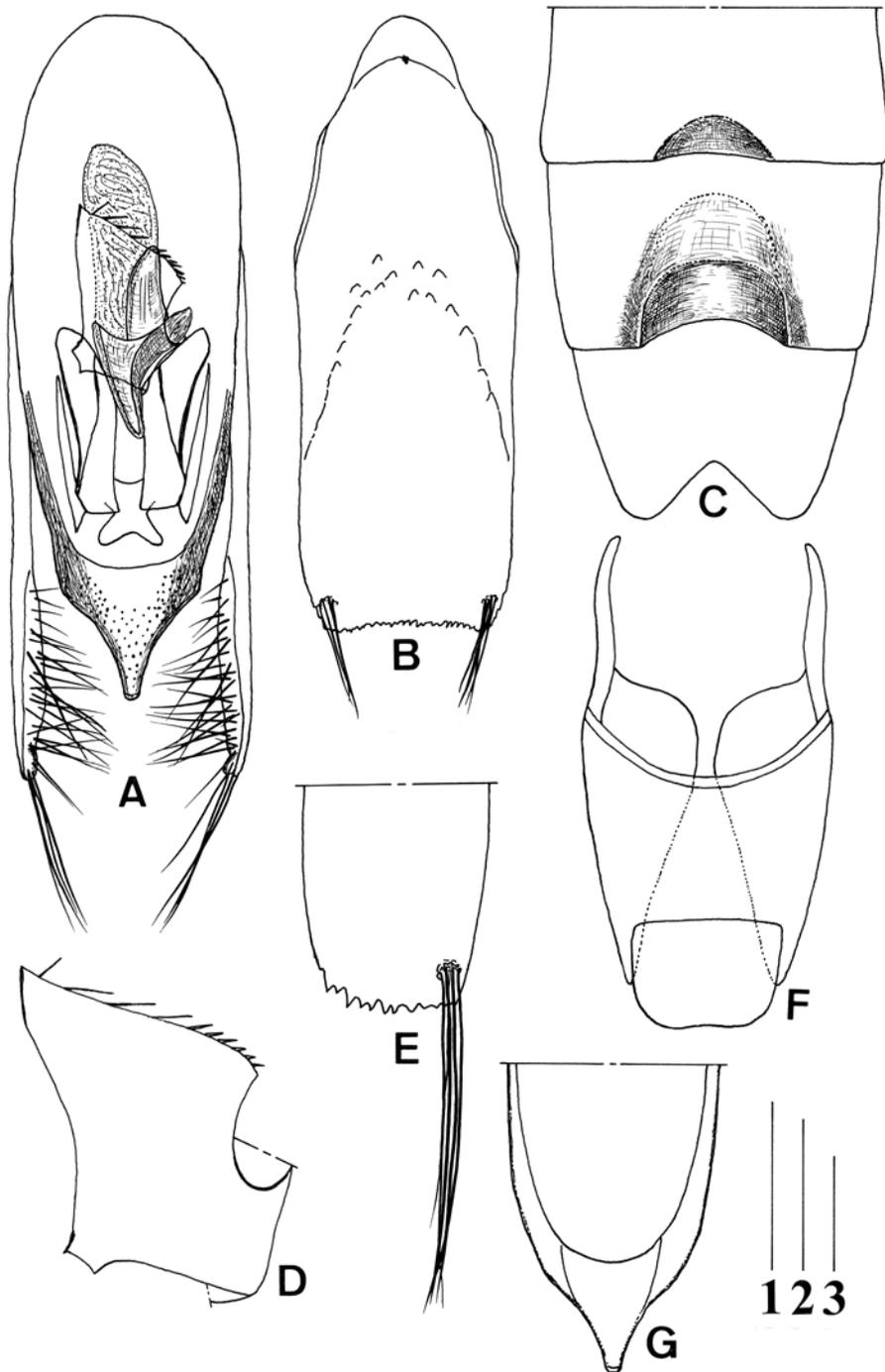


Fig. 15. *Stenus tenuipes* Sharp (A–E, Itoigawa, Niigata; F, Ohtaki, Miyagi; G, Kitamoshiri, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 6th to 8th ventrites of male; D, endophallic cloak-like structure; E, apex of gonocoxite; F, 9th and 10th terga of male; G, posterior part of aedeagal median lobe. Scale 1: 0.2 mm for A, B, G, 0.1 mm for D, E; scale 2: 0.3 mm for C; scale 3: 0.2 mm for F.

leg.; 1 ♂, Muroran City, Iburi, 13. vii. 1969, K. Miyamori leg.; 1 ♀, same locality, 31. vii. 1971, K. Miyamori leg. [HONSHU]: 1 ♂, Kawara-bo, Mt. Hayachine, Iwate Pref., 22-24. vi. 1980, S. Naomi leg.; 1 ♂, Zenjin, Mt. Chokai, Akita Pref., 19-20. vi. 1980, S. Naomi leg.; 1 ♂, same locality, 3. viii. 1994, K. Ohgi leg.; 2 ♂1 ♀, Ohtaki-gawa, Miyagi Pref., 5. vi. 1978, M. Tomokuni leg.; 1 ♀, same locality and date, M. Sato leg.; 1 ♀, Suge-numa, Miyagi Pref., 5. vi. 1978, M. Sato leg.; 2 ♂1 ♀, Yakurai Spa., Miyagi Pref., 21. viii. 1978, M. Sato leg.; 2 ♂1 ♀, Kaikake Spa., Yuzawa-cho, Niigata Pref., 14. v. 1995, K. Haga leg.; 2 ♂2 ♀, Yunotani-mura, Niigata Pref., 5. viii. 1995, K. Haga leg.; 1 ♀, Tonaka River, Yuzawa-cho, Niigata Pref., 12. v. 1985, K. Haga leg.; 1 ♀, Sasagamine, Mt. Myoko, Niigata Pref., 14-15. vi. 1980, S. Naomi leg.; 1 ♀, Shiga-kogen, Nagano Pref., 3-6. viii. 1982, M. Sato leg.; 2 ♂, Mt. Ontake, Kiso, Nagano Pref., 27. vii. 1985, M. Tao leg.; 3 ♂2 ♀, Itoigawa, Niigata Pref., 29. x. 1993, K. Ohgi leg.; 1 ♀, Takanami Pond, Itoigawa, Niigata Pref., 29. x. 1993, K. Ohgi leg.; 2 ♂2 ♀, Sakura River, Ibaragi Pref., 9. iv. 1978, M. Tao leg.; 1 ♂, Nakaminato, Ibaragi Pref., 8. iv. 1978, M. Tao leg.; 1 ♀, Yasumori, Tsukuba City, Ibaragi Pref., 17. iv. 1994, K. Ohgi leg.; 2 ♂3 ♀, Urawa City, Saitama Pref., 16. iv. 1994, K. Ohgi leg.; 1 ♂1 ♀, Hannou City, Saitama Pref., 3. iv. 1994, K. Ohgi leg.; 1 ♀, Mt. Gori, Hiroshima Pref., 4. vi. 1978, H. Aramaki leg.; 3 ♂4 ♀, Ikenohara, Ube City, Yamaguchi Pref., 20. iii. 1994, K. Ohgi leg.; 3 ♂2 ♀, Tokuchi-cho, Yamaguchi Pref., 19. iii. 1994, K. Ohgi leg. [KYUSHU]: 1 ♂, Kurusu, Naokawa-mura, Ohita Pref., 30. x. 1984, S. Sasaki leg.; 1 ♂, same locality and date, K. Kazato leg.; 1 ♀, Tade River, Higashi-sefuri, Saga Pref., 21. vi. 1993, S. Nomura leg.; 1 ♂1 ♀, Ohmura City, Nagasaki Pref., 9. iv. 1980, S. Imasaka leg.; 1 ♂1 ♀, Ohmura City, Nagasaki Pref., 20. v. 1980, S. Imasaka leg.; 3 ♂, Hirakawa, Kagoshima Pref., 28. v. 1975, H. Makihara leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Sado Is.); Korea, China.

Redescription. Male and female: Macropterous species; body 4.3–5.8 mm (fore-body 2.2–2.7 mm) in length, elongate. Body entirely black, with metallic reflection; elytra each with a yellowish spot; labrum black; antennae with 1st segment black, 2nd to 11th segments dark red; legs with femora black, tibiae and tarsi dark red. Head concave between eyes, with a narrow median longitudinal convex area; punctures round, dense, small, distinct. Pronotum with surface uneven, with a median fovea behind the middle; punctures round to elliptical, very dense. Elytra with surface weakly uneven; punctures round, very dense, distinct. Legs relatively long; 4th tarsomere simple. Abdomen narrowed posteriorly; punctures round, moderately dense, and small in 3rd to 7th segments, while punctures in 8th segment very small and sparse. Lateroventrites ventromesial in position, densely punctate.

Male: Fourth ventrite posteromedially with a semicircular flat area; 5th ventrite posteromedially with a semicircular flat area which is very shallowly emarginate; 6th ventrite (Fig. 15C) posteromedially with a crescent-shaped depression, which is very shallowly emarginate; 7th ventrite (Fig. 15C) posteromedially with a large, deep, semicircular depression, which is arcuately emarginate, and also medially with a shallow crescent depression which is contiguous with the posteromedian depression; 8th ventrite (Fig. 15C) posteriorly with a large V-shaped emargination; 9th tergum (Fig. 15F) with ventral apophyses moderately long; 9th ventrite (Fig. 15B) elongate, rounded apicolaterally, very shallowly emarginate posteriorly, with apicolateral setae short; 10th tergum (Fig. 15F) very shallowly emarginate. Aedeagal median lobe obtusely angulate (Fig. 15A) or weakly rounded (Fig. 15G) apicolaterally, almost triangular behind the apicolateral corners, apical sclerotized area posteriorly covered with small pores. Endophallic median longitudinal bands (Fig. 15A) short, with ventral bands narrow, covered with dot-like sculptures, dorsal bands very wide; expulsion hooks (Fig. 15A) fused to form a nearly X-shaped sclerite; basal tube

(Fig. 15A) with sclerotized part of basal room composed only of left shaft, tube body arrowhead-shaped; cloak-like sclerite as in Fig. 15D. Parameres (Fig. 15A) almost straight, each small but distinctly incised apicomediaally; apical area very long, furnished mesially with 25 to 26 setae of short to moderate length; and also most apically with 4 to 5 very long seta.

Female: Eighth ventrite bluntly pointed or angulate posteromedially; gonocoxites (Fig. 15E) each almost rounded or blunt apicolaterally, distinctly serrate posteriorly, with apicolateral setae very long. Spermatheca not observable.

Biology and ecology. *Stenus tenuipes* is distributed in the plains and mountainous regions in Japan. The beetles inhabit litter in natural forests; and they also live in leaf litter heaped near the shores of rivers and ponds.

Remarks. Sharp (1874) described *Stenus tenuipes* as new from Japan; and after that, Sharp (1889) recorded *S. biguttatus* as "*S. biguttatus* var." from Japan (Awomori; Hakodate), but the specimens recorded from Japan by Sharp are not *S. biguttatus* but *S. tenuipes* (Puthz, 1981b). Naomi (1988d) mistook *S. tenuipes* for *S. comma*.

Stenus tenuipes is allied to *S. comma*, but it is separable from the latter by the elytral yellowish spots smaller, the abdomen with narrower latroventrites; the 6th ventrite of male posteromedially with a crescent-shaped depression (Fig. 15C), the 7th ventrite of male posteromedially with a larger semicircular depression (Fig. 15C), the aedeagal median lobe more weakly angulate or weakly rounded apicolaterally (Fig. 15A), the paramere small but distinctly incised at the subapico-mesial part (Fig. 15A), and the cloak-like sclerite shorter (Fig. 15D). *S. tenuipes* shows infraspecific variation regarding the size of elytral marking (small: Naomi, 1988d, fig. 1E and large: *ibid.*, fig. 1F), which sometimes causes coleopterists to do misidentification of this species. This species also shows variation regarding structure of the apical part of aedeagal median lobe. The median lobe has its apicolateral angle (Fig. 15A) although it is less strongly angulate than that in *S. comma*, but it is sometimes rounded apicolaterally, without the apicolateral corner (Fig. 15G; Puthz, 2008b: 178; fig. 11).

***Stenus biguttatus* Linnaeus**
(Figs. 2aA, 16A–E, 17A–D, 127H)

Stenus biguttatus Linnaeus, 1758: 422; Naomi & Puthz, 1996: 160; Naomi, 1997e: 5; Herman, 2001: 2085; Naomi & Puthz, 2013: 137.

Stenus szechuanus Puthz, 1981b: Naomi, 1988d: 56.

Type material. Type locality: Europe.

Other material examined. [HOKKAIDO]: 1♂6♀, Ohtsu, Toyokoro-cho, 27. v. 1990, K. Haga leg.; 3♂, Rikubetsu, 30. vii. 1986, S. Nomura leg.; 1♂1♀, Kottaro, Kushiro Moor, 29. viii. 1990, M. Sato leg.; 1♀, Bankei, Sapporo, 24. vi. 1977, N. Nishikawa leg.; 1♀, Kamayausu, Ishikari, 6. vi. 1986, M. Ohara leg.; 2♂3♀, Mt. Hakken, 27. v. 1977, N. Nishikawa leg.; 1♂, Shakubetsu, Onbetsu-cho, 3. viii. 1988, K. Haga leg.; 1♂, Tanno-cho, 27. viii. 1992, T. Kato leg.; 2♀, Iwaubetsu, Shiretoko, 7. vii. 1986, S. Nomura leg.

Distribution. Japan (Hokkaido); China, Russia, Azerbaijan, Armenia, Europe.

Redescription. Male and female: Macropterous; body 4.7–5.6 mm (fore-body 2.3–2.7 mm) in length, elongate, dull; paraglossae ovoidal (Fig. 2aA). Body black with metallic reflection; elytra each with a yellowish spot; labrum black; antennae and legs dark red to black. Head concave between eyes, with median longitudinal keel short, very narrow; punctures round to elliptical,

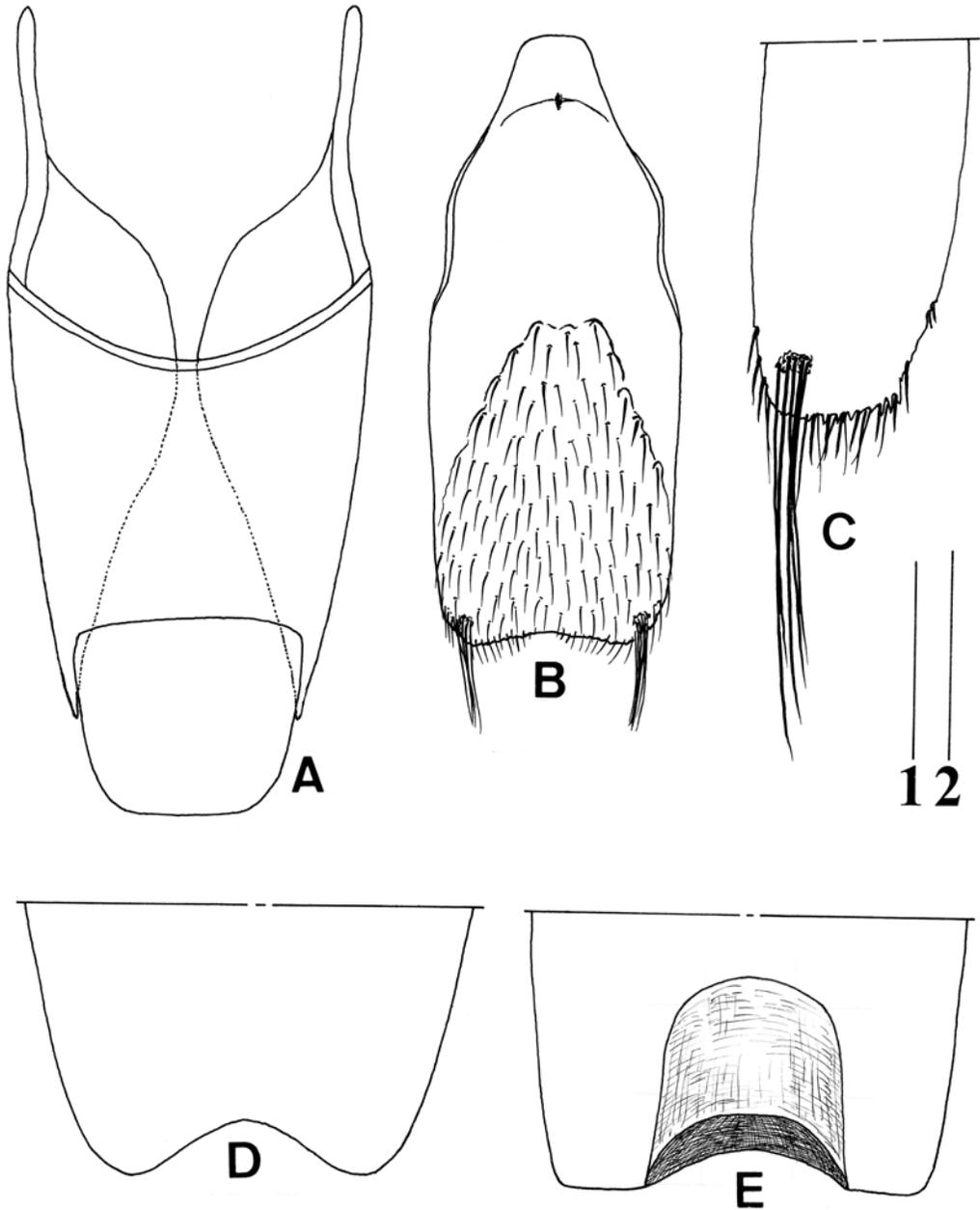


Fig. 16. *Stenus biguttatus* Linnaeus (A, B, D, E, Rikubetsu, Hokkaido; C, Toyokoro, Hokkaido). A, 9th and 10th terga of male; B 9th ventrite of male; C, posterior part of gonocoxite; D, posterior part of 8th ventrite of male; E, 7th ventrite of male. Scale 1: 0.2 mm for A, B, D, 0.1 mm for C; scale 2: 0.3 mm for E.

dense to very dense, small, distinct. Pronotum with surface weakly uneven, with a median fovea behind the middle; punctures very dense, small, rough. Elytra with surface weakly uneven; punctures round to elliptical, very dense, various in size. Legs relatively long; 4th tarsomere simple. Abdomen narrowed posteriorly, well convex above; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in posterior segments round to

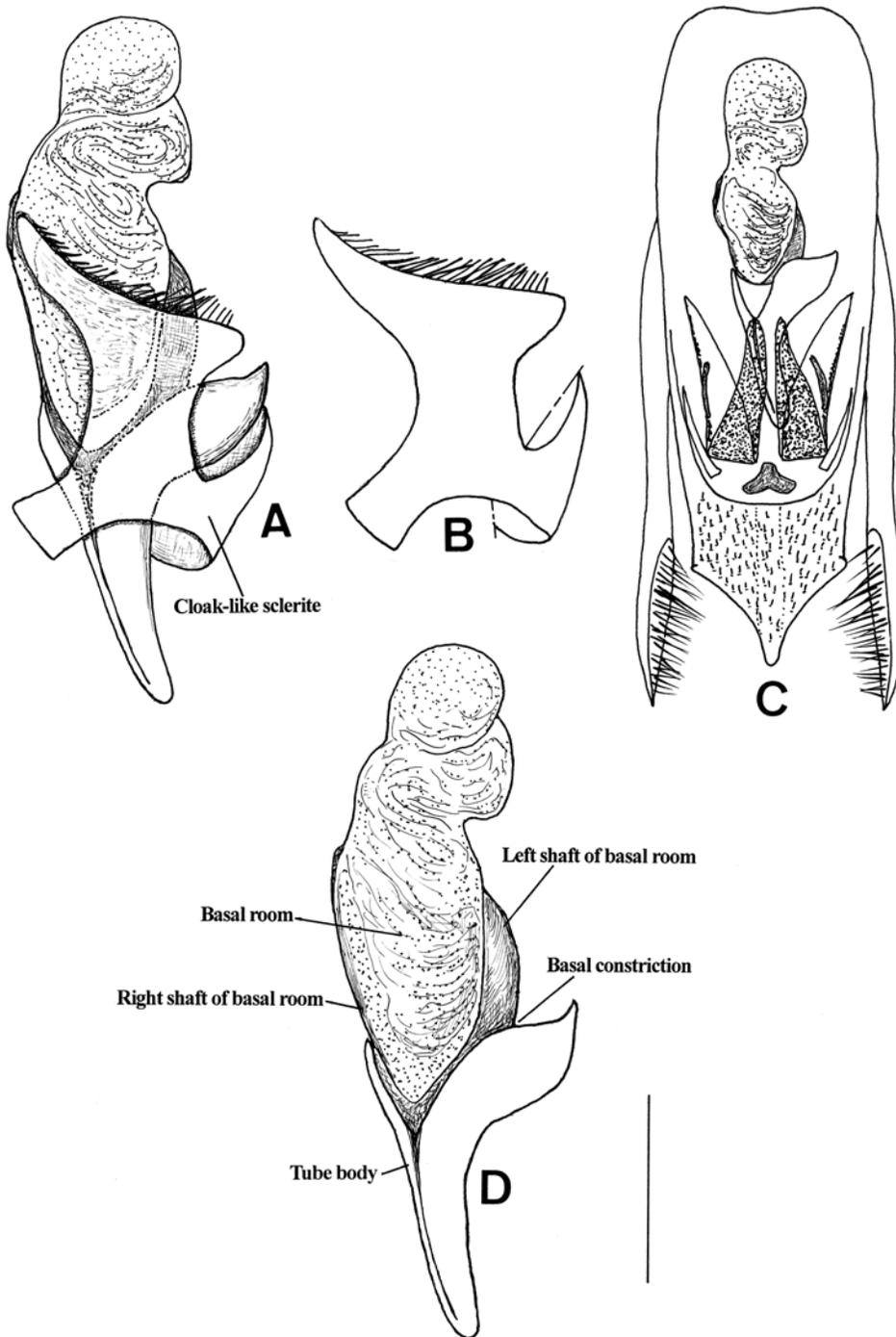


Fig. 17. *Stenus biguttatus* Linnaeus (Tanno, Hokkaido). A, endophallic basal tube with cloak-like structure; B, cloak-like structure; C, Aedeagus, without showing cloak-like structure; D, endophallic basal tube. Scale 1: 0.1 mm for A, B, D, 0.2 mm for C.

elliptical, very small and regular. Lateroventrites ventromesial in position, wide, covered usually with small punctures (but sometimes also with large ones).

Male: Sixth ventrite shallowly emarginate posteromedially; 7th ventrite (Fig. 16E) posteromedially with a very deep depression (or cliff), which is arcuately emarginate, and also medially with a large, shallow depression which is contiguous with the posteromedian depression; 8th ventrite (Fig. 16D) posteriorly with a broad, arcuate emargination; 9th tergum (Fig. 16A) with ventral apophyses moderately long; 9th ventrite (Fig. 16B) rounded apicolaterally, very shallowly emarginate posteriorly, with apicolateral setae short; 10th tergum (Fig. 16A) almost entire. Aedeagal median lobe (Fig. 17C) wide, distinctly angulate at apicolateral corners which each has a small hump, almost triangular behind the apicolateral corners, apical sclerotized area covered with moderately dense pores which each has a very short seta. Endophallic median longitudinal bands (Fig. 17C) wide, ventral bands each narrowed anteriorly, a little shorter than dorsal bands which are covered with dot-like sculptures; expulsion hooks (Fig. 17C) atrophied to be a small, Y-shaped sclerite which is located behind posterior margins of median longitudinal bands; basal tube (Fig. 17A, C, D) with sclerotized part of basal room composed of two shafts of different length, basal constriction distinct, tube body arrowhead-shaped; cloak-like sclerite as in Fig. 17B. Parameres (Fig. 17C) almost straight, relatively thick, each acutely pointed apically; apical area long, furnished mesially with 25 to 30 setae of short to moderate length.

Female: Eighth ventrite entire; gonocoxites (Fig. 16C) each almost rounded apicolaterally, finely serrate posteriorly, with apicolateral setae very long. Spermatheca not observable.

Biology and ecology. *Stenus biguttatus* is distributed in the plains and mountainous regions in Japan. The beetles inhabit open fields or grass lands; and they also live in leaf litter heaped near the rivers, lakes and marshes in Japan.

Remarks. Naomi (1988d) once recorded *S. szechuanus* from Hokkaido, but all specimens of the *Stenus* species belong to *S. biguttatus* (Naomi & Puthz, 1996), which was virtually the first record of *S. biguttatus* from Japan. It was found after the record that the true *S. biguttatus* is relatively common in the plains of Hokkaido. Among the Japanese members of *comma*-group, *S. biguttatus* is allied to *S. alienus*, but it is separable from the latter by the legs darker in color (dark red to black), the triangular apical part of aedeagal median lobe shorter (Fig. 17C), and the endophallic cloak-like sclerite structured as in Fig. 17B. In some cases, *S. biguttatus* is separable from *S. alienus* also by the shape of posteromedian depression of male 7th ventrite (Fig. 16E); that is, it is shorter in *S. biguttatus* than in *S. alienus*. However, since it shows variation in shape in *S. biguttatus*, its shape is not necessarily very useful for identifying the species.

Stenus alienus Sharp

(Figs. 18A–G, 127I)

Stenus alienus Sharp, 1874: 81; Herman, 2001: 2050; Puthz, 2001c: 42; Naomi & Puthz, 2013: 137.

Type material. Syntypes (NHML), type localities: Simabara, Osaka.

Material examined. [HOKKAIDO]: 3♂2♀, Mt. Sokuryo, Muroran, 7. viii. 1971, K. Miyamori leg. [HONSHU]: 1♀, Yasumiya, Towada-lake, Aomori Pref., 4-5. viii. 1966, M. Chujo leg.; 1♂, Kawara-bo, Mt. Hayachine, Iwate Pref., 22-24. vi. 1980, S. Naomi leg.; 3♂, Uenohara, Miyagi Pref., 20. viii. 1977, M. Sato leg.; 2♀, Nuruyu, Hanayama, Miyagi Pref., 6. viii. 1984, K. Morimoto leg.; 1♀, Shintabaru, Fukushima Pref., 30. vii. 1983, M. Tao leg.; 2♀, Senjyogahara,

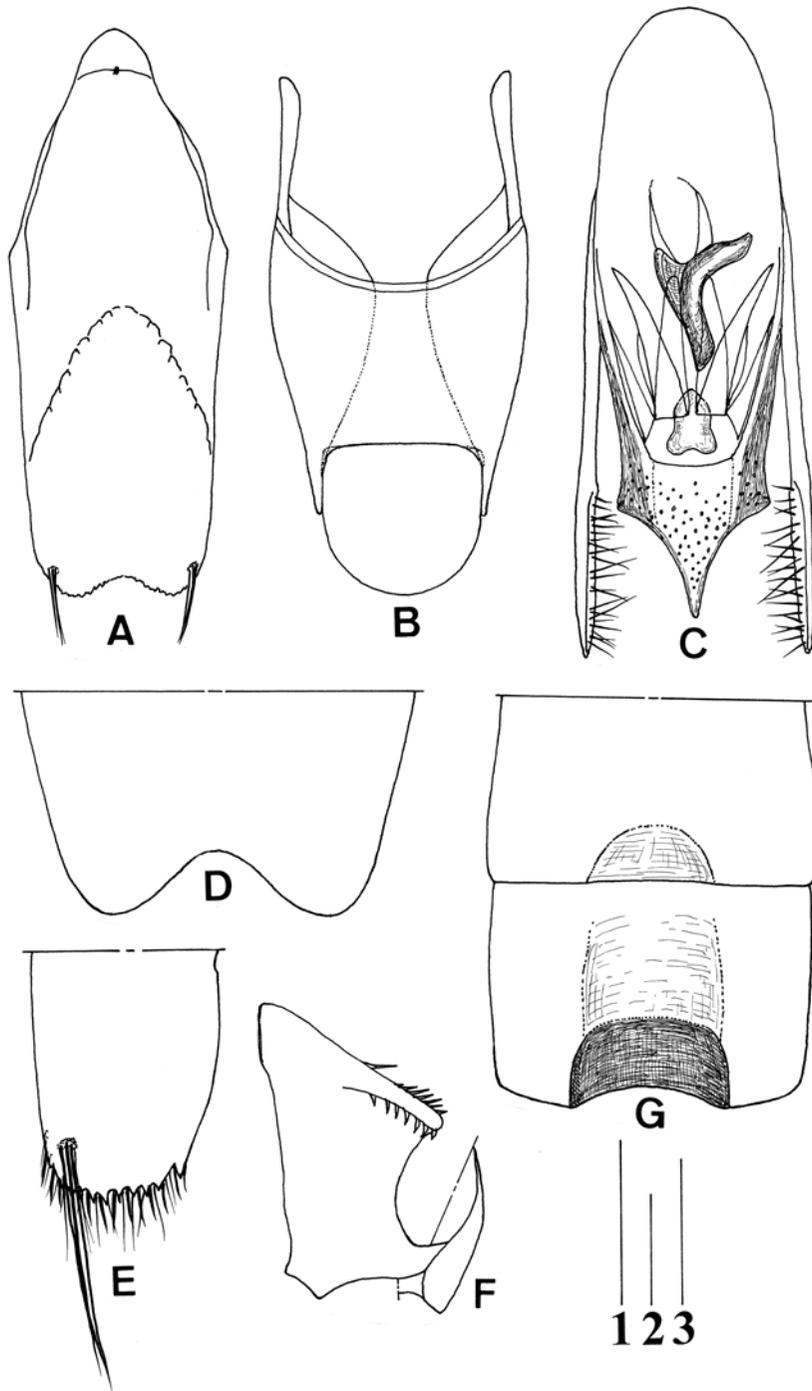


Fig. 18. *Stenus alienus* Sharp (A, B, D, E, G, Nikko, Tochigi; C, F, Hayachine, Iwate). A, 9th ventrite of male; B, 9th and 10th terga of male; C, aedeagus; D, apex of 8th ventrite of male; E, apex of gonocoxite; F, endophallic cloak-like structure; G, 6th to 7th ventrites of male. Scale 1: 0.2mm for A, C, D, 0.1mm for E, F; scale 2: 0.2mm for B; scale 3: 0.2mm for G.

Nikko, Tochigi Pref., 21. vii. 1997, T. Niisato leg.; 1 ♂2 ♀, Yumoto, Nikko, Tochigi Pref., 19. vii. 1977, M. Tao leg.; 1 ♂, Chuzenji, Nikko, Tochigi Pref., 5. V. 1966, Y. Miyake leg.; 1 ♀, Shiobara, Tochigi Pref., 20. v. 1979, T. Niisato leg.; 2 ♀, Nogi C., Tochigi Pref., 24. xi. 1976, T. Niisato leg.; 1 ♂, Naka River, Ibaragi Pref., 7. iv. 1978, M. Tao leg.; 2 ♂, Musashino C., Tokyo, 9. vi. 1976, T. Niisato leg.; 1 ♀, Tama River, Fuchu, Tokyo, 29. viii. 1982, M. Tao leg.; 1 ♂1 ♀, Machida C., Tokyo, 28. v. 1981, T. Niisato leg.; 2 ♂1 ♀, Mt. Takao, Tokyo, 2. iv. 1975, K. Kawada leg.; 1 ♀, Tsurumi-ku, Yokohama C., Kanagawa Pref., 10. vii. 1983, M. Tao leg.; 1 ♂, Tsurukawa, Kanagawa Pref., 14. iii. 1975, K. Kawada leg.; 1 ♂2 ♀, Tsurumi-ku, Yokohama C., Kanagawa Pref., 15. iii. 1976, M. Tao leg.; 1 ♀, Noborito, Kanagawa Pref., 25. iii. 1978, M. Tao leg.; 2 ♂, Tsurumi River, Kanagawa Pref., 25. iii. 1979, M. Tao leg.; 1 ♀, Kinome Pass, Fukui Pref., 25. vi. 1982, H. Sasaji leg.; 2 ♂1 ♀, same locality, 25. iv. 1982, H. Sasaji leg.; 1 ♂1 ♀, Taniyama, Ohno, Fukui Pref., 6. vi. 1976, H. Sasaji leg.; 1 ♂, Mt. Kariyasu, Fukui Pref., 9. v. 1981, H. Sasaji leg.; 1 ♂, Sugentan, Kono-mura, Fukui Pref.; 22. vii. 1981, H. Sasaji leg.; 1 ♀, Yashaga-ike, Fukui Pref., 9-11. viii. 1975, H. Sasaji leg.; 1 ♀, Mt. Monjyu, Fukui Pref., 22. v. 1973, H. Sasaji leg.; 1 ♀, Makidani, Mt. Hino, Fukui Pref., 21. v. 1978, H. Sasaji leg.; 1 ♂2 ♀, Kisofukushima, Nagano Pref., 25. vi. 1975, H. Ohishi leg.; 1 ♂, Todai, Nagano Pref., 6. v. 1977, M. Tao leg.; 1 ♀, Shiga Highland, Nagano Pref., 1-3. viii. 1978, M. Sato leg.; 1 ♂, Inayasu, Nagano Pref., 5. v. 1977, M. Tao leg.; 3 ♂2 ♀, Shinhotaka Spa, Gifu Pref., 10-12. vi. 1980, S. Naomi leg.; 2 ♂, Gifu, 4. iii. 1946, K. Ohbayashi leg.; 2 ♂1 ♀, Nagara River, Gifu C., Gifu Pref., 14. xi. 1954, Z. Natuse leg.; 1 ♂, Nisshin, Aichi Pref., 25. xii. 1985, T. Kato leg.; 1 ♂, Shimogamo, Kyoto, 11. xi. 1980, T. Ogata leg.; 1 ♀, Sandoai-cho, Mie Pref., 14. iii. 1976, H. Ohishi leg.; 1 ♀, Mt. Daisen, Tottori Pref., 3. v. 1991, A. Watanabe leg.; 1 ♀, same locality, 3-5. vi. 1980, S. Naomi leg.; 3 ♂, Wake, Okayama Pref., 17. iv. 1977, S. Naomi leg.; 1 ♀, same locality, 29. iv. 1997, S. Naomi leg.; 3 ♂, Okayama C., Okayama Pref., 1. vi. 1977, Fukushima leg.; 1 ♀, Tabarushimo, Okayama Pref., 26. iv. 1976, S. Naomi leg.; 1 ♂, Okayama C., Okayama Pref., 14. v. 1977, S. Naomi leg.; 1 ♀, Minamidani, Fuse-mura, Dogo Is., Oki Is., Shimane Pref., 18-25. v. 2004, T. Shimada leg.; 1 ♀, same locality, 1-11. vi. 2004, T. Shimada leg.; 3 ♀, Kabura-sugi, Saigô-cho, Dôgo Is., Oki Is., Shimane Pref., 17. vii. 2003, T. Shimada leg. [SHIKOKU]: 1 ♂, Mt. Odami, Ehime Pref., 11-13. vi. 1981, S. Naomi leg. [KYUSHU]: 1 ♂1 ♀, Kueyama, Shimabara, Nagasaki Pref., 27. iii. 1979, S. Imasaka leg.; 1 ♂, Senbuki, Shimabara, Nagasaki Pref., 2. xi. 1977, S. Imasaka leg.; 1 ♂1 ♀, same locality, 21. iv. 1977, S. Imasaka leg.; 2 ♀, Yokogawa, Naokawamura, Oita Pref., 29. iii. 1985, S. Sasaki leg.; 1 ♀, Mt. Tatsuda, Kumamoto C., Kumamoto Pref., 20. v. 1061, H. Aramaki leg.; 1 ♀, Miiike, Mt. Kirishima, Kagoshima Pref., 8. v. 1985, S. Nomura leg.; 1 ♀, Nakatane-cho, Tane Is., Kagoshima Pref., 9-12. v. 1996, M. Maruyama leg. [CHINA]: 1 ♂ (cS), China, Gansu, Dalijia Shan, 46 km W Linia, 2980 m, 10. vii. 1994, A. Smetana leg.; 1 ♀ (cS), China, Shaanxi, Qiniing Shan above Houzhenn 115 km WSW Xi'an, 1450 m, 5. vii. 2001, A. Smetana leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Oki Is., Tane Is.); Korea, Taiwan, China, Mongolia, Russia.

Redescription. Male and female: Macropterous; body 4.4–5.6 mm (fore-body 2.0–2.6 mm) in length, elongate. Body black, with metallic reflection; elytra each with a yellowish spot; labrum black; antennae reddish brown; legs yellowish brown to reddish brown. Head concave between eyes, with median longitudinal keel short, very narrow; punctures round to elliptical, dense to very dense, small, distinct. Pronotum with surface weakly uneven, with a median fovea behind the middle; punctures very dense, small, rough. Elytra with surface weakly uneven; punctures round to elliptical, very dense, various in size. Legs relatively long, slender; 4th tarsomere sim-

ple. Abdomen narrowed posteriorly, well convex above; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in posterior segments round to elliptical, very small, and regular. Lateroventrites ventromesial in position, wide, covered usually with small punctures (but sometimes also with large ones).

Male: Fifth ventrite posteromedially with a semicircular flat area; 6th ventrite (Fig. 18G) posteromedially with a shallow depression, which is very shallowly emarginate; 7th ventrite (Fig. 18G) posteromedially with a very deep, large depression (or cliff), which is arcuately emarginate, and also medially with a large, shallow depression which is contiguous with the posteromedian depression; 8th ventrite (Fig. 18D) posteriorly with a broad emargination; 9th tergum (Fig. 18B) with ventral apophyses thin, moderately long; 9th ventrite (Fig. 18A) emarginate and finely serrate posteriorly, with apicolateral setae short; 10th tergum (Fig. 18B) entire. Aedeagal median lobe (Fig. 18C) broad, distinctly angulate at apicolateral corners which each has a small hump, subtriangular behind the apicolateral corners, acutely pointed apically. Endophallic median longitudinal bands (Fig. 18C) moderately long, relatively narrow, ventral bands only covered with dot-like sculptures; expulsion hooks fused to form a nearly heart-shaped sclerite which is emarginate posteriorly; basal tube (Fig. 18C) with sclerotized part of basal room composed of two shafts of different length, basal constriction distinct, tube body arrowhead-shaped; cloak-like sclerite as in Fig. 18C. Parameres (Fig. 18C) almost straight, each pointed apically; apical area long, furnished mesially with 20 to 23 setae mostly of short length.

Female: Eighth ventrite entire; gonocoxites (Fig. 18E) each almost rounded apicolaterally, distinctly serrate posteriorly, with apicolateral setae long to very long. Spermatheca not observable.

Biology and ecology. *S. alienus* is one of the commonest *Stenus* species in Japan; and it is widely distributed in the plains and low and relatively high mountainous regions. The beetles are found of semi-arid grounds in open fields or grass lands, or at stony riverbanks; and they often walk around there. They inhabit semi-arid grounds at the crop or cultivated fields; and they also lives in somewhat dried grass litter heaped at the grasslands or open fields.

Remarks. *Stenus alienus* is allied to *S. biguttatus*, but it is separable from the latter by the legs paler in color (yellowish brown to reddish brown), the subtriangular apical part of aedeagal median lobe longer (Fig. 18C), the endophallic cloak-like sclerite structured as in Fig. 9F. See Puthz (2008b: 177; Figs. 4–9) regarding variation of the setation of aedeagal parameres in *S. alienus*.

Stenus anthracinus Sharp

(Figs. 19A–G, 127J)

Stenus anthracinus Sharp, 1889: 326; Herman, 2001: 2059; Puthz, 2001c: 42; Naomi & Puthz, 2013: 137.

Stenus yanoi Sawada & Nakane, 1954: 8.

Type material examined. Syntypes: 2 ♀ (NHML), type localities: Oyama, Kashiwagi. [examined by Puthz in 1965].

Other material examined. [HONSHU]: 1 ♂, Mt. Atsumi, Yamagata Pref., 4. v. 1962, Y. Watanabe leg.; 1 ♂, same locality, 29. iv. 1962, Y. Watanabe leg.; 1 ♀, same locality, 3. v. 1968, Y. Watanabe leg.; 2 ♀, same locality, 1. v. 1989, Y. Watanabe leg.; 1 ♂, same locality, 4. v. 1994, Y. Watanabe leg.; 1 ♂ 1 ♀, same locality, 7. viii. 1997, Y. Watanabe leg.; 1 ♂, Mt. Banzan, Sendai,

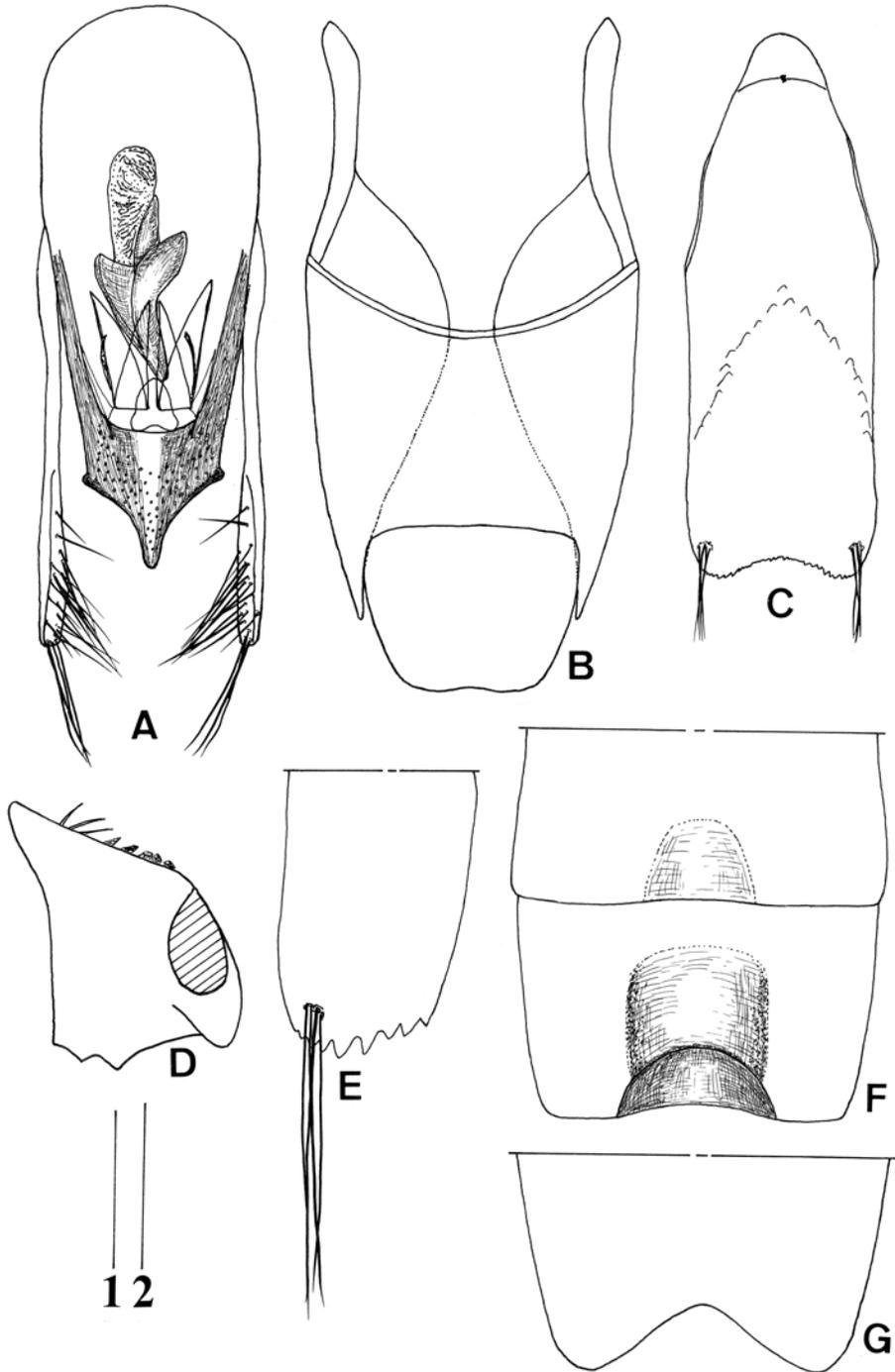


Fig. 19. *Stenus anthracinus* Sharp (A–D, Ohto, Wakayama; E, F, Myoko, Niigata; G, Renge, Niigata). A, aedeagus; B, 9th and 10th terga of male; C, 9th ventrite of male; D, endophallic cloak-like structure; E, apex of gonocoxite; F, 6th to 7th ventrites of male; G, apex of 8th ventrite of male. Scale 1: 0.2 mm for A–C, G, 0.1 mm for D, E; scale 2: 0.3 mm for F.

Miyagi Pref., 20. iii. 1996, H. Yoshitake leg.; 1 ♀, Mt. Abukuma, Fukushima Pref., 5. v. 1984, S. Ohmogo leg.; 3 ♂4 ♀, Sasagamine, Mt. Myoko, Niigata Pref., 14-15. vi. 1980, S. Naomi leg.; 2 ♂1 ♀, Renge Spa., Niigata Pref., 20. viii. 1986, M. Sato leg.; 1 ♀, Mt. Nyugasa, Nagano Pref., 13. viii. 1978, M. Sato leg.; 2 ♀, Mt. Hongu, Aichi Pref., 19. ix. 1978, M. Sato leg.; 1 ♀, Marunuma, Nikko, Tochigi Pref., 4-5. vii. 1982, S. Naomi leg.; 1 ♂, Wasabi-zawa, Okuchichibu, Saitama Pref., 31. vii. 1986, K. Nemoto leg.; 1 ♂, Hirayu, Gifu Pref., 7-9. vi. 1980, S. Naomi leg.; 1 ♂1 ♀, Hohare Pass, Gifu Pref., 5. v. 1986, K. Suzuki leg.; 5 ♂, Mizune-zawa, Okutama, Tokyo, 2. v. 1980, Y. Watanabe leg.; 1 ♂1 ♀, Mt. Takao, Tokyo, 26. viii. 1978, M. Tao leg.; 1 ♀, same locality, 1. v. 1984, M. Tao leg.; 1 ♀, same locality, 6. vii. 1985, M. Tao leg.; 1 ♀, Yahatamura, Mie Pref., 9. viii. 1954, Z. Naruse leg.; 2 ♂2 ♀, Mt. Ohto, Wakayama Pref., 28-29. vi. 1981, S. Naomi leg.; 2 ♀, Onzui, Hyogo Pref., 6. vi. 1984, S. Nomura leg.; 2 ♂1 ♀, Urahikimi, Shimane Pref., 5. vi. 1988, S. Nomura leg.; 3 ♂, Nakatsuya, Yoshiwa-mura, Hiroshima Pref., 7. vi. 1987, S. Nomura leg. [SHIKOKU]: 2 ♂, Mt. Shiratsue, Ehime Pref., 11. vi. 1972, S. Kinoshita leg.; 1 ♂1 ♀, Komenono, Matsuyama, Ehime Pref., 25. iv. 1993, L. Li leg.; 1 ♂, Narukawa, Hiromi, Ehime Pref., 5. v. 1992, M. Sakai leg. [KYUSHU]: 1 ♀, Kikuchi Valley, Kumamoto Pref., 11. iv. 1981, S. Naomi leg.; 1 ♂, Eadagouchi, Taraki-cho, Kumamoto Pref., 8. ix. 1992, M. Sakai leg.; 1 ♂, Hagi, Gokanoshō, Kumamoto Pref., 11. v. 1982, S. Imasaka leg.; 1 ♂, Kureko, Gokanoshō, Kumamoto Pref., 26. vii. 1962, H. Aramaki leg.; 1 ♀, Mt. Ichifusa, Kumamoto Pref., 1-2. viii. 1988, S. Naomi leg.

Distribution. Japan (Hokkaido?, Honshu, Shikoku, Kyushu); China.

Redescription. Male and female: Macropterous; body 4.3–5.6 mm (fore-body 2.3–2.5 mm) in length, elongate. Body black, moderately shining; labrum black; antennae dark red; legs black but tibiae and tarsi often dark red. Head moderately concave between eyes, with median longitudinal keel short, very narrow; punctures round to elliptical, moderately dense to dense, distinct. Pronotum with surface weakly uneven; punctures elliptical to round, very dense, distinct, and arranging almost transversely near anterior and posterior margins. Elytra well convex above, with surface weakly uneven; punctures round, very dense, various in size, somewhat rough. Legs slender; 4th tarsomere simple. Abdomen narrowed posteriorly, well convex above; punctures round to elliptical, moderately dense to dense, various in size, and somewhat irregular in anterior segments, while punctures in posterior segments round to elliptical, very small and regular. Lateral ventrites ventromesial in position, moderately wide, punctate.

Male: Third to 5th ventrites each glabrous on posteromedian area; 6th ventrite (Fig. 19F) posteromedially with a semicircular depression, which is very shallowly emarginate; 7th ventrite (Fig. 19F) posteromedially with a large, deep and semicircular depression, which is arcuately emarginate, and also with a shallow, large depression on center, which is contiguous with the posteromedian depression; 8th ventrite (Fig. 19G) posteriorly with a very large, wide V-shaped emargination; 9th tergum (Fig. 19B) with ventral apophyses long; 9th ventrite (Fig. 19C) elongate, rounded apicolaterally, shallowly emarginate and also finely serrate posteriorly, with apicolateral setae short; 10th tergum (Fig. 19B) very weakly emarginate. Aedeagal median lobe (Fig. 19A) broad, distinctly angulate at apicolateral corners which each has a small hump or tooth, subtriangular behind the apicolateral corners, and pointed apically, with apical sclerotized area covered with fine pores. Endophallic median longitudinal bands (Fig. 19C) short, only ventral bands covered with dot-like sculptures; expulsion hooks (Fig. 19A) fused to form a nearly heart-shaped sclerite; basal tube (Fig. 19A) with sclerotized part of basal room composed only of left shaft, basal constriction distinct, tube body arrowhead-shaped; cloak-like sclerite as in Fig. 19D. Parameres (Fig. 19A) long, each rounded apically; stem thin, straight; apical area long, weakly

swollen mesially, furnished mesially with 14 to 17 moderately long to long setae, and also most apically with 3 to 4 very long setae which turn posteriorly.

Female: Eighth ventrite posteromedially obtuse; gonocoxites (Fig. 19E) each distinctly serrate posteriorly, with apicolateral setae very long. Spermatheca not observable.

Biology and ecology. *Stenus anthracinus* is distributed in the mountainous regions in Japan. The beetles inhabit moist or wet leaf litter heaped in the vicinity of mountain torrents; and they also live in moist litter in natural forests.

Remarks. *Stenus anthracinus* is closely allied to *S. puthzorum*, but it is separable from the latter by the body narrower, the head with longer median longitudinal keel between eyes, the punctures on elytra simply dense and somewhat rough, the punctures on abdomen distinctly sparser, the posteromedian depressions on the 7th and 8th ventrites of male smaller and shallower (Fig. 19F), and the aedeagal median lobe broader, with a small hump at the apicolateral corner (Fig. 19A).

Stenus alienoides was first described from Takesaki, Taiwan by Puthz (1981b); and this species is separable from *S. anthracinus* by the body more strongly shining, the apical triangular part of aedeagal median lobe narrower and longer, etc. However, *S. alienoides* is considered a vicariant species of *S. anthracinus* in Taiwan; and the record of *S. alienoides* from Okitsu, Japan in Puthz (2008b) be regarded as the record of *S. anthracinus*.

***Stenus puthzorum* Naomi & Watanabe**
(Fig. 20A–F)

Stenus puthzorum Naomi & Watanabe, 2015: 95.

Type material examined. Holotype: ♂ (TUAA), Kurokawa, N-Echigo, Niigata Pref., 16. ix. 1960, K. Baba leg.

Distribution. Japan (Honshu: Niigata Pref.).

Redescription. Male: Macropterous; body 5.2 mm (fore-body 2.6 mm) in length, elongate. Body black, moderately shining, with metallic reflection; antennae black with 3rd to 5th segments dark red; legs black except for dark red tibiae. Head deeply concave between eyes, with median longitudinal keel short, very narrow; punctures round to elliptical, very dense, small, distinct. Pronotum with surface weakly uneven; punctures very dense, small, rough, sometimes two or more punctures fused to form a large one. Elytra well convex above, with surface weakly uneven; punctures round, very dense, moderately large, but punctures on anteromedian areas of elytra elliptical to elongate ovoidal, almost arranged from anteromedian to posterolateral direction. Legs relatively slender; 4th tarsomere simple. Abdomen narrowed posteriorly, well convex above; punctures round, dense, small and distinct in anterior segments, while punctures in posterior segments round to elliptical, very small and regular. Lateroventrites ventromesial in position, wide, covered with large punctures.

Third to 4th ventrites each glabrous on posteromedian area; 5th ventrite posteromedially with a flat, glabrous area which is very weakly emarginate; 6th ventrite (Fig. 20B) posteromedially with a semicircular depression, which is arcuately emarginate; 7th ventrite (Fig. 20B) posteromedially with a very large, deep and semicircular depression, which is arcuately emarginate, and also with a shallow, round depression on center, which is contiguous with the posteromedian depression; 8th ventrite (Fig. 20D) posteromedially with a large, semicircular emargination; 9th tergum (Fig. 20E) with ventral apophyses long, straight; 9th ventrite (Fig. 20C) elongate,

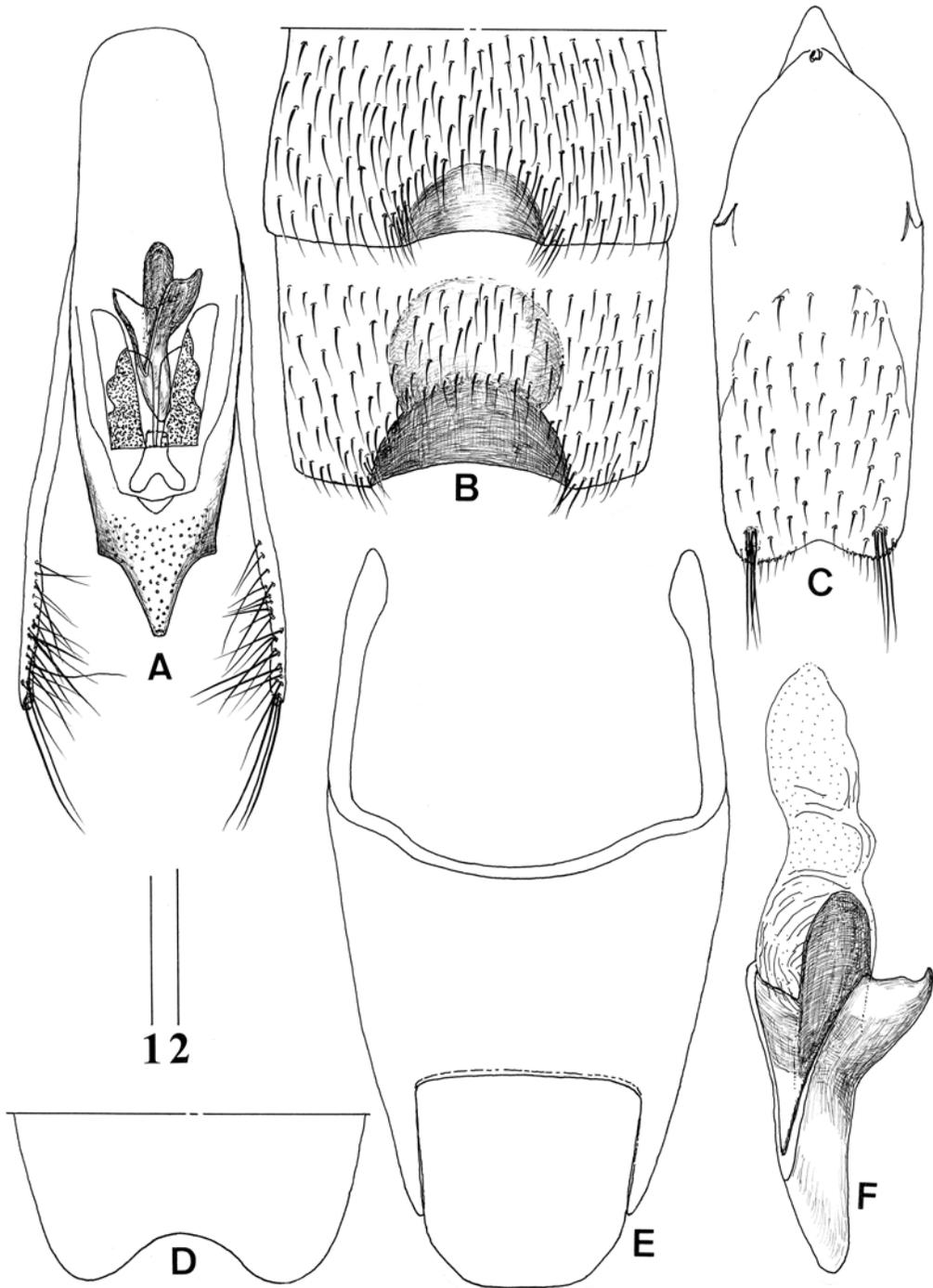


Fig. 20. *Stenus puthorum* Naomi & Watanabe (Kurokawa, Niigata). A, aedeagus; B, 6th to 7th ventrites of male; C, 9th ventrite of male; D, apex of 8th ventrite of male; E, 9th and 10th terga of male; F, endophallic basal tube. Scale 1: 0.2 mm for A, C, D, E, 0.1 mm for F; scale 2: 0.3 mm for B.

rounded and also very finely serrate apicolaterally, emarginate posteriorly, with stem subtriangular in shape, apicolateral setae moderately long; 10th tergum (Fig. 20E) entire. Aedeagal median lobe (Fig. 20A) relatively narrow, acutely angulate apicolaterally, almost triangular behind the apicolateral corners; apical sclerotized area almost covered with small pores. Endophallic median longitudinal bands (Fig. 20A) short, broad, without dot-like sculptures on anterior and anterolateral parts; expulsion hooks fused to form a Y-shaped sclerite; basal tube (Fig. 20A) robust, basal room almost membranous (Fig. 20F), with left shaft sclerotized, tube body arrowhead-shaped. Parameres (Fig. 20A) thin, slender; apical area long, furnished mesially with 19 to 20 setae of moderate length, and also most apically with 2 to 3 very long setae.

Female: Unknown.

Biology and ecology. Only one male individual of *Stenus puthzorum* is presently collected from the mountainous region of central Honshu. No data on the habitats of this species are obtained.

Remarks. *Stenus puthzorum* is closely allied to *S. anthracinus* but it is clearly distinguishable from the latter by the body broader, entirely with silvery reflection, the head with shorter and thinner median longitudinal keel between eyes, the punctures on the anteromedian areas of elytra almost arranged from anteromesial to posterolateral direction, the punctures on abdomen distinctly denser, the posteromedian depressions on the 6th and 7th ventrites larger and deeper (Fig. 20B), and the aedeagal median lobe narrower, without small hump at the apicolateral corner (Fig. 20A).

Etymology. This species is named in honour of Dr. Volker Puthz and Mrs. Marianne Puthz.

***Stenus kobensis* Cameron**

(Figs. 21A–H, 127K)

Stenus kobensis Cameron, 1930: 205; Herman, 2001: 2247; Naomi & Puthz, 2013: 137.

Type material examined. Syntypes (NHML), type locality: Kobe, Cascade Valley [examined by Puthz in 1965].

Other material examined. [HOKKAIDO]: 5♂3♀, Sekihoku Pass, 27. viii. 1977, M. Sato leg.; 1♀, Mt. Kariba, Shiribeshi, 12. vi. 1986, S. Nomura leg.; 2♀, same locality, 13. vi. 1986, S. Nomura leg.; 1♂1♀, Rausu River, 6. vii. 1986, S. Nomura leg.; 1♂, Toyohira Valley, Sapporo C., 8. ix. 1978, H. Detani leg.; 1♂1♀, Toyohira River above Jyozankei, 4. v. 1973, Bauman & Kumata leg. (cP, USNM). [HONSHU]: 2♀, Okuyagen, Shimokita Peninsula, Aomori Pref., 2. viii. 1987, S. Nomura leg.; 2♂1♀, Oirase River, Shiragami, Aomori Pref., 8. viii. 1987, S. Nomura leg.; 1♀, Kuzukawa, Aomori Pref., x. 1958 (Mus. Prague); 1♀, Kawara-bo, Mt. Hayachine, Iwate Pref., 22–24. vi. 1980, S. Naomi leg.; 3♂, Tohgatta, Miyagi Pref., 19. viii. 1977, M. Sato leg.; 1♂1♀, Futakuchi, Miyagi Pref., 20. viii. 1977, M. Sato leg.; 1♂, Funamata-zawa, Fukushima Pref., 9. viii. 1977, H. Akiyama leg.; 1♀, Sanbo River, Lake Road, Fukushima Pref., 5. v. 1973, Bauman & Kohno (USNM); 1♂1♀, Sasagamine, Mt. Myoko, Niigata Pref., 14–15. vi. 1980, S. Naomi leg.; 1♀, Renge Spa., Niigata Pref., 20. viii. 1986, M. Sato leg.; 1♀, Nakubusa, Nagano Pref., 21–25. viii. 1961, K. Mizusawa leg. (Genf); 2♂3♀, same locality, 3. viii. 1986, S. Morita leg. (DEI); 1♂, Tochu-dani nr. Nat. Cons. Entre, Mt. Hakusan, 1. ix. 1980, P. Zwick leg.; 1♀, Mittani-dani nr. Ichimose, Mt. Hakusan, 2. ix. 1980, P. Zwick leg.; 1♀, Todai, Nagano Pref., 7. v. 1977, M. Tao leg.; 1♂, Oppara, Gifu Pref., 15. vi. 1978, M. Sato leg.; 1♀, Jigoku-dani, Mt. Yatsu, Yamanashi Pref., 8. vii. 1982, S. Naomi leg.; 1♀, Oku-nikko, Nerazawa,

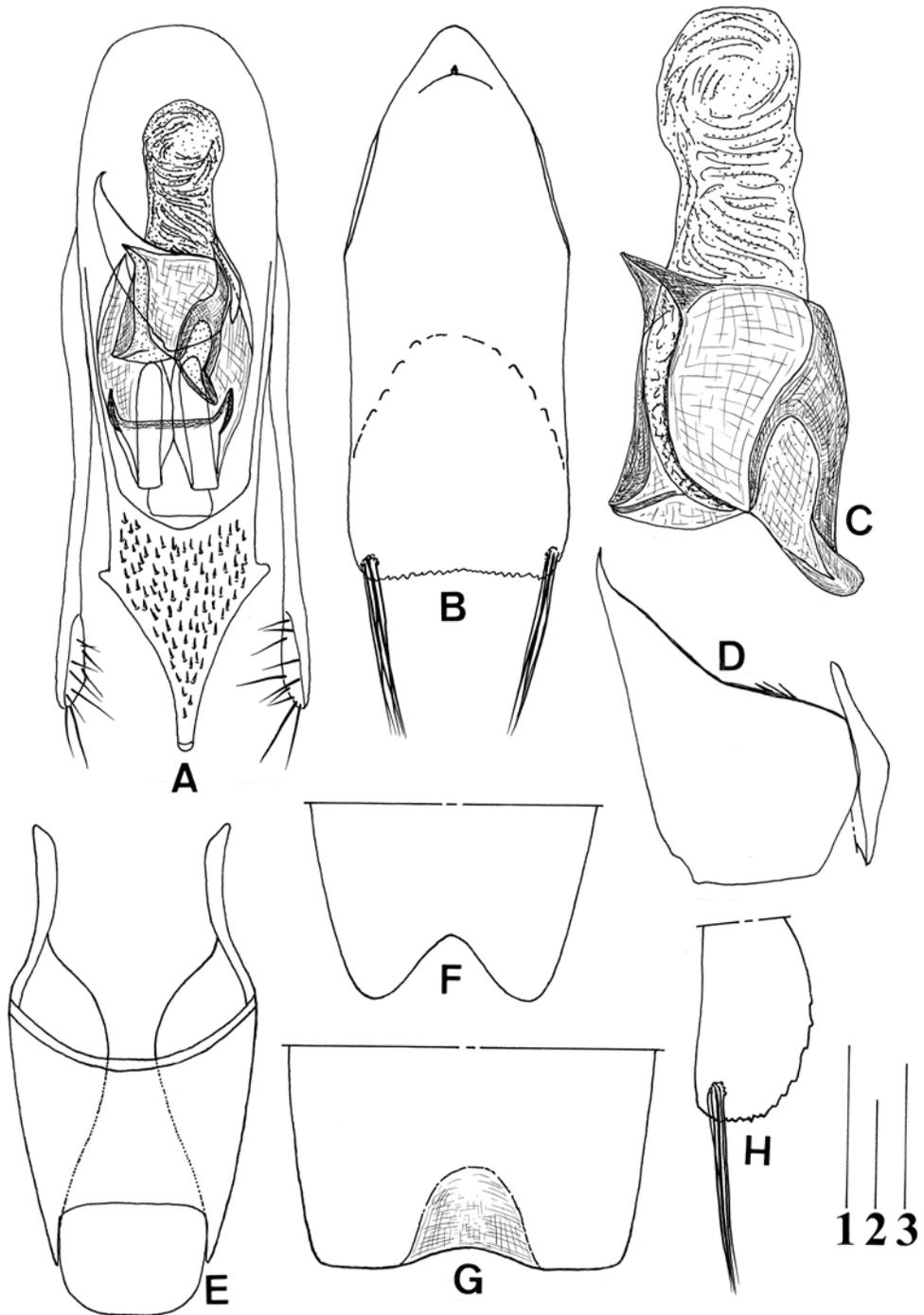


Fig. 21. *Stenus kobensis* Cameron (A, C, D, Ichihara, Chiba; B, E, G, Aso, Kumamoto; F, Oppara, Gifu; H, Kamisaibara, Okayama). A, aedeagus; B, 9th ventrite of male; C, endophallic basal tube; D, endophallic cloak-like structure; E, 9th and 10th terga of male; F, apex of 8th ventrite of male; G, 7th ventrite of male; H, gonocoxite. Scale 1: 0.2 mm for A, B, H, 0.1 mm for C, D; scale 2: 0.2 mm for E, F; scale 3: 0.3 mm for G.

Tochigi Pref., 8. ix. 1937, Y. Yano leg. (NHML); 1 ♂, Chuzenji, Nikko, Tochigi Pref., v. 1908 (Mus. Paris); 1 ♀, Tochiyori-zawa, Okutama, Tokyo, Ishikawa leg. (Coll Coiffait, Mus. Paris); 1 ♂, Yoro Valley, Ichihara City, Chiba Pref., 9. v. 1993, K. Ohgi leg.; 2 ♂, Tanzawa, Kanagawa Pref., 31. viii. 1986, M. Tao leg.; 1 ♀, Gora, Hakone, 17. viii. 1939, S. Suenson leg. (Mus. Copenhagen); 1 ♂, Mt. Hongu, Aichi Pref., 1. vi. 1956, M. Sato leg.; 1 ♂, Mt. Hongu, Aichi Pref., 18. vi. 1961, Watanabe leg. (Genf); 1 ♂5 ♀, Mt. Daiki, Kyoto, 22. vi. 1951, Y. Wada leg. (NHMW; SMNS); 2 ♂3 ♀, Mt. Ohto, Wakayama Pref., 28-29. vi. 1981, S. Naomi leg.; 2 ♂, Tamagawa Valley, Kii-nyu River, Wakayama Pref., 9. vi. 2012, P. Zwick leg.; 1 ♂, Onzui, Hyogo Pref., 6. vi. 1984, S. Nomura leg.; 3 ♀, Gozaisho, Mie Pref., 13. iv. 1956, M. Sato leg.; 1 ♂, same locality, 28. iii. 1954, M. Sato leg.; 1 ♂, same locality, 9. x. 1954, M. Sato leg.; 1 ♂, Asake, Mie Pref., vi. 1965, M. Sato leg.; 1 ♂, Okame, Mie Pref., 6. iv. 1944, K. Moribe leg.; 1 ♂, Mt. Daisen, Tottori Pref., 3-5. vi. 1980, S. Naomi leg.; 1 ♀, Tsuwano, Shimane Pref., 30. x. 1956, T. Wasaki (cHromádka); 1 ♂1 ♀, Nakatsuya, Yoshiwa-mura, Hiroshima Pref., 7. vi. 1987, S. Nomura leg.; 1 ♀, Kami-saibara, Okayama Pref., 10. x. 1977, M. Kaneda leg. [SHIKOKU]: 1 ♀, Omogokei, Iyo, Ehime Pref., 22. viii. 1953, RT. Edashige leg.; 1 ♂, Mt. Ishizuchi, Ehime Pref., 5. vi. 1952, Y. Wada leg. (NHMW); 3 ♂1 ♀, Mt. Odami, Ehime Pref., 11-13. vi. 1981, S. Naomi leg.; 3 ♂, same locality, 21. vii. 1979, M. Sato leg. [KYUSHU]: 2 ♂, Kachigi, Naokawa-mura, Ohita Pref., 25. iv. 1986, S. Sasaki leg.; 2 ♂, Mt. Kyogatake, Saga Pref., 24. iv. 1987, S. Nomura leg.; 1 ♂, Kugino, Mt. Aso, Kumamoto Pref., 25. vi. 1961, H. Aramaki leg.; 1 ♀, Mt. Ichifusa, Mizukami-mura, Kumamoto Pref., 8. vi. 1967, S. Hisamatsu leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Oki Isls.).

Redescription. Male and female: Macropterous; body 4.6–5.9 mm (fore-body 2.6–3.2 mm) in length, elongate. Body black, moderately shining, with metallic reflection; labrum and legs black; antennae dark red. Head deeply concave between eyes, with median longitudinal keel short, narrow; punctures round, dense, small, distinct. Pronotum with surface weakly uneven, with a distinct or indistinct median longitudinal depression; punctures elliptical to round, very dense, distinct. Elytra large, well convex above, with surface weakly uneven; punctures round to elliptical, very dense, distinct. Legs slender; 4th tarsomere simple. Abdomen narrowed posteriorly, well convex above; punctures round, moderately dense to dense, and small in anterior segments, while punctures in posterior segments round to elliptical, small (but sometimes very small), and regular. Lateroventrites ventromesial in position, wide, punctate.

Male: Seventh ventrite (Fig. 21G) posteromedially with a shallow, bell-shaped depression, which is arcuately emarginate; 8th ventrite (Fig. 21F) posteriorly with a very large, wide V-shaped emargination; 9th tergum (Fig. 21E) with ventral apophyses long; 9th ventrite (Fig. 21B) relatively wide, rounded apicolaterally, finely serrate posteriorly, with apicolateral setae long; 10th tergum (Fig. 21E) entire. Aedeagal median lobe (Fig. 21A) elongate, shortly projecting laterally at apicolateral corners, elongate-subtriangular behind the apicolateral corners, with apical sclerotized area covered with moderately dense pores which each has a short but relatively thick seta. Endophallic median longitudinal bands (Fig. 21A) with ventral bands short, strongly sclerotized, covered with dot-like sculptures, dorsal bands being rather large and wide in such a way that they dorsally wrap the basal tube; expulsion hooks (Fig. 21A) fused to form a sclerite whose posterior margin is straight; basal tube rather complex in structure as in Fig. 21C, apical beak-shaped area connected with lateral twig-like sclerites by membranes; cloak-like sclerite as in Fig. 21D. Parameres (Fig. 21A) slender, not reaching posteriorly the apex of median lobe, each rounded apically; apical area short, a little wide, furnished with about 10 setae of various length along its mesial margin.

Female: Eighth ventrite obtusely pointed posteromedially; gonocoxites (Fig. 21H) each rounded apicolaterally, serrate both posteriorly and mesially, with apicolateral setae very long. Spermatheca not observable.

Biology and ecology. *S. kobensis* is a common *Stenus* species in Japan; and it is widely distributed in the mountainous regions. The beetles inhabit moist or wet leaf litter heaped in the vicinity of mountain torrents; and they also live in moist litter in natural forests.

Remarks. *Stenus kobensis* is allied to *S. anthracinus* and *S. puthzorum*, but it is separable from the latter two species by the body larger, the pronotum with the median longitudinal depression, the punctures on posterior abdominal segments similar in size to those on the anterior segments, the 6th and 7th ventrites of male only weakly modified (Fig. 21G), the gonocoxite serrate both posteriorly and mesially (Fig. 21H), the aedeagal median lobe slenderer, with the more elongate apical triangular area behind apicolateral corners (Fig. 21A); the paramere apicomediaally with shorter setae (Fig. 21A), and endophallic basal tube unique in structure as in Fig. 21C.

Species group of *S. seminiger* Champion

S. seminiger group consists of 1 species in Japan; see Puthz (2013: 1298, 1447) regarding the taxonomic information of this group. Diagnostic characters are as follows: Legs with 4th tarsomere simple; lateroventrites ventromesial in position, moderately broad; 9th tergum with a cleaning comb at posterior margin (Fig. 22E); 9th ventrite of male with apicolateral teeth, macrosetae missing (Fig. 22B); aedeagal median lobe narrow, with apicomedian projection (Fig. 22C); endophallus with a cloak-like sclerite which partially covers the basal tube (Fig. 22C); gonocoxite with apicolateral tooth (Fig. 22D); spermatheca not observable.

Stenus macies Sharp (Figs. 22A–H, 127L)

Stenus macies Sharp, 1874: 83; Herman, 2001: 2268; Puthz, 2008b: 187; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♂ (NHML), type locality: Nagasaki [examined by Puthz in 1969].

Other material examined. [HOKKAIDO]: 1 ♂, Shinnosuke-Sannosawa, Mitsumata, Kamishihoro, 12. vii. 1994, K. Miyashita leg.; 1 ♀, Kamisenkyo, Kamiiso-cho, 16. viii. 1997, M. Nishikawa leg.; 2 ♂, Sounkyo, 26. vii. 1963, Y. Shibata leg. [HONSHU]: 1 ♂, Mt. Kumano, Miyagi Pref., 24. viii. 1978, M. Sato leg.; 1 ♂, Toubaku-zawa, Oku-chichibu, Saitama Pref., 5. vi. 1986, K. Nemoto leg.; 1 ♀, Mt. Nasu, Tochigi Pref., 3. vi. 1994, S. Naomi leg.; 1 ♀, Kirizumi Spa., Gunma Pref., 7. vi. 1986, M. Tao leg.; 1 ♀, Okutama, Tokyo, 7. vii. 1986, M. Tao leg.; 2 ♂, Sato-Kurosaki, Mikura Is., Izu Isls., 6. vi. 1996, S. Naomi et M. Maruyama leg.; 1 ♂, Fuji-rindo, Yamanashi Pref., 4. ix. 1977, K. Kawada leg.; 1 ♂ 1 ♀, Mt. Fuji, Yamanashi Pref., 18. vi. 1978, M. Tao leg.; 2 ♂, Daibosatsu, Yamanashi Pref., 22-23. vi. 1985, M. Sato leg.; 1 ♀, Nirazaki City, Yamanashi Pref., 15. vii. 1993, K. Hosoda leg.; 1 ♂, Tamodani, Izumi-mura, Fukui Pref., 5. v. 1982, H. Sasaji leg.; 1 ♀, Satsura-dani, Izumi-mura, Fukui Pref., 2. viii. 1981, H. Sasaji leg.; 1 ♂, Mt. Hino, Fukui Pref., 5. v. 1975, H. Sasaji leg.; 1 ♀, Mt. Ibuki, Shiga Pref., 9. vii. 1977, Y. Hori leg.; 1 ♂ 1 ♀, Mt. Gomanodan, Wakayama Pref., 22-23. vi. 1981, S. Naomi leg.; 1 ♀, Mt. Takahachi, Tottori Pref., 4. vii. 1976, S. Naomi leg.; 1 ♀, Mt. Dainanji, Dogo Is., Oki Isls., 18-25. v.

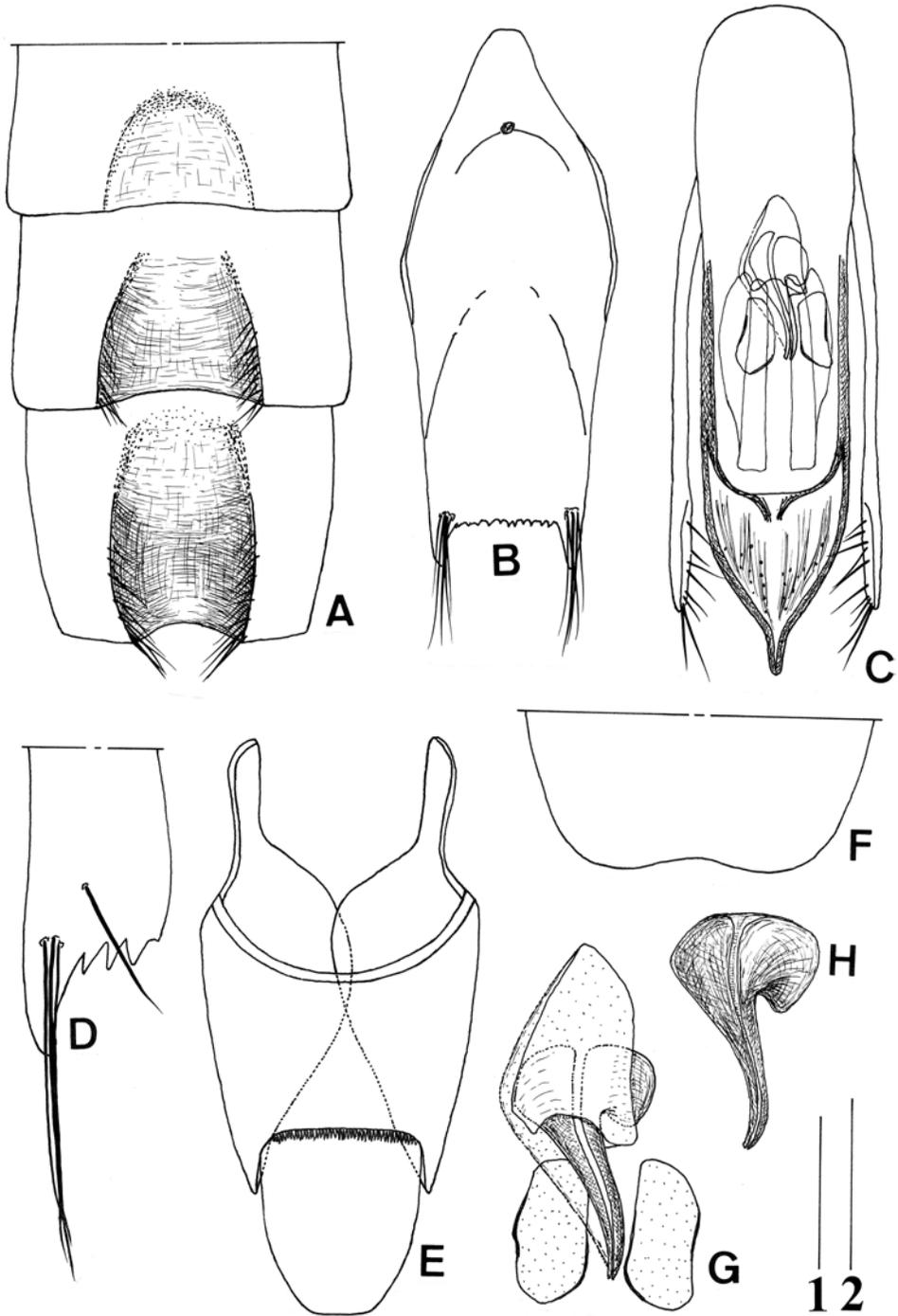


Fig. 22. *Stenus macies* Sharp (A–C, F–H, Tamodani, Fukui; D, Takahachi, Tottori; E, Kamishihoro, Hokkaido). A, 5th to 7th ventrites of male; B, 9th ventrite of male; C, aedeagus; D, apex of gonocoxite; E, 9th and 10th terga of male; F, apex of 8th ventrite of male; G, endophallic structures; H, endophallic basal tube. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B, C, E, F, 0.1 mm for D, G, H.

2004, T. Shimada leg.; 1 ♀, Kabura-sugi, Saigô-cho, Dôgo Is., Oki Isls., 17. vii. 2003, T. Shimada leg.; 1 ♀, Shinrin Park, Okayama Pref., 18. vi. 1978, M. Kaneda leg. [SHIKOKU]: 1 ♂, Minokoshi, Mt. Tsurugi, Tokushima Pref., 15. vii. 1984, M. Sakai leg.; 1 ♀, Ochiai Pass, Tokushima Pref., 31. vii. 1976, M. Kaneda leg.; 1 ♀, Mt. Ishizuchi, Ehime Pref., 16. vi. 1981, S. Naomi leg.; 1 ♂, Komenono, Ehime Pref., 7. vi. 1976, M. Sakai leg. [KYUSHU]: 1 ♂, Mt. Hiko, Fukuoka Pref., 8. viii. 1977, S. Naomi leg.; 1 ♂, Tashirobaru, Nagasaki Pref., 21. iv. 1977, S. Imasaka leg.; 1 ♂, Senbuki, Shimabara, Nagasaki Pref., 22. viii. 1977, S. Imasaka leg.; 1 ♀, Mt. Unzen, Nagasaki Pref., 1. iii. 1977, S. Imasaka leg.; 1 ♀, Mayuyama, Shimabara, Nagasaki Pref., 1. x. 1977, S. Imasaka leg.; 1 ♀, Shimoda, Amakusa Is., Kumamoto Pref., 7. viii. 1977, H. Ohishi leg.; 1 ♀, Shiratani, Yaku Is., Kagoshima Pref., 13. vii. 1984, M. Tao leg.; 1 ♂, Koseta, Yaku Is., Kagoshima Pref., 23. xi. 1984, S. Morita leg.; 1 ♀, Ookawa, Yaku Is., Kagoshima Pref., 12. vii. 1973, O. Yamaji leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Sado Is., Miyake Is., Mikura Is., Hachijo Is., Oki Isls., Tsushima Is., Yaku Is.); China.

Redescription. Male and female: Macropterous; body 3.8–5.2 mm (fore-body 1.9–2.4 mm) in length, elongate, moderately shining. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae dark red to black; legs reddish brown through dark red to black. Head moderately concave between eyes, with median longitudinal area (demarcated laterally with furrows) almost flat; punctures round to elliptical, dense, distinct. Pronotum with surface weakly uneven, without median longitudinal depression nor fovea; punctures elliptical to round, very dense, somewhat rough. Elytra with surface weakly uneven; punctures round, very dense, distinct. Legs moderately long; 4th tarsomere simple. Abdomen weakly convex above; punctures round, dense to very dense, and small in anterior segments, while punctures in posterior segments very round to elliptical, small, and regular. Lateroventrites ventromesial in position, punctate.

Male: Fourth ventrite posteromedially with a semicircular flat area which is very weakly emarginate; 5th ventrite (Fig. 22A) posteromedially with a large, shallow semicircular depression, which is very weakly emarginate; 6th ventrite (Fig. 22A) posteromedially with a very large, moderately deep semicircular depression, which is arcuately emarginate; 7th ventrite (Fig. 22A) medially with a very large, elongate-subovoidal depression, which is deep or very deep behind the middle and is arcuately emarginate; 8th ventrite (Fig. 22F) posteromedially with a shallow, arcuate emargination; 9th tergum (Fig. 22E) with ventral apophyses short, moderately thick; 9th ventrite (Fig. 22B) finely serrate posteriorly, with apicolateral teeth pointed, apicolateral setae moderately long to long; 10th tergum (Fig. 22E) elongate, entire. Aedeagal median lobe (Fig. 22C) elongate, almost parallel-sided, rounded apicolaterally, with the relatively long, apicomedian projection; apical sclerotized area long, with very thin, longitudinal linear sculptures and very fine, sporadic pores. Endophallic median longitudinal bands (Fig. 22C) with ventral bands more located mesially than dorsal bands, both dorsal and ventral bands covered with dot-like sculptures; expulsion hooks (Fig. 22C) separated each other, each broad-bean-shaped, submembranous except for lateral rims which are partially sclerotized (Fig. 22G); basal tube almost beak-shaped, structured as in Fig. 22G, H; cloak-like sclerite as in Fig. 22G. Parameres (Fig. 22C) slender, thin, almost straight, each rounded apically; apical area short, furnished mesially with 8 to 9 short to moderately long setae.

Female: Eighth ventrite obtusely pointed posteromedially; gonocoxites (Fig. 22D) each posteriorly with 2 or 3 teeth, apicolateral tooth large, pointed, apicolateral setae very long. Spermatheca not observable.

Biology and ecology. *Stenus macies* is widely distributed in the plains and mountainous regions in Japan; it also lives in such small islands as Miyake and Yaku. The beetles inhabit leaf litter heaped around or in natural forests.

Remarks. *Stenus macies* is allied to *S. yanoianus* Puthz, 1980b from Taiwan and *S. fraterculus* Puthz, 1980b from China, but it is separable from the latter two species by the legs paler in color (reddish brown through dark red in usual) and the aedeagal median lobe slender, almost parallel-sided (Fig. 22C).

There are paired plates in the endophallus of *S. seminiger* group (i.e., *S. macies*: Fig. 22G; see also Puthz, 1971a: 80; 2008b: 187). At first glance they are not expulsion hooks because of the following three reasons: First, they are positioned near the basal tube; second, they are mostly submembranous; and third, in its related species group (e.g., *S. comma* group), the expulsion hooks are commonly fused to form an arrow-headed sclerite. However, they are considered the expulsion hooks, given that they are dorsal in position relative to the median longitudinal bands.

Species group of *S. clavicornis* (Scopoli)

S. clavicornis group consists of 15 species in Japan; and see Puthz (1988a, 2013) for a characterization of this group. Diagnostic characters are as follows: Legs with 4th tarsomere simple; abdomen with 3rd to 6th terga each with 3 basal longitudinal keels (Fig. 128A); lateroventrites existing in 4th to 6th segments except for two species (*S. takedai* and *S. laborator*); 9th ventrite of male with pointed apicolateral teeth, macrosetae missing (Fig. 28C); aedeagal median lobe elongate, with its apical part various in shape (bilobed as in Fig. 28B; truncate apically as in Fig. 31A; rounded as in Fig. 33A; spatulate as in Fig. 37B, etc.); expulsion hooks only partially (Fig. 23F) or completely (Fig. 31D) fused, various in shape; gonocoxite with pointed apicolateral tooth (Fig. 23G); spermatheca not observable.

Key to the Japanese species of *S. clavicornis* group

- 1(26) Abdomen with laterotergites existing in 4rd to 6th segments; aedeagal median lobe with basal area well developed, longer before basal foramen (Fig. 29B).
- 2(9) Legs unicolorous (dark red to black).
- 3(4) Body larger (5.2–6.0 mm; fore-body: 2.7–3.0 mm); 6th ventrite of male posteromedially with a longitudinal keel (Fig. 23A); aedeagus as in Fig. 23D..... *S. juno* Paykull
- 4(3) Body smaller (2.9–4.5 mm; fore-body: 1.6–2.4 mm); 6th ventrite of male posteromedially without longitudinal keel.
- 5(8) Body larger (4.1–4.5 mm; fore-body: 2.0–2.4 mm); depression on the 7th ventrite of male with its lateral ridges not parallel.
- 6(7) Body narrower, with elytra smaller (head width/elytral width <0.90); pronotum without distinct microsculpture; lateroventrites with coarse, moderately dense punctures; 6th ventrite of male very weakly projecting posteriorly at posteromedian part (Fig. 25D); 7th ventrite of male posteromedially with an ovoidal, shallow depression (Fig. 25D); aedeagus as in Fig. 25C *S. yamato* Naomi
- 7(6) Body broader, with elytra larger (head width/elytral width <0.85); pronotum with deep microsculpture; lateroventrites with less coarse, dense punctures; 6th ventrite of male posteromedially with very weak, shallow emargination (Fig. 26C); 7th ventrite of male pos-

- teromedially with a moderately deep, subtrapezoidal depression, (Fig. 26C); aedeagus as in Fig. 26A..... *S. lewisius* Sharp
- 8(5) Body smaller (2.9–4.0 mm; fore-body: 1.6–2.1 mm); depression on the 7th ventrite of male with its lateral ridges running almost parallel (Fig. 30E); aedeagus as in Fig. 30B *S. amurensis* Eppelsheim
- 9(2) Legs bicolorous (yellowish brown to reddish brown, with knees infuscate).
- 10(13) Body larger (5.5–7.0 mm; fore body: 2.8–3.0 mm).
- 11(12) Body with abdomen broader, less strongly cylindrical (Fig. 128B); head with vertex only weakly concave, with its median portion about as high as mesial eye margin; 4th latero-tergite distinctly broader than breadth of 2nd antennal segment, coarsely, densely punctate; 5th and 6th ventrites of male each with paired setal bands (Fig. 24A); aedeagus as in Fig. 24D *S. indagator* Eppelsheim
- 12(11) Body with abdomen narrower, more strongly cylindrical (Fig. 128L); head with vertex deeply concave, with its median portion distinctly lower in level than mesial eye margin; 4th lateroventrite narrower than breadth of 2nd antennal segment, impunctate; 5th and 6th ventrites of male each without setal bands (Fig. 34D); aedeagus as in Fig. 34B *S. formosanus* Benick
- 13(10) Body smaller (3.5–5.7 mm; fore body: 1.9–2.5 mm).
- 14(19) Lateroventrites broader; 4th lateroventrite about as broad as length of 2nd antennal segment.
- 15(18) Smaller species (3.6–5.2 mm; fore body: 1.9–2.2 mm); interstices between punctures smooth on abdomen.
- 16(17) Fifth and 6th ventrites of male without modification; aedeagus as in Fig. 27B *S. katoi* Naomi & Ito
- 17(16) Fifth ventrite of male posteromedially with a semicircular flat area or shallow depression; 6th ventrite of male posteromedially with a shallow, bell-shaped depression (Fig. 28E); aedeagus as in Fig. 28B *S. sauteri* Bernhauer
- 18(15) Larger species (5.0–5.7 mm; fore body: 2.1–2.5 mm); interstices between punctures covered with reticulated microsculpture on abdomen; 5th ventrite of male without modification; 6th ventrite of male posteromedially only with a flat area (Fig. 35A); aedeagus as in Fig. 35B *S. clavicornis* (Scopoli)
- 19(14) Lateroventrites narrower; 4th lateroventrite more or less shorter than length of 2nd antennal segment.
- 20(21) Lateroventrites horizontal (or sometimes dorsomesial) in position; abdomen with punctures smaller, sparser, interstices between punctures much larger than half diameter of punctures in the middle of anterior terga; 6th and 7th ventrites of male each posteromedially with a larger depression (Fig. 29A); aedeagus as in Fig. 29B *S. nishikawai* Naomi
- 21(20) Lateroventrites dorsomesial (or sometimes horizontal) in position; abdomen with punctures larger, denser, interstices between punctures distinctly smaller than half diameter of punctures in the middle of anterior terga; abdominal ventrites with different modifications; aedeagi different in structure.
- 22(23) Seventh tergum with punctures smaller, less dense, interstices between punctures larger than diameter of punctures; 4th and 5th ventrite of male without modification; aedeagus as in Fig. 32E *S. disterminus* Puthz
- 23(22) Seventh tergum with punctures larger, denser, interstices between punctures smaller than diameter of punctures; 4th and 5th ventrites of male with modification; aedeagi differently

- structured.
- 24(25) Smaller species (3.9–5.1 mm; fore body 2.0–2.3 mm); abdomen with interstices between punctures smooth; 6th ventrite of male posteromedially with a larger flat area; aedeagus as in Fig. 31A *S. distans* Sharp
- 25(24) Larger species (body 5.0–5.2 mm; fore body 2.3–2.4 mm); abdomen with interstices between punctures covered with reticulated microsculpture; 6th ventrite of male posteromedially with a smaller flat area (Fig. 33C); aedeagus as in Fig. 33A
..... *S. calliceps* Bernhauer
- 26(1) Abdomen with laterotergites missing in 4th to 6th segments; legs unicolorous (yellowish brown to reddish brown); aedeagal median lobe with basal area weakly developed, shorter before basal foramen (Fig. 37B).
- 27(28) Body thinner, more strongly shining, with elytra narrower, abdomen slenderer (Fig. 129B); punctures on abdominal terga sparser, smaller; aedeagus as in Fig. 36B
..... *S. takedai* Naomi
- 28(27) Body thicker, less strongly shining, with elytra broader, abdomen thicker (Fig. 129C); punctures on the abdominal terga denser and larger; aedeagus as in Fig. 37B
..... *S. laborator* Sharp

***Stenus juno* Paykull**
(Figs. 2aB, 23A–G, 128A)

Stenus juno Paykull, 1789: 33; Naomi, 1991: 165; Herman, 2001: 2240; Puthz, 2001c: 42; Naomi & Puthz, 2013: 137.

Type material. Type locality: Suecia.

Other material examined. [HOKKAIDO]: 1 ♂1 ♀, Ootsu, Toyokoro-cho, 24. vi. 1993, K. Miyashita leg.; 3 ♀, same locality, 13. vii. 1992, K. Haga leg.; 2 ♂, Memanbetsu-cho, 6. vii. 1993, T. Kato leg.; 1 ♀, Shirautoro Lake, Kushiro, 11. vi. 1990, R. Kuranishi leg.; 1 ♀, Hyotan Pond, Akan N.-P., 4. vii. 1986, S. Nomura leg.; 1 ♂, Mokoto, Abashiri, 10. vii. 1958, T. Nakane leg. [HONSHU]: 1 ♀, Urabandai, Fukushima Pref., 9. vii. 1985, K. Konishi leg.; 1 ♀, Yunoko Lake, Oku-Nikko, Tochigi Pref., 29. vii. 1999, V. Puthz leg.; 6 ♂1 ♀, Marunuma Lake, Gunma Pref., 30. vii. 1954, K. Sawada leg.; 2 ♀, Saikawabashi, Akashima-cho, Nagano Pref., 5. iv. 1993, S. Nomura leg.

Distribution. Japan (Hokkaido, Honshu: Tohoku, Kanto and Chubu districts); China, Russia, Azerbaijan, Europe, Canada, USA.

Redescription. Male and female: Macropterous; body 5.2–6.0 mm (fore-body 2.7–3.0 mm) in length, robust; paraglossae ovoidal (Fig. 2aB). Body black, with metallic reflection; labrum black; antennae with 1st segment black, 2nd to 11th segments dark red; legs with femora black, tibiae and tarsi dark red. Head concave between eyes, with a pair of distinct longitudinal depressions; punctures round to elliptical, very dense, various in size, distinct. Pronotum with surface weakly uneven, with an indistinct median longitudinal depression; punctures almost round, very dense, somewhat rough. Elytra with surface weakly uneven; punctures round to elliptical, very dense, somewhat rough and rugose. Legs relatively long; 4th tarsomere simple. Abdomen thick, subparallel-sided; 3rd to 6th terga each with 3 basal longitudinal keels; punctures almost round, moderately dense to dense, small and distinct in anterior segments, while punctures in posterior segments sparse very, small and regular. Lateroventrites ventromesial in position, relatively nar-

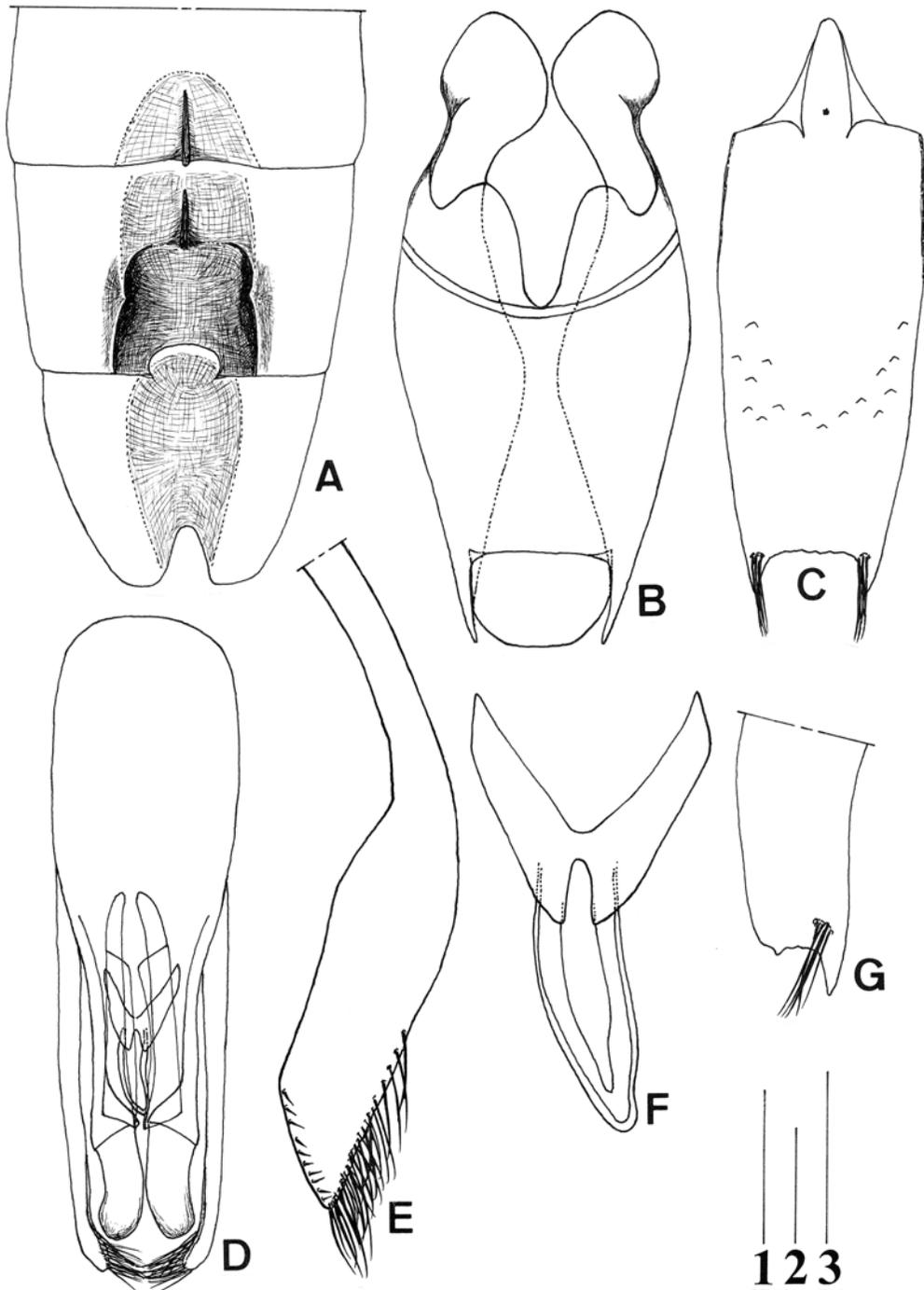


Fig. 23. *Stenus juno* Paykull (A, B, D–F, Toyokoro, Hokkaido; C, Abashiri, Hokkaido; G, Akan, Hokkaido). A, 6th to 8th ventrites of male; B, 9th and 10th terga of male; C, 9th ventrite of male; D, aedeagus; E, aedeagal paramere (lateral view); F, endophallic expulsion hook and basal tube; G, apex of gonocoxite. Scale 1: 0.3 mm for A, B; scale 2: 0.2 mm for C, D; scale 3: 0.1 mm for E, G, 0.1 mm for F.

row, densely punctate.

Male: Legs with femora rather thick; hind femur with the posteromedian part weakly angulate; middle tibia with the apicomeral part shortly pointed; 3rd ventrite posteromedially with a small, round, shallow depression, whose posterior part only weakly projects posteriorly, and also with an indistinct, low median longitudinal keel on the depressed area; 4th ventrite posteromedially with a similar depression as in the 3rd, but the posterior margin almost straight and the median longitudinal keel on the depressed area higher than that in the 3rd; 5th ventrite posteromedially with a small semicircular depression which is very weakly emarginate, the median longitudinal keel on the depression as high as that in the 4th; 6th ventrite (Fig. 23A) posteromedially with a medium-sized, semicircular depression, which is very shallowly bi-emarginate posteriorly, the median longitudinal keel on the depression a little higher than that in the 5th; 7th ventrite (Fig. 23A) posteromedially with a large, deep concavity, its lateral sides each with a high, hatchet-like projection, and a small, round notch existing at the posteromedian part of concavity, the posteromedian concavity contiguous with the shallow anteromedian depression, median longitudinal keel on the anteromedian depression a little higher than that in the 6th; 8th ventrite (Fig. 23A) posteromedially with a narrow, V-shaped emargination, and medially with a large, elongate-ovoidal depression; 9th tergum (Fig. 23B) with anterolateral flaps large, ventral apophyses very large, spatulate, posterolateral projections reaching fully the posterior margin of 10th tergum; 9th ventrite (Fig. 23C) elongate, angulate basilaterally, indistinctly serrate posteriorly, with stem elongate, narrow, basilateral emarginations small, apicolateral teeth acutely pointed, apicolateral setae moderately long; 10th tergum (Fig. 23B) rather small, entire. Aedeagal median lobe (Fig. 23D) elongate, apically with a pair of lobes which each turn dorsally and are rounded apically. Endophallic median longitudinal bands (Fig. 23D) moderately long, with ventral bands longer than dorsal bands which are truncate anteriorly; expulsion hooks fused to form a V-shaped sclerite (Fig. 23F) posteromedially with a deep, narrow emargination; basal tube (Fig. 23F) short, baculiform, turning dorsally. Parameres (Fig. 23D) narrow and incurved apically when seen ventrally, but rather broad when seen laterally (Fig. 23E); apical area rather long, wide, furnished apicoventrally with about 30 setae of moderate length, also apicodorsally with a line of 9–10 very short setae.

Female: Eighth ventrite posteromedially with a very shallow emargination; gonocoxites (Fig. 23G) each with apicolateral tooth acutely pointed, apicolateral setae short to moderately long. Spermatheca not observable.

Biology and ecology. *Stenus juno* is distributed in the low and high mountainous regions in Japan. The beetles inhabit moist litter heaped near the shores of rivers, lakes and marshes, and also wet litter in the vicinity of running water.

Remarks. *Stenus juno* was first recorded from Japan (Hokkaido) by Naomi (1991). This species is allied to *S. calcaratus* Scriba, 1864, but it is easily separable from the latter by the body smaller (5.2–6.0 mm), the elytra distinctly longer than prothorax, and the abdominal ventrites of male not furnished with suberect long setae (Fig. 23A).

Stenus indagator Eppelsheim
(Figs. 24A–E, 128B)

Stenus indagator Eppelsheim, 1887: 428; Herman, 2001: 2230; Naomi & Puthz, 2013: 137.
Stenus lentus Sharp, 1889: 326.

Type material examined. Holotype of *S. indagator*: ♀ (NHMW), type locality: Wladiwostok [examined by Puthz in 1965]. Syntypes of *S. lentus*: 3 exs. (NHML), type locality: Nikko [examined by Puthz in 1967].

Other material examined. [HOKKAIDO]: 1 ♂, Kami-shihoro, 26. vi.–4. vii. 1989, K. Haga leg.; 1 ♂, Memuro-cho, 15. ix. 1991, K. Ito leg.; 1 ♀, Tohro Lake, Kushiro, 27. vii. 1986, S. Nomura leg. 1 ♀, Yunosawa, Memambetsu-cho, 17. ix. 1992, T. Kato leg.

Distribution. Japan (Hokkaido, Honshu); China, Russia.

Redescription. Male and female: Macropterous; body 5.5–7.0 mm (fore-body 2.8–3.0 mm) in length, robust, relatively broad. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae dark red to black; legs yellowish brown to reddish brown, with knees and apical parts of tibiae more or less infusate. Head concave between eyes, with the sides of vertex impressed along mesial margins of eyes and with a pair of distinct longitudinal depressions, median part between the depressions moderately elevated; punctures round to elliptical, dense, various in size, distinct. Pronotum well convex above, with surface very weakly uneven; punctures almost round, very dense, various in size. Elytra with surface weakly uneven; punctures round to elliptical, very dense, large. Legs relatively long; 4th tarsomere simple. Abdomen relatively wide, weakly narrowed posteriorly; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, moderately dense to dense, and small in anterior segments, while punctures in posterior segments sparse, very small and regular. Lateroventrites ventromesial in position, wide, punctate.

Male: Legs with femora rather thick; hind femur shallowly concave and pubescent at the posterior part of basal half; middle tibia with a spine at the apicomeral part; hind tibia compressed dorsoventrally, broadest a little behind the middle, with the mesial area shallowly, widely concave; 3rd ventrite (Fig. 24A) posteromedially with a small, semicircular flat area, a small tuft of short setae located at each side of the flat area; 4th ventrite (Fig. 24A) posteromedially with a medium-sized, crescent depression, which is very weakly emarginate, and a medium-sized tuft of long setae located at each side of the depression; 5th ventrite (Fig. 24A) posteromedially with a moderately deep, transverse depression which is emarginated posteriorly, a large setal band located at each side of the depression; 6th ventrite (Fig. 24A) posteromedially with a very large, semicircular concavity whose posterior margin is arcuate, a very large setal band located at each side of the concavity, the posteromedian concavity continuous with the shallow, anteromedian depression; 7th ventrite (Fig. 24A) medially with a very large, deep concavity, a triangular projection existing at its lateral side, which turns ventrally and is acutely pointed; 8th ventrite (Fig. 24A) posteromedially with a small, V-shaped emargination, and medially with a large, elongate-ovoidal depression; 9th tergum (Fig. 24B) with anterolateral flaps subtriangular, ventral apophyses very large, wide; 9th ventrite (Fig. 24E) elongate, irregularly serrate posteriorly, with stem elongate-triangular, pointed apically, basilateral processes small, rounded, apicolateral teeth short, acutely pointed, apicolateral setae short; 10th tergum (Fig. 24B) entire. Aedeagal median lobe (Fig. 24D) elongate, with a pair of apical lobes, each of which is round apically and furnished with 4 setae. Endophallic median longitudinal bands (Fig. 24D) with ventral bands each long, thin, gently curved laterally, minutely incised at anterolateral part, dorsal bands each short, broad; expulsion hooks (Fig. 24D) fused to form a nearly M-shaped sclerite; basal tube (Fig. 24D) short, attenuate apically, with a rounded hump at the middle of its right side. Parameres (Fig. 24D) similarly structured as in *S. juno*; apical area furnished mesially with about 20 setae of moderate length, and also most apically with a tuft of dense setae.

Female: Eighth ventrite posteromedially with a very shallow emargination; gonocoxites (Fig.

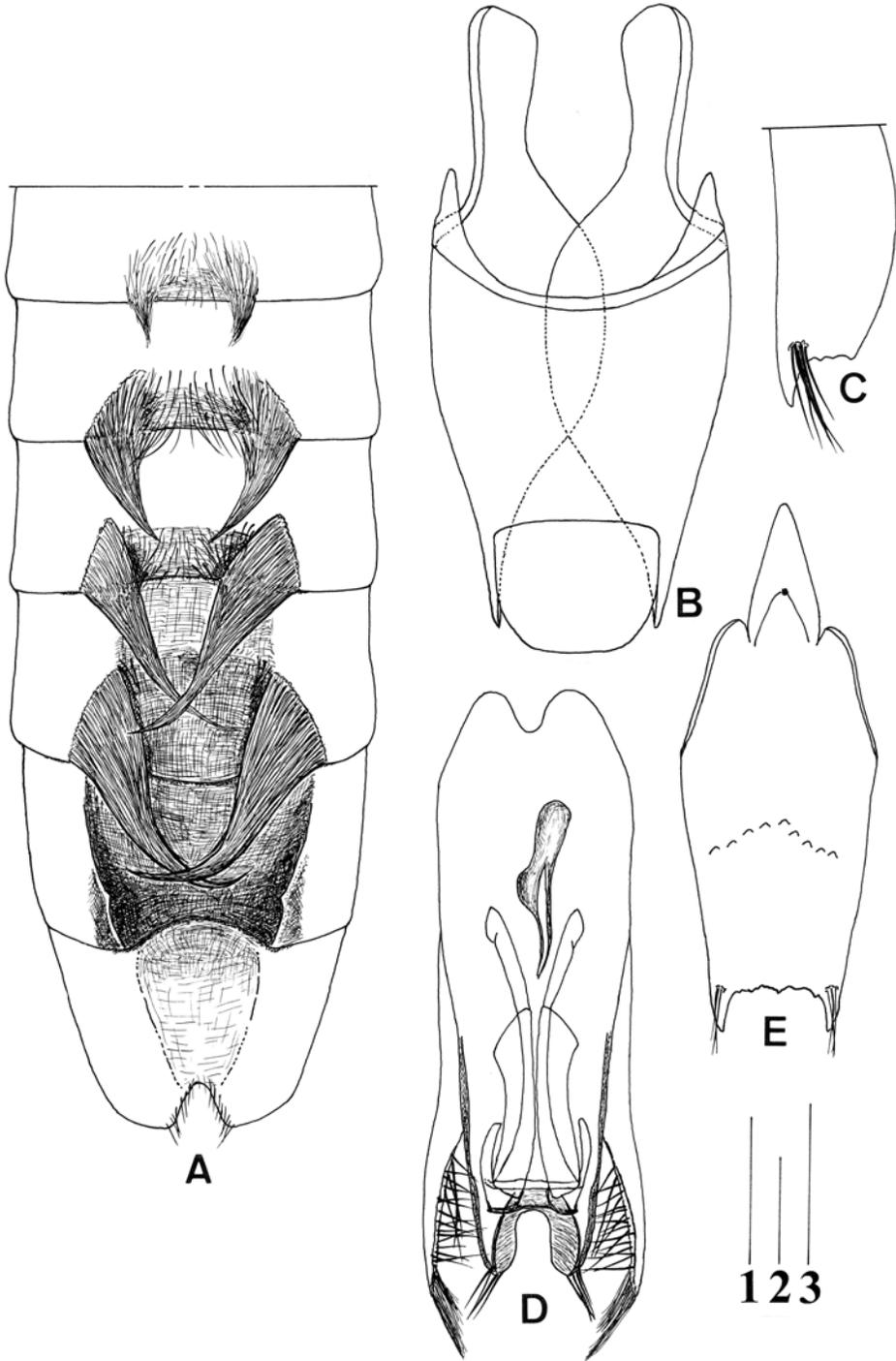


Fig. 24. *Stenus indagator* Eppelsheim (A, B, D, E, Kamishihoro, Hokkaido; C, Kushiro, Hokkaido). A, 3rd to 8th ventrites of male; B, 9th and 10th terga of male; C, gonocoxite; D, aedeagus; E, 9th ventrite of male. Scale 1: 0.4mm for A; scale 2: 0.2 mm for B, D, E; scale 3: 0.2 mm for C.

24C) each indistinctly serrate posteriorly, with apicolateral tooth pointed, apicolateral setae short to moderately long. Spermatheca not observable.

Biology and ecology. *S. indagator* is a very rare and magnificent *Stenus* species in Japan; and it is distributed in the low and high mountainous regions. The beetles inhabit moist litter located near the rivers, lakes and marshes.

Remarks. In *Stenus indagator* a regular line of very long, golden setae arise from the lateral margin of depression in 5th and 6th ventrites; and they stick one another to form a band-like structure (Fig. 24A). Thus, the setal modification found in male is here called “setal band”. *S. indagator* is allied to *S. bimaculatus* Gyllenhal, 1810, but it is easily separable from the latter by the elytra unicolorous (dark red to black), without yellowish spots; and the paired “setal bands” existing on the ventrites of male (Fig. 24A).

***Stenus yamato* Naomi**
(Figs. 25A–G, 128C)

Stenus yamato Naomi, 1988d: 57; Herman, 2001: 2230; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♂ (KUF), Karikomi Pond, Koike, Fukui Pref., 19. vii. 1981, H. Sasaji leg. Paratypes: 1 ♂ (cN), Inayasu, Nagano Pref., 5. v. 1977, M. Tao leg.; 2 ♂ (cN), Sannomatadani, Fukui Pref., 4. vi. 1983, H. Sasaji leg.; 2 ♂ 1 ♀ (cN), Monomi Pass, Tanzawa Pref., Kanagawa Pref., 5. viii. 1978, M. Tao leg.

Other material examined. [HONSHU]: 2 ♂, Mt. Yakeishi, Iwate Pref., 3–4. viii. 1985, S. Morita; 1 ♂, Genta-shimizu, Matsuo-mura, Iwate Pref., 10. ix. 1988, Y. Takanashi leg.; 3 ♂ 1 ♀, Hama River, Irihirose-mura, Niigata Pref., 10. vi. 1995, K. Haga leg.; 1 ♀, Marunuma, Gunma Pref., 22. vi. 1982, S. Morita leg.; 1 ♂, Mt. Koya, Wakayama Pref., 7. vi. 1964, T. Ito leg.; 1 ♀, Mt. Koya, Kii, Wakayama Pref., 23. v. 1965, T. Ito leg.; 1 ♂, Mt. Kojin, Nara Pref., 17. vii. 1976, T. Ito leg.; 1 ♀, same locality, 7. viii. 1966, T. Ito leg. [SHIKOKU]: 1 ♂, Komeno, Matsuyama City, Ehime Pref., 4. v. 1991, I. Okamoto leg. [KYUSHU]: 1 ♂, Mt. Tara, Takaki-cho, Nagasaki Pref., 3. vi. 2002, T. Watanabe leg.

Distribution. Japan (Honshu, Shikoku, Kyushu).

Redescription. Male and female: Macropterous; body 4.1–4.4 mm (fore-body 2.0–2.3 mm) in length, elongate, shining. Body black; labrum, antennae and legs dark red to black. Head concave between eyes, with a pair of distinct longitudinal depressions; punctures round to elliptical, moderately dense to very dense, various in size. Pronotum with surface weakly uneven, with an indistinct median longitudinal depression; punctures round to elliptical, very dense, various in size, somewhat rough. Elytra with surface weakly uneven; punctures round to elliptical, very dense, sometimes rugose at sutural areas. Legs moderately long, relatively thin; 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 3rd to 7th terga each with 3 basal longitudinal keels; punctures round, moderately dense to dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, sparse, very small and regular. Lateroventrites ventromesial in position, moderately wide, punctate.

Male: Fourth and 5th ventrites each posteromedially with a shining, semicircular flat area, which is very weakly emarginate; 6th ventrite (Fig. 25D) posteromedially with a semicircular, shallow depression, which weakly, arcuately projects posteriorly, with setae along its lateral margin; 7th ventrite (Fig. 25D) posteromedially with an ovoidal, shallow depression, which is shallowly emarginate posteriorly and covered densely with setae at its lateral parts; 8th ventrite (Fig.

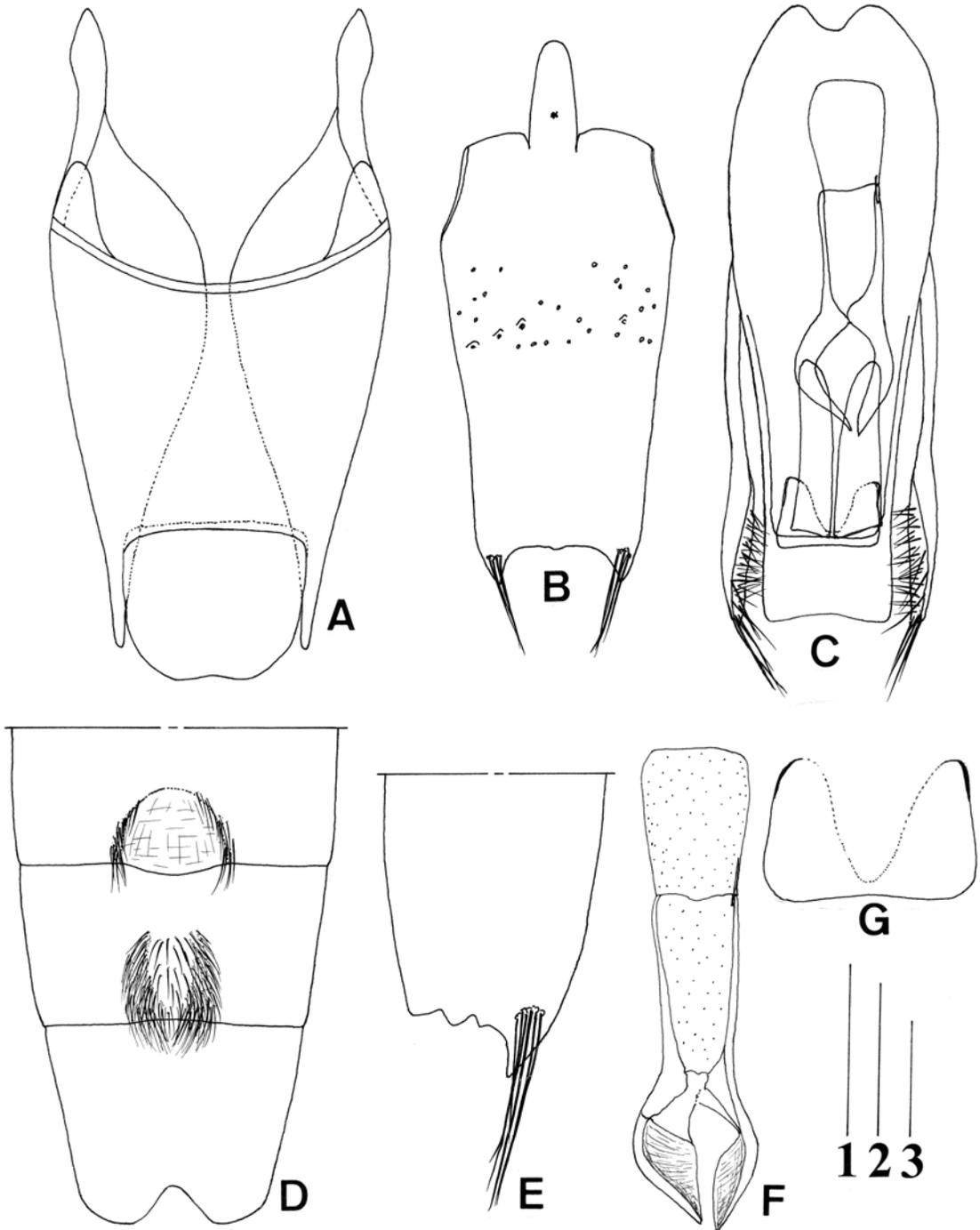


Fig. 25. *Stenus yamato* Naomi (A, B, Matsuo, Iwate; C, F, G, Komeno, Ehime; D, Tara, Nagasaki; E, Tanzawa, Kanagawa). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, Sixth to 8th ventrites of male; E, apex of gonocoxite; F, endophallic basal tube; G, expulsion hook. Scale 1: 0.2mm for A–C, 0.1 mm for E, G; scale 2: 0.3 mm for D; scale 3: 0.2mm for F.

25D) posteromedially with a V-shaped emargination; 9th tergum (Fig. 25A) with anterolateral flaps subtriangular, ventral apophyses relatively short; 9th ventrite (Fig. 25B) angulate basilaterally, hardly serrate posteriorly, with stem elongate, thin, apicolateral teeth short, pointed, apicolateral setae moderately long; 10th tergum (Fig. 25A) very shallowly emarginate posteromedially. Aedeagal median lobe (Fig. 25C) moderately thick, with apical part wide, almost truncate or very weakly emarginate. Endophallic median longitudinal bands (Fig. 25C) short, broad; expulsion hooks (Fig. 25C) fused by the posteromesial corner to form a sclerite as in Fig. 25G; basal tube (Fig. 25C, F) robust, with basal room almost membranous, tube body very thick, spoon-shaped. Parameres (Fig. 25C) each with stem thin, very weakly incurved when seen ventrally; apical area long, thick, furnished mesially with 25 to 31 short setae, and also most apically with a tuft of moderately long setae.

Female: Eighth ventrite posteromedially with a small, very shallow emargination; gonocoxites (Fig. 25E) each distinctly or indistinctly serrate posteriorly, with apicolateral tooth short, pointed, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus yamato* inhabits leaf litter in the natural forests of low and high mountainous regions, and also moist litter near the rivers and ponds.

Remarks. *Stenus yamato* is allied to *S. lewisius*, but it is separable from the latter by the body more slender (Fig. 128C), the elytra smaller, the 7th ventrite of male with posteromedian depression covered laterally with dense setae (Fig. 25D); the 8th ventrite of male with posteromedian emargination smaller (Fig. 25D); the aedeagal median lobe thicker, with its apical part almost truncate or very weakly emarginate (Fig. 25C); and the endophallic basal tube thicker, with spoon-shaped tube body (Fig. 25F).

Etymology. The specific epithet is derived from one of the ancient Japanese names of "Japan".

***Stenus lewisius* Sharp**
(Figs. 26A–H, 128D)

Stenus lewisius Sharp, 1874: 82; Herman, 2001: 2260; Puthz, 2001c: 43; Naomi & Puthz, 2013: 137.

Stenus gatenpio Naomi, 1990d: 99.

Type material examined. Holotype (NHML), type locality: Mitzuyama, Nagasaki [examined by Puthz].

Other material examined. [HOKKAIDO]: 1 ♂1 ♀, Sarobetsu, 24. viii. 1977, M. Sato leg.; 1 ♀, Shibeche, 18. vi. 1976, M. Sato leg.; 1 ♀, Jozankei, 19. vi. 1976, M. Sato leg. [HONSHU]: 1 ♂2 ♀, Tohgatta, Miyagi Pref., 19. viii. 1977, M. Sato leg.; 1 ♀, Uenohara, Miyagi Pref., 20. viii. 1977, M. Sato leg.; 1 ♀, Yakurai Spa., Miyagi Pref., 21. viii. 1978, M. Sato leg.; 1 ♂2 ♀, Nuruyu, Hanayama, Miyagi Pref., 6. viii. 1984, K. Morimoto leg.; 1 ♀, Kirizumi Spa., Gunma Pref., 7. vi. 1986, M. Tao leg.; 1 ♀, Urawa City, Saitama Pref., 23. ix. 1983, M. Tao leg.; 1 ♀, Kanso-numa, Hikari-cho, Chiba Pref., 3. v. 2000, R. Kuranishi leg.; 1 ♀, Noborito, Kawasaki City, Kanagawa Pref., 3. v. 1978, M. Tao leg.; 1 ♂1 ♀, same locality, 1. x. 1978, M. Tao leg.; 1 ♂1 ♀, Tama River, Noborito, Kanagawa Pref., 25. ii. 1979, M. Tao leg.; 1 ♀, Tsurumi-ku, Yokohama City, Kanagawa Pref., 26. ix. 1982, M. Tao leg.; 1 ♂, same locality 16. v. 1987, M. Tao leg.; 1 ♂, Toyota, Aichi Pref., 25. iv. 1976, M. Sato leg.; 1 ♂1 ♀, Sobue, Aichi Pref., 20. iv. 1975, M. Sato leg.; 1 ♀, Mt. Daihi, Kyoto, 19. ix. 1981, T. Ito leg.; 1 ♂, Kasuga, Nara Pref., 20. iv. 1985, T. Ito leg.;

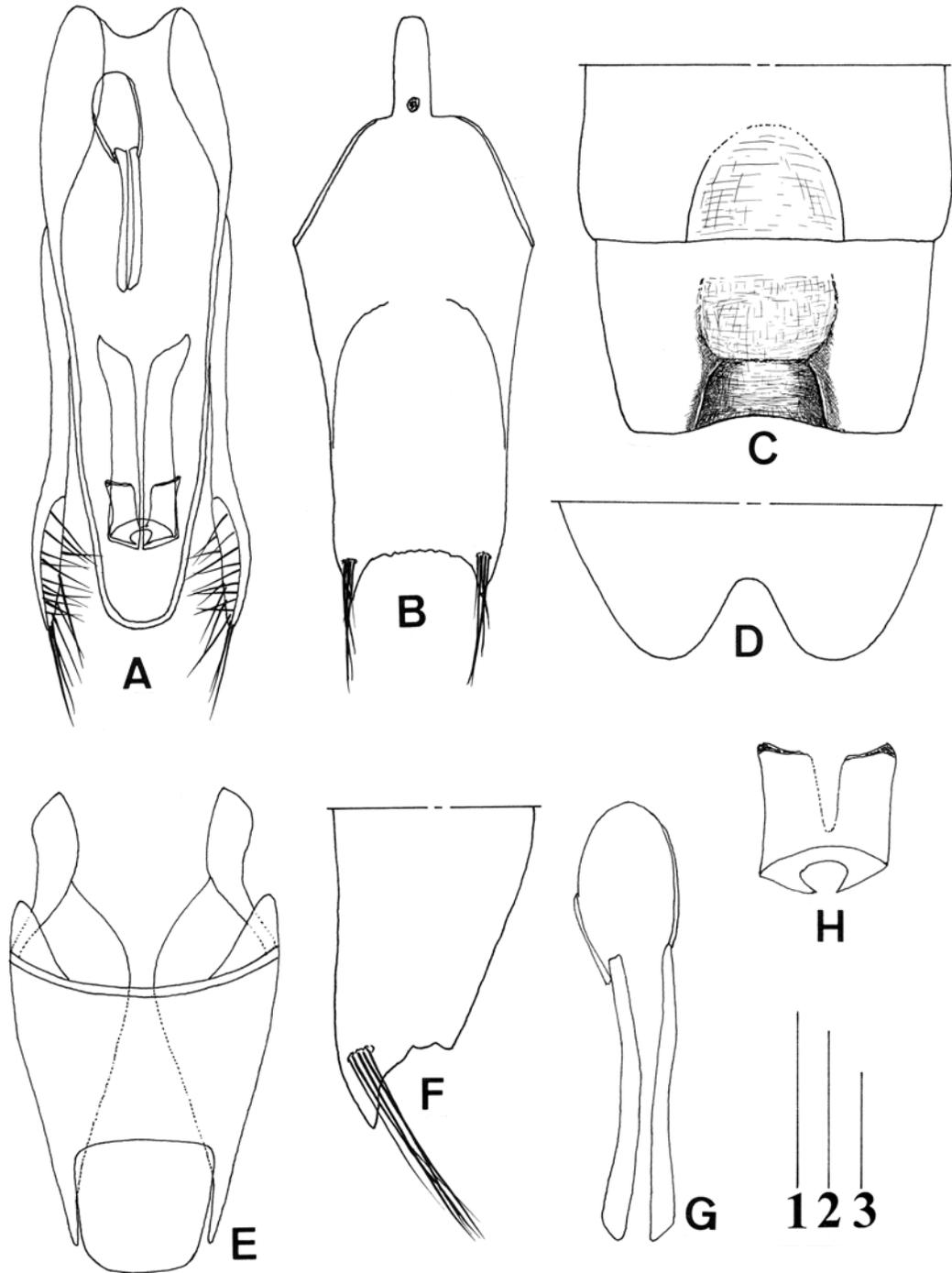


Fig. 26. *Stenus lewisius* Sharp (A–D, G, H, Sarobetsu, Hokkaido; E, Unagi-ike, Kagoshima; F, Shibecha, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 6th to 7th ventrites of male; D, apex of 8th ventrite of male; E, 9th and 10th terga of male; F, apex of gonocoxite; G, endophallic basal tube; H, expulsion hook. Scale 1: 0.2 mm for A, B, D, 0.1 mm for F–H; scale 2: 0.3 mm for D; scale 3: 0.2 mm for E.

2♂2♀, Okayama City, Okayama Pref., 1. vi. 1977, Fukushima leg.; 1♂, Okutsu-cho, Okayama Pref., 2. viii. 1977, M. Kaneda leg.; 2♂, Tsudaka-bokujyo, Okayama City, Okayama Pref., 14. iii. 1977, Fukushima leg.; 1♂4♀, Nikyukyo, Kure City, Hiroshima Pref., 1. vi. 1985, I. Okamoto leg. [SHIKOKU]: 2♂, Miyanotani Pond, Shikoku-chuo City, Ehime Pref., 30. x. 2005, Y. Katayama leg.; 2♀, same locality and date, T. Kurihara leg. [KYUSHU]: 1♂, Nishi-koganemaru, Shima-cho, Fukuoka Pref., 16. viii. 1991, S. Nomura leg.; 1♂, Heiwadai, Fukuoka City, Fukuoka Pref., 22. ix. 1991, S. Nomura leg.; 1♂, Kurusu River, Naokawa-mura, Oita Pref., 30. x. 1984, K. Kazato leg.; 1♂, same locality, 31. x. 1984, S. Sasaki leg.; 1♂, Mt. Kurodake, Oita-gun, Oita Pref., 9. v. 1982, S. Sasaki leg.; 1♂, same locality, 5. vii. 1982, S. Sasaki leg.; 1♀, Sannoh, Yamato-cho, Saga Pref., 24. iii. 1991, S. Nomura leg.; 1♂1♀, Mt. Unzen, Nagasaki Pref., 15. xi. 1977, S. Imasaka leg.; 2♀, Kunimi-cho, Nagasaki Pref., 14. xi. 1980, S. Imasaka leg.; 1♀, Shinyama, Ohmachi, Saga Pref., 29. iii. 1968, Y. Eguchi leg.; 1♂, Unagi-ike, Kagoshima Pref., 18. v. 1986, M. Sato leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu).

Redescription. Male and female: Macropterous; body 4.1–4.5 mm (fore-body 2.1–2.4 mm) in length, elongate, weakly or moderately shining. Body black; labrum and antennae dark red; legs black, sometimes with tibiae and tarsi dark red. Head relatively small, concave between eyes, with a pair of distinct longitudinal depressions; punctures round, dense to very dense, various in size, distinct. Pronotum with surface weakly uneven; punctures round, very dense, various in size, distinct. Elytra large, well convex above, with surface weakly uneven; punctures round, very dense, relatively small, deep, sometimes irregular. Legs relatively short; 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 3rd to 7th terga each with 3 basal longitudinal keels; punctures round, moderately dense to dense, small, and distinct in anterior segments, while punctures in posterior segments round to elliptical, moderately dense, and very small. Lateroventrites ventromesial in position, moderately wide, punctate.

Male: Sixth ventrite (Fig. 26C) posteromedially with a large, semicircular flat area, which is very weakly emarginate; 7th ventrite (Fig. 26C) posteromedially with a moderately deep, subtrapezoidal depression which is arcuately emarginate and is provided with a longitudinal ridge along its lateral margin, and also centrally with a shallow depression, which is contiguous with the posteromedian depression; 8th ventrite (Fig. 26D) posteromedially with a large, almost V-shaped emargination; 9th tergum (Fig. 26E) with anterolateral flaps subtriangular, ventral apophyses short, thick; 9th ventrite (Fig. 26B) hardly or very finely serrate posteriorly, with stem thin, slender, apicolateral teeth short, pointed, apicolateral setae long; 10th tergum (Fig. 26E) small, entire. Aedeagal median lobe (Fig. 26A) slender, with its apical part rounded. Endophallic median longitudinal bands (Fig. 26A) moderately long and wide, pointed apicolaterally; expulsion hooks (Fig. 26A) fused to form a sclerite as in Fig. 26H; basal tube (Fig. 26A) medium-sized, basal room ovoidal, with two thin shafts of different length, tube body simply baculiform (Fig. 26G). Parameres (Fig. 26A) weakly curved laterally near the middle; apical area long, relatively thick, furnished with 14 to 16 setae along its mesial margin, and also most apically with 3 to 4 long setae.

Female: Eighth ventrite posteromedially with a small, very shallow emargination; gonocoxites (Fig. 26F) each with apicolateral tooth large, pointed, apicolateral setae long. Spermatheca not observable.

Biology and ecology. *S. lewisius* is a common *Stenus* species in Japan; and it is widely distributed in the plains to low mountainous regions. The beetles inhabit semi-arid open areas such as stony riverbanks; and they walk around the grounds and stones there.

Remarks. *S. lewisius* has been an East Asian *Stenus* species (Herman, 2001), but the *Stenus* populations of China, Korea and Russia, which were previously regarded as *S. lewisius*, are presently considered to be *S. lewisius pseudoater* Bernhauer, 1938a by Puthz (2013a). Thus, the nominotypical subspecies *S. lewisius* is indigenous in Japan. *S. lewisius* is allied to *S. yamato*, but it is separable from the latter by the body wider (Fig. 128D), the elytra larger, the 7th ventrite of male with posteromedian depression hardly covered laterally with setae (Fig. 26C), the 8th ventrite of male with posteromedian emargination larger (Fig. 26D), the aedeagal median lobe thinner, with its apical part round (Fig. 26A), and the endophallic basal tube smaller, with tube body simply baculiform (Fig. 26G).

Etymology. This species was named in honour of Mr. George Lewis, England, the collector of the type material of this species.

***Stenus katoi* Naomi & Ito**
(Figs. 27A–G, 128E)

Stenus katoi Naomi & Ito, 2015b: 225.

Type material examined. Holotype: ♂ (OMNH), Kayamura, Shibeche-cho, Hokkaido, 5. viii. 2013, T. Kato leg. Paratypes: 1 ♂1 ♀ (cN), 1 ♂1 ♀ (cI), 1 ♂ (cP), same data as holotype; 1 ♀ (cP), Musa River, Kushiro, Hokkaido, 11. vi. 2010, K. Matsumoto leg.

Distribution. Japan (Hokkaido).

Redescription. Male and female: Macropterous; body 4.7–5.2 mm (fore body 2.0–2.2 mm) in length, moderately shining. Body black; labrum and antennae dark red to black; legs reddish brown to dark reddish brown, with knees infusate. Head concave between eyes, partially, weakly impressed just along mesial margins of eyes, with a pair of longitudinal depressions; punctures round to elliptical, dense to very dense, various in size. Pronotum with surface weakly uneven; punctures round, very dense, various in size. Elytra with surface very weakly uneven; punctures round, very dense. Legs moderately long; tibiae thin; 4th tarsomere simple. Abdomen relatively wide, weakly convex dorsally; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, sparse small and distinct in anterior segments, while punctures in posterior segments sparse, very small and regular. Lateroventrites ventromesial in position, wide, punctate.

Male: Seventh ventrite (Fig. 27E) posteromedially with a bell-shaped depression, which is arcuately emarginate; 8th ventrite (Fig. 27E) posteromedially with a relatively small, V-shaped emargination; 9th tergum (Fig. 27A) with ventral apophyses moderately long, posterolateral projections very acute; 9th ventrite (Fig. 27C) indistinctly serrate posteriorly, with stem relatively narrow, apicolateral teeth acutely pointed, apicolateral setae moderately long; 10th tergum (Fig. 27A) entire. Aedeagal median lobe (Fig. 27B) narrowed apically, very weakly, distinctly constricted just before the apex, which is almost truncate but very shallowly emarginate medially. Endophallic median longitudinal bands (Fig. 27B) with ventral bands each very long, strongly curved laterally a little before the middle, dorsal bands each very broad, weakly broadened anteriorly, truncate anteriorly; expulsion hooks (Fig. 27B) fused to form a transverse sclerite as in Fig. 27D; basal tube (Fig. 27B) with basal room ovoidal, submembranous, franked dorsally with a pair of board-like sclerites, tube body short, pincer-like in structure (Fig. 27F). Parameres (Fig. 27B) each very weakly sinuous when seen ventrally; apical area long, relatively thick, furnished mesially with 35 to 46 dense setae.

Female: Eighth ventrite entire but sometimes posteromedially with a very small, shallow

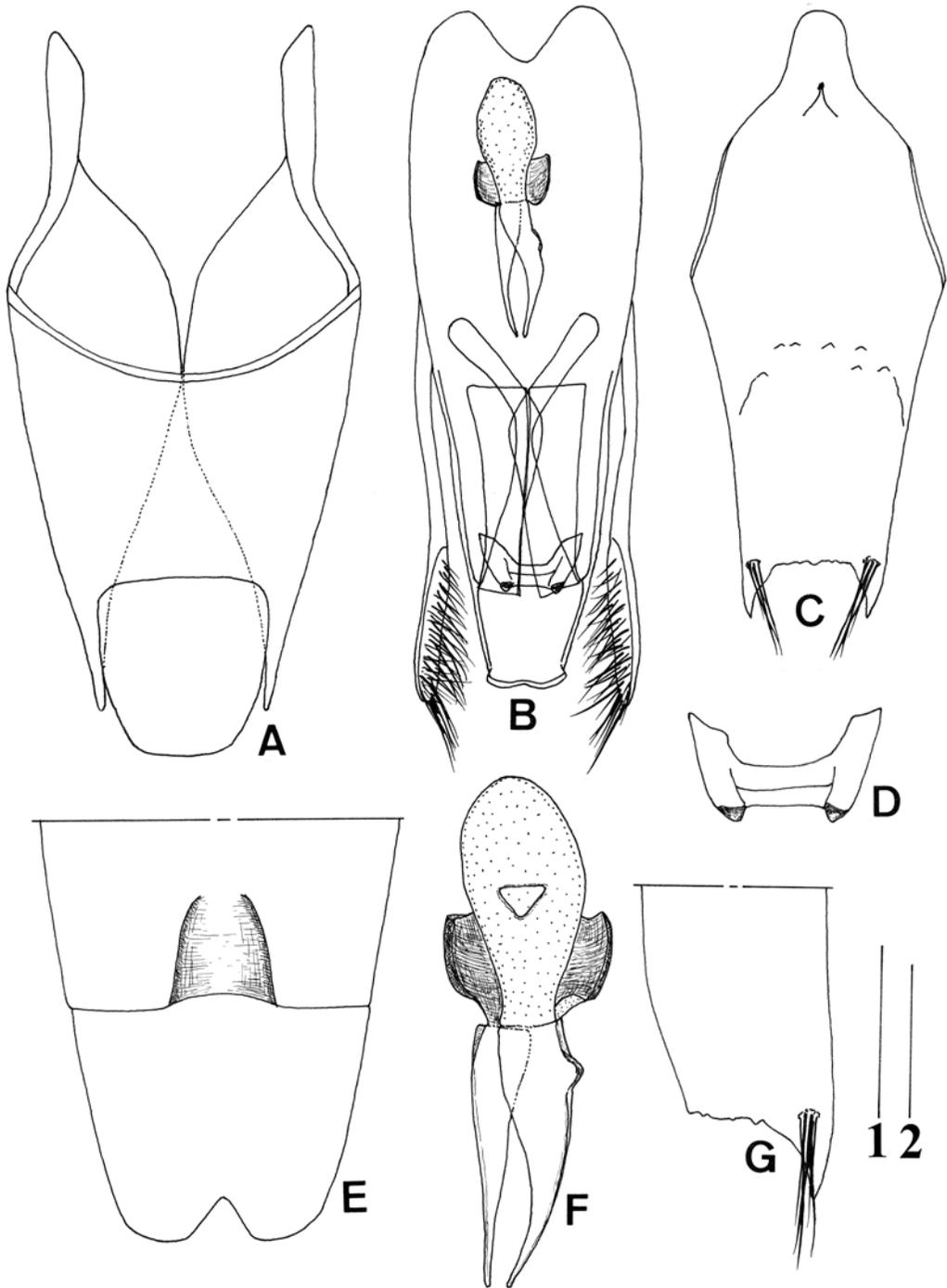


Fig. 27. *Stenus katoi* Naomi & Ito (Shibeche, Hokkaido). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, expulsion hook; E, 7th to 8th ventrites of male; F, endophallic basal tube; G, apex of gonocoxite. Scale 1: 0.2 mm for A–C, G, 0.1 mm for D, F; scale 2: 0.3 mm for E.

emargination; gonocoxites (Fig. 27G) each indistinctly serrate posteriorly, with apicolateral tooth acutely pointed, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus katoi* was recently discovered from Hokkaido by Naomi & Ito (2015b), suggesting that it may be a rare species. It is distributed only in the plains of the eastern part of Hokkaido. The beetles inhabit moist leaf litters of the grasslands and natural forests located near the rivers and lakes.

Remarks. *Stenus katoi* is closely allied to *S. sauteri*, but it is separable from the latter by the legs darker in coloration (reddish brown to dark reddish brown), the 5th and 6th ventrites of male without modification, the aedeagal median lobe a little wider, with its apex very shallowly emarginate (Fig. 27B), and the endophallic expulsion hooks fused to form a wider, transverse sclerite (Fig. 27D).

Etymology. This species was named in honour of Mr. T. Kato (Hokkaido), a collector of the type material of this species.

Stenus sauteri Bernhauer

(Figs. 28A–G, 128F)

Stenus sauteri Bernhauer, 1907: 379; Herman, 2001: 2379; Puthz, 2012a: 156; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♂, paratype 1 ♀ (FMC), type locality: Kanagawa [examined by Puthz in 1967].

Other material examined. [HOKKAIDO]: 1 ♂, Higashi-ohnuma, Nanae, Oshima, 14. vi. 1986, S. Nomura leg.; 2 ♀, same locality, 16. vi. 1986, S. Nomura leg.; 1 ♀, Wakoto, Teshikaga-cho, 29. iv. 2008, T. Kato leg.; 1 ♀, Kushiro Marsh, Tsurui, On'nenai, 27. viii. 1990, M. Sakai leg.; 1 ♀, Bekanbeushi Marsh, Akkeshi-cho, 9. vii. 2004, R. Matsumoto leg.; 1 ♀, Tohro Lake, Kushiro, 27. vii. 1986, S. Nomura leg.; 1 ♀, Tohutsu, Tokoro, Kitami City, 3. vi. 2008, T. Kato leg.; 1 ♀, Otadomari Pond, Rishiri Is., 28. vi. 1986, S. Nomura; 1 ♀, Barato, Ishikari, 8. viii. 1977, N. Nishikawa leg.; 1 ♂1 ♀, Koshimizu, Shari, 28. v. 2013, T. Kato leg. [HONSHU]: 1 ♂, Tonaka River, Yuzawa-cho, Niigata Pref., 13. v. 1995, K. Haga leg.; 1 ♂1 ♀, Uono River, Kawaguchi-cho, Niigata Pref., 30. iv. 1995, K. Haga leg.; 1 ♀, Renge Spa., Niigata Pref., 20. viii. 1986, M. Sato leg.; 2 ♂3 ♀, Estuary of Abe River, Suruga-ku, Shizuoka City, Shizuoka Pref., 16. vii. 2007, T. Shimada leg.; 1 ♀, Mt. Mitake, Tokyo, 26. vi. 1977, M. Tao leg.; 1 ♂, Machida City, Tokyo, 5. iv. 1987, M. Tao leg.; 1 ♂, Segami, Yato, Enkaizan, Yokohama, Kanagawa Pref., 10. xi. 1993, H. Watari leg.; 1 ♀, Edo River, Ichikawa City, Chiba Pref., 11. v. 1991, T. Takeda leg.; 1 ♂, Suiseki-bashi, Noda City, Chiba Pref., 12. xi. 1990, T. Takeda leg.; 2 ♂, Kitasuga, Narita City, Chiba Pref., 25. iii. 1990, T. Takeda leg.; 2 ♂1 ♀, Tega-numa Lake, Sakura City, Chiba Pref., 8. x. 1998, T. Shimada leg. [SHIKOKU]: 3 ♂4 ♀, Akui River, Naka'akui, Tokushima Pref., 15. viii. 1988, M. Sakai leg.; 1 ♂, Shigenobu River, Masaki-cho, Ehime Pref., 25. viii. 1993, I. Okamoto leg.; 1 ♀, Estuary of Shigenobu River, Ehime Pref., 3. viii. 1993, M. Sakai leg. [KYUSHU]: Hazama, Ohita Pref., 5. xi. 1985, A. Miyata leg. [KOREA]: 1 ♀, Yusung, Taejon, Ch'ungh'ongnam-do, Korea, 5. viii. 1997, M. Nishikawa leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu); Korea, Russia.

Redescription. Male and female: Macropterous; body 3.6–5.2 mm (fore body 1.9–2.2 mm) in length, moderately shining, with antennae moderately long, slender. Head and abdomen black; pronotum and elytra dark red; labrum dark red; antennae dark red except for the 1st segments

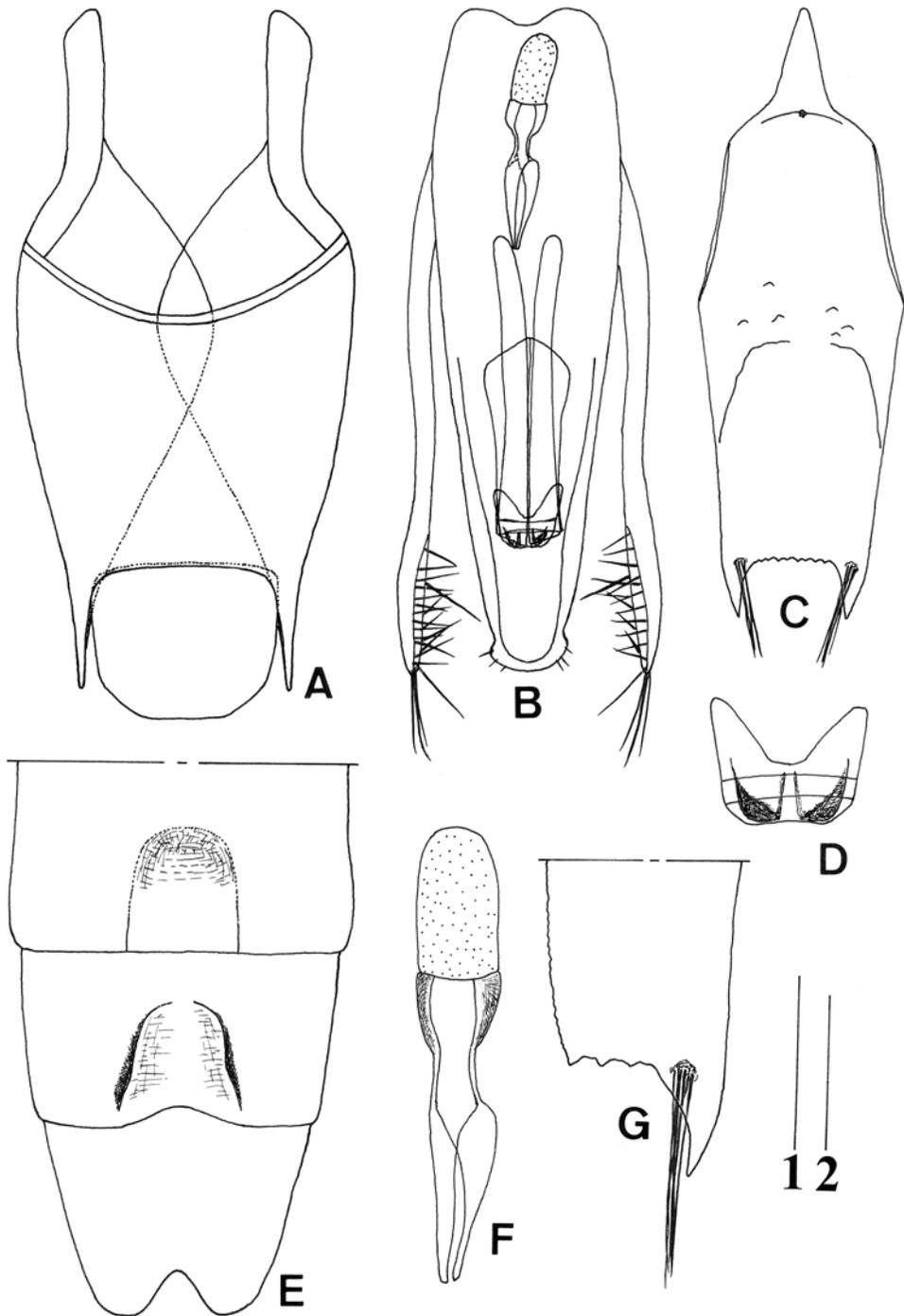


Fig. 28. *Stenus sauteri* Bernhauer (A, C–E, Oshima, Hokkaido; B, F, Noda, Chiba; G, Akui, Tokushima). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, endophallic expulsion hook; E, 6th to 8th ventrites of male; F, basal tube; G, apex of gonocoxite. Scale 1: 0.2 mm for A–C, 0.1 mm for D, F, G; scale 2: 0.3 mm for E.

which are black; legs yellowish brown to reddish brown, with knees infusate. Head concave between eyes, partially, weakly impressed along mesial margins of eyes, with a pair of longitudinal depressions; punctures round to elliptical, dense to very dense, various in size. Pronotum with surface almost even; punctures round, very dense, various in size, distinct. Elytra with surface almost even; punctures round, very dense, distinct. Legs moderately long; tibiae thin; 4th tarsomere simple. Abdomen a little wide, weakly convex dorsally; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, sparse, small and distinct in anterior segments, while punctures in posterior segments sparse, very small and regular. Lateroventrites ventromesial in position, wide, punctate.

Male: Fifth ventrite posteromedially with a semicircular flat area or shallow depression, which is sometimes very weakly emarginate posteriorly; 6th ventrite (Fig. 28E) posteromedially with a bell-shaped, shallow depression; 7th ventrite (Fig. 28E) posteromedially with a subtrapezoidal depression, which is emarginate posteriorly and strongly polished; 8th ventrite (Fig. 28E) posteromedially with a V-shaped emargination; 9th tergum (Fig. 28A) with ventral apophyses moderately long, broad, posterolateral projections very acute; 9th ventrite (Fig. 28C) elongate, weakly serrate posteriorly, with stem elongate-triangular in shape, pointed apically, apicolateral teeth acutely pointed, apicolateral setae moderately long; 10th tergum (Fig. 28A) almost entire. Aedeagal median lobe (Fig. 28B) slender, with a short, fan-shaped apex, which is furnished laterally with 2 or 3 very short setae. Endophallic median longitudinal bands (Fig. 28B) with ventral bands very long, almost straight, dorsal bands rather broad, much shorter than ventral bands; expulsion hooks fused to form a stout sclerite (Fig. 28D); basal tube (Fig. 28B) with basal room elongate-ovoidal, submembranous only in anterior part, comprising posteriorly paired sclerotized shafts, basal constriction distinct, tube body pincer-shaped (Fig. 28F). Parameres (Fig. 28B) weakly sinuous when seen ventrally; apical area long, moderately thick, furnished mesially with 16 to 17 (mostly) short setae, and also most apically with 4 or 5 moderately long setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 28G) each irregularly serrate posteriorly, with apicolateral tooth long, acutely pointed, apicolateral setae long. Spermatheca not observable.

Biology and ecology. *S. sauteri* is a common *Stenus* species in Japan; and it is widely distributed in the plains and low mountainous regions. The beetles usually inhabit moist litter of the grasslands and natural forests located near the rivers, lakes and marshes (e.g., litter of reed growing near the marsh).

Remarks. *Stenus sauteri* is closely allied to *S. katoi*, but it is separable from the latter by the legs righter in coloration (yellowish brown to reddish brown), the 5th and 6th ventrites of male with modifications described above (Fig. 28E); the aedeagal median lobe a little narrower, with its apex almost fan-shaped (Fig. 28B), the expulsion hooks fused to form a narrower, stout sclerite (Fig. 28D).

Etymology. This species was named in honour of Mr. Hans Sauter (München), the collector of the type material of this species.

***Stenus nishikawai* Naomi**
(Figs. 29A–F, 128G)

Stenus nishikawai Naomi, 1988d: 58; Herman, 2001: 2301; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♂ (KUF), Higashi-ohnuma, Nanae, Oshima, Hokkaido,

14. vi. 1986, S. Nomura leg. Paratypes: 1 ♀ (cN), Higashi-ohnuma, Nanae, Oshima, Hokkaido, 14. vi. 1986, S. Nomura leg.; 1 ♀ (cN), same locality, 15. vi. 1986, S. Nomura leg.; 1 ♀ (cN), Mt. Hakken, Hokkaido, 25. v. 1977, N. Nishikawa leg.; 1 ♂ (cN), Nogi-cho, Tochigi Pref., 10. x. 1977, M. Tao leg.

Other material examined. [HOKKAIDO]: 2 ♂9 ♀, Ohnuma, Nanae-cho, Oshima, 9. ix. 1994, T. Kishimoto leg.; 1 ♂, Oikawanai, Taiki, 23. v. 1993, K. Shibata leg. [HONSHU]: 1 ♂, Omine-san, Gunma Pref., 11. iv. 1954.

Distribution. Japan (Hokkaido, Honshu, Kyushu?).

Redescription. Male and female: Macropterous; body 3.5–4.3 mm (fore body 1.9–2.2 mm) in length, moderately shining, with antennae moderately long, slender. Head and abdomen black; pronotum and elytra dark red; labrum and antennae dark red to black; legs yellowish brown to reddish brown, with knees infuscate. Head with a pair of longitudinal depressions; punctures round to elliptical, dense to very dense, distinct. Pronotum with surface weakly uneven; punctures round to elliptical, dense to very dense. Elytra with surface weakly uneven; punctures round, dense to very dense, sometimes two punctures partially fused. Legs moderately long; tarsi with 4th tarsomere simple. Abdomen subcylindrical, moderately convex dorsally; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, moderately dense and rather fine in anterior segments, while punctures in posterior segments sparse, very small and regular. Lateroven- trites horizontal or ventromesial in position, relatively narrow, punctate.

Male: Legs with femora relatively thick; 4th ventrite posteromedially with a medium-sized, flat area; 5th ventrite (Fig. 29A) posteromedially with a semicircular, flat area, which is furnished with a line of setae along each lateral side; 6th ventrite (Fig. 29A) posteromedially with a large, semicircular depression, which is very weakly emarginate posteriorly and furnished with a line of long to very long setae at each lateral side; 7th ventrite (Fig. 29A) posteromedially with a very large, deep concavity, which is largely, arcuately emarginate posteriorly and is also furnished laterally with a line of moderately long setae; 8th ventrite (Fig. 29A) posteromedially with a V-shaped emargination, and anteromedially with a large depression, which becomes broader anteriorly (to the extent to fit the breadth of posteromedian emargination of 7th ventrite) and also becomes a little deeper anteriorly; 9th tergum (Fig. 29D) with ventral apophyses short to moderately long, posterolateral projections long, very acute; 9th ventrite (Fig. 29C) elongate, weakly serrate posteriorly, with stem elongate-hexagonal in shape, basilateral emarginations relatively small, apicolateral teeth short, acutely pointed, apicolateral setae long; 10th tergum (Fig. 29D) very weakly emarginate posteromedially. Aedeagal median lobe (Fig. 29B) strongly bulbous basally, then strongly narrowed apically, with its apex almost truncate or weakly arcuate, very weakly swollen laterally, and also furnished with 2 or 3 short setae at each side. Endophallic median longitudinal bands (Fig. 29B) with ventral bands each moderately long, pointed apically, dorsal bands each short, rounded apically; lateral longitudinal bands (Fig. 29B) very thin; expulsion hooks (Fig. 29B) connected by posteromesial corner, each short, almost rounded anteriorly; basal tube (Fig. 29B) with basal room ovoidal, submembranous, fringed posterolaterally with paired short shafts, tube body baculiform, asymmetrically bifurcate at apex, ventrally with accessory structure which is thin and pincer-like (Fig. 29F). Parameres (Fig. 29B) relatively short; apical area distinctly swollen mesially, furnished mesially with 21 to 23 moderately long setae, and also most apically with 3 or 4 long setae which turn posteriorly.

Female: Eighth ventrite obtusely angulate posteromedially; gonocoxites (Fig. 29E) each indistinctly serrate posteriorly, with apicolateral tooth long, acutely pointed, apicolateral setae long. Spermatheca not observable.

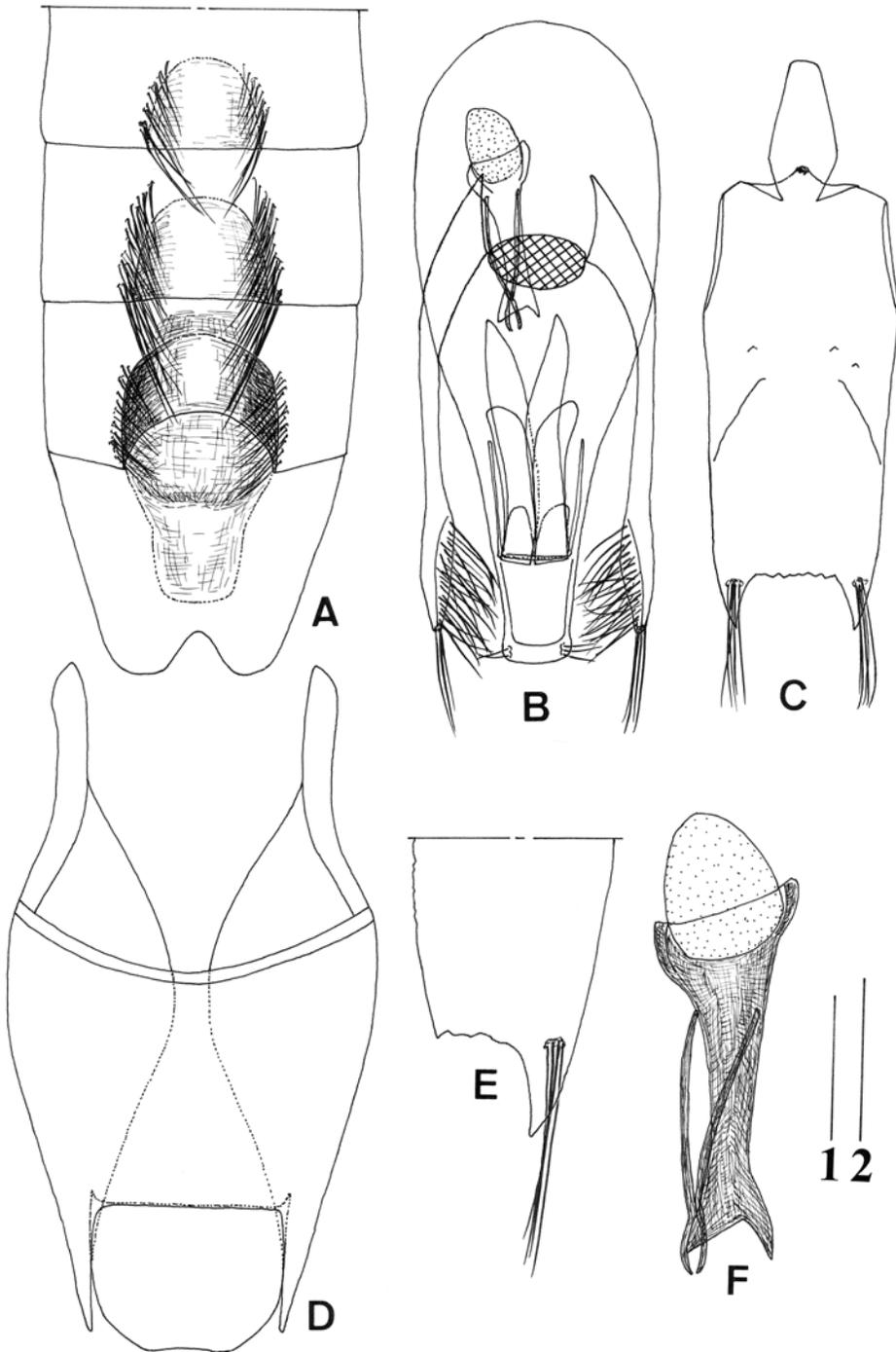


Fig. 29. *Stenus nishikawai* Naomi (Nanae, Hokkaido). A, 5th to 8th ventrites of male; B, aedeagus; C, 9th ventrite of male; D, 9th and 10th terga of male; E, apex of gonocoxite; F, endophallic basal tube. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B–D, 0.1 mm for E, F.

Biology and ecology. *Stenus nishikawai* is distributed in the plains and low mountainous regions. No ecological data are obtained, but the collecting records suggest that the beetles are litter inhabitants.

Remarks. *Stenus nishikawai* is allied to *S. amurensis*, but it is separable from the latter by the legs lighter in coloration (yellowish brown to reddish brown), the hind femur without modification in male, the 7th ventrite of male with posteromedian concavity deeper and more deeply emarginate (Fig. 29A), the 8th ventrite of male with posteromedian emargination narrower (Fig. 29A), and the endophallic basal tube body asymmetrically bifurcate apically (Fig. 29F).

Etymology. This species was named in honour of Mr. Naomi Nishikawa (Sapporo), a collector of the type material of this species.

***Stenus amurensis* Eppelsheim**
(Figs. 30A–G, 128H)

Stenus amurensis Eppelsheim, 1886: 43; Naomi & Puthz, 1994a: 219; Naomi & Puthz, 1996: 160; Herman, 2001: 2055; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♀ (NHMW), type locality: Blagowestschensk [examined by Puthz in 1965].

Other material examined. [HOKKAIDO]: 6♂2♀, Chitose Lake, Chitose City, 6. vi. 1999, M. Maruyama leg.; 1♂, Echigo Lake, Ebetsu City, 29. iv. 1999, M. Maruyama leg.; 3♀, same locality, 2. vi. 1999, M. Maruyama leg.; 1♂, same locality, 23. vi. 1993, K. Miyashita leg.; 1♂1♀, Kimonto Pond, Taijyu-machi, 23. vi. 1993, K. Miyashita leg.; 2♀, Hyotan Pond, Akan N. P., 4. vii. 1986, S. Nomura leg.; 1♂1♀, Otadomari-numa, Rishiri Is., 25. viii. 1993, T. Kishimoto leg.; 1♂, Kirakotan, Kushiro Moor, 25. viii. 1990, M. Sato leg.; 2♂, Oshimizu-cho, Nikuru-numa, 27. vii. 1993, K. Haga leg.

Distribution. Japan (Hokkaido); China, Mongolia, Russia, Kuriles (Iturup).

Redescription. Male and female: Macropterous; body 2.9–4.0 mm (fore body 1.6–2.1 mm) in length, weakly to moderately shining, with antennae relatively short. Body black; labrum black; antennae with basal and apical segments black, middle segments dark red; legs dark red to black. Head with a pair of longitudinal depressions; punctures elliptical, very dense, regular. Pronotum with surface weakly uneven; punctures round, very dense, various in size. Elytra large, well angulate at humeri, with surface weakly uneven; punctures round, very dense, distinct. Legs relatively short; tarsi with 4th tarsomere simple. Abdomen subcylindrical, weakly narrowed posteriorly; 3rd to 6th (or 7th) terga each with 3 basal longitudinal keels; punctures round, sparse and small in anterior segments, while in posterior segments punctures sparse, very small and regular. Lateroventrites horizontal or ventromesial in position, punctate.

Male: Legs with femora thick; hind femur with a small tooth at the posterior side of the base; 5th ventrite posteromedially with a small, semicircular flat area, which is furnished with several long setae at each lateral side; 6th ventrite (Fig. 30E) posteromedially with a large, semicircular flat area, which is very shallowly emarginate posteriorly and furnished with a line of long setae along each lateral side; 7th ventrite (Fig. 30E) posteromedially with a large, deep depression, which is emarginate posteriorly, distinctly ridged laterally, and also furnished laterally with a line of setae; 8th ventrite (Fig. 30E) posteromedially with a wide, V-shaped emargination, and medially with a large depression which becomes broader and a little deeper anteriorly; 9th tergum (Fig. 30A) with ventral apophyses short, posterolateral projections long, very acute; 9th ventrite

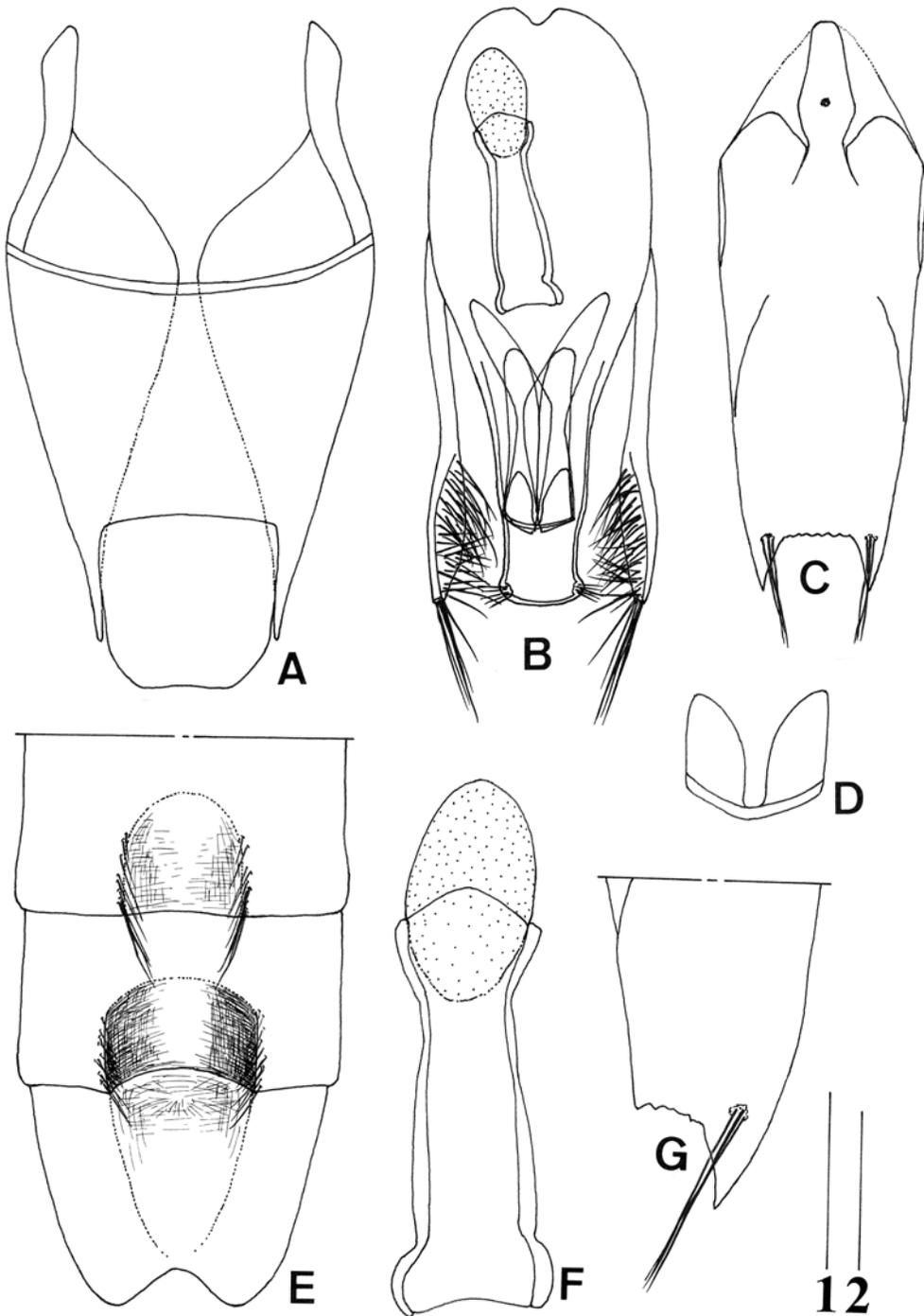


Fig. 30. *Stenus amurensis* Eppelsheim (A, C, E, G, Taijyu, Hokkaido; B, D, F, Ebetsu, Hokkaido). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, endophallic expulsion hook; E, 6th to 8th ventrites of male; F, basal tube; G, apex of gonocoxite. Scale 1: 0.2 mm for A–C, 0.1 mm for D, F, G; scale 2: 0.3 mm for E.

(Fig. 30C) elongate, weakly serrate posteriorly, with stem elongate-hexagonal in shape, basilateral emarginations narrow, basilateral projections almost rounded anteriorly, apicolateral teeth acutely pointed, apicolateral setae moderately long; 10th tergum (Fig. 30A) very weakly emarginate posteromedially. Aedeagal median lobe (Fig. 30B) strongly bulbous basally, and then strongly narrowed apically, its apex nearly short fan-shaped, with 4 or 5 short setae at each lateral corner. Endophallic median longitudinal bands (Fig. 30B) relatively wide, with ventral bands each moderately long, curved laterally near the middle, ventral bands each short, straight; expulsion hooks (Fig. 30B) connected by posteromesial corner, each short, obtusely angulate anteriorly (Fig. 30D); basal tube (Fig. 30B) with basal room ovoidal, submembranous, franked posterolaterally with paired short shafts, tube body baculiform, thick, weakly thickened apically, swollen laterally at apex (Fig. 30F). Parameres (Fig. 30B) each with stem thin; apical area long, distinctly widened dorsoventrally, furnished mesially with 35 to 45 moderately long, dense setae, and also most apically with 5 or 6 long setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 30G) each irregularly serrate posteriorly, with apicolateral tooth large, acutely pointed, apicolateral setae long to very long. Spermatheca not observable.

Biology and ecology. *Stenus amurensis* is distributed in the plains and low mountainous regions in Japan. The beetle inhabits moist litter heaped at the grasslands and natural forests located near the lakes and marshes, and also wet litter in the vicinity of standing waters.

Remarks. Naomi & Puthz (1994a) tentatively recorded *S. amurensis* from Japan (Hokkaido), based on two female specimens, because they did not examine the males. Naomi & Puthz (1996) confirmed that those *Stenus* specimens belong to *S. amurensis* when they additionally examined its male specimens from Hokkaido.

Stenus amurensis is allied to *S. nishikawai*, but it is separable from the latter by the legs darker in coloration (dark red to black), the hind femur of male with a small tooth at the posterior side of the base, the 7th ventrite of male with posteromedian concavity shallower and more shallowly emarginate (Fig. 30E), the 8th ventrite of male with posteromedian emargination broader (Fig. 30E), and the endophallic basal tube body swollen laterally at apex (Fig. 30F).

Stenus distans Sharp

(Figs. 31A–G, 128I)

Stenus distans Sharp, 1889: 327; Herman, 2001: 2163; Naomi & Puthz, 2013: 137.

Stenus beppuensis Bernhauer, 1939b: 151; Puthz, 1974: 435.

Type material examined. Holotype of *S. distans*: ♀ (NHML), type locality: Nagasaki [examined by Puthz in 1965]. Holotype of *S. beppuensis*: ♀ (FMC), type locality: Beppu [examined by Puthz in 1967].

Other material examined. [HOKKAIDO]: 1 ♂, Abashiri, 1. viii. 1954, T. Nakane leg.; 1 ♀, Memanbatsu-cho, 2. ix. 1992, T. Kato leg.; 1 ♀, Tomiiso, Teuri Is., 9. vii. 2001, T. Shimada leg. [HONSHU]: 1 ♀, Sarukura, Mt. Chokai, Akita Pref., 19. vi. 1980, S. Naomi leg.; 1 ♀, Ochinome, Sakata City, Yamagata Pref., 3. x. 1992, S. Nomura leg.; 1 ♀, Sanpoku-machi, Niigata Pref., 2. vii. 1985, S. Nomura leg.; 2 ♂, Fukumizu, Hakui City, Ishikawa Pref., 20. x. 1995, T. Kishimoto leg.; 1 ♀, Chikuma River, Ueda City, Nagano Pref., 19. ix. 1991, K. Sugiyama leg.; 1 ♂, Mt. Tomi, Chiba Pref., 4. x. 1970, H. Yamazaki leg.; 7 ♂ 2 ♀, Karo Sand-dune, Tottori Pref., 26. xi. 1991, N. Tsurusaki leg.; 1 ♂, Mt. Takahara, Okayama Pref., 6. ix. 1981, K. Yoshihara leg. [SHI-

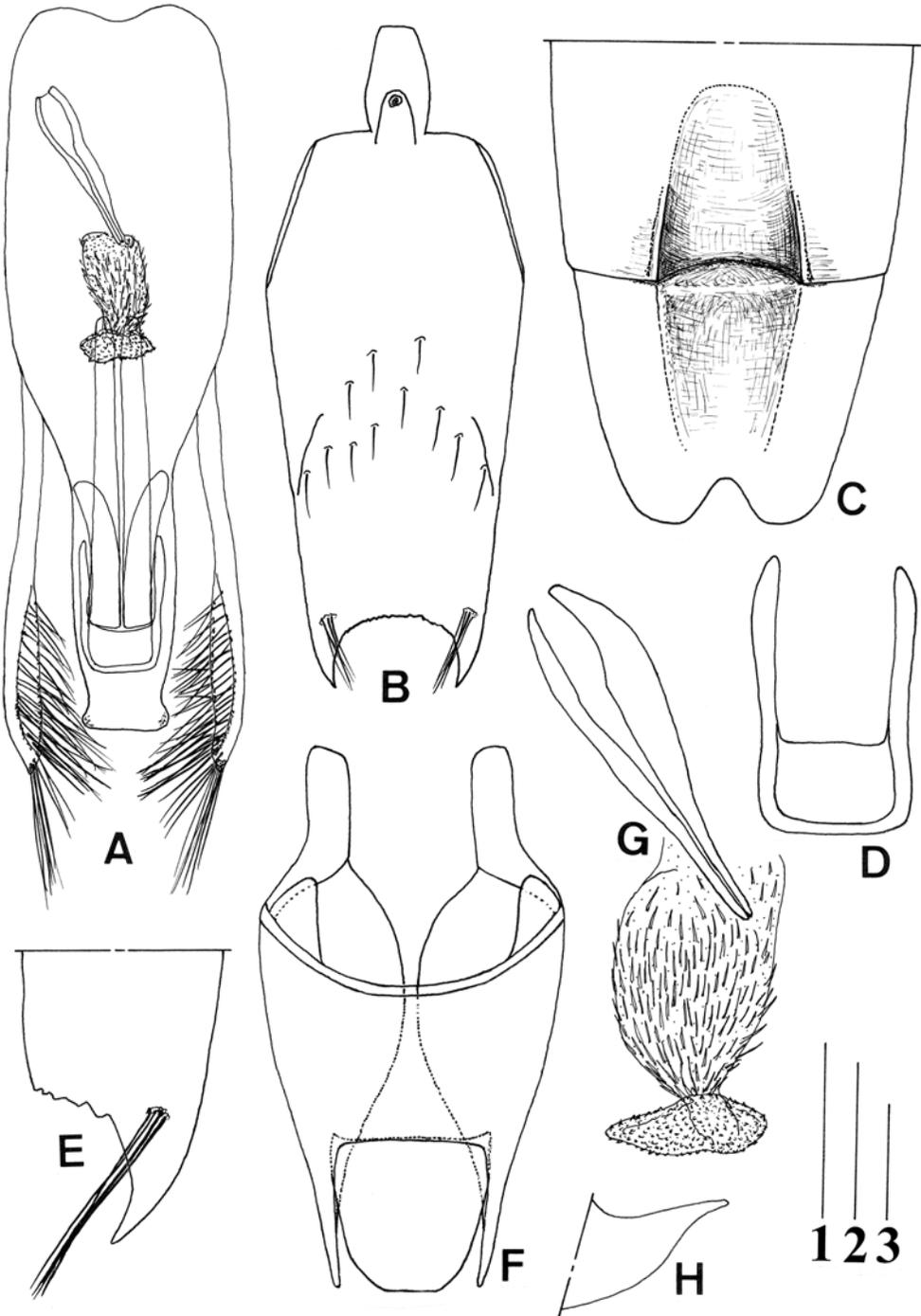


Fig. 31. *Stenus distans* Sharp (A, Okino-erabu, Kagoshima; B, D, G, Takahara, Okayama; C, E, Karo, Tottori; F, H, Asami, Amami Is.). A, aedeagus; B, 9th ventrite of male; C, 7th to 8th ventrites of male; D, endophallic expulsion hook; E, apex of gonocoxite; F, 9th and 10th terga of male; G, endophallic structures; H, apex of the posterolateral projection of 9th tergum (lateral view). Scale 1: 0.2 mm for A, B, D, E, G; scale 2: 0.3 mm for C; scale 3: 0.2 mm for F, H.

KOKU]: 1♂, Mt. Ishizuchi, Ehime Pref., 1. viii. 1977, S. Naomi leg. [KYUSHU]: 1♀, Akagawa, Mt. Kujyu, Ohita Pref., 13. viii. 1983, H. Harada leg.; 1♀, Hazama, Ohita Pref., 5. xi. 1985, A. Miyata leg. [NANSEI ISLS.]: 1♀, Kuchi Is., Tokara, Kagoshima Pref., 1. vii. 1969, H. Makihara leg.; 1♂, Asani, Amami Is., Kagoshima Pref., 5. v. 1966, T. Shibata leg.; 1♀, Akirigami River, Toku Is., Kagoshima Pref., 3. v. 1988, S. Nomura leg.; 1♂1♀, Okino-erabu Is., Kagoshima Pref., 24. iii. 1966, T. Ito leg.; 2♀, same locality, 25. iii. 1966, T. Ito leg.; 1♀, same locality, 25. iii. 1966, H. Nomura leg. [CHINA]: 1♀ (cS), China, border Shaanxi-Sichuan Daba Shan pass 20km SSE Zhenping, 1700–1800 m, 9. vii. 2001, A. Smetana leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Teuri Is., Kuchi Is., Amami Is., Toku Is., Okino-erabu Is.); Korea, China.

Redescription. Male and female: Macropterous; body 3.9–5.1 mm (fore-body 2.0–2.3 mm) in length, dull to weakly shining, with antennae moderately long and thin. Body black, with metallic reflection; labrum black; antennae with 1st to 2nd segments black, 3rd to 11th segments reddish brown; legs yellowish brown to reddish brown, with knees more or less infusate. Head with a pair of broad, longitudinal depressions; punctures round, very dense, distinct. Pronotum with surface weakly uneven, with an indistinct median longitudinal depression; punctures round, very dense, somewhat rough. Elytra with surface almost smooth to weakly uneven; punctures round to elliptical, very dense, distinct. Legs relatively long; tarsi with 4th tarsomere simple. Abdomen subcylindrical, well convex above; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, dense, small and distinct in anterior segments, while in posterior segments punctures sparse to moderately dense, very small, regular and distinct; interstices between punctures smooth and shining. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Legs with femora thick; mid tibia with a small tooth at the apicomeresial corner; 4th and 5th ventrites each posteromedially with a very shallow emargination; 6th ventrite posteromedially with a large flat area, which is very shallowly emarginate; 7th ventrite (Fig. 31C) medially with an large, elongate depression, which becomes deeper posteriorly, is arcuately emarginate posteriorly, and distinctly ridged laterally in its posterior 1/2; 8th ventrite (Fig. 31C) posteromedially with a V-shaped emargination, and medially with a large, elongate shallow depression which becomes broader anteriorly; 9th tergum (Fig. 31F) with apicolateral flaps subtriangular, ventral apophyses rather thick, posterolateral projections long, acute, curved dorsally when seen laterally (Fig. 31H); 9th ventrite (Fig. 31B) very finely serrate and also arcuately emarginate posteriorly, with stem almost elongate-hexagonal in shape, apicolateral teeth acute, apicolateral setae short; 10th tergum (Fig. 31F) small, entire. Aedeagal median lobe (Fig. 31A) bulbous basally, strongly narrowed behind the middle, weakly constricted just before the apex, which is truncate. Endophallic median longitudinal bands (Fig. 31A) with ventral bands each very long, slender, straight, dorsal bands each short, weakly curved laterally before the middle; expulsion hooks fused to form a gate-like sclerite with long anterolateral apophyses (Fig. 31D); basal tube (Fig. 31A) simple, with tube body simply attenuate; inner sac (Fig. 31G) with its anterior sac covered densely with thin setae. Parameres (Fig. 31A) each with apical area large, very long, broadened almost dorsoventrally, furnished with 38 to 39 moderately long to long setae along its mesial margin, and also most apically with 7 to 8 long setae.

Female: Eighth ventrite posteromedially with a very small notch; gonocoxites (Fig. 31E) each irregularly serrate posteriorly, with apicolateral tooth large, acutely pointed, apicolateral setae long. Spermatheca not observable.

Biology and ecology. *Stenus distans* is widely distributed in Japan from Hokkaido through

Honshu and Shikoku to Kyushu and Nansei Isls. The beetles inhabit litter in the natural forests of plains and low and high mountainous regions.

Remarks. *Stenus distans* is closely allied to *S. disterminus*, but it is clearly separable from the latter by the 8th ventrite of male with emargination smaller and narrower (Fig. 31C), the aedeagal median lobe narrower behind the middle, with its simply truncate apex (Fig. 31A), the endophallic expulsion hooks narrower (Fig. 31D), and the basal tube body simply attenuate apically (Fig. 31G).

***Stenus disterminus* Puthz**

(Figs. 32A–G, 128J)

Stenus disterminus Puthz, 1993b: 179; Herman, 2001: 2163; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♂ (CBM), Mt. Kiyosumi, Amatsu-kominato, Chiba Pref., 9. vi. 1991, T. Takeda leg. Paratypes: 1 ♀ (cN), Mt. Kiyosumi, Amatsu-kominato-machi, Chiba Pref., 14. vii. 1990, T. Takeda leg.; 2 ♀ (cN), Yomogi, Mt. Kiyosumi, Chiba Pref., 13. v. 1990, T. Takeda leg.

Other material examined. [HONSHU]: 1 ♂, Mt. Daifuku, Ichihara City, Chiba Pref., 19. vi. 1983, H. Yamazaki leg.; 2 ♀, Mt. Takago, Kimitsu City, Chiba Pref., 7. ix. 1996, S. Naomi leg.; 2 ♂, same locality, 22. ix. 1997, S. Naomi leg.; 1 ♀, same locality, 7. vi. 1998, S. Naomi leg.; 1 ♀, same locality, 25. x. 1998, S. Naomi leg.; 1 ♀, same locality, 13. v. 2000, S. Naomi leg.; 1 ♀, same locality, 15. v. 2000, S. Naomi leg.; 1 ♂, same locality, 22. v. 2000, S. Naomi leg.; 1 ♂ 2 ♀, Umagaeshi, Gotenba City, Shizuoka Pref., 10. x. 1991, S. Nomura leg.; 1 ♂, Yamabushi Pass, Doshi-mura, Yamanashi Pref., 18. x. 2000, S. Nomura leg.

Distribution. Japan (Honshu).

Redescription. Male and female: Brachypterous; body 4.5–5.2 mm (fore-body 2.1–2.3 mm) in length, moderately shining, with antennae short. Body black, with metallic reflection; labrum black; antennae reddish brown except for 1st black segment; legs yellowish brown to reddish brown, with knees infusate. Head with a pair of wide, longitudinal depressions; punctures round to elliptical, dense to very dense, various in size. Pronotum with surface weakly uneven, with an indistinct median longitudinal depression; punctures round, very dense, somewhat rough, distinct. Elytra with surface very weakly uneven; punctures round to elliptical, very dense, medium to large in size. Legs relatively long; tarsi thin, with 4th tarsomere simple. Abdomen subcylindrical, well convex above; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, dense, small and distinct in anterior segments, while punctures in posterior segments moderately dense, very small and regular; interstices between punctures smooth, shining. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Sixth ventrite posteromedially with a large, semicircular flat area; 7th ventrite (Fig. 32A) posteromedially with a large, subtrapezoidal depression, which is arcuately emarginate posteriorly, and weakly ridged laterally; 8th ventrite (Fig. 32A) posteromedially with a wide V-shaped emargination, and anteromedially with a large, elongate flat area which becomes broader anteriorly; 9th tergum (Fig. 32B) with apicolateral flaps subtriangular, ventral apophyses moderately long, very thick, posterolateral projections long, very acute; 9th ventrite (Fig. 32D) elongate, irregularly serrate posteriorly, with stem elongate, apicolateral teeth acutely pointed, apicolateral setae short; 10th tergum (Fig. 32B) short, very weakly emarginate posteromedially. Aedeagal median lobe (Fig. 32E) elongate, narrowed apically behind the middle, truncate at

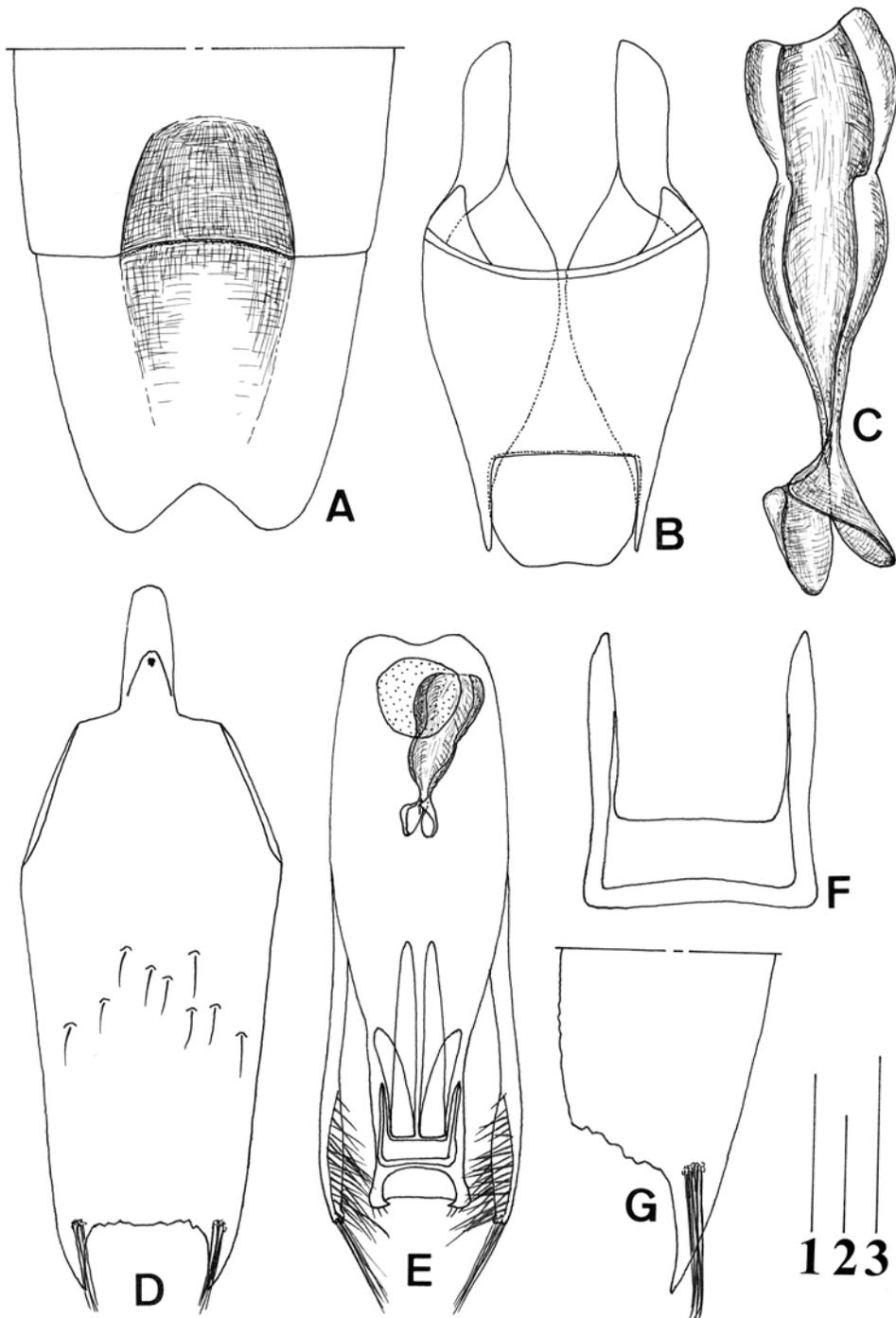


Fig. 32. *Stenus disterminus* Puthz (A–F, Takago, Chiba; G, Gotenba, Shizuoka). A, 7th to 8th ventrites of male; B, 9th and 10th terga of male; C, endophallic basal tube; D, 9th ventrite of male; E, aedeagus; F, expulsion hook; G, apex of gonocoxite. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B, E; scale 3: 0.1 mm for C, F, G, 0.2 mm for D.

apex, with ventral side of apex widely excavate posteriorly, flanked laterally with sclerotized walls which are each acutely pointed apicomediaally and furnished apically with 2 or 3 short setae. Endophallic median longitudinal bands (Fig. 32E) with ventral bands moderately long, straight, ventral bands short, diverging anteriorly; expulsion hooks large, fused to form a gate-like sclerite (Fig. 32F); basal tube (Fig. 32E) gourd in shape, with a pair of unique apical flaps which together form a nearly funnel-shaped structure (Fig. 32C). Parameres (Fig. 32E) each with apical area long, wide, furnished with 27 to 31 moderately long setae along its mesial margin, and also most apically with 6 to 7 long setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 32G) each irregularly serrate posteriorly, with apicolateral tooth long, acutely pointed, apicolateral setae short. Spermatheca not observable.

Biology and ecology. *Stenus disterminus* is distributed in the mountainous regions in central Honshu. The beetles inhabit leaf litter in the natural forests. It was repeatedly observed in the natural forests at the foots of Mt. Takago, Chiba that the beetles slowly walk around on the moist stones (on which mosses sometimes grow) existing along the mountain trails.

Remarks. *Stenus disterminus* is closely allied to *S. distans*, but it is separable from the latter by the 8th ventrite of male with V-shaped emargination larger and broader (Fig. 32A), the aedeagal median lobe broader behind the middle, with the ventral side of apex broadly excavate posteromedially (Fig. 32E), the endophallic expulsion hooks broader (Fig. 32F), and the basal tube body gourd-shaped, apically with a pair of unique flaps (Fig. 32C).

***Stenus calliceps* Bernhauer**
(Figs. 33A–G, 128K)

Stenus calliceps Bernhauer, 1916: 28; Herman, 2001: 2104; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♀ (FMC), type locality: Kiautschou [examined by Puthz in 1970].

Other material examined. [HONSHU]: 1 ♀, Hiogo; 1 ♂1 ♀ (FMC), 1 ♂ (cP), Okayama, Japan. Sauter. [KYUSHU]: 1 ♀, Sata, 21. v. 1959, K. Sawada leg. [NANSEI-ISLS]: 1 ♀, Tokara-Takara Is., Kagoshima Pref., 25. iii. 1992, S. Nomura leg. (See Puthz [1974: 436] regarding the collecting data of *S. calliceps* from Hiogo and Kagoshima.) [CHINA]: 1 ♂ (cS), China, Gansu, Dalijia Shan, 46 km W Linia, 2980 m, 10. vii. 1994, A. Smetana leg.

Distribution. Japan (Honshu, Kyushu; Nansei Is.); Korea, China.

Redescription. Male and female: Macropterous; body 5.0–5.2 mm (fore-body 2.3–2.4 mm) in length, robust, dull to weakly shining. Body black, with metallic reflection; labrum black; antennae with 1st and 2nd segments black, 3rd to 11th segments reddish brown; legs reddish brown, with knees infuscate. Head concave between eyes, with a pair of distinct longitudinal depressions; punctures round to elliptical, very dense, various in size, distinct. Pronotum with surface weakly uneven, with an indistinct median longitudinal depression; punctures very dense, somewhat rough, distinct. Elytra with surface weakly uneven; punctures round to elliptical, very dense, distinct. Legs relatively long; 4th tarsomere simple. Abdomen thick, subparallel-sided; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, dense, small and distinct in anterior segments, while punctures in posterior segments dense, very small and regular; interstices between punctures covered with mesh-like microsculpture. Lateroventrites dorsomesial or horizontal in position, relatively narrow, punctate.

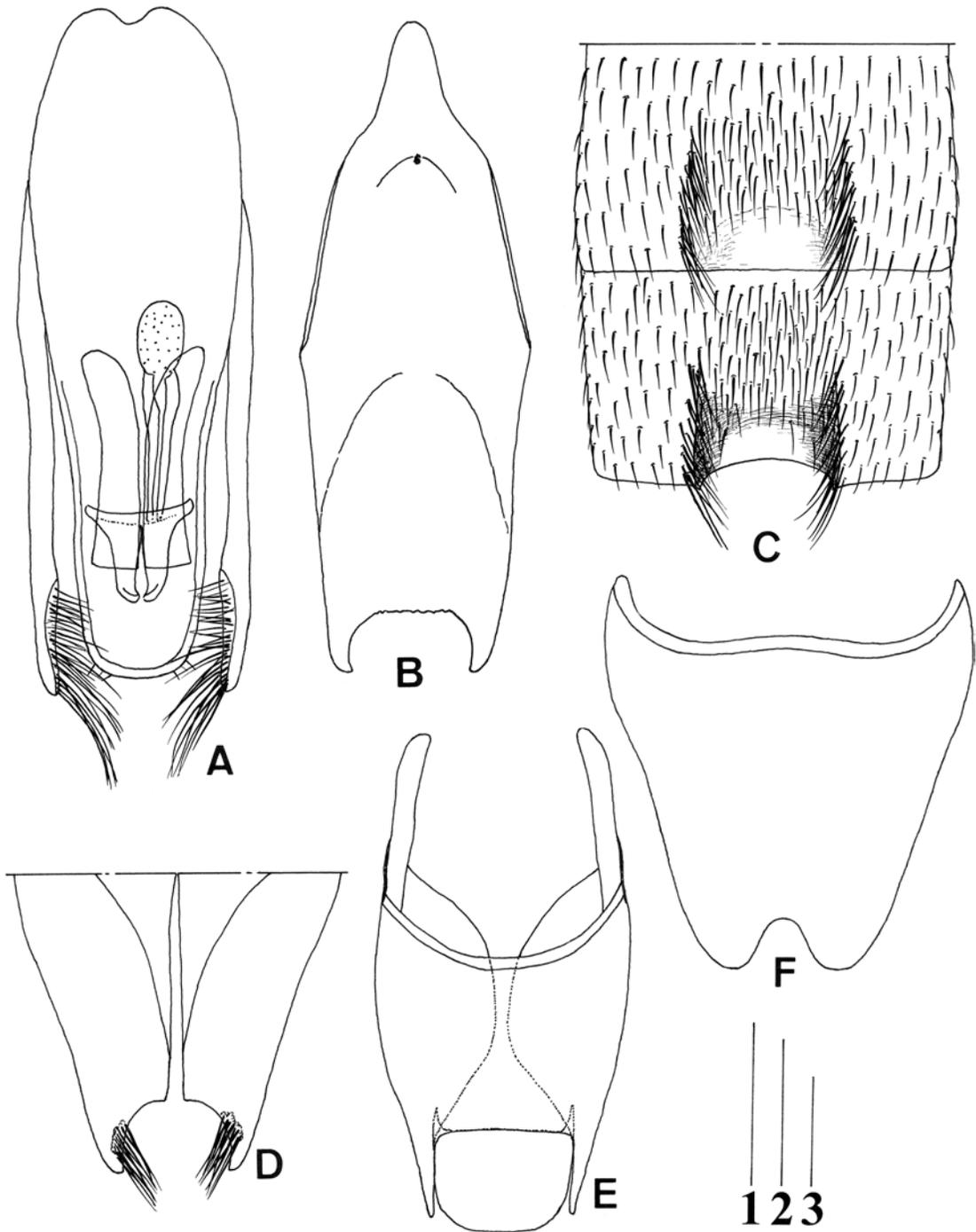


Fig. 33. *Stenus calliceps* Bernhauer (A–C, E, F, Okayama; D, Tokara-Takara Is., Kagoshima). A, aedeagus; B, 9th ventrite of male; C, 6th to 7th ventrites of male; D, apices of gonocoxites; E, 9th and 10th terga of male; F, 8th ventrite of male. Scale 1: 0.2 mm for A, B, D; scale 2: 0.3 mm for C; scale 3: 0.2 mm for E, F.

Male: Fourth and 5th ventrites each posteromedially with subtriangular glabrous flat area; 6th ventrite (Fig. 33C) posteromedially with a semicircular flat area, which is furnished laterally with a line of yellowish, long setae; 7th ventrite (Fig. 33C) posteromedially with a subtrapezoidal depression, which is moderately emarginate posteriorly, distinctly ridged laterally, and also furnished laterally with a line of yellowish, long; 8th ventrite (Fig. 33F) posteromedially with a relatively small emargination; 9th tergum (Fig. 33E) with ventral apophyses long, straight, posterolateral projections long, very acute; 9th ventrite (Fig. 33B) elongate, finely serrate posteriorly, with stem elongate, apicolateral teeth thick, weakly incurved apically; 10th tergum (Fig. 33E) small, entire. Aedeagal median lobe (Fig. 33A) weakly constricted near the middle but relatively thick behind the middle, with the apex rounded, furnished laterally with 3 pairs of very short setae. Endophallic median longitudinal bands (Fig. 33A) relatively short, thick; expulsion hooks (Fig. 33A) connected by anteromesial corner, each hook with anterior area projecting laterally; basal tube (Fig. 33A) simple, with basal room ovoidal in shape, tube body baculiform, weakly swollen basally. Parameres (Fig. 33A) slender, almost straight, each rounded apically; apical area furnished mesially and also apically with 32 to 33 dense setae of various length.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 33D) each hardly serrate posteriorly, with apicolateral tooth moderately thick, apicolateral setae short. Spermatheca not observable.

Biology and ecology. *S. calliceps* is a very rare *Stenus* species in Japan; and only a few beetles are collected at present. No ecological data are obtained, but the collecting records suggest that the beetles are litter inhabitants.

Remarks. *Stenus calliceps* was first recorded from Japan (Okayama, Hiogo and Kagoshima [Cape Sata]) by Puthz (1974). This species is allied to *S. distans* and *S. disterrimus*, but this species is clearly separable from the latter two species by the f body somewhat robust in structure (Fig. 128K), the abdomen with interstices between punctures distinctly covered with mesh-like microsculpture, and the aedeagal median lobe rounded apically (Fig. 33A). Note that morphology of the apicolateral flaps of 9th tergum of male is not described here because the flaps are difficult to observe in the specimen examined.

Stenus formosanus Benick

(Fig. 34A–F, 128L)

Stenus formosanus Benick, 1914: 285; Herman, 2001: 2184; Naomi & Puthz, 2013: 137.

Type material examined. Holotype: ♂ (DEIM), type locality: Hoozan, Taiwan [examined by Puthz in 1966].

Other material examined. [NANSEI ISLS.]: 1 ♂, Kawahara, Sonai, Yonaguni Is., Okinawa Pref., 2. iii. 2007, I. Tanaka leg. [VIETNAM]: 1 ♂, Tam Dao, Tonkin.

Distribution. Japan (Nansei Isls.: Yonaguni Is.); Taiwan, China, Vietnam.

Redescription. Male: Macropterous; body 6.0–6.5 mm (fore-body 2.8–2.9 mm) in length, moderately shining, with antennae moderately long, elytra large, abdomen slender, cylindrical. Body black, with metallic reflection; labrum black; antennae reddish brown; legs yellowish brown to reddish brown, with knees infuscate. Head deeply concave, distinctly impressed even just inside mesial margins of eyes, with a pair of distinct longitudinal depressions; punctures round to elliptical, very dense, somewhat rough. Pronotum well convex above, with surface weakly uneven, with an indistinct median longitudinal depression; punctures very dense, rough,

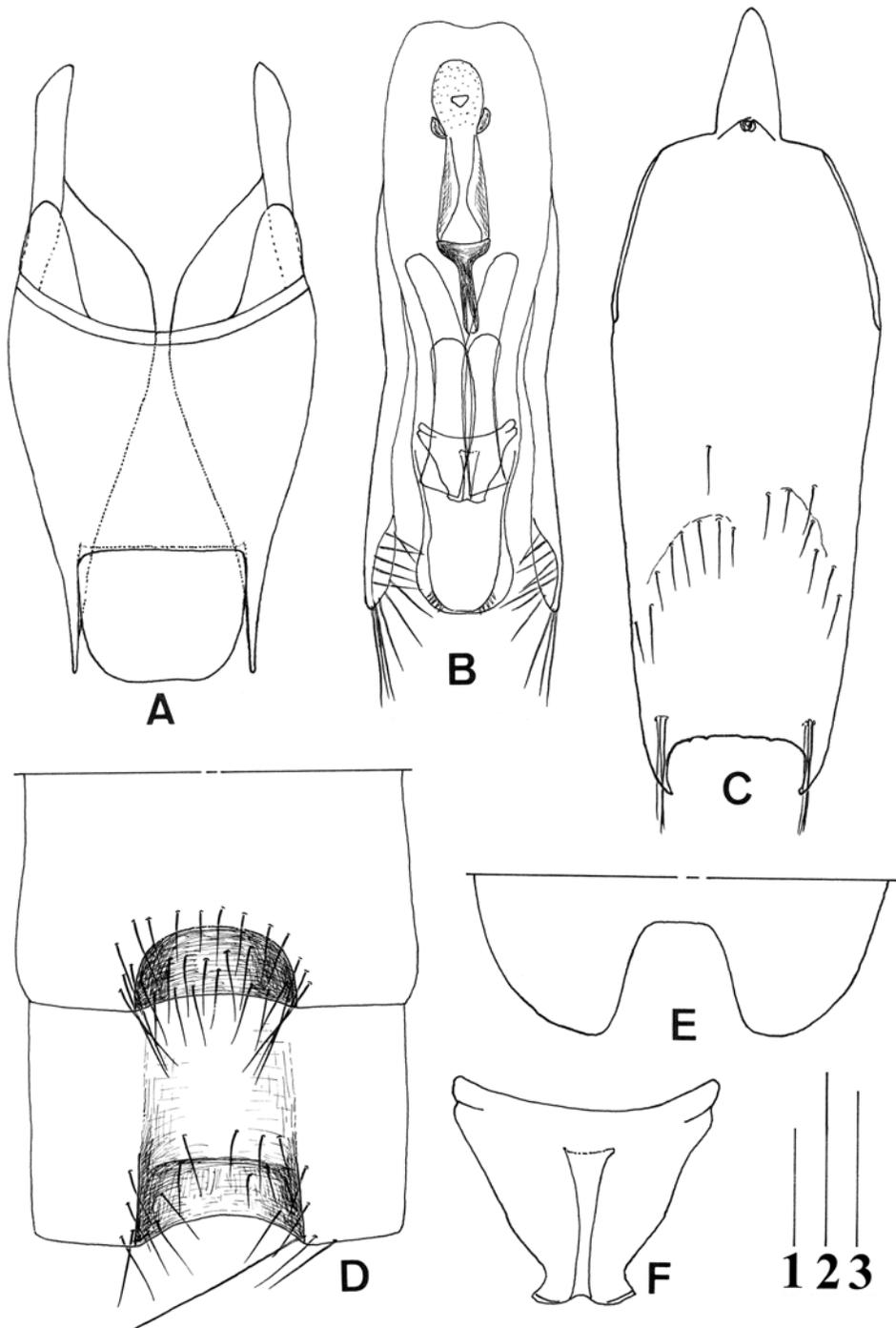


Fig. 34. *Stenus formosanus* Benick (A, C, Tam Dao, Tonkin; B, D–F, Sonai, Yonaguni Is.). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, 6th to 7th ventrites of male; E, apex of 8th ventrite of male; F, endophallic expulsion hook. Scale 1: 0.2 mm for A, B; scale 2: 0.2 mm for C, 0.1 mm for E, F; scale 3: 0.3 mm for D.

2 or more punctures sometimes putting together and running transversely on the central to posteromedian part. Elytra with surface weakly uneven; punctures round to elliptical, very dense, and arranged characteristically (i.e., running from the anteromesial corners to midlateral parts, and from the midlateral parts to posteromesial corners). Legs relatively long; femora thick; tarsi with 4th tarsomere simple. Abdomen thin, subparallel-sided; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, dense, small and distinct in anterior segments, while punctures in posterior segments moderately dense, very small and regular. Lateroventrites horizontal or dorsomesial in position, very narrow, impunctate or simply furrowed.

Fifth ventrite posteromedially with a small flat area, which is very weakly emarginate posteriorly; 6th ventrite (Fig. 34D) posteromedially with a semicircular flat area, which is arcuately emarginate posteriorly; 7th ventrite (Fig. 34D) posteromedially with a subtrapezoidal concavity, which is moderately emarginate and distinctly ridged laterally; 8th ventrite (Fig. 34E) posteromedially with a large, U-shaped emargination; 9th tergum (Fig. 34A) with anterolateral flaps rounded anteriorly, ventral apophyses short, posterolateral projections long, acutely pointed; 9th ventrite (Fig. 34C) elongate, hardly serrate posteriorly, with stem elongate-triangular in shape, apicolateral teeth incurved, acute, apicolateral setae moderately long; 10th tergum (Fig. 34A) almost entire. Aedeagal median lobe (Fig. 34B) slender, distinctly bisinuate laterally, with the apex rounded, furnished with 5 pairs of very short setae. Endophallic median longitudinal bands (Fig. 34B) with ventral bands long, rounded anteriorly, dorsal bands short; expulsion hooks (Fig. 34B) almost fused to form a subtriangular sclerite, with its median longitudinal part more or less submembranous (Fig. 34F); basal tube (Fig. 34B) pitcher-shaped, basal room submembranous with its basal constriction distinct, tube body thick, with the apical thin, sclerotized rod. Parameres (Fig. 34B) each slender, distinctly sinuous, rounded apically; apical area short, weakly swollen mesially, furnished mesially with 8 to 9 moderately long setae, and most apically with 3 long setae.

Female: Unknown from Japan. In Japan, only one male beetle of this species was once collected from Yonaguni Is.

Biology and ecology. No ecological data are obtained.

Remarks. Among the Japanese members of *S. clavicornis* group, *S. formosamus* is in general similar in structure to *S. distans*, *S. distermimus* and *S. calliceps*, but this species is clearly separable from the latter three species by the head distinctly impressed just inside the mesial margins of eyes, the elytra much larger, with punctures characteristically arranged as described above, the abdomen more strongly cylindrical and distinctly narrower, the aedeagal median lobe distinctly bisinuate laterally (Fig. 34B), and the endophallic basal tube body pitcher-shaped (Fig. 34B).

Stenus clavicornis (Scopoli)

(Figs. 35A–G, 129A)

Stenus clavicornis (Scopoli, 1763): 100; Naomi, 1988d: 58; Herman, 2001: 2128; Naomi & Puthz, 2013: 137.

Type material. Type locality: Carniolia.

Other material examined. [HOKKAIDO]: 3 ♂1 ♀, Kami-shunbetsu, 20. vii. 1977, S. Naomi leg.; 1 ♂1 ♀, On'nenai, Tsurui, Kushiro Marsh, 24. viii. 1990, M. Sakai leg.; 3 ♀, Kirakotanmisaki, Kushiro Marsh, 25. viii. 1990, M. Sakai leg.; 3 ♂1 ♀, Shiretoko Pass, Shari-cho, 3. viii. 1989, K. Haga leg.; 1 ♀, Onbetsu-cho, 3. viii. 1988, K. Haga leg.; 1 ♂, Harutori, Kushiro City, 9.

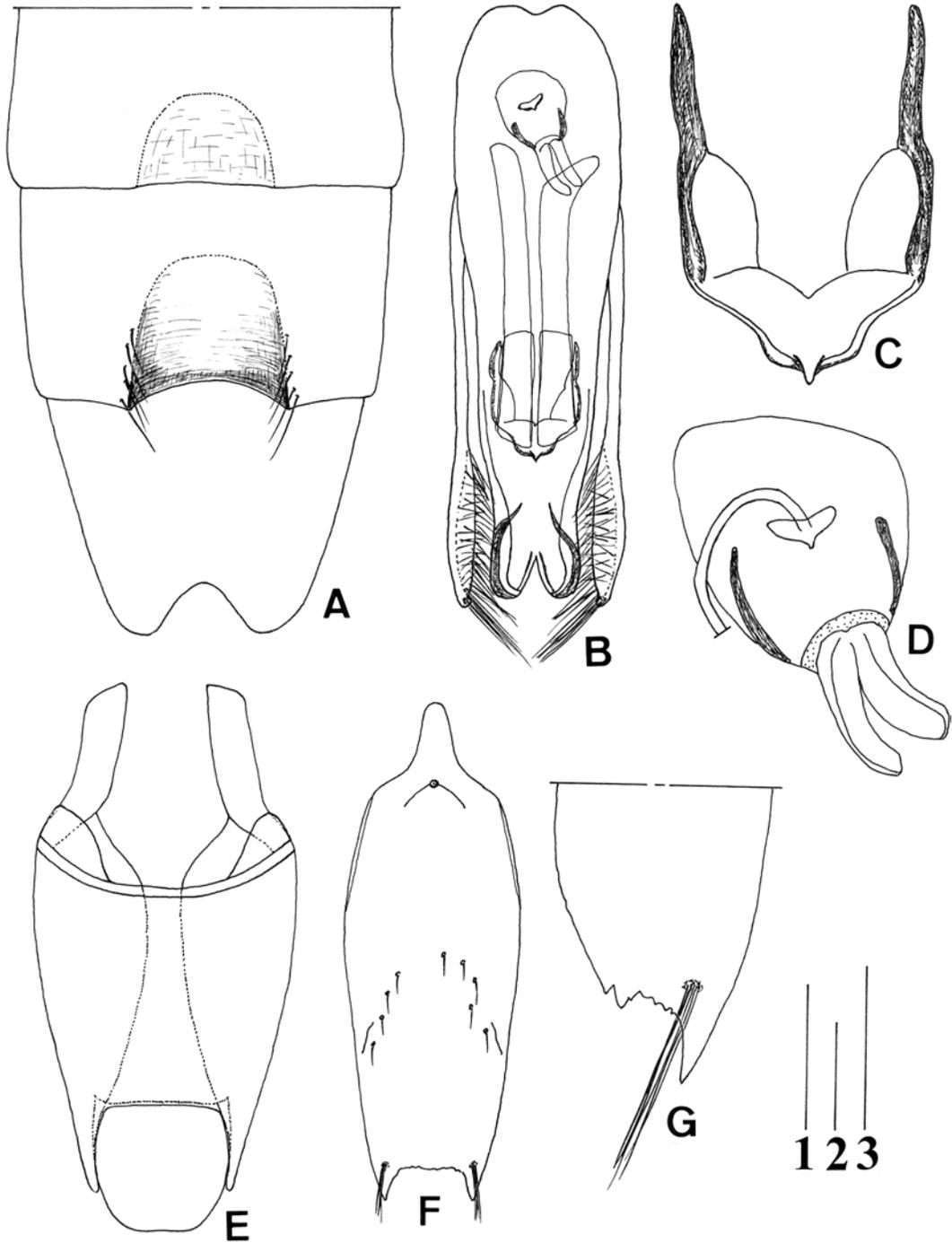


Fig. 35. *Stenus clavicornis* (Scopoli) (A, Hokkaido, Kami-shunbetsu; B–D, G, Hokkaido, Kushiro; E, F, Hokkaido, Shari). A, 6th to 8th ventrites of male; B, aedeagus; C, endophallic expulsion hook; D, basal tube; E, 9th and 10th terga of male; F, 9th ventrite of male; G, apex of gonocoxite. Scale 1: 0.3 mm for A; scale 2: 0.2 for B, E, F; scale 3: 0.1 mm for C, D, G.

vii. 1998, T. Matsumoto leg.

Distribution. Japan (Hokkaido); Korea, China, Russia, Mongolia, Georgia, Armenia, Azerbaijan, Turkey, Europe, Canada, USA.

Redescription. Male and female: Macropterous (hind wings each folded but only reaching the posterior margin of 3rd tergum when they are unfolded); body 5.0–5.7 mm (fore-body 2.1–2.5 mm) in length, dull to weakly shining, with antennae short. Body black, with metallic reflection; labrum black; antennae dark brown to black; legs yellowish brown to reddish brown, with knees infuscate. Head with a pair of distinct longitudinal depressions; punctures round to elliptical, very dense. Pronotum with surface weakly uneven; punctures round, very dense, various in size. Elytra with surface weakly uneven; punctures round to elliptical, very dense, and arranged almost longitudinally on the areas along the suture, where 2 or more punctures sometimes put together. Legs relatively long; tarsi with 4th tarsomere simple. Abdomen subparallel-sided; 3rd to 6th (or 7th) terga each with 3 basal longitudinal keels; punctures round, dense, small and distinct in anterior segments, while punctures in posterior segments various in shape, sparse to moderately dense, and very small; interstices between punctures covered with mesh-like microsculptures. Lateroventrites horizontal or ventromesial in position, relatively wide, punctate.

Male: Legs with femora thick; middle tibia with a small tooth at the apicomeres part; 6th ventrite (Fig. 35A) posteromedially with a semicircular flat area, which is very weakly emarginate posteriorly; 7th ventrite (Fig. 35A) posteromedially with a large, bell-shaped depression, which is arcuately emarginate posteriorly; 8th ventrite (Fig. 35A) posteromedially with a V-shaped emargination; 9th tergum (Fig. 35E) with apicolateral flaps rounded anteriorly, ventral apophyses moderately long and wide; 9th ventrite (Fig. 35F) elongate, hardly serrate posteriorly, with stem elongate, apicolateral teeth short, acute, apicolateral setae short; 10th tergum (Fig. 35E) almost entire, or very weakly emarginate posteriorly. Aedeagal median lobe (Fig. 35B) slender, narrowed apically, deeply narrowly emarginate (or bilobed) apically, with each apical lobe strongly sclerotized laterally. Endophallic median longitudinal bands (Fig. 35B) with ventral bands very long, running almost parallel, dorsal bands each very short, truncate anteriorly; expulsion hooks (Fig. 35B) fuse to form a gate-like sclerite with a small, posteromedian tooth, anterolateral arms long, well sclerotized (Fig. 35C); basal tube (Fig. 35B) with basal room subspherical, tube body consisting of two short rods which are weakly curved apically (Fig. 35D). Parameres (Fig. 35B) slender, almost straight; apical area long, distinctly widened dorsoventrally, furnished mesially with 40 to 45 sense setae, and also most apically with 7 to 8 long setae.

Female: Eighth ventrite posteromedially with a very small notch; gonocoxites (Fig. 35G) each irregularly serrate posteriorly, with apicolateral tooth long, acute, apicolateral setae very long. Spermatheca not observable.

Biology and ecology. *Stenus clavicornis* is distributed in the plains and low mountainous regions. In Hokkaido, the beetles inhabit relatively dry grasses in the grasslands; and they also live in moist litter at the grasslands and natural forests located near the lakes and rivers.

Remarks. *Stenus clavicornis* is widely distributed in the Holarctic region; and it was first recorded from Japan (Hokkaido) by Naomi (1988d). *S. clavicornis* is allied to *S. obsculipalpis* Hubenthal, 1911, but it is separable from the latter by the maxillary palpi and legs righter in coloration (i.e., yellowish brown to reddish brown) and the aedeagal median lobe with apical lobe strongly sclerotized laterally (Puthz, 1972c). *S. clavicornis* is also allied to *S. caspius* Puthz, 1972c, but it is separable from the latter by the abdominal terga medially with denser punctures and the aedeagal median lobe with apical part more deeply emarginate (Fig. 35B) (Puthz, 1972c).

***Stenus takedai* Naomi**
(Figs. 36A–G, 129B)

Stenus takedai Naomi, 1990d: 103; Herman, 2001: 2412; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Midori-ku, Yokohama City, Kanagawa Pref., 15. vi. 1985, M. Tao leg. Paratypes: 1 ♂1 ♀ (cN), Suidobashi, Shonan-machi, Chiba Pref., 19. xi. 1984, T. Takeda leg.; 2 ♀ (cN), Midori-ku, Yokohama City, Kanagawa Pref., 5. v. 1986, M. Tao leg.; 1 ♀ (cN), Tsurumi-ku, Yokohama City, Kanagawa Pref., 16. v. 1987, M. Tao leg.

Other material examined. [HONSHU]: 1 ♀, Akigase, Urawa City, Saitama Pref., 23. ix. 1981, H. Oda leg.; 1 ♂1 ♀, Matsuzaki, Inzai, Chiba Pref., 3. v. 1991, T. Takeda leg.; 2 ♂, Midori-ku, Yokohama City, Kanagawa Pref., 3. xi. 1986, M. Tao leg.; 2 ♂1 ♀, Totsuka-ku, Yokohama City, Kanagawa Pref., 31. v. 1986, M. Tao leg.; 1 ♀, Sengokubara, Hakone, Kanagawa Pref., 23. xi. 1969, Y. Hirano leg.

Distribution. Japan (Honshu).

Redescription. Male and female: Macropterous; body 3.8–5.1 mm (fore-body 1.9–2.2 mm) in length, slender, moderately shining, with antennae moderately long. Body black; labrum black; antennae dark brown except for 1st black segments; legs yellowish brown to reddish brown. Head with a pair of shallow longitudinal depressions, median area between the longitudinal depressions very narrow, weakly convex; punctures round to elliptical, dense to very dense. Pronotum with surface weakly uneven; punctures round to elliptical, very dense, various in size. Elytra with surface weakly uneven; punctures round, very dense, regular, distinct. Legs long, slender; tarsi with 4th tarsomere simple. Abdomen slender, cylindrical; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, moderately dense to dense, small and distinct in anterior segments, while punctures in posterior segments sparse, very small and regular. Lateroventrites missing but tergoventral sutures existing in 4th to 6th segments.

Male: Seventh ventrite (Fig. 36D) posteromedially with a shallow, subtrapezoidal depression, which is arcuately emarginate; 8th ventrite (Fig. 36D) posteromedially with a V-shaped emargination; 9th tergum (Fig. 36A) with anterolateral flaps rounded anteriorly, ventral apophyses moderately long and wide, posterolateral projections long; 9th ventrite (Fig. 36C) elongate, hardly serrate posteriorly, with stem elongate, apicolateral teeth long, acute, apicolateral setae short; 10th tergum (Fig. 36A) entire. Aedeagal median lobe (Fig. 36B) slender, becoming narrower apically, weakly constricted near apical 1/3, with apical part very weakly swollen laterally, rounded apicolaterally with 3 or 4 pairs of short setae. Endophallic median longitudinal bands (Fig. 36B) with ventral bands moderately long, almost rounded apically, dorsal bands short; expulsion hooks (Fig. 36B) fused to form a gate-like sclerite with anterolateral arms long (Fig. 36G); basal tube (Fig. 36B, F) short, gourd-shaped, submembranous. Parameres (Fig. 36B) long, slender, weakly curved; apical area spoon-like, furnished mesially with 10 to 11 sparse setae.

Female: Eighth ventrite entire; gonocoxites (Fig. 36E) each irregularly serrate posteriorly, with apicolateral tooth large, very acute, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus takedai* is distributed in the plains in central Honshu. The beetles inhabit litter in the grasslands or leaf litter in the vicinity of natural forests.

Remarks. *Stenus takedai* and *S. laborator* are characteristic in the following two characters: The lateroventrites are missing in the 4th to 7th abdominal segments; and the basal area of aedeagal median lobe is rather short before the basal foramen, and thus the parameres attach near the

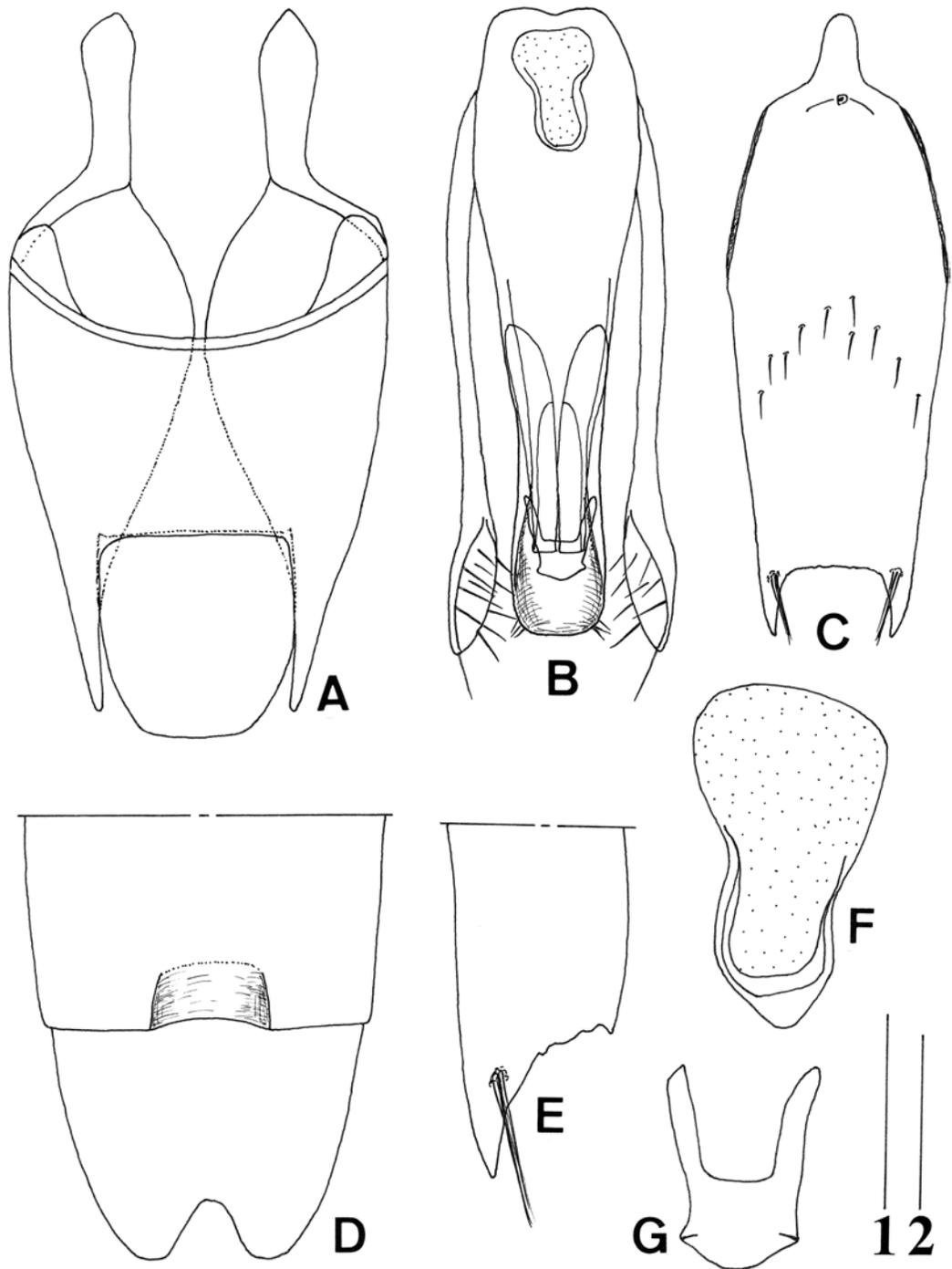


Fig. 36. *Stenus takedai* Naomi (A–E, G, Totsuka, Kanagawa; F, Shonan, Chiba). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, 7th to 8th ventrites of male; E, apex of gonocoxite; F, endophallic basal tube; G, expulsion hook. Scale 1: 0.2 mm for A–C, 0.1 mm for E–G; scale 2: 0.3 mm for D.

basal margin of median lobe (Figs. 36B, 37B). *S. takedai* is considered the sister species of *S. laborator*, and it is easily separable from the latter by the body thinner, more strongly shining, with the elytra narrower and abdomen slenderer (Fig. 129B), the abdominal terga with punctures sparser and smaller, the 7th ventrite of male with posteromedian depression smaller and shallower (Fig. 36D), and the aedeagal median lobe almost rod-like behind the middle (Fig. 36B).

Etymology. This species was named in honour of Mr. Takaaki Takeda, Funabashi who collected most of the type specimens of this species.

***Stenus laborator* Sharp**
(Figs. 37A–G, 129C)

Stenus laborator Sharp, 1889: 327; Herman, 2001: 2250; Naomi & Puthz, 2013: 138.

Type material examined. Lectotype: ♂ (NHML), type locality: Yokohama, Japan. Paralectotypes: 3 ♂ (NHML), type locality: Yokohama, Japan; 1 ♀ (NHML), type locality: Osaka, Japan, 6. VII.–8. VII. 81 [designated by Puthz (1968)].

Other material examined. [HOKKAIDO]: 1 ♂, Ishikari, 6. viii. 1962, Y. Shibata leg. [HONSHU]: 1 ♂, Takadate, Hiraizumi, Iwate Pref., 2. x. 1992, S. Nomura leg.; 1 ♀, Naya, Iwanuma City, Miyagi Pref., 30. xi. 1995, S. Nomura leg.; 1 ♀ (cP), Watarase, Ibaragi, 11. x. 1961, K. Mizusawa leg.; 1 ♂, Tone River, Toride City, Ibaraki Pref., 6. viii. 1986, M. Tao leg.; 2 ♂3 ♀, Jinbe-ohashi, Inba-mura, Chiba Pref., 28. iii. 1990, T. Takeda leg.; 2 ♂4 ♀, Negina River, Shimousa-machi, Chiba Pref., 3. xi. 1989, T. Takeda leg.; 2 ♂4 ♀, same locality, 21. iii. 1990, T. Takeda leg.; 1 ♂1 ♀, Tone River, Nakaya, Sakae-cho, Chiba Pref., 6. v. 1991, S. Nomura leg.; 1 ♂2 ♀, Suga-shinden, Sakae-cho, Chiba Pref., 30. x. 1989, T. Takeda leg.; 2 ♂, Yahata, Kyoto, 13. iii. 1941, K. Taniguchi leg.

Distribution. Japan (Hokkaido, Honshu).

Redescription. Male and female: Macropterous; body 3.6–5.0 mm (fore-body 2.0–2.3 mm) in length, slender, weakly shining, with antennae moderately long. Body black; labrum black; antennae reddish brown to dark red except for 1st black segments; legs yellowish brown to reddish brown. Head with a pair of shallow longitudinal depressions, median area between the longitudinal depressions very narrow, weakly convex; punctures round to elliptical, dense to very dense, various in size. Pronotum with surface weakly uneven; punctures round, very dense, somewhat rough. Elytra moderately large, with surface uneven; punctures round, very dense, somewhat rough. Legs long, slender; tarsi with 4th tarsomere simple. Abdomen slender, cylindrical; 3rd to 6th terga each with 3 basal longitudinal keels; punctures round, dense, small and distinct in anterior segments, while punctures in posterior segments sparse to moderately dense, very small and regular. Lateroventrites and tergoventral sutures missing in 4th to 6th segments.

Male: Legs with mid tibia with a very small tooth at the apicomeral part, hind tibia mesially with a small tooth at the subapical part (Fig. 129C); 6th ventrite (Fig. 37D) posteromedially with a semicircular flat area; 7th ventrite (Fig. 37D) medially with a large, elongate depression which is arcuately emarginate posteriorly, and laterally ridged in posterior 1/2; 8th ventrite (Fig. 37D) posteromedially with a deep, U-shaped emargination, and anteriorly with a depression with its sides ridged, the anterior depression smoothly continuing to the central, relatively broad flat area; 9th tergum (Fig. 37C) with anterolateral flaps subtriangular, ventral apophyses moderately long; 9th ventrite (Fig. 37E) elongate, hardly serrate posteriorly, with stem very thin, narrow, basilateral emarginations small, apicolateral teeth very acute, apicolateral setae short; 10th tergum (Fig. 37E) entire. Aedeagal median lobe (Fig. 37B) narrow basally, distinctly spatulate, apicolaterally

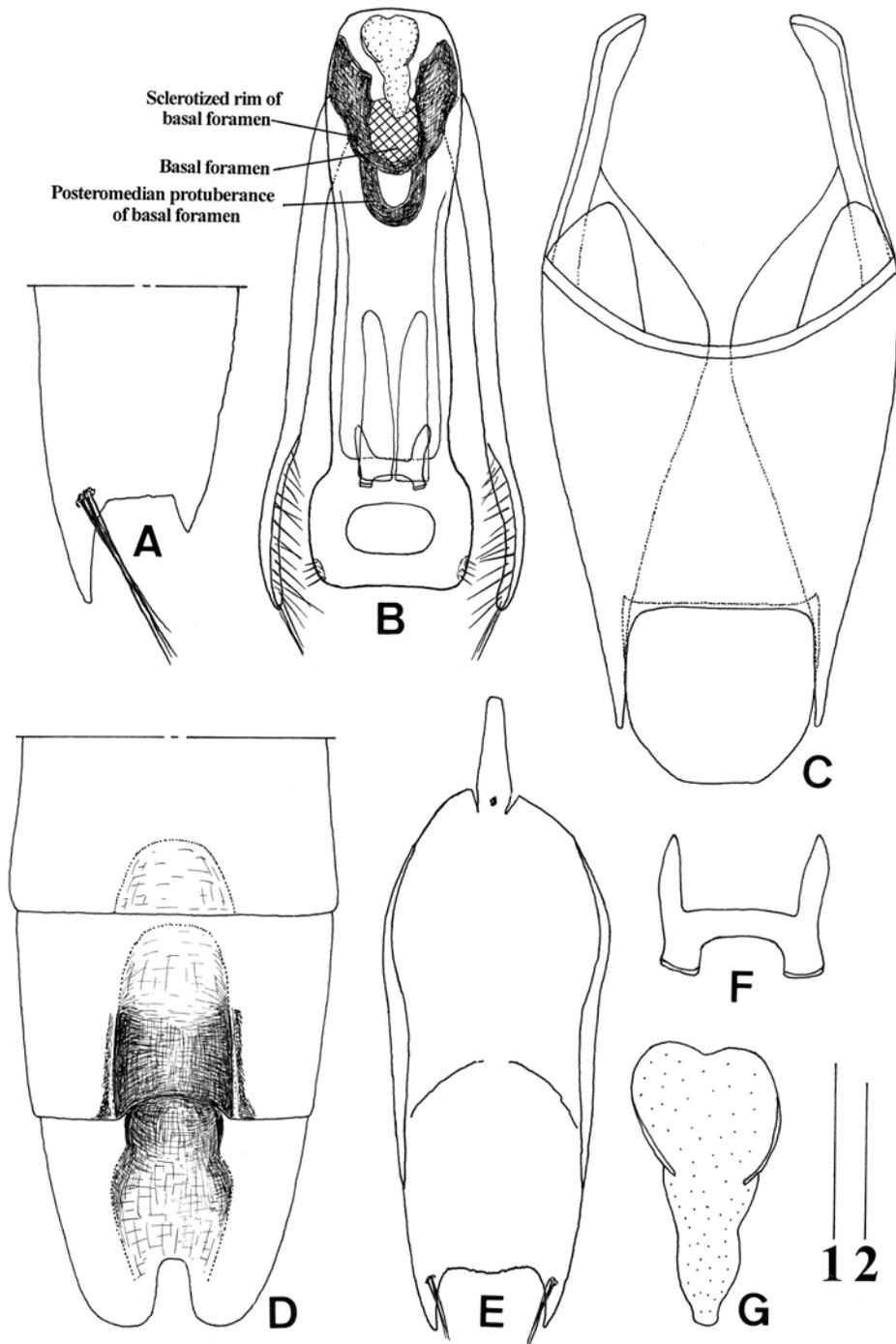


Fig. 37. *Stenus laborator* Sharp (Shimousa, Chiba). A, apex of gonocoxite; B, aedeagus; C, 9th and 10th terga of male; D, 6th to 8th ventrites of male; E, 9th ventrite of male; F, endophallic expulsion hook; G, basal tube. Scale 1: 0.1 mm for A, F, G, 0.2 mm for B, C, E; scale 2: 0.3 mm for D.

with 4 pairs of short setae. Endophallic median longitudinal bands (Fig. 37B) short; expulsion hooks (Fig. 37B, F) fused to form a H-shaped sclerite; basal tube (Fig. 37B, G) small, nearly gourd-shaped, submembranous. Parameres (Fig. 37B) long, slender; apical area very long, weakly incurved, furnished mesially with 18 to 19 (mostly) short, sparse setae.

Female: Eighth ventrite entire; gonocoxites (Fig. 37A) each hardly serrate posteriorly, with apicomerial tooth pointed, apicolateral tooth long, acute, apicolateral setae long. Spermatheca not observable.

Biology and ecology. *Stenus laborator* is distributed in the plains and low mountainous regions. The beetles inhabit leaf litter in the grasslands or near the rivers and ponds.

Remarks. *Stenus laborator* is closely allied to *S. takedai*, but it is easily separable from the latter by the body thicker, less strongly shining, with the elytra broader and abdomen thicker (Fig. 129C), the abdominal terga with punctures denser and larger, the 7th ventrite of male with posteromedian depression larger and deeper (Fig. 37D), and the aedeagal median lobe distinctly spatulate (Fig. 37B).

Species group of *S. humilis* Erichson

S. humilis group consists of 27 species in Japan; see Puthz (1970c) regarding a characterization of this group. Diagnostic characters are as follows: Legs with 4th tarsomere very weakly or not bilobed; 3rd to 5th or 6th terga each with 3 short, basi-longitudinal keels; lateroventrites almost horizontal or dorsomesial in position, narrow; 9th ventrite of male with apicolateral teeth (Figs. 38B) (or apicolateral parts strongly serrate; Puthz, 1970c, fig.2) and paired macrosetae; aedeagal medium lobe with paired apicolateral teeth and apicomerial subtransparent area (Fig. 5B, C); endophallic expulsion hooks fused to usually form a U-shaped (Fig. 38F) or transverse (Fig. 43B) sclerite; gonocoxite with apicolateral tooth short, bi- or trifurcate (Figs. 38G); spermatheca not observable.

Japanese members of *S. humilis* group will be subdivided into 2 subgroups; and the followings are short descriptions about the 2 subgroups.

Subgroup 1. This subgroup is composed of 3 species (*S. japonicus*, *S. mammops* and *S. hammondi*) in Japan. Distributional range of the subgroup is Japan, China, Russia and north America. This subgroup is clearly diagnosed by the following aedeagal character: The apical part of median lobe is divided longitudinally into the paired, pallet-like, sclerotized lobes (Figs. 38C).

Subgroup 2. This subgroup is composed of 24 species (*S. expugnator*, *S. sakura*, *S. giushin*, *S. zaishin*, *S. kirin*, *S. ohbayashii*, *S. lanceolatus*, *S. ochiba*, *S. satushin*, *S. nipponomontanus*, *S. wasamatanus*, *S. corrugatus*, *S. hagai*, *S. curvaticellus*, *S. intumescens*, *S. displicatus*, *S. toukin*, *S. ubusuna*, *S. kokie*, *S. serratimarginatus*, *S. zimmermanni*, *S. yasutoshii*, *S. houomontis* and *S. takashii*). They are all indigenous in Japan except for *S. expugnator*. Distributional range of the subgroup is Japan and Russia. This subgroup is diagnosed by the following aedeagal characters: The median lobe is broader or slender, but more or less violin-shaped in many species (Fig. 61A); the apical sclerotized area are narrowed apically (Figs. 43B); and the apicolateral teeth (Fig. 5B, C) are more or less developed (Figs. 43B, 49B); and the apex of median lobe is pointed (Figs. 43B), rounded (Fig. 60A), or with the apicomerial projection (Fig. 41A).

Key to the Japanese species of *S. humilis* group

1(6) Median lobe with apical part bilobed (i.e., divided longitudinally into paired pallet-like,

- sclerotized lobes; Fig. 38C). [**Subgroup 1**]
- 2(3) Apex of median lobe simply rounded (Fig. 38C); apical pallet-like lobe of median lobe rounded without small tooth at anteromesial corner (Fig. 38C).....*S. japonicus* Sharp
- 3(2) Apex of median lobe medially with a deep, narrow incision (Fig. 39A); apical pallet-like lobe of median lobe angulate with a small tooth at anteromesial corner (Fig. 39A).
- 4(5) Expulsion hook with posterolateral corner weakly projecting laterally (Fig. 39F); basal tube narrower, with apex smaller. (Fig. 39C).....*S. mammops* Casey
- 5(4) Expulsion hook with posterolateral corner simply angulate (Fig. 40G); basal tube broader, with apex larger (Fig. 40A).....*S. hammondi* Puthz
- 6(1) Median lobe with apical part simple, with apical sclerotized area more or less developed.
- [**Subgroup 2**]
- 7(8) Median lobe with broad apicomedian projection, apicolateral teeth missing (Fig. 41A); basal tube with apical part beak-shaped (Fig. 41C).....*S. expugnator* Ryvkin
- 8(7) Median lobe without broad apicomedian projection, with apicolateral teeth; basal tube with apical part simple (i.e., simply rounded).
- 9(10) Basal tube distinctly divided into basal room and tube body, with paired lateral processes (Fig. 42E).....*S. sakura* Hromádka
- 10(9) Basal tube simply baculiform, usually not divided into basal room and tube body.
- 11(12) Median lobe with apicolateral teeth and also paired teeth located at the middle of lateral sides of apicomedian subtransparent area (Figs. 64A).....*S. takashii* Naomi
- 12(11) Median lobe with apicolateral teeth; apicomedian subtransparent area laterally without any teeth nor humps (Fig. 61A).
- 13(22) Apicolateral teeth (or humps) located at or near lateral margins of median lobe.
- 14(15) Apicolateral teeth (or humps) located near lateral margins of median lobe (Fig. 53D); paramere furnished mesially with setae in stem as well as apical area (Fig. 53D).....*S. hagai* Naomi
- 15(14) Apicolateral teeth (or humps) located just at lateral margins of median lobe; paramere furnished mesially with setae only in apical area.
- 16(17) Median lobe narrowed apically behind the middle, without apicolateral corners (Fig. 51B).....*S. wasamatanus* Puthz
- 17(16) Median lobe broader, with apicolateral corners developed.
- 18(19) Median lobe violin-shaped, with apicolateral teeth larger (Fig. 55D).....*S. intumescens* Naomi, Nomura & Puthz sp. nov.
- 19(18) Median lobe not violin-shaped, with apicolateral teeth smaller.
- 20(21) Median lobe abruptly narrowed near apicolateral humps to form the lanceolate apical sclerotized area (Fig. 56E); expulsion hook weakly arched anteriorly (Fig. 56D).....*S. displicatus* Naomi, Nomura & Puthz sp. nov.
- 21(20) Median lobe uniformly narrowed behind the rounded apicolateral corners to form the triangular apical sclerotized area (Fig. 57C); expulsion hook weakly arched posteriorly (Fig. 57C).....*S. toukin* Naomi & Puthz
- 22(13) Apicolateral teeth (or humps) located at the mesial edges of ventro-lateral rims of median lobe.
- 23(30) Median lobe with apex not pointed apically (rounded or angulate apically).
- 24(27) Median lobe strongly narrowed apically behind apicolateral corners, with apex narrow but still rounded.
- 25(26) Seventh ventrite of male posteromedially with depression smaller (Fig. 48A); median

- lobe not violin-shaped (Fig. 48F, G) *S. ochiba* Naomi & Puthz
- 26(25) Seventh ventrite of male posteromedially with depression larger (Fig. 59E); median lobe violin-shaped (Fig. 59B) *S. kokie* Naomi
- 27(24) Median lobe distinctly with broad apex.
- 28(29) Median lobe weakly narrowed apically behind apicolateral corners, with apex angulate (Fig. 60A); median hook simply pointed apicolaterally (Fig. 62C).....
..... *S. serratimarginatus* Naomi
- 29(28) Median lobe strongly constricted behind apicolateral corners, apical sclerotized area narrow basally, with apex uniformly rounded; median hook shortly incurved anterolaterally (Fig. 62C) *S. yasutoshii* Naomi
- 30(23) Median lobe with apex more or less distinctly pointed apically (Fig. 43B).
- 31(40) Median lobe not violin-shaped (distinctly not so).
- 32(39) Paramere furnished mesially with setae only in apical area.
- 33(38) Median lobe with apicolateral corners more or less angulate; expulsion hook transverse at median part (or not arched posteriorly).
- 34(35) Median lobe distinctly constricted behind anterolateral corners to form the lanceolate apex (Fig. 43B); expulsion hook wider (Fig. 43B) *S. giushin* Naomi
- 35(34) Median lobe almost simply narrowed apically, with the triangular apex; expulsion hook narrower.
- 36(37) Median lobe with apical sclerotized area anteriorly with the narrower, U-shaped emargination (Fig. 44E); apicolateral teeth larger, located close to each other (Fig. 44E) *S. zaishin* Naomi
- 37(36) Median lobe with apical sclerotized area anteriorly with the broader, arcuate emargination (Fig. 45B); apicolateral teeth smaller, distantly located to each other (Fig. 45B) *S. kirin* Naomi & Ito
- 38(33) Median lobe without apicolateral corner (or lateral margin of median lobe uniformly, very gently curved in apical half; Fig. 52A); expulsion hook weakly but entirely arched posteriorly (Fig. 52F)..... *S. corrugatus* Naomi & Shimada
- 39(32) Paramere furnished mesially with setae in stem as well as apical area (Fig. 54F) *S. curvaticellus* Naomi
- 40(31) Median lobe more or less violin-shaped.
- 41(46) Median lobe lanceolate apically.
- 42(45) Median lobe nearly violin-shaped (or apicolateral corners distinctly narrower than basal bulbous area), with apical sclerotized area longer.
- 43(44) Seventh ventrite of male with depression narrower (Fig. 46G); apical sclerotized area of median lobe with anterior emargination V-shaped (Fig. 46E); expulsion hook with anterolateral arm shorter, simply rounded apically (Fig. 46C) *S. ohbayashii* Naomi
- 44(43) Seventh ventrite of male with depression broader (Fig. 47D); apical sclerotized area of median lobe without anterior emargination (Fig. 47B); expulsion hook with anterolateral arm longer, incurved apically (Fig. 47B) *S. lanceolatus* Naomi
- 45(42) Median lobe distinctly violin-shaped (or apicolateral corners about as wide as basal bulbous area), with apical sclerotized area shorter (Fig. 63B)..... *S. houomontis* Naomi & Ito
- 46(41) Median lobe not so (or elongate-triangular, triangular or subtriangular apically)
- 47(50) Median lobe with apical sclerotized area elongate-triangular in shape.
- 48(49) Median lobe with apical sclerotized area shorter (Fig. 49B); expulsion hook with anterolateral arm moderately long (Fig. 49G)..... *S. satushin* Naomi

- 49(48) Median lobe with apical sclerotized area longer (Fig. 50A); expulsion hook anterolaterally with a small tooth (Fig. 50F).....*S. nipponomontanus* Naomi
 50(47) Median lobe with apical sclerotized area not so (or triangular or subtriangular in shape).
 51(52) Median lobe less strongly pointed apically, with apical sclerotized area triangular in shape (Fig. 58B); expulsion hook distinctly bent posteriorly at the middle (Fig. 58F)*S. ubusuna* Naomi & Ito
 52(51) Median lobe more strongly (or acutely) pointed apically, with apical sclerotized area subtriangular in shape (Fig. 61A); expulsion hook simply, weakly, entirely arched posteriorly (Fig. 61F).....*S. zimmermanni* Puthz

***Stenus japonicus* Sharp**
 (Figs. 38A–G, 129D)

Stenus japonicus Sharp, 1874: 84; Herman, 2001: 2237; Naomi & Puthz, 2013: 138.

Stenus nipponensis Cameron, 1930: 205; Naomi, 1989a: 41 (cited as *S. nipponensis*); Naomi & Puthz, 1994a: 217 (synonym of *S. japonicus*).

Stenus giushin Naomi, 1990: 101 (*partim*).

Type material examined. Syntypes of *S. japonicus* (NHML), type locality: Nagasaki [examined by Puthz in 1965]. Holotype of *S. nipponensis*: ♀ (NHML), type localities: Yakushima; Mimasaka [examined by Puthz in 1968].

Other material examined. [HOKKAIDO]: 3 ♂5 ♀, On'nenai, Tsurui, Kushiro Marsh, 24. viii. 1990, M. Sakai leg.; 2 ♀, Higashi-ohnuma, Nanae, Oshima, 14. vi. 1986, S. Nomura leg.; 1 ♀, same locality, 15. vi. 1986, S. Nomura leg.; 1 ♂3 ♀, same locality, 16. vi. 1986, S. Nomura leg.; 1 ♀, Shoro Beach, Shiranuka-cho, 28. viii. 1990, M. Sakai leg.; 1 ♂, Tomakomai, 31. viii. 1978, H. Detani leg.; 1 ♀, Toyokoro, 27. v. 1990, K. Haga leg. [HONSHU]: 1 ♂, Watarase Marsh, Tochigi Pref., 6. v. 1979, M. Tao leg.; 1 ♀, Tencho, Shioya-cho, Tochigi Pref., 18. v. 1993, T. Kishimoto leg.; 4 ♀, Oose, Yashio City, Saitama Pref., 12. iv. 1992, Hinakura leg.; 1 ♂, Hizaura, Oohara-machi, Chiba Pref., 30. xii. 1989, T. Takeda leg.; 1 ♂, Kisarazu City, Chiba Pref., 25. v. 1985, M. Tao leg.; 1 ♀, Matsuzaki, Inzai, Chiba Pref., 10. xii. 1989, T. Takeda leg.; 1 ♂1 ♀, Kawasaki City, Kanagawa Pref., 10. iv. 1977, M. Tao leg.; 1 ♂, Yokohama City, Kanagawa Pref., 1. x. 1983, M. Tao leg.; 1 ♀, Otari, Nagano Pref., 5. vi. 1994, Y. Hirano leg.; 1 ♀, Tokoname City, Aichi Pref., 3. vi. 1977, M. Ohishi leg.; 1 ♀, Mennoki Pass, Aichi Pref., 5. v. 1983, M. Sato leg.; 1 ♀, Oochidani, Tottori City, Tottori Pref., 22. xi. 1991, N. Tsurusaki leg. [SHIKOKU]: 1 ♂, Toyo City, Ehime Pref., 13. iv. 1985, M. Sakai leg.; 1 ♀, Akui River, Naka-akui, Tokushima Pref., 15. viii. 1988, M. Sakai leg. [KYUSHU]: 1 ♂1 ♀, Imazu, Fukuoka City, Fukuoka Pref., 29. i. 1989, S. Nomura leg. (paratypes of *S. giushin*); 1 ♀, Tsuru River, Genkai-machi, Fukuoka Pref., 26. i. 1992, S. Nomura leg.; 1 ♂2 ♀, San'nou, Yamato-machi, Saga Pref., 24. iii. 1991, S. Nomura leg.; 1 ♂, Imari City, Saga Pref., 6. x. 1977, H. Ohishi leg.; 1 ♀, Mt. Iwato, Kazusa, Nagasaki Pref., 7. ix. 1977, S. Imasaka leg.; 1 ♂1 ♀, Kueyama, Shimabara, Nagasaki Pref., 4. x. 1977, S. Imasaka leg.; 1 ♂, Kuchinotsu-machi, Nagasaki Pref., 23. xi. 1979, S. Imasaka leg.; 2 ♀, Kumamoto City, Kumamoto Pref., 30. iii. 1977, S. Naomi leg.; 1 ♂, Hitoyoshi City, Kumamoto Pref., 16. x. 1977, H. Ohishi leg.; 1 ♀, Miike Pond, Mt. Kirishima, Kagoshima Pref., 18. v. 1983, Y. Sawada leg.; 1 ♀, Imuta Pond, Kedoin-cho, Kagoshima Pref., 9. xii. 1989, S. Nomura leg.; 2 ♂1 ♀, Fukiagehama, Kagoshima Pref., 11. xii. 1989, S. Nomura leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu); China, Russia.

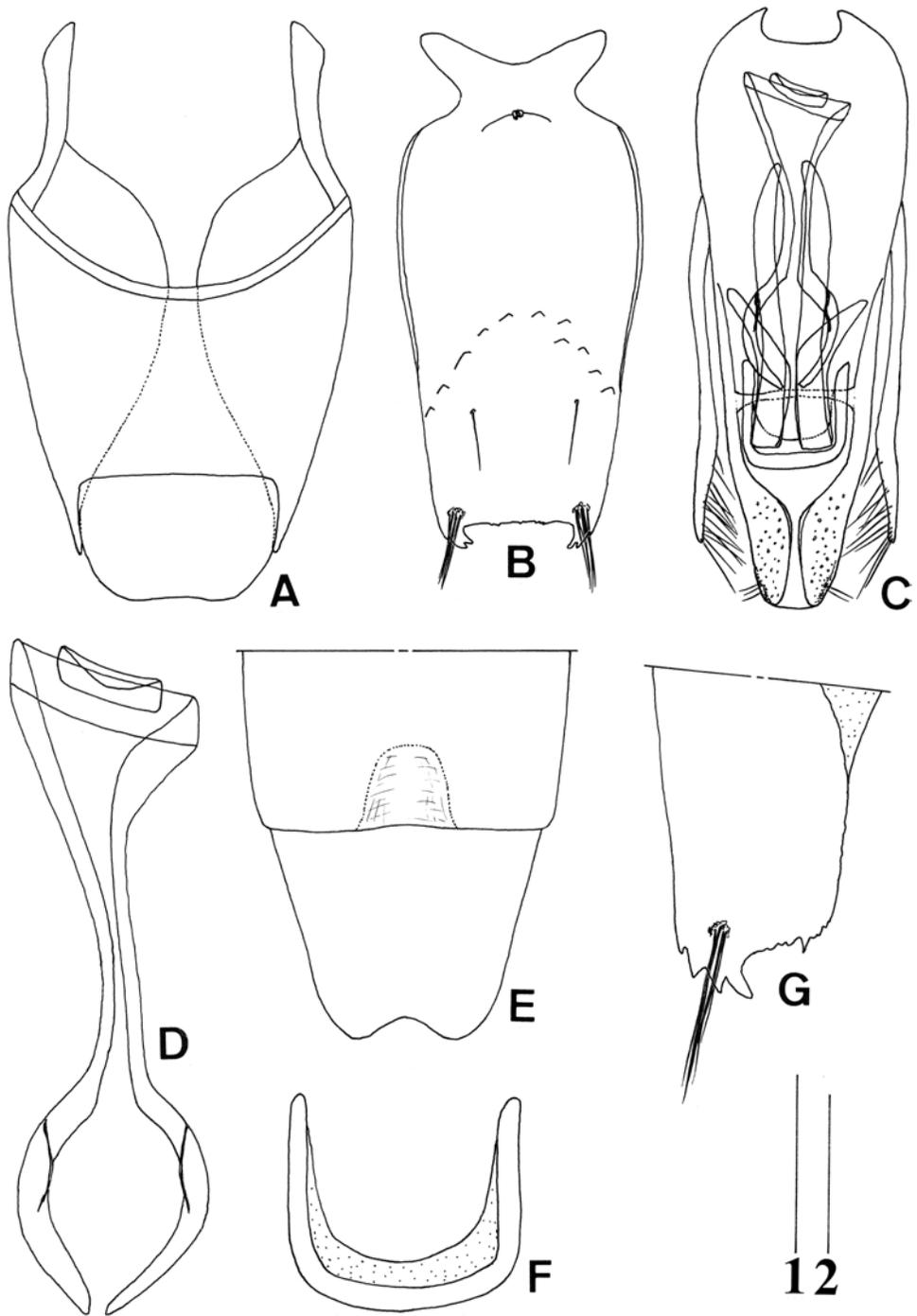


Fig. 38. *Stenus japonicus* Sharp (A–D, F, G, Hizaura, Chiba; E, Kawasaki, Kanagawa). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, endophallic basal tube; E, 7th to 8th ventrites of male; F, expulsion hook; G, apex of gonocoxite. Scale 1: 0.2 mm for A–C, 0.1 mm for D, F, G; scale 2: 0.3 mm for E.

Redescription. Male and female: Macropterous/brachypterous; body 3.4–4.0 mm (fore body 1.8–2.1 mm) in length, dull to moderately shining, with antennae short. Body and its appendages almost entirely dark red to black. Head with a pair of shallow longitudinal depressions; punctures round, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, distinct. Elytra with surface uneven; punctures round to elliptical, very dense, somewhat rough. Legs short; tarsi with 4th tarsomere very weakly bilobed. Abdomen weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, dense, small and distinct in anterior segments, while puncture in posterior segments elliptical, dense, very small and regular. Lateroventrites horizontal in position, narrow, punctate.

Male: Seventh ventrite (Fig. 38E) posteromedially with a flat area which is very shallowly emarginate posteriorly; 8th ventrite (Fig. 38E) posteromedially with a wide, arcuate emargination; 9th tergum (Fig. 38A) with ventral apophyses moderately long, thin; 9th ventrite (Fig. 38B) relatively wide, hardly serrate posteriorly, with stem wide, bilobed (or strongly bifurcate), apicolateral teeth each short, incurved, bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 38A) very weakly emarginate posteriorly. Aedeagal median lobe (Fig. 38C) almost simply narrowed apically, rounded apically, with paired apical sclerotized lobes which are divided longitudinally, pallet-like, rounded anteromesially, and also furnished apicolaterally with 2 or 3 short setae. Endophallic median longitudinal bands (Fig. 38C) with ventral bands very long, dorsal bands short, distinctly curved laterally before the middle; expulsion hook (Fig. 38C, F) simply U-shaped; basal tube (Fig. 38C) very large, with basal room nearly triangular in shape, tube body distinctly spatulate (Fig. 38D). Parameres (Fig. 38C) short, not reaching the apex of median lobe, each pointed apically; apical area weakly swollen basally, furnished mesially with 12 to 14 setae.

Female: Eighth ventrite entire; gonocoxites (Fig. 38G) each irregularly serrate posteriorly, with apicolateral tooth tri- or tetrafurcate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus japonicus* is a common species in Japan; and it is widely distributed in the plains and low mountainous regions. The beetles inhabit litter in the natural forests and glass lands.

Remarks. *Stenus japonicus* is allied to *S. mammops* and *S. hammondi*, but this species is clearly separable from the latter two species by the aedeagal median lobe rounded apically (Fig. 38C), the apical sclerotized lobe gently rounded anteromesially (Fig. 38C), the expulsion hook simply U-shaped (Fig. 38F), and the endophallic basal tube body distinctly spatulate, with the apex very large, ovoidal (Fig. 38D).

Stenus mammops Casey

(Figs. 39A–G, 129E)

Stenus mammops Casey, 1884: 97; Naomi, 1988c: 49; Naomi & Puthz, 1994: 42; Herman, 2001: 2272; Naomi & Puthz, 2013: 138.

Type material examined. Lectotype: ♂ (USNM), type locality: Trenton Falls [designated by Puthz (1974: 163)].

Other material examined. [HOKKAIDO]: 3 ♀, Shiretoko Pass, Shari-cho, 3. viii. 1989, K. Haga leg.; 1 ♀, Mt. Yotei, Kucchan-machi, 4–20. vii. 2000, K. Sasaki leg.; 1 ♂ 1 ♀, same locality, 20. vii. - 4. viii. 2000, K. Sasaki leg.; 2 ♀, same locality, 7. vii. 1989, N. Yasuda leg.; 2 ♂, Hime-numa, Rishiri Is., 26. vi. 1986, S. Nomura leg.; 1 ♀, same locality, 9. vii. 1977, S. Naomi leg.;

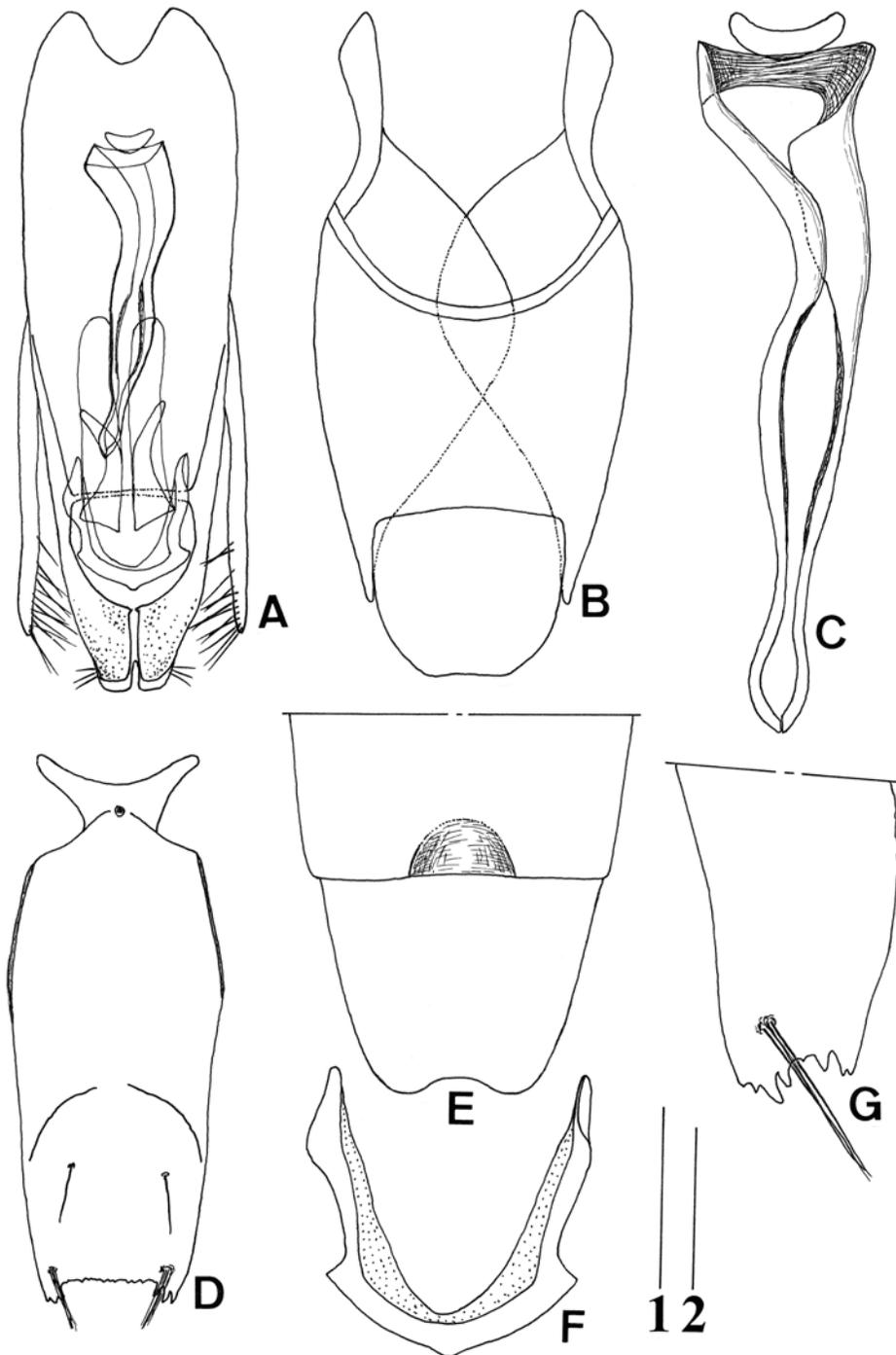


Fig. 39. *Stenus mammops* Casey (A, B, D, F, Guchian, Hokkaido; C, E, G, Himenuma, Rishiri Is.). A, aedeagus; B, 9th and 10th terga of male; C, endophallic basal tube; D, 9th ventrite of male; E, 7th to 8th ventrites of male; F, expulsion hook; G, apex of gonocoxite. Scale 1: 0.2 mm for A, B, D, F, G; scale 2: 0.3 mm for E.

1 ♂1 ♀, same locality, 9. viii. 1990, T. Kishimoto leg.; 2 ♀, Toyokoro, Ootsu, 13. vii. 1992; 1 ♂1 ♀, Upepe-Sanke, Mt. Daisetsu, 9. vii. 2002, N. Yasuda leg.; 1 ♀, Barasan-to, Bekkai-cho, 5. vii. 1986, S. Nomura leg. [KYUSHU]: 3 ♂2 ♀, Mt. Mitake, Tsushima Is., Nagasaki Pref., 1. iv. 1999, T. Watanabe leg.

Distribution. Japan (Hokkaido; Rishiri Is., Tsushima Is.); China, Russia, Canada, USA, West Indies.

Redescription. Male and female: Brachypterous; body 3.2–4.3 mm (fore body 1.7–2.1 mm) in length, dull to moderately shining, with antennae short. Body and its appendages almost entirely dark red to black. Head with a pair of shallow longitudinal depressions; punctures round, very dense, almost regular, distinct. Pronotum with surface weakly uneven; punctures round, very dense, distinct. Elytra with surface uneven; punctures round to elliptical, very dense, large, somewhat rough. Legs short; tarsi short, moderately thick, with 4th tarsomere very weakly bilobed. Abdomen wide, weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, moderately dense, very small and regular. Lateroven- trites ventromesial or horizontal in position, narrow, punctate.

Male: Seventh ventrite (Fig. 39E) posteromedially with a small, shallow, depression, which is very shallowly emarginate posteriorly; 8th ventrite (Fig. 39E) posteromedially with a shallow, broad emargination; 9th tergum (Fig. 39B) with ventral apophyses moderately long, wide; 9th ventrite (Fig. 39D) elongate, finely serrate posteriorly, with stem wide, bilobed, apicolateral teeth each short, bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 39B) very weakly emarginate posteriorly. Aedeagal median lobe (Fig. 39A) simply narrowed apically, with the apex medially with a deep, narrow incision, apical sclerotized lobes divided longitudinally, pal- let-like, angulate anteromesially with a small tooth, and also furnished apicolaterally with 2 or 3 short setae. Endophallic median longitudinal bands (Fig. 39A) with ventral bands very wide, moderately long, dorsal bands short, narrowed apically, strongly curved laterally; expulsion hook (Fig. 39A) nearly U-shaped, weakly projecting laterally at posterolateral corner (Fig. 39F); basal tube (Fig. 39A) rod-like but twice weakly constricted, with apex small, ovoidal (Fig. 39C). Para- meres (Fig. 39A) short, not reaching the apex of median lobe; apical area furnished mesially with 12 to 13 setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 39G) each strongly, irregu- larly serrate posteriorly and also apicolaterally, with apicolateral setae moderately long. Sperma- theca not observable.

Biology and ecology. *Stenus mammops* is distributed in the plains, low and high mountainous regions in Japan; and the previous collecting records show that this species is not rare in Hok- kaido. The beetles inhabit leaf litter in natural forests. The syrup and vinegar seem to induce the beetles of this species; and thus the beetles are sometimes collected by baited traps (with syrup and vinegar) set in the forests of Hokkaido.

Remarks. *Stenus mammops* is first recorded from Japan (Hokkaido) by Naomi (1988c). This species is allied to *S. hammondi*, but it is separable from the latter by the 6th ventrite of male without modification, the 7th ventrite of male posteromedially with a smaller depression (Fig. 39E), the endophallic median longitudinal bands shorter (Fig. 39A), the expulsion hook weakly projecting laterally at posterolateral corner (Fig. 39F), and the basal tube body thinner, with api- cal area smaller (Fig. 39C).

Stenus hammondi Puthz
(Figs. 40A–G, 129F)

Stenus hammondi Puthz, 1970b: 31; Naomi & Puthz, 1996: 160; Herman, 2001: 2211; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (NHML), type locality: China: Harbin [examined by Puthz].

Other material examined. [HOKKAIDO]: 1 ♂ 1 ♀, Echigo Bog, Ebetsu City, 9. iv. 1993, K. Miyashita leg.; 2 ♀, same locality, 16. iv. 1993, K. Miyashita leg.; 1 ♀, same locality, 29. iv. 1995, K. Miyashita leg.

Distribution. Japan (Hokkaido); China, Russia.

Redescription. Male and female: Macropterous/brachypterous; body 2.7–3.3 mm (fore body 1.6–1.8 mm) in length, dull to weakly shining, with antennae short. Body black; labrum black; antennae dark red; legs reddish brown, with knees infuscate. Head not cave, with a pair of shallow longitudinal depressions; punctures round to elliptical, very dense, almost regular, distinct. Pronotum with surface weakly uneven; punctures round, very dense, distinct. Elytra somewhat flat above, with surface weakly uneven; punctures round, very dense, somewhat rough. Legs short; tarsi short, moderately thick, with 4th tarsomere very weakly bilobed. Abdomen wide, weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, dense, very small and regular. Lateroventrites ventromesial or horizontal in position, narrow, punctate.

Male: Sixth ventrite (Fig. 40B) posteromedially with a semicircular flat area; 7th ventrite (Fig. 40B) posteromedially with a semicircular depression, which is arcuately emarginate posteriorly; 8th ventrite (Fig. 40B) posteromedially with a moderately wide emargination; 9th tergum (Fig. 40D) with ventral apophyses moderately long; 9th ventrite (Fig. 40C) elongate, irregularly serrate posteriorly, with stem wide, arcuately emarginate anteriorly, basilateral emarginations deep, narrow, apicolateral teeth each short, trifurcate apically, apicolateral setae short; 10th tergum (Fig. 40D) weakly emarginate posteriorly. Aedeagal median lobe (Fig. 40E) simply narrowed apically behind the middle, with the apex medially with a deep, narrow incision, apical sclerotized lobes divided longitudinally, pallet-like, angulate anteromesially with a small tooth, and also furnished apicolaterally with 2 or 3 short setae. Endophallic median longitudinal bands (Fig. 40E) with ventral bands long, each weakly incurved apically, dorsal bands short, each narrowed apically; expulsion hook (Fig. 40E) pointed apicomediaally, simply angulate posterolaterally (Fig. 40G); basal tube (Fig. 40A) consisting of two sclerotized shafts, twice strongly constricted in the middle, with asymmetrically swollen apex (Fig. 40E). Parameres (Fig. 40E) short, not reaching the apex of median lobe, each weakly curved laterally before the base of apical area, which is furnished mesially with 14 to 15 setae of different length.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 40F) each rather irregularly serrate posteriorly, with apicolateral tooth short, tri- or tetrafurcate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus hammondi* was presently collected once only at the Echigo Bog, Ebetsu in Hokkaido; and the beetles inhabit moist litter (e.g. of reeds) around the bog there. In the April where the *Stenus* beetles were collected in Hokkaido, the ice was thinly covered on the litter around the Echigo Bog. During this very cold season, the adult beetles of *S. hammondi*

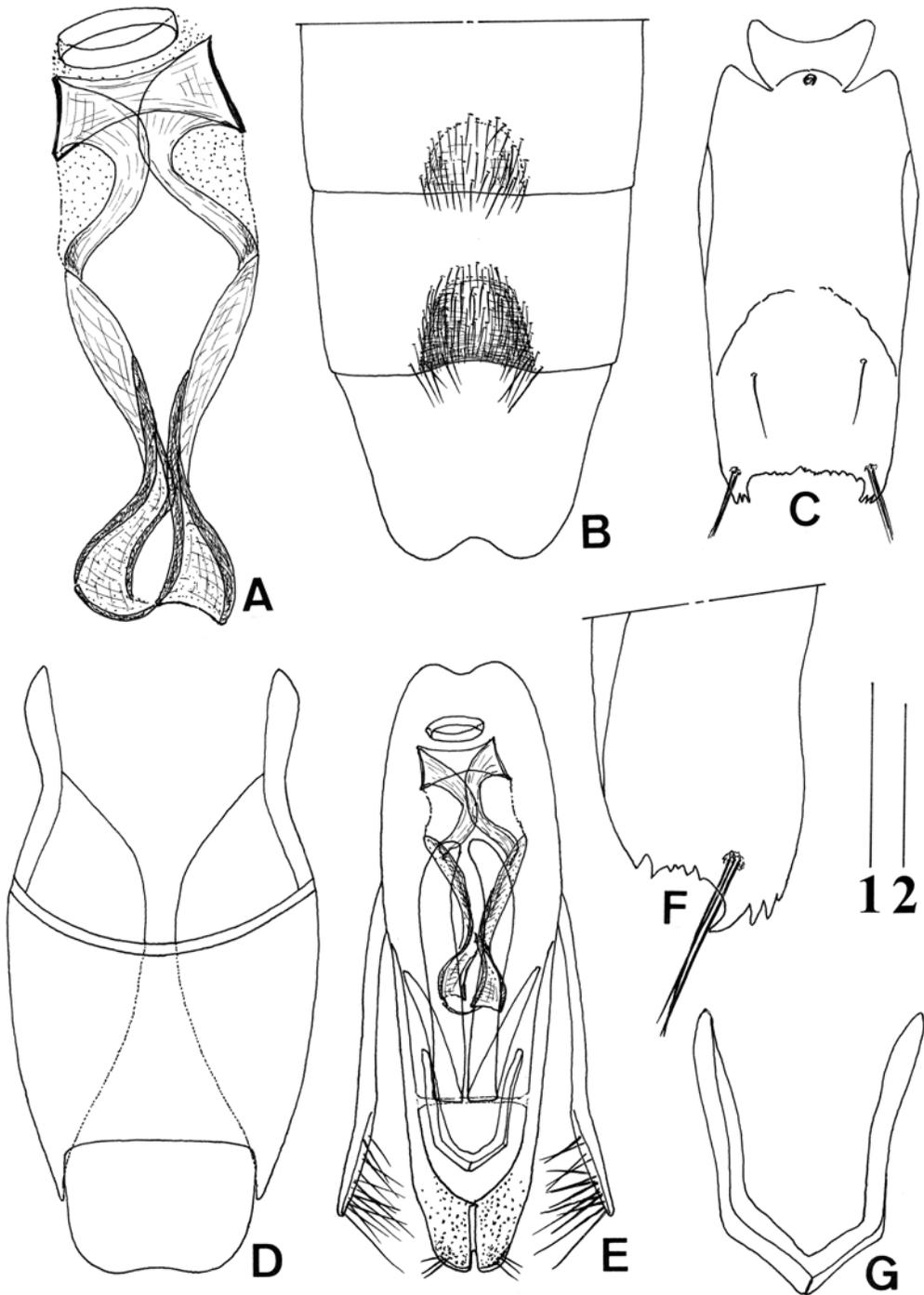


Fig. 40. *Stenus hamonndi* Puthz (Ebatsu, Hokkaido). A, endophallic basal tube; B, 6th to 8th ventrites of male; C, 9th ventrite of male; D, 9th and 10th terga of male; E, aedeagus; F, apex of gonocoxite; G, expulsion hook. Scale 1: 0.1 mm for A, F, G, 0.2 mm for C–E; scale 2: 0.3 mm for B.

lives on and in the litter that are covered by thin ice; and in the warm season (June) where the ice (that covered the litters) has already melted away, the adult beetles were not observed at the same litter where they lived in April (per. com. by K. Miyashita). The beetles were collected also on the pathways near river, and at the plant roots on dry waste ground; they are also collected by sweeping the overgrown gardens (Puthz, 1970b).

Remarks. *Stenus hammondi* is first recorded from Japan (Hokkaido) by Naomi & Puthz (1996). *S. hammondi* is allied to *S. mammops*, but this species is clearly separable from the latter by the 6th ventrite of male posteromedially with a flat area (Fig. 40B), the 7th ventrite of male posteromedially with a larger depression (Fig. 40B), the median longitudinal bands longer (Fig. 40E), the endophallic expulsion hook simply angulate apicomediaally, (Fig. 40G), and the basal tube body thicker, with the larger apical swollen area (Fig. 40A).

Etymology. This species is named in honour of an eminent staphylinist, Mr. Peter Hammond (Natural History Museum, London).

Stenus expugnator Ryvkin

(Figs. 41A–G, 129G)

Stenus expugnator Ryvkin, 1987a: 123; Naomi, 1997f: 143; Herman, 2001: 2173; Naomi & Puthz, 2013: 138.

Type material. Holotype: ♂ (ZIRAS), type locality: Kunashir, Russia.

Material examined. [HOKKAIDO]: 1 ♂, Oikawanai, Taiki-cho, 1. viii. 1993, K. Shibata leg.; 1 ♂ 1 ♀, Bansei Shore, Taiki-cho, 19. vi. 2009, T. Watanabe leg. [HONSHU]: 1 ♂ 6 ♀, Obitsu River, Kuroto, Kisarazu, Chiba Pref., 5. v. 1996, S. Nomura leg.; 1 ♂, Near Kuroto, Kisarazu, Chiba Pref., 27. iv. 1986, R. Inagawa leg.

Distribution. Japan (Hokkaido, Honshu: Chiba Pref.); Russia.

Redescription. Male and female: Brachypterous; body 3.5–4.1 mm (fore body 1.7–2.0 mm) in length, weakly shining, with antennae short. Body black; labrum black; antennae and legs dark red. Head not concave, with a pair of shallow longitudinal depressions; punctures round to elliptical, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, distinct. Elytra with surface almost even; punctures round, very dense, somewhat rough. Legs short; tarsi short, moderately thick, with 4th tarsomere very weakly bilobed. Abdomen wide, weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, dense, very small and regular. Lateroventrites ventromesial or horizontal in position, narrow, punctate.

Male: Eight ventrite (Fig. 41E) posteromedially with a semicircular, very shallow depression, which is shallowly emarginate posteriorly; 9th tergum (Fig. 41B) with ventral apophyses moderately long; 9th ventrite (Fig. 41D) elongate, finely serrate posteriorly, with stem subtrapezoidal, constricted basally, apicolateral teeth each short, trifurcate apically, apicolateral setae short; 10th tergum (Fig. 41B) truncate posteriorly. Aedeagal median lobe (Fig. 41A) elongate, weakly swollen laterally near basal orifice, widely rounded apicolaterally, with the apicomedian projection short, wide, weakly emarginate posteriorly. Endophallic median longitudinal bands (Fig. 41A) very long, slender; expulsion hook (Fig. 41A, F) almost M-shaped, with its posterolateral part angulate posteriorly; basal tube (Fig. 41A) with basal room ovoidal, submembranous, tube body almost baculiform, with beak-shaped apex (Fig. 41C). Parameres (Fig. 41A) slender, almost

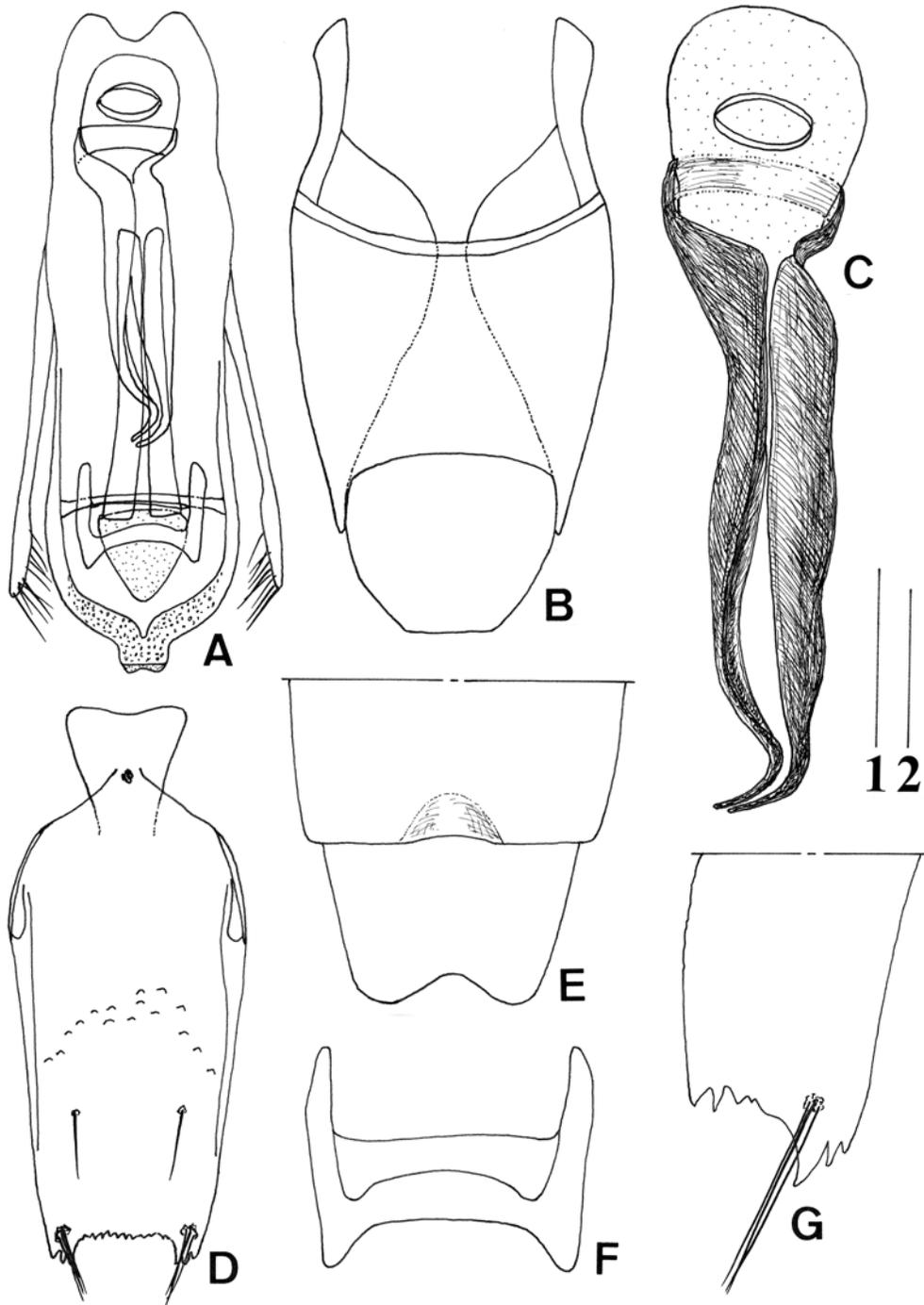


Fig. 41. *Stenus expugnatur* Ryvkin (A–D, F, Taiki, Hokkaido; Em G, Obitsu, Chiba). A, aedeagus; B, 9th and 10th terga of male; C, endophallic basal tube; D, 9th ventrite of male; E, 7th to 8th ventrites of male; F, expulsion hook; G, apex of gonocoxite. Scale 1: 0.2 mm for A, B, D, 0.1 mm for C, F, G; scale 2: 0.3 mm for E.

straight, short, not reaching the apex of median lobe; apical area short, furnished mesially with 9 to 10 setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 41G) each rather irregularly serrate posteriorly, with apicolateral tooth trifurcate apically, apicolateral setae moderately long to long. Spermatheca not observable.

Biology and ecology. The beetles of *Stenus expugnator* inhabit the litter of reeds and other grasses grown at the estuary of rivers, suggesting that this is a halophilous species.

Remarks. *Stenus expugnator* was first recorded from Japan (Hokkaido, Chiba) by Naomi (1997f). This species is closely allied to *S. proclinatus* Benick, 1922 from China, but it is separable from the latter by the 8th ventrite of male with posteromedian emargination larger and broader (Fig. 41E), the aedeagal median lobe with apicomedian projection only weakly emarginate apically (Fig. 41A), and the endophallic expulsion hook being M-shaped as in *S. proclinatus* but narrower, thicker medially, and only less shallowly emarginate posteriorly (Fig. 41F). *S. expugnator* is also allied to *S. carbonarius* Gyllenhal, 1827, which is widely distributed in the western part of Eurasian continent, but it is separable from the latter by the endophallic expulsion hook being M-shaped (Fig. 41F) and the basal tube beak-shaped apically.

Stenus sakura Hromádka

(Fig. 42A–F)

Stenus sakura Hromádka, 1979a: 115; Herman, 2001: 2376; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (MHNG), Mt. Ohdai, Nara Pref., 24. viii. 1968, K. Sawada leg.

Distribution. Japan (Honshu: Nara Pref.).

Redescription. Male: Brachypterous; body 3.5 mm (fore body 1.6 mm) in length, moderately shining, with antennae relatively short. Body black, slightly with reddish tinge on pronotum and elytra; labrum black; antennae dark red; legs dark reddish brown to black. Head with a pair of longitudinal depressions; punctures round to elliptical, very dense, various in size, distinct. Pronotum with surface weakly uneven; punctures round, very dense, various in size. Elytra with surface uneven; punctures round, very dense, various in size. Legs short; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen relatively wide; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense to dense, and various in size in anterior segments, while punctures in posterior segments very elliptical, moderately dense, small and regular. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Sixth ventrite (Fig. 42D) posteromedially with a semicircular depression, which is shallowly emarginate posteriorly, sparsely covered with setae, and also furnished with several relatively long setae at posterolateral corners; 7th ventrite (Fig. 42D) posteromedially with a large, bell-shaped depression, which is arcuately emarginate, ridged posterolaterally, and covered densely with short setae; 8th ventrite (Fig. 42D) posteromedially with a V-shaped emargination, and centrally with a shallow depression, which become shallower posteriorly; 9th tergum (Fig. 42A) with ventral apophyses long; 9th ventrite (Fig. 42C) elongate, finely serrate posteriorly, with stem elongate-rectangular in shape, apicolateral teeth each short, bifurcate apically; 10th tergum (Fig. 42A) transverse, shallowly emarginate posteriorly. Aedeagal median lobe (Fig. 42B) elongate, gently rounded apicolaterally, its apex acutely pointed, ventromedially with a longitudinal keel; apicomedian subtransparent area large, almost pentagonal in shape; apicolateral teeth

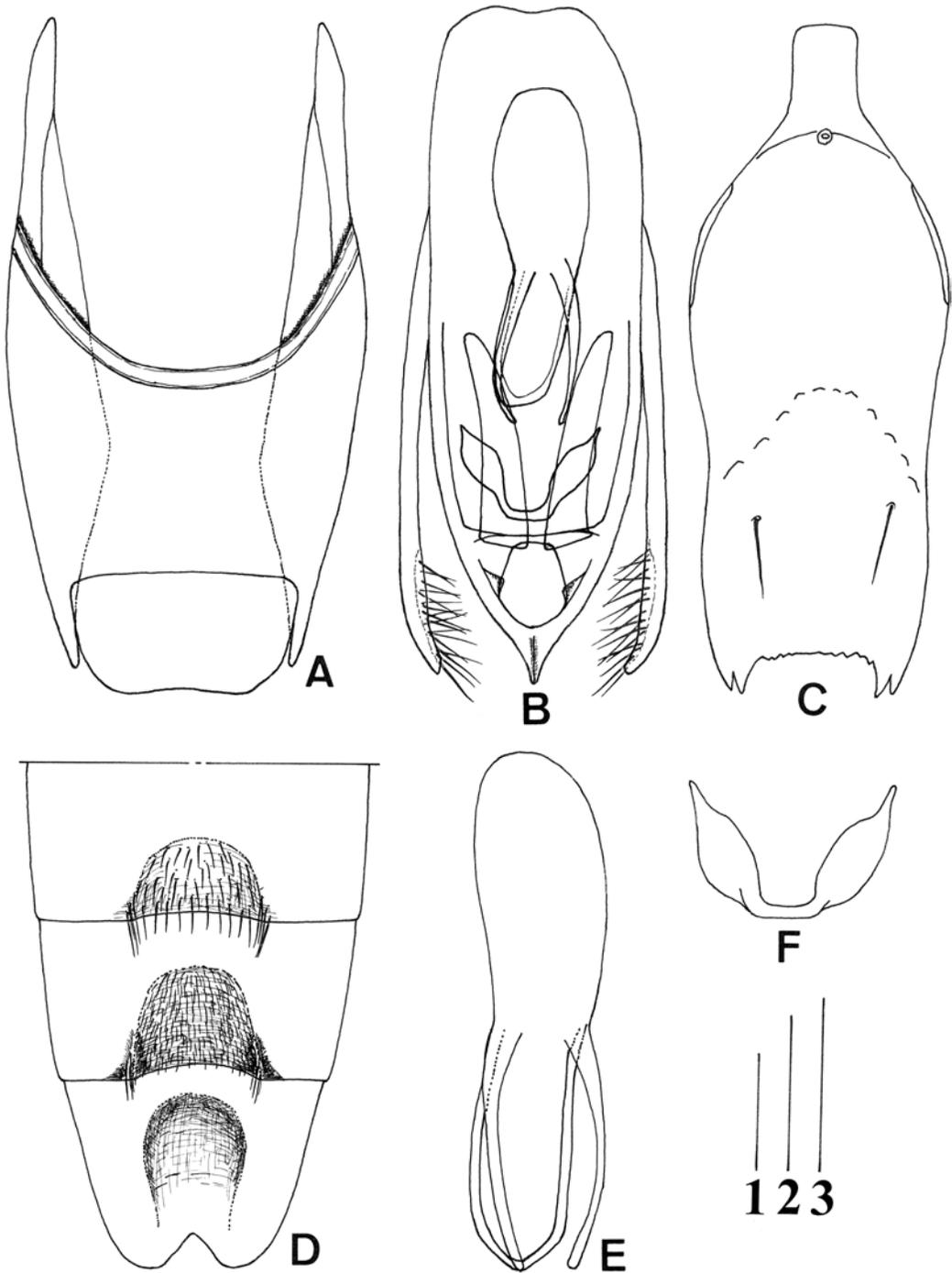


Fig. 42. *Stenus sakura* Hromádka (Ohdaigahara, Nara). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, 6th to 8th ventrites of male; E, endophallic basal tube; F, expulsion hook. Scale 1: 0.1 mm for A–C; scale 2: 0.3 mm for D; scale 3: 0.1 mm for E, F.

pointed, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 42B) broad, moderately long; expulsion hook structured as in Fig. 42B, F; basal tube (Fig. 42B) with basal room large, elongate-ovoidal in shape, tube body simply baculiform, ventrally with paired lateral processes which are thin and weakly incurved (Fig. 42E). Parameres (Fig. 42B) thin, slender, very weakly incurved; apical area moderately long, covered mesially with 17 to 18 moderately long setae.

Female: Not examined.

Biology and ecology. *S. sakura* is a very rare *Stenus* species; and only a few beetles were collected in the natural forests of mountainous regions in Honshu (Kii-Peninsula). The beetles are leaf litter inhabitants.

Remarks. *Stenus sakura* was originally described by Hromádka in 1979a, based on 1 male and 2 female (Ohdai, Nara) and 1 female (Chuzenji, Tochigi). We examined the paratype specimen from Chuzenji (cP) and found that it belongs to *S. zimmermanni* Puthz, 1968b. Being distinctly different from all other members of subgroup 2 in Japan, *S. sakura* is very characteristic in having the endophallic basal tube ventrally with paired lateral processes (Fig. 42E). Given this, it is difficult to detect the closely related species of *S. sakura* among the Japanese members of *S. humilis* group, but it is clearly distinguished from them by the endophallic structures mentioned above.

Etymology. The specific epithet of this species is derived from the Japanese name of cherry tree “Sakura”.

***Stenus giushin* Naomi**
(Figs. 43A–F, 129H)

Stenus giushin Naomi, 1990d: 101; Herman, 2001: 2201; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Ryumon Valley, Saga Pref., 23. x. 1977, H. Ohishi leg. Paratypes: 9♂5♀ (cN), same data as holotype; 1♂ (cN), Kyogatake, Saga Pref., 6. vi. 1983, S. Nomura leg.; 1♀ (cN), Mt. Seira, Imari City, Saga Pref., 3. iii. 1985, S. Nomura leg.; 1♂2♀ (cN), Kikuchi Valley, Kumamoto Pref., 11. iv. 1981, S. Naomi leg.

Other material examined. [KYUSHU] 4♂1♀, Mt. Unzen, Shimabara, Nagasaki Pref., 16. v. 1986, T. Ito leg.

Distribution. Japan (Kyushu). In the original description by Naomi (1990), *S. giushin* is recorded also from Fukuoka Pref. northern Kyushu, but it was clarified that the specimens of *S. japonicus* recorded from Fukuoka are mistook for those of *S. giushin*.

Redescription. Male and female: Brachypterous; body 2.6–3.3 (fore body 1.4–1.6 mm) in length, moderately shining, with antennae relatively short. Body black, slightly with reddish tinge on pronotum and elytra; labrum black; antennae dark red; legs reddish brown, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round, very dense, almost regular. Pronotum with surface weakly uneven; punctures round, very dense. Elytra with surface weakly uneven; punctures round, very dense, somewhat rough. Legs relatively short; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen relatively wide to wide; 3rd to 5th or 6th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, sparse to moderately dense, very small and regular. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

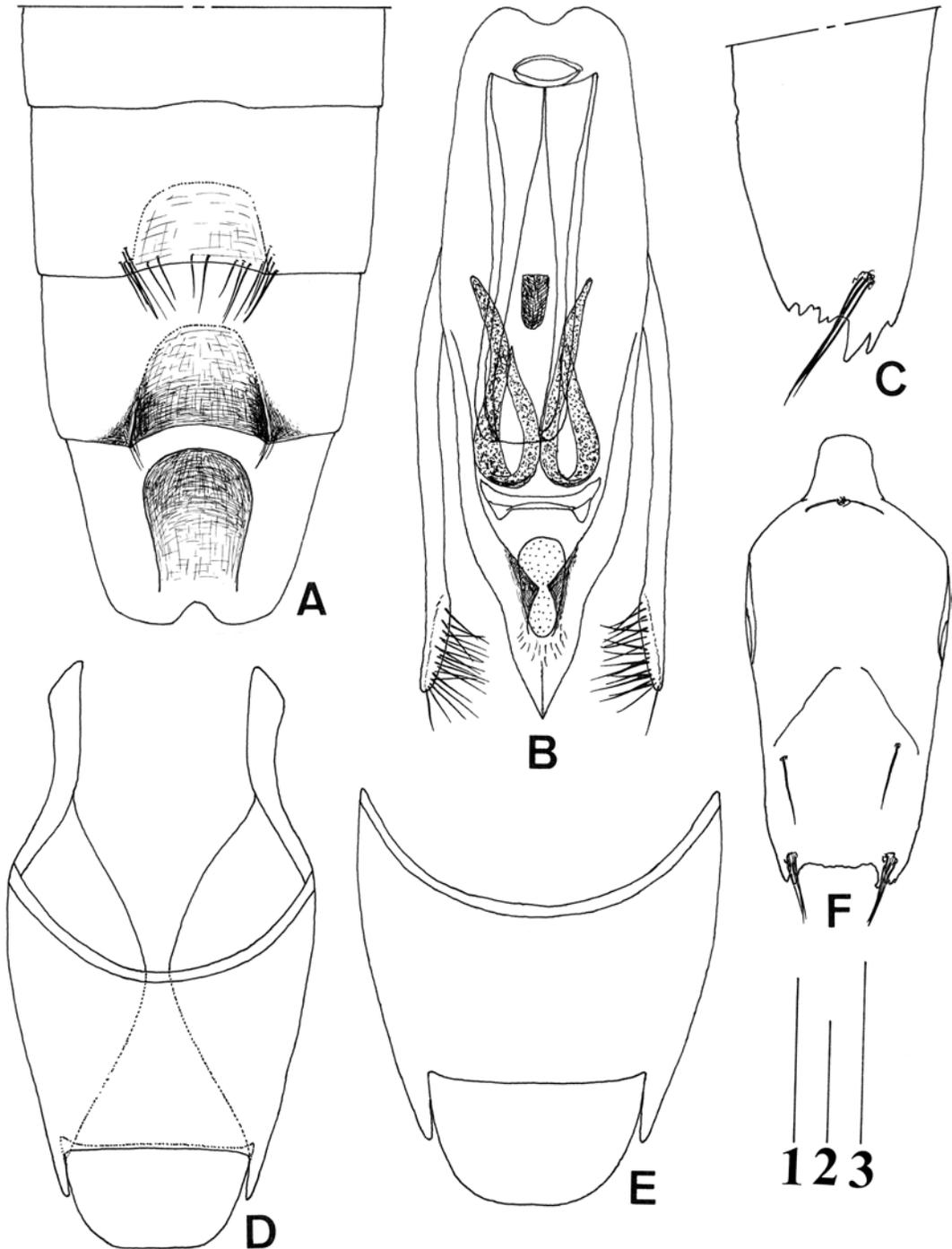


Fig. 43. *Stenus giushin* Naomi (A, Kyogatake, Saga; B, F, Kikuchi, Kumamoto; C–E, Ryumon, Saga). A, 5th to 8th ventrites of male; B, aedeagus; C, apex of gonocoxite; D, 9th and 10th terga of male; E, 9th and 10th terga of female; F, 9th ventrite of male. Scale 1: 0.3 mm for A; scale 2: 0.1 mm for B; scale 3: 0.1 mm for C; 0.2 mm for D–F.

Male: Fifth ventrite (Fig. 43A) posteromedially with a very shallow emargination; 6th ventrite (Fig. 43A) posteromedially with a subtrapezoidal flat area, which is arcuately emarginate, and furnished sparsely with setae along posterior margin, and also with several setae at posterolateral corners; 7th ventrite (Fig. 43A) posteromedially with a large, bell-shaped depression, which is arcuately emarginate and furnished with short setae at posterolateral corners; 8th ventrite (Fig. 43A) posteromedially with a small emargination, and centrally with a shallow depression, which become shallower posteriorly; 9th tergum (Fig. 43D) with ventral apophyses moderately long; 9th ventrite (Fig. 43F) elongate, indistinctly serrate posteriorly, with stem rounded anteriorly, apicolateral teeth each short, bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 43D) entire. Aedeagal median lobe (Fig. 43B) elongate, gently rounded apicolaterally, moderately constricted behind the apicolateral corners to form the lanceolate apex; apical sclerotized area anteromedially with very short, sparse setae; apicomedian subtransparent area elongate-ovoidal in shape; apicolateral teeth very large, pointed, well sclerotized, broad-triangular in shape, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 43B) moderately long; expulsion hook (Fig. 43B) transverse, with short posterolateral arms; basal tube (Fig. 43B) large, baculiform. Parameres (Fig. 43B) slender; apical area weakly swollen mesially, furnished mesially with 18 to 20 moderately long setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 43E) without ventral apophyses; gonocoxites (Fig. 43C) each irregularly serrate posteriorly, with apicolateral tooth bi- or trifurcate apically, apicolateral setae moderately long; 10th tergum (Fig. 43E) entire. Spermatheca not observable.

Biology and Ecology. *Stenus giushin* is distributed in the mountainous regions of Kyushu. The beetles inhabit leaf litter heaped in the natural forests and also near the mountain torrents.

Remarks. *Stenus giushin* is allied to *S. zaishin*, but it is clearly separable from the latter by the 7th ventrite of male with posteromedian depression larger (Fig. 43A), the aedeagal median lobe with apicolateral corners more distinctly developed and apicolateral teeth distinctly larger (Fig. 43B), and the endophallic expulsion hook broader and thicker (Fig. 43B).

Etymology. The specific epithet of this species “*giushin*” is derived from a name of ancient Chinese mask.

***Stenus zaishin* Naomi**
(Figs. 44A–G, 129I)

Stenus zaishin Naomi, 1990d: 102; Herman, 2001: 2438; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Mt. Tsurugi, Tokushima Pref., 15–17. x. 1980, S. Naomi leg. Paratypes: 7♂7♀ (cN), same data as holotype.

Other material examined. [HONSHU] 1♂1♀, Mt. Ohdai, Nara Pref., 1. v. 1969, T. Ito leg. [SHIKOKU] 1♂, Motokawa, Ino-machi, Kochi Pref., 18. viii. 2007, T. Miyata leg.

Distribution. Japan (Honshu, Shikoku).

Redescription. Male and female: Brachypterous; body 3.3–3.6 (fore body 1.5–1.7 mm) in length, weakly shining, with antennae short. Body black; labrum black; antennae and legs reddish brown to dark red. Head with a pair of longitudinal depressions; punctures round to elliptical, very dense. Pronotum with surface very weakly uneven; punctures round to elliptical, very dense, sometimes two or more punctures combined. Elytra with surface uneven; punctures round to elliptical, very dense, somewhat rough. Legs relatively short; tarsi short, with 4th tarsomere

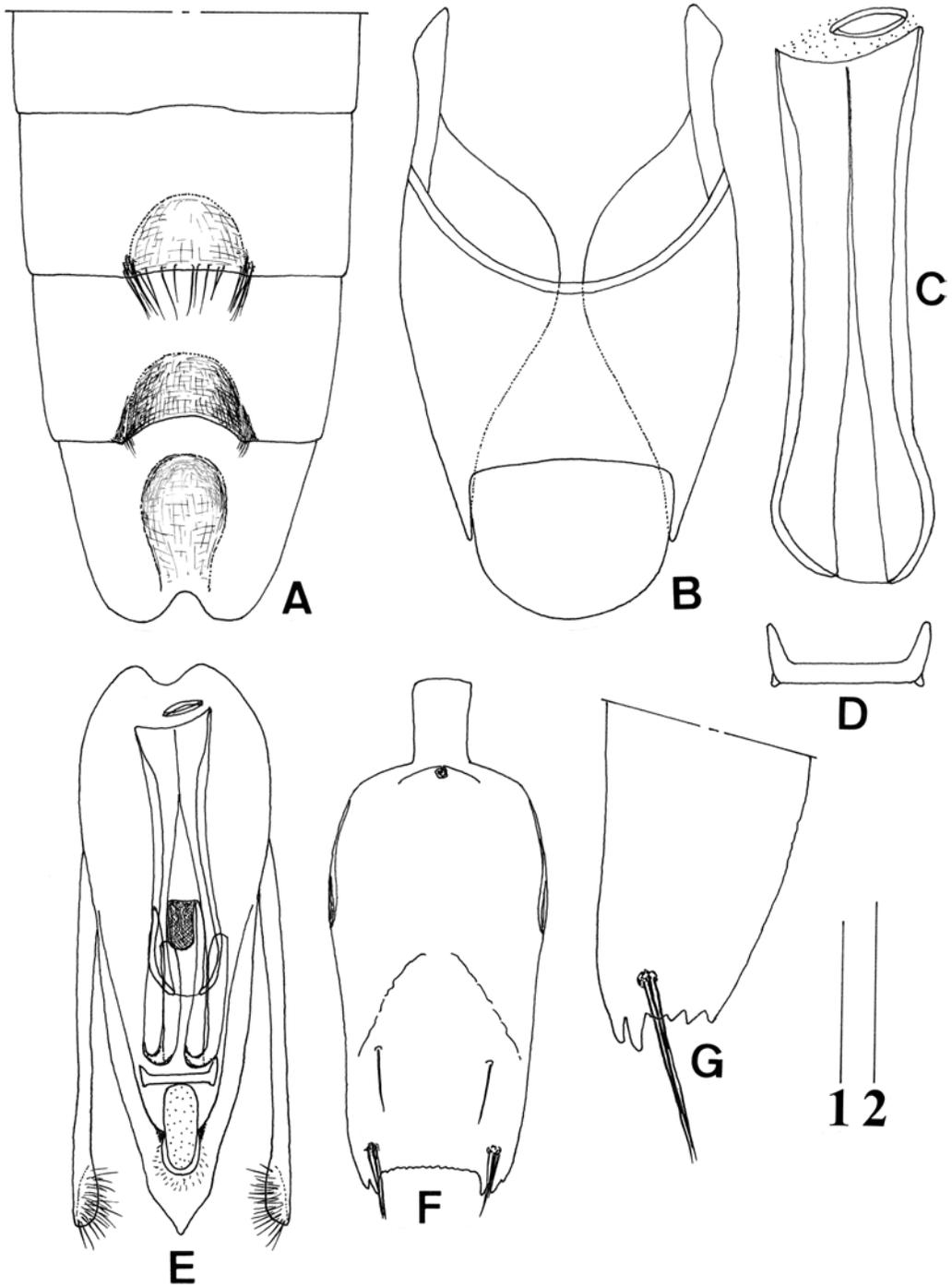


Fig. 44. *Stenus zaishin* Naomi (A, C–G, Tsurugi, Tokushima; B, Ohdaigahara, Nara). A, 5th to 8th ventrites of male; B, 9th and 10th terga of male; C, endophallic basal tube; D, endophallic expulsion hook; E, aedeagus; F, 9th ventrite of male; G, apex of gonocoxite. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B, E, F; scale 3: 0.1 mm for C, D, G.

very weakly bilobed. Abdomen relatively wide to wide 3rd to 5th or 6th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, moderately dense, very small and regular. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Fifth ventrite (Fig. 44A) posteromedially with a very shallow emargination; 6th ventrite (Fig. 44A) posteromedially with a semicircular flat area, which is very shallowly emarginate posteriorly and furnished with several moderately long setae at posterolateral corners; 7th ventrite (Fig. 44A) posteromedially with a semicircular depression, which is arcuately emarginate posteriorly and furnished with short setae at posterolateral corners; 8th ventrite (Fig. 44A) posteromedially with a medium-sized emargination, and centrally with a shallow depression, which becomes shallower posteriorly; 9th tergum (Fig. 44B) with ventral apophyses moderately long; 9th ventrite (Fig. 44F) elongate, finely serrate posteriorly, with stem elongate-rectangular in shape, apicolateral teeth each bi- or trifurcate apically, apicolateral setae moderately long; 10th tergum (Fig. 44D) entire. Aedeagal median lobe (Fig. 44B) elongate, almost uniformly narrowed apically, with the lanceolate apex; apical sclerotized area anteromedially with a U-shaped emargination, and covered with very fine setae along the rim of emargination; apicomedian subtransparent area elongate; apicolateral teeth small, sclerotized, pointed, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 44E) short; expulsion hook (Fig. 36E, D) transverse, with anterior arms turning anterolaterally; basal tube (Fig. 44E, C) large, baculiform. Parameres (Fig. 44E) slender, almost straight; apical area short, swollen mesially, covered mesially with 20 to 25 short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 44G) each irregularly serrate posteriorly, with apicolateral teeth bi- or trifurcate apically, apicolateral setae moderately long to long. Spermatheca not observable.

Biology and Ecology. *Stenus zaishin* is distributed in the low to high mountainous regions. The beetles inhabit litter in the natural forests.

Remarks. *Stenus zaishin* is allied to *S. giushin*, but it is clearly separable from the latter by the 7th ventrite of male with posteromedian depression smaller (Fig. 44A), the aedeagal median lobe almost simply narrowed apically, without distinct apicolateral corners (Fig. 44E), the apicolateral teeth of median lobe distinctly smaller (Fig. 44E), and the expulsion hook narrower and thinner (Fig. 44E).

Etymology. The specific epithet of this species “*zaishin*” is derived from a name of ancient Chinese mask.

Stenus kirin Naomi & Ito

(Figs. 45A–G, 129J)

Stenus kirin Naomi & Ito, 2014: 281.

Type material examined. Holotype: ♂ (OMNH), Mt. Kojin, Yamato (Nara Pref.), 2. v. 1968, T. Ito leg. Paratypes: 1 ♀ (cN), same data as holotype; 1 ♀ (cN), same locality as holotype, 30. vi. 1968, T. Ito leg.; 1 ♂ (cN), Mt. Tateri-kojin, Oku-koya, Nara Pref., 4. v. 1969, M. Goto leg.

Distribution. Japan (Honshu: Nara Pref.).

Redescription. Male and female: Brachypterous; body 2.9–3.1 (fore body 1.5–1.6 mm) in length, moderately shining, with short antennae. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae reddish brown; legs reddish brown, with knees more or

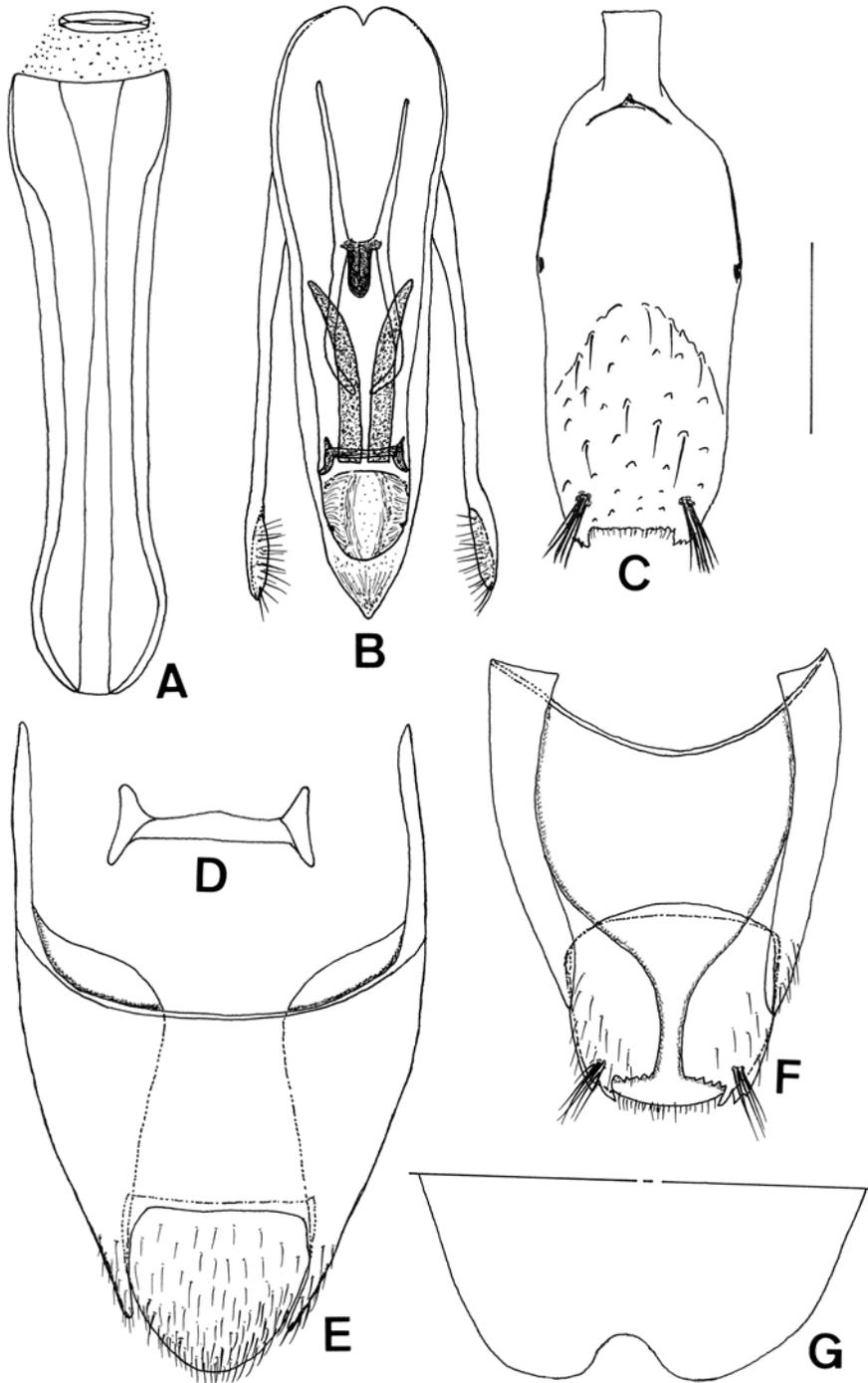


Fig. 45. *Stenus kirin* Naomi & Ito (Nara). A, endophallic basal tube; B, aedeagus; C, 9th ventrite of male; D, expulsion hook; E, 9th and 10th terga of male; F, 9th, 10th terga and gonocoxites of female; G, apex of 8th ventrite of male. Scale: 0.1 mm for A, D 0.2 mm for B, C, E–G.

less infuscate. Head with a pair of longitudinal depressions; punctures round, dense. Pronotum with surface weakly uneven; punctures round to subrugose, very dense. Elytra with surface very weakly uneven; punctures very dense, rough. Legs short; tarsi short, moderately thick, with 4th tarsomere very weakly bilobed. Abdomen weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, dense, very small and regular. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Sixth ventrite posteromedially with a triangular flat area, which is very weakly emarginate posteriorly; 7th ventrite posteromedially with a shallow, semicircular depression, which is arcuately emarginate; 8th ventrite (Fig. 45G) posteromedially with a medium-sized emargination; 9th tergum (Fig. 45E) with ventral apophyses long, thin; 9th ventrite (Fig. 45C) elongate, hardly serrate posteriorly, with stem elongate-rectangular in shape, apicolateral teeth each short, bi- or tridentate apically, apicolateral setae short; 10th tergum (Fig. 45E) entire. Aedeagal median lobe (Fig. 45B) slender, gradually narrowed apically, pointed apically; apical sclerotized area subtriangular in shape, widely arcuately emarginate anteriorly; apicomedian subtransparent area narrow, fusiform; apicolateral teeth very small, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 45B) moderately long, broad, gradually divergent anteriorly; expulsion hook (Fig. 45B, D) transverse, with short antero-lateral arm and postero-lateral arm; basal tube (Fig. 45A, B) large, thick, weakly swollen apically. Parameres (Fig. 45B) slender, thin; apical area weakly swollen, furnished mesially with thin, short setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 45F) without ventral apophyses; gonocoxites (Fig. 45F) each serrate posteriorly, with apicolateral tooth bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 45F) entire. Spermatheca not observable.

Biology and Ecology. *Stenus kirin* is distributed in the low mountainous regions. The beetles inhabit litter in the natural forests.

Remarks. *Stenus kirin* is allied to *S. giushin* and *S. zaishin*, but it is clearly separable from the latter two species by the aedeagal median lobe more slender, with the apicolateral teeth much smaller (Fig. 45B), and the endophallic expulsion hook with posterolateral arm longer and turning posterolaterally (Fig. 45D).

Etymology. The specific epithet of this species is derived from the Japanese noun 'Kirin', that is, the name of imaginary animal which is considered a symbol of 'Good Luck'.

***Stenus ohbayashii* Naomi**

(Figs. 46A–G, 129K)

Stenus zaishin ohbayashii Naomi, 1997f: 141; Herman, 2001: 2438; Naomi & Puthz, 2013: 138.
Stenus ohbayashii Naomi, 1997f: Naomi & Ito, 2014: 287.

Type material examined. Holotype of *S. zaishin ohbayashii*: ♂ (CBM), Hontani, Mt. Odami, Ehime Pref., 30. vii. 1994, M. Sakai leg.

Other material examined. [SHIKOKU]: 29 ♂ 24 ♀, Mt. Odami, Ehime Pref., 11. vii. 1994, E. Yamamoto leg.

Distribution. (Shikoku: Ehime Pref.).

Redescription. Male and female: Brachypterous; body 3.4–3.6 mm (fore body 1.5–1.6 mm) in length, weakly to moderately shining, with antennae short. Body almost entirely black; labrum black; antennae and legs dark red. Head with a pair of longitudinal depression; punctures round

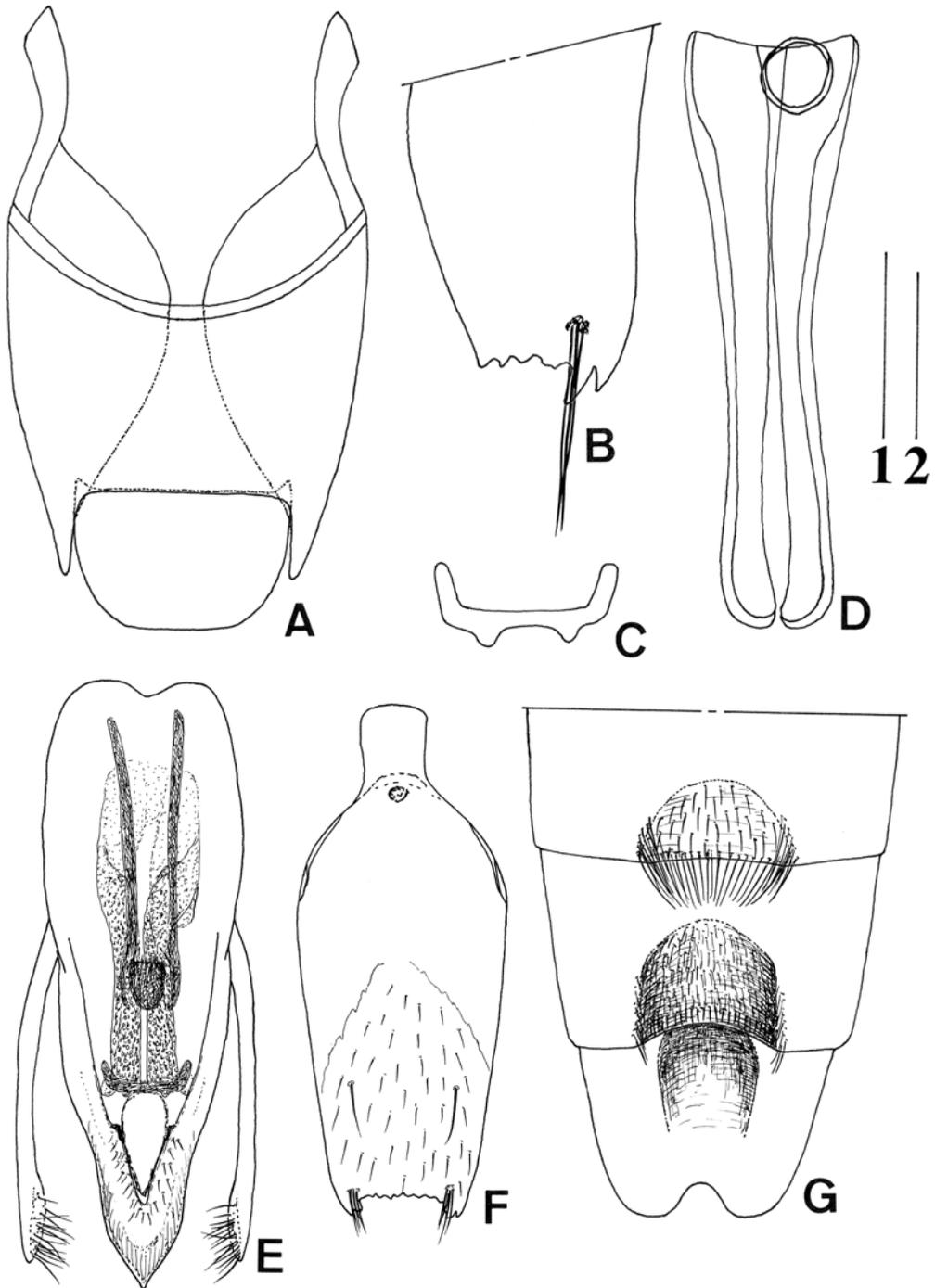


Fig. 46. *Stenus ohbayashii* Naomi (Odami, Ehime). A, 9th and 10th terna of male; B, apex of gonocoxite; C, endophallic expulsion hook; D, basal tube; E, aedeagus; F, 9th ventrite of male; G, 6th to 8th ventrites of male. Scale 1: 0.2 mm for A, E, F, 0.1 mm for B–D; scale 2: 0.3 mm for G.

to elliptical, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, sometimes subrugous. Elytra with surface weakly uneven; punctures very dense, rough, somewhat subrugous. Legs relatively short; tarsi with 4th tarsomere very weakly bilobed. Abdomen moderately wide; 3rd to 6th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense, small and in anterior segments, while punctures in posterior segments elliptical, moderately dense and very small. Lateroventrites horizontal or dorsomesial in position, narrow, punctate.

Male: Sixth ventrite (Fig. 46G) posteromedially with a semicircular flat area, which is weakly emarginate and furnished posteriorly with moderately long setae; 7th ventrite (Fig. 46G) posteromedially with a large, deep depression, which is arcuately emarginate; 8th ventrite (Fig. 46G) posteromedially with a medium-sized emargination, centrally with a shallow depression, which become shallower posteriorly; 9th tergum (Fig. 46A) with ventral apophyses moderately long; 9th ventrite (Fig. 46F) elongate, weakly serrate posteriorly, with stem elongate-rectangular in shape, apicolateral teeth each short, bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 46A) entire. Aedeagal median lobe (Fig. 46E) weakly constricted near the middle, lanceolate and acute apically; apical sclerotized area long, deeply emarginate anteriorly to form a V-shaped notch, covered sparsely with short setae along the rim of emargination; apicomedian subtransparent area elongate-subovoidal in shape; apicolateral teeth small, each located at the anterior corner of emargination. Endophallic median longitudinal bands (Fig. 46E) long, moderately wide; expulsion hook (Fig. 46E) transverse, thin, with its anterolateral arm turning anterolaterally, and also posteriorly with two short humps (Fig. 46C); basal tube (Fig. 46D, E) large, simple, baculiform. Parameres (Fig. 46E) slender, weakly incurved; apical area short, weakly swollen mesially, furnished mesially with 16 to 17 thin, short setae.

Female. Eighth ventrite rounded posteriorly; gonocoxites (Fig. 46B) each irregularly serrate posteriorly, with apicolateral teeth short, bi- or trifurcate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and Ecology. *Stenus ohbayashii* is distributed in the mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus ohbayashii* was first described by Naomi (1997f) as a subspecies of *S. zaishin* Naomi, 1990d; and the subspecies was subsequently upgraded to a distinct species by Naomi & Ito (2014). Given the highly structural similarity of their aedeagi, *S. ohbayashii* is the sister species of *S. lanceolatus*, but it is separable from the latter by the 7th ventrite of male with posteromedian depression smaller (Fig. 46G), the apical sclerotized area of aedeagal median lobe anteriorly with the V-shaped emargination (Fig. 46E), the apicomedian subtransparent area much larger (Fig. 46E), and the endophallic expulsion hook with anterolateral arms shorter (Fig. 46C).

Etymology. The specific epithet of this species is named in honour of a Japanese coleopterist, Dr. Nobuo Ohbayashi (Ehime Univ.).

***Stenus lanceolatus* Naomi**

(Figs. 47A–F, 129L)

Stenus lanceolatus Naomi, 1997f: 135; Herman, 2001: 2253; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Kenashizen, Shinsho-mura, Okayama Pref., 14. v. 1994, O. Yamaji leg.

Other material examined. 2♂2♀, Hajiri, Hidaka-cho, Toyooka City, Hyogo Pref., 20. xi.

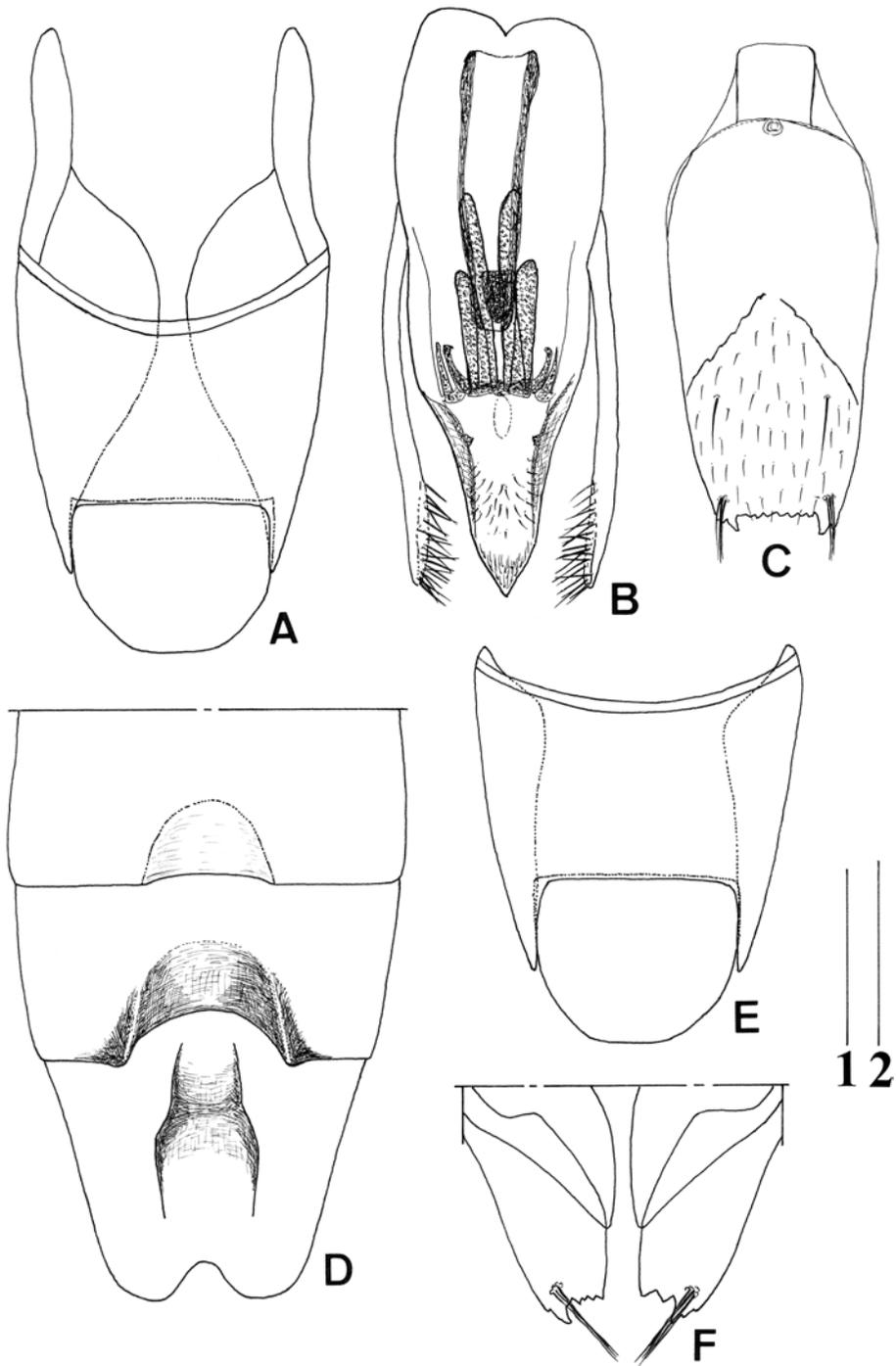


Fig. 47. *Stenus lanceolatus* Naomi (Toyooka, Hyogo). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, 6th to 8th ventrites of male; E, 9th and 10th terga of female; F, gonocoxites. Scale 1: 0.2 mm for A–C, E, F; scale 2: 0.3 mm for D.

2007, M. Matsumoto leg.

Distribution. Japan (Honshu: Hyogo and Okayama Prefs.).

Redescription. Male and female: Brachypterous; body 3.0–3.7 mm (fore body 1.5–1.6 mm) in length, weakly to moderately shining, with antennae relatively short. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae dark red; legs dark red, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round, dense to very dense, small, distinct, two punctures sometimes fused. Pronotum with surface uneven; punctures round, very dense, somewhat rough. Elytra with surface weakly uneven; punctures round, very dense, somewhat rough. Legs relatively short; tarsi with 4th tarsomere very weakly bilobed. Abdomen wide; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, dense, very small, regular and distinct. Lateroventrites horizontal or dorsomesial in position, narrow, punctate.

Male: Sixth ventrite (Fig. 47D) posteromedially with a semicircular flat area, which is weakly emarginate posteriorly; 7th ventrite (Fig. 47D) posteromedially with a very large, deep depression, which is widely emarginate posteriorly, and distinctly ridged laterally; 8th ventrite (Fig. 47D) posteromedially with a medium-sized, V-shaped emargination, medially with a longitudinal furrow, which is narrowed anteriorly; 9th tergum (Fig. 47A) with ventral apophyses relatively thick, moderately long; 9th ventrite (Fig. 47C) elongate, weakly serrate posteriorly, with stem almost square in shape, apicolateral teeth each short, bi- or trifurcate apically, apicolateral setae short. Aedeagal median lobe (Fig. 47B) lanceolate apically, with pointed apex; apical sclerotized area developed, long, declivous ventrolaterally, and partially covered with short, sparse setae; apicomedian subtransparent area small, fusiform; apicolateral teeth small, pointed. Endophallic median longitudinal bands (Fig. 47B) with ventral bands moderately long, dorsal bands short; expulsion hook (Fig. 47B) almost C-shaped, anterolateral arm slender with the small claw-like apex; basal tube (Fig. 47B) large, simple, baculiform. Parameres (Fig. 47B) slender, very weakly incurved; apical area moderately long, very weakly swollen mesially, furnished mesially with 21 to 22 thin, short setae.

Female. Eighth ventrite rounded posteriorly; 9th tergum without ventral apophyses (Fig. 47E); gonocoxites (Fig. 47F) each irregularly serrate posteriorly, with apicolateral teeth short, bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 47E) entire. Spermatheca not observable.

Biology and Ecology. *Stenus lanceolatus* is distributed in the plains to low mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus lanceolatus* is closely allied to *S. ohbayashi*, but it is separable from the latter by the 7th ventrite of male with posteromedian depression larger (Fig. 47D), the apical sclerotized area of aedeagal median lobe without anterior emargination (Fig. 47B), the apicomedian subtransparent area very small (Fig. 47B), and the endophallic expulsion hook with anterolateral arms longer (Fig. 47B).

***Stenus ochiba* Naomi & Puthz**
(Figs. 48A–G, 130A)

Stenus ochiba Naomi & Puthz, 1994a: 213; Herman, 2001: 2310; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (cP), Mt. Ontake, Nagano Pref., 3000 m, 23. ix. 1972, R. Yosii leg. Paratypes: 1 ♂ (cN), same data as holotype; 1 ♂ (cN), Nakatsuya, Yoshiwa-mura,

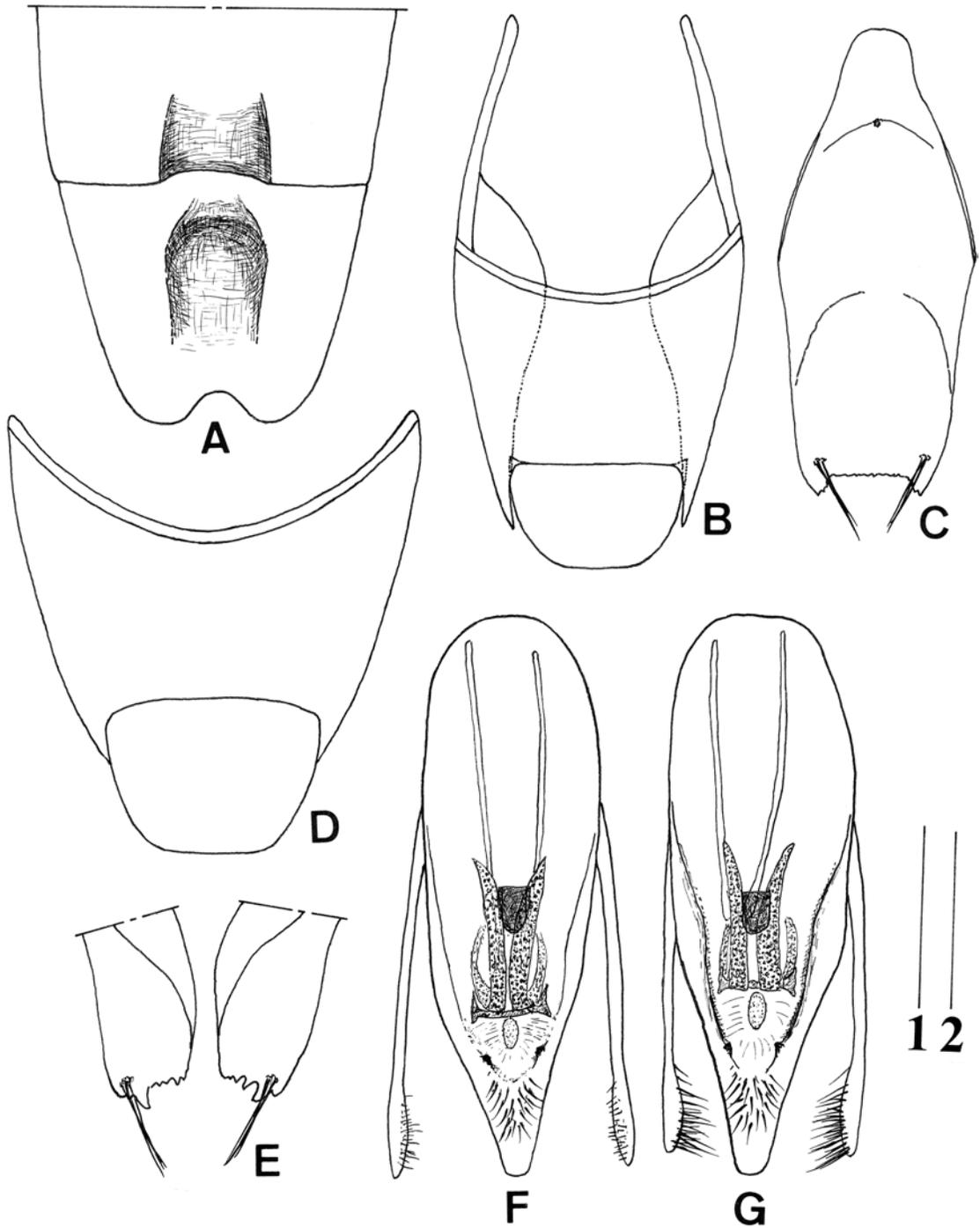


Fig. 48. *Stenus ochiba* Naomi & Puthz (A, D–F, Yoshiwa, Hiroshima; B, C, G, Ontake, Nagano). A, 7th to 8th ventrites of male; B, 9th and 10th terga of male; C, 9th ventrite of male; D, 9th and 10th terga of female; E, apices of gonocoxites; F, G, aedeagus. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B–G.

Hiroshima Pref., 28. vii. 1990, I. Okamoto leg.

Other material examined. [HONSHU] 1 ♀, Nakatsuya, Yoshiwa-mura, Hiroshima Pref., 7. vi. 1987, S. Nomura leg.

Distribution. Japan (Honshu: Nagano and Hiroshima Prefs.).

Redescription. Male and female: Brachypterous; body 2.7–3.3 mm (fore body 1.5–1.6 mm) in length, subcylindrical, moderately shining, with short antennae. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae reddish brown; legs reddish brown, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, somewhat rough. Elytra with surface uneven; punctures very dense, rough. Legs short; tarsi short, moderately thick, with 4th tarsomere very weakly bilobed. Abdomen wide, weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures moderately round to elliptical, dense and distinct in anterior segments, while punctures in posterior segments moderately dense, very small and regular. Lateroventrites horizontal or dorsomesial in position, narrow, punctate.

Male: Seventh ventrite (Fig. 48A) posteromedially with a subtrapezoidal depression, which is arcuately emarginate posteriorly; 8th ventrite (Fig. 48A) posteromedially with a medium-sized emargination, and centrally with an elongate-bell-shaped depression, which becomes gradually shallower posteriorly; 9th tergum (Fig. 48B) with ventral apophyses long, straight, thin; 9th ventrite (Fig. 48C) elongate, finely serrate posteriorly, with stem rounded anteriorly, apicolateral teeth each short, bi- or tridenticulate apically, apicolateral setae short; 10th tergum (Fig. 48B) transverse, entire. Aedeagal median lobe (Fig. 48F, G) strongly narrowed apically behind apicolateral corners, with apex narrow but still rounded; apical sclerotized area anteromedially covered with short sparse setae; apicomedian subtransparent area small, elliptical; apicolateral teeth very small, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 48F, G) with ventral bands moderately long, each gradually narrowed anteriorly, dorsal bands short; expulsion hook (Fig. 48F, G) transverse, thin, with its anterolateral arm a little longer than postero-lateral arm; basal tube (Fig. 48F, G) large, simple, baculiform. Parameres (Fig. 48F, G) slender, thin, almost straight; apical area weakly swollen mesially, furnished mesially with very short setae (Fig. 48F) or with moderately long setae (Fig. 48G).

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 48D) without ventral apophyses; gonocoxites (Fig. 48E) each irregularly serrate posteriorly, with apicolateral teeth short, bifurcate apically, apicolateral setae moderately long; 10th tergum (Fig. 48D) entire. Spermatheca not observable.

Biology and ecology. *S. ochiba* is distributed in the low and high mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus ochiba* is closely allied to *S. satushin* and *S. nipponomontanus*, but it is separable from the latter two species by the 6th ventrite of male without modifications, and the aedeagal median lobe with apex narrowly but distinctly rounded (Fig. 48F, G). Presently, *S. ochiba* has been collected from two distantly separated localities (alpine zone of Mt. Ontake, central Honshu and lowland of Hiroshima, western Honshu). The aedeagus shows slight morphological difference between these two populations with respect to the length of parameral setae (Naomi & Puthz, 1994a), but we treat here the difference as an infraspecific variation.

Etymology. The specific epithet of this species is derived from the Japanese noun 'Ochiba', which means "fallen leaves"; and the beetles inhabit leaf litters or fallen leaves.

***Stenus satushin* Naomi & Puthz**
(Figs. 49A–G, 130B)

Stenus satushin Naomi & Puthz, 1994a: 212; Herman, 2001: 2378; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Mt. Takanawa, Hojo City, Ehime Pref., 14. iv. 1991, I. Okamoto leg. Paratypes: 1 ♂ (cN), Mt. Takanawa, Hojyo City, Ehime Pref., 14. iv. 1991, I. Okamoto leg.; 2 ♂ (cN), same locality, 30. iv. 1991, I. Okamoto leg.; 1 ♂ (cN), same locality, 6. v. 1991, I. Okamoto leg.; 1 ♂ (cN), same locality, 24. viii. 1991, I. Okamoto leg.

Other material examined. [HONSHU]: 1 ♂ 1 ♀, Mado Pass, Tanbara-cho, Ehime Pref., 27. xi. 1968, M. Yoshida leg.

Distribution. Japan (Shikoku: Ehime Pref.).

Redescription. Male and female: Brachypterous; body 3.2–3.3 mm (fore body 1.5–1.6 mm) in length, subcylindrical, moderately shining, with short antennae. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae reddish brown; legs reddish brown, with knees more or less infusate. Head with a pair of longitudinal depressions; punctures round to elliptical, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, somewhat rough. Elytra with surface uneven; punctures round to elliptical, very dense, somewhat subrugous. Legs short; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen wide; 3rd to 5th or 6th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in posterior segments moderately dense, very small and regular. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Sixth ventrite (Fig. 49D) posteromedially with a small, shallow semicircular depression, which is shallowly emarginate posteriorly; 7th ventrite (Fig. 49D) posteromedially with a bell-shaped depression, which is emarginate posteriorly; 8th ventrite (Fig. 49D) posteromedially with a medium-sized emargination, and centrally with an elongate depressed area which becomes gradually shallower posteriorly; 9th tergum (Fig. 49A) with ventral apophyses moderately long; 9th ventrite (Fig. 49E) elongate, hardly serrate posteriorly, with stem rectangular in shape, apicolateral teeth each short, di- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 49A) entire. Aedeagal median lobe (Fig. 49B) nearly violin-shaped, pointed apically; apical sclerotized area medially covered with short, sparse setae; apicomedian subtransparent area rather small, elliptical; apicolateral teeth very small, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 49B) moderately long; expulsion hook (Fig. 49B) transverse but weakly arched posteriorly, with its anterolateral arm longer than posterolateral arm (Fig. 49G); basal tube (Fig. 49B, C) large, baculiform. Parameres (Fig. 49B) slender, thin, weakly incurved; apical area weakly swollen mesially, furnished mesially with 21 to 22 setae (Fig. 49B).

Female: Eighth ventrite almost rounded posteriorly; gonocoxites (Fig. 49F) each irregularly serrate posteriorly, with apicolateral tooth indistinct (or 2 or 3 teeth of various size at apicolateral part, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus satushin* is distributed in the low mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus satushin* is closely allied to *S. nipponomontanus*, but this species is separable from the latter by the 6th and 7th ventrites of male each with a smaller depression (Fig. 49D), the aedeagal median lobe with its lateral rim narrower, and apical sclerotized area shorter and

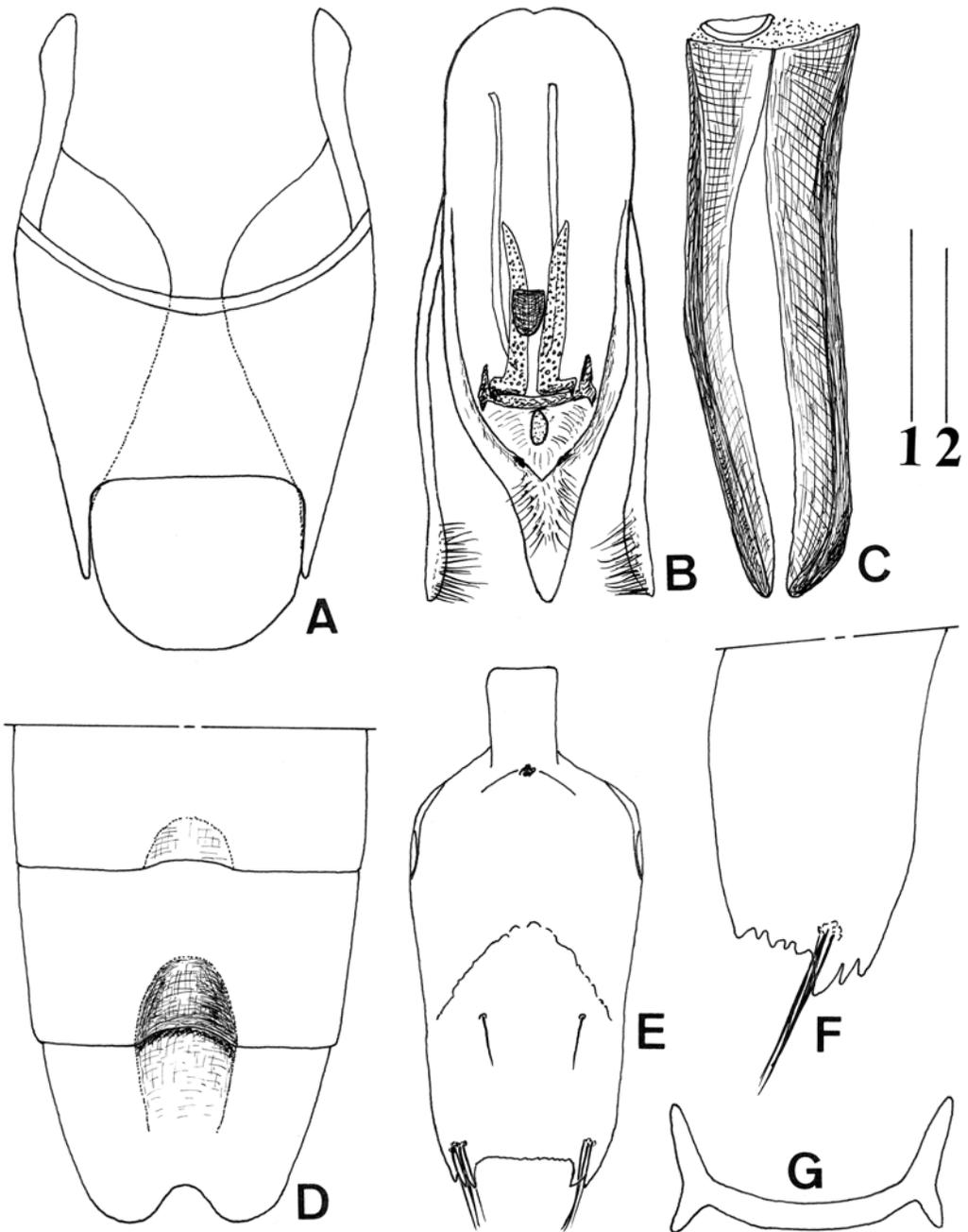


Fig. 49. *Stenus satushin* Naomi (A, D–F, Tanbara, Ehime; B, C, G, Hojyo, Ehime). A, 9th and 10th terga of male; B, aedeagus; C, endophallic basal tube; D, 6th to 8th ventrites of male; E, 9th ventrite of male; F, apex of gonocoxite; G, endophallic expulsion hook. Scale 1: 0.2mm for A, B, E, 0.1 mm for C, F, G; scale 2: 0.3 mm for D.

narrower (Fig. 49B), and the endophallic expulsion hook wider, with its anterolateral arm relatively long (Fig. 49G).

Etymology. The specific epithet of this species “*satushin*” is derived from a name of ancient

Chinese mask.

***Stenus nipponomontanus* Naomi**
(Figs. 50A–G, 130C)

Stenus nipponomontanus Naomi, 1988c: 48; Herman, 2001: 2301; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♀ (KUF), Ohdaigahara, Nara Pref., 25–26. vi. 1981, S. Naomi leg. Paratypes: 1 ♂1 ♀ (cN), same data as holotype.

Other material examined. [HONSHU] 1 ♂, Ohdaigahara, Nara Pref., 20. vii. 1975, T. Ito leg.; 1 ♂1 ♀, Mt. Kasuga, Nara Pref., 4. v. 1969, Y. Watanabe leg.; 2 ♂1 ♀, same locality, 3. iv. 1992, T. Kishimoto leg.

Distribution. Japan (Honshu: Nara Pref.).

Redescription. Male and female: Brachypterous; body 3.2–3.7 mm (fore body 1.6–1.8 mm) in length, subcylindrical, moderately shining, with short antennae. Body almost entirely black; labrum black; antennae reddish brown; legs dark red to black. Head with a pair of longitudinal depressions; punctures round, very dense, distinct. Pronotum with surface uneven; punctures round, very dense, various in size, somewhat rough. Elytra with surface uneven; punctures round to elliptical, very dense, various in size, somewhat subrugous. Legs short; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen wide; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round, moderately dense, small and various in size in anterior segments, while punctures in posterior segments round to elliptical, moderately dense and very small. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Sixth ventrite (Fig. 50C) posteromedially with a shallow, semicircular depression, which is shallowly emarginate; 7th ventrite (Fig. 50C) posteromedially with a large, bell-shaped depression, which is arcuately emarginate posteriorly; 8th ventrite (Fig. 50C) posteromedially with a small, U-shaped emargination, and medially with an elongate depressed area which becomes shallower and broader posteriorly; 9th tergum (Fig. 50D) with ventral apophyses short, broad; 9th ventrite (Fig. 50E) elongate, very finely serrate posteriorly, with stem elongate-rectangular in shape, apicolateral teeth each short, bi- or tridentulate apically, apicolateral setae moderately long; 10th tergum (Fig. 50D) entire. Aedeagal median lobe (Fig. 50A) nearly violin-shaped, acutely pointed apically; apical sclerotized area long, elongate-triangular in shape, anteromedially covered with short, sparse setae; apicomedian subtransparent area small, ovoidal; apicolateral teeth very small, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 50A) with ventral bands long, thin, dorsal bands short; expulsion hook (Fig. 50A) transverse but weakly arched posteriorly, anterolaterally with a small tooth, posterolaterally with a triangular tooth (Fig. 50F); basal tube (Fig. 50A, B) large, baculiform. Parameres (Fig. 50A) very thin, slender, almost uniformly incurved; apical area moderately long, hardly swollen mesially, furnished mesially with 20 to 21 short setae (Fig. 50A).

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 50G) each irregularly serrate posteriorly, with apicolateral tooth indistinct or bifurcate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus nipponomontanus* is distributed in the low to high mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus nipponomontanus* is closely allied to *S. satushin*, but this species is separable from the latter by the 6th and 7th ventrites of male each with a larger depression (Fig. 50C),

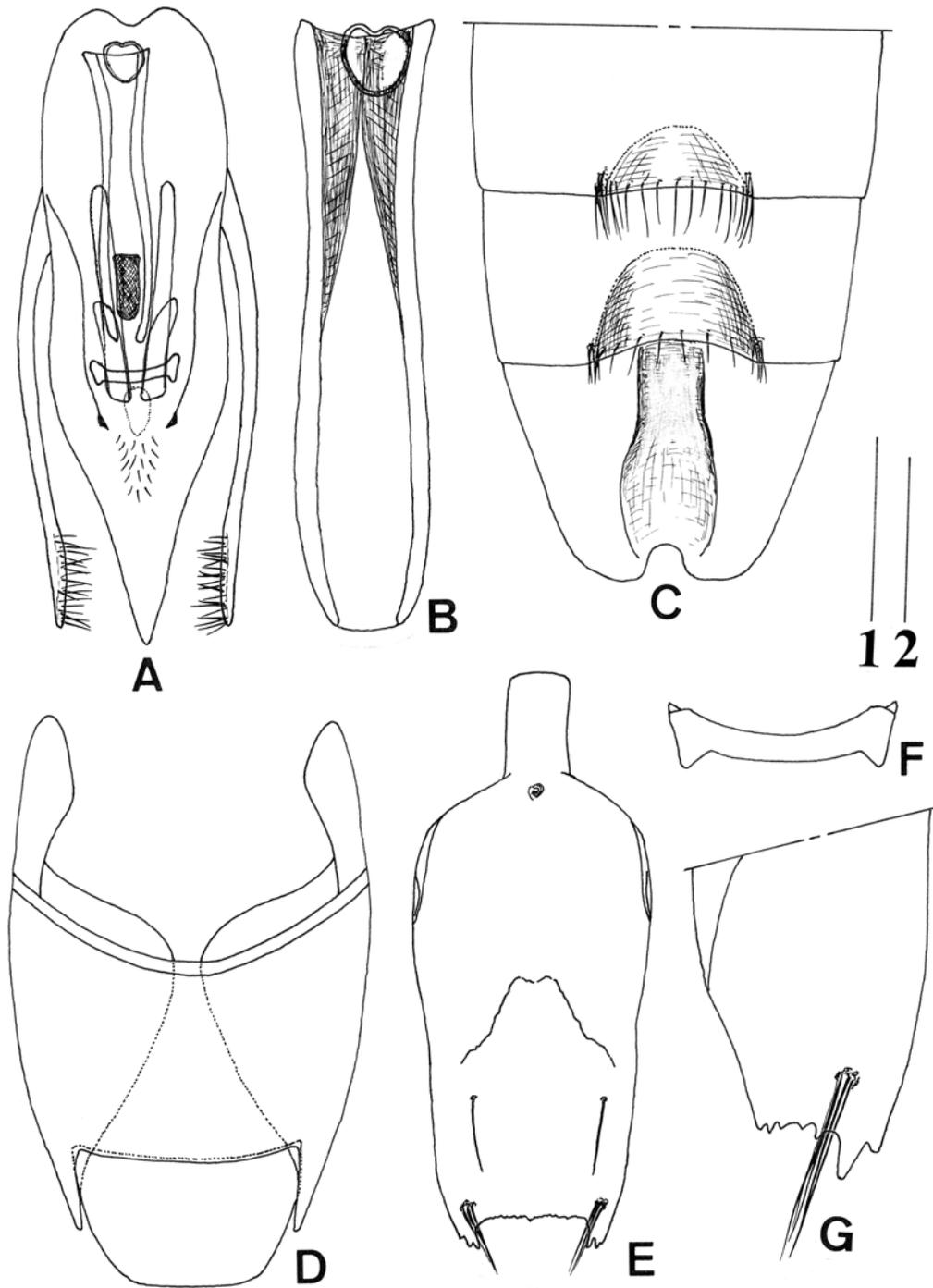


Fig. 50. *Stenus nipponomontanus* Naomi (Ohdaigahara, Nara). A, aedeagus; B, endophallic basal tube; C, 6th to 8th ventrites of male; D, 9th and 10th terga of male; E, 9th ventrite of male; F, expulsion hook; G, apex of gonocoxite. Scale 1: 0.2 mm for A, D, E, 0.1 mm for B, F, G; scale 2: 0.3 mm for C.

the aedeagal median lobe with its lateral rim wider, and apical sclerotized area longer and wider (Fig. 50A), and the endophallic expulsion hook narrower, anterolaterally with a small tooth (Fig. 50F).

***Stenus wasamatanus* Puthz**
(Figs. 51A–G, 130D)

Stenus wasamatanus Puthz, 2001c: 43; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (SMNS), type locality: Mt. Wasamata, Nara Pref. [examined by Puthz]. Paratypes: 1 ♂1 ♀ (cN), Mt. Wasamata, Nara Pref., 11. vii. 1999, V. Puthz leg.

Other material examined. [HONSHU] 5 ♂5 ♀, Mt. Wasamata, Kami-kitayama, Nara Pref., 11. vii. 1999, M. Maruyama leg.; 2 ♂, same locality, 14–15. vi. 1997, Y. Hayashi leg.; 1 ♂1 ♀, Mt. Inamura, Oomine, Nara Pref., 5. v. 1994, T. Ito leg.; 2 ♂1 ♀, same locality, 1. vi. 1985. T. Ito leg.

Distribution. Japan (Honshu: Nara Pref.).

Redescription. Male and female: Brachypterous; body 2.7–3.3 mm (fore body 1.5–1.6 mm) in length, weakly shining, with short antennae. Body black; labrum black; antennae dark red; legs reddish brown, with knees more or less infusate. Head with a pair of distinct longitudinal depressions; punctures round, very dense, regular, distinct. Pronotum with surface weakly uneven; punctures round, very dense, somewhat rough. Elytra with surface uneven; punctures round to elliptical, very dense, somewhat rough. Legs moderate in length; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen moderately wide to wide; 3rd to 5th or 6th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, sparse to moderately dense, and small in anterior segments, while punctures in posterior segments round to elliptical, sparse to moderately dense, and very small. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Sixth ventrite (Fig. 51E) posteromedially with a very shallow emargination, which is furnished sparsely with setae along the posterior margin; 7th ventrite (Fig. 51E) posteromedially with a bell-shaped depression, which is arcuately emarginate, and furnished sparsely with short setae along the posterior margin; 8th ventrite (Fig. 51E) posteromedially with a medium-sized emargination; 9th tergum (Fig. 51C) with ventral apophyses moderately long; 9th ventrite (Fig. 51G) elongate, very finely serrate posteriorly, with stem elongate-subrectangular in shape, apicolateral teeth each short, bi- or tridenticate apically, apicolateral setae short; 10th tergum (Fig. 51C) transverse, gently rounded posteriorly. Aedeagal median lobe (Fig. 51B) nearly spindle-shaped, with the short lanceolate apex; apical sclerotized area furnished with short (Fig. 51B) or moderately long setae on anterolateral parts; apicomedian subtransparent area medium-sized, ovoidal in shape; apicolateral teeth small, each located at the lateral margin just before the apical sclerotized area. Endophallic median longitudinal bands (Fig. 51B) moderately long and broad; expulsion hook (Fig. 51B) almost arc-shaped, with anterolateral arm distinctly longer than posterolateral arm (Fig. 51D); basal tube (Fig. 51A, B) large, baculiform. Parameres (Fig. 51B) thin, weakly incurved; apical area weakly swollen mesially, furnished mesially with 18 to 20 short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 51F) each serrate posteriorly, with apicolateral tooth bi- or trifurcate apically, apicolateral setae moderately long. Spermatheca not observable.

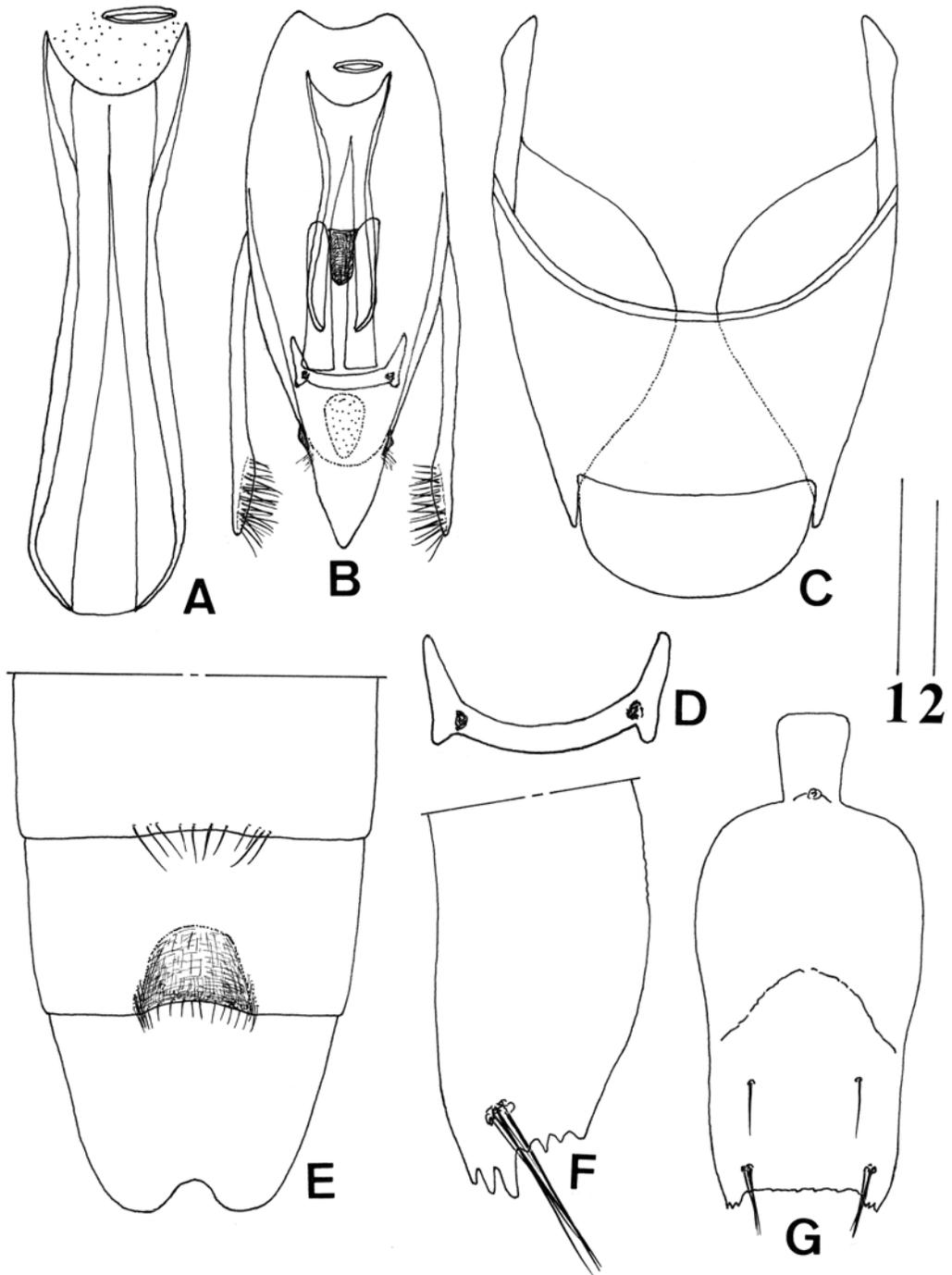


Fig. 51. *Stenus wasamatanus* Puthz (A, B, D, G, Ohmine, Nara; C, E, F, Wasamata, Nara). A, endophallic basal tube; B, aedeagus; C, 9th and 10th terga of male; D, endophallic expulsion hook; E, 6th to 8th ventrites of male; F, gonocoxite; G, 9th ventrite of male. Scale 1: 0.2 mm for B, C, G, 0.1 mm for A, D, F; scale 2: 0.3 mm for E.

Biology and Ecology. *Stenus wasamatanus* is distributed in the mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus wasamatanus* is allied to *S. corrugatus*, but it is separable from the latter by the 10th tergum of male more strongly transverse (Fig. 51C), the aedeagal median lobe with apical part lanceolate, with apicolateral teeth located at the lateral margins (Fig. 51B), the endophallic median longitudinal band shorter (Fig. 51B), and the basal tube weakly swollen apically (Fig. 51A).

***Stenus corrugatus* Naomi & Shimada**
(Figs. 52A–F, 130E)

Stenus corrugatus Naomi & Shimada, 2008: 54; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Ooku, Okinoshima-cho, Dogo Is., Oki Isls. Shimane Pref., 7. x. 2004, T. Shimada leg. Paratypes: 1 ♂ (cN), same data as holotype; 1 ♂ (cN), Mt. Tokibari, Saigo-cho, Dogo Is., Oki Isls. Shimane Pref., 12. vi. 2003, T. Shimada leg.

Distribution. Japan (Honshu: Oki Isls.).

Redescription. Male: Brachypterous; body 2.8–3.2 mm (fore body 1.5–1.7 mm) in length, weakly shining, with short antennae. Body black; labrum black; antennae dark red; legs reddish brown, with knees more or less infusate. Head with a pair of distinct longitudinal depressions; punctures round to elliptical, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, somewhat rough. Elytra with surface rather uneven; punctures very dense, rough. Legs moderate in length; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense to dense, and small to moderate in size in anterior segments, while punctures in posterior segments round to elliptical, moderately dense, very small and regular. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Sixth ventrite (Fig. 52D) posteromedially with a shallow, subtriangular depression, which is weakly emarginate posteriorly; 7th ventrite (Fig. 52D) posteromedially with a moderately deep depression, which is arcuately emarginate; 8th ventrite (Fig. 52D) posteromedially with a U-shaped emargination; 9th tergum (Fig. 52C) with ventral apophyses moderately long; 9th ventrite (Fig. 52B) elongate, irregularly finely serrate posteriorly, with stem constricted basally, subtrapezoidal in shape, apicolateral teeth each short, bi- or tridentate apically, apicolateral setae short; 10th tergum (Fig. 52C) entire. Aedeagal median lobe (Fig. 52A) gradually narrowed apically behind the middle (so that the apicolateral corner is not formed), with a small apicomedian projection; apical sclerotized area almost triangular in shape, partly covered with short setae; apicomedian subtransparent area elongate-elliptical in shape; apicolateral teeth small, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 52A) with ventral bands moderately long, broad, dorsal bands short to moderately long; expulsion hook (Fig. 52A) almost arc-shaped, with the posterolateral arm short, a small hump located ventrally near the base of posterolateral arm (Fig. 52F); basal tube (Fig. 52A) simple, baculiform, weakly bent dorsally near the middle (Fig. 52E). Parameres (Fig. 52A) thin, with stem weakly incurved; apical area weakly swollen mesially, covered mesially with 22 to 26 short setae.

Female: Unknown.

Biology and Ecology. *S. corrugatus* is an insular *Stenus* species. The beetles inhabit leaf litter in the natural forests of mountainous regions in Oki Islands.

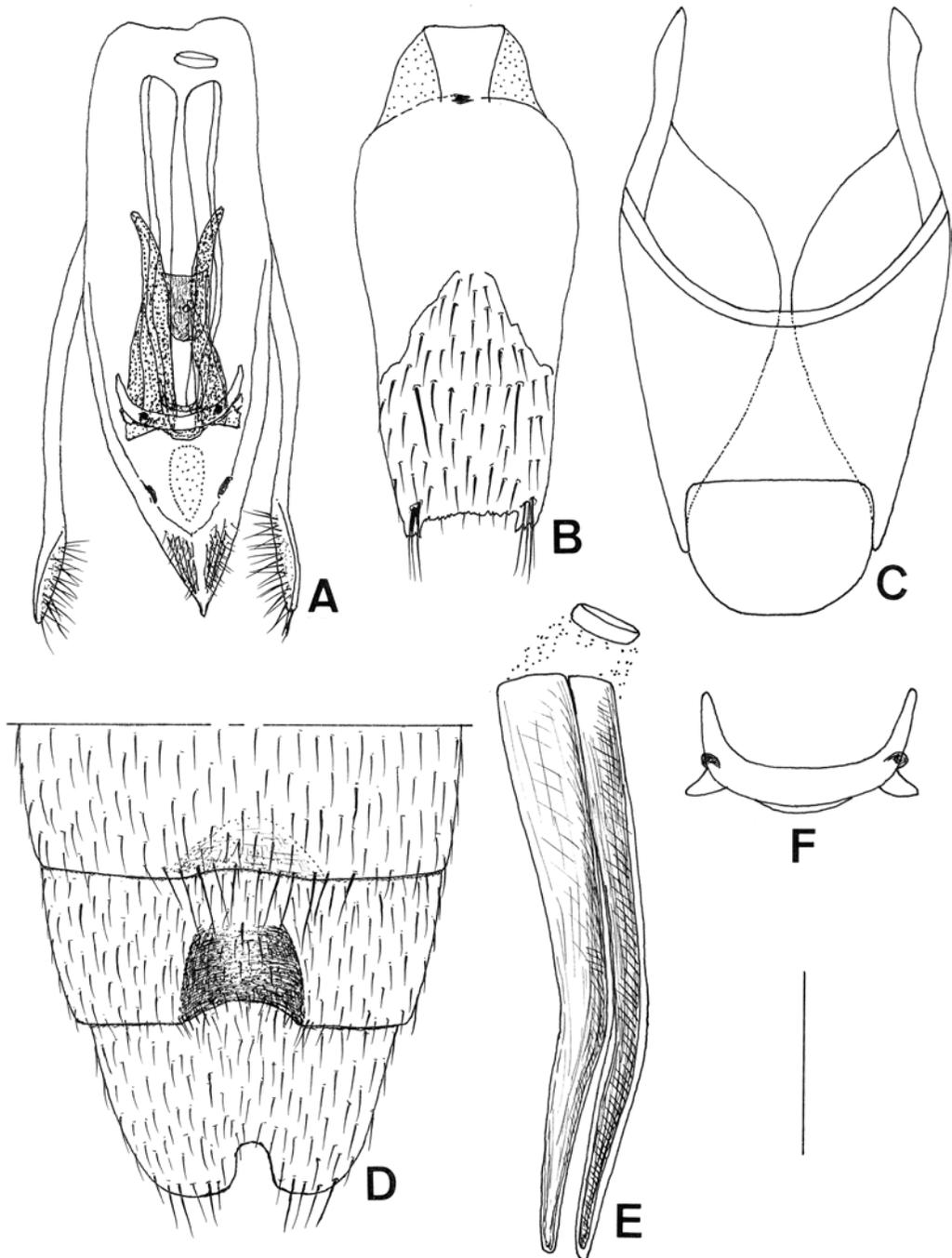


Fig. 52. *Stenus corrugatus* Naomi & Shimada (Dogo Is., Shimane). A, aedeagus; B, 9th ventrite of male; C, 9th and 10th terga of male; D, 6th to 8th ventrites of male; E, endophallic basal tube; F, expulsion hook. Scale: 0.2 mm for A–C, 0.1 mm for E, F, 0.25 mm for D.

Remarks. *Stenus corrugatus* is allied to *S. wasamatanus*, but it is separable from the latter by the 10th tergum of male narrower (Fig. 52C), the aedeagal median lobe with apical part almost triangular in shape, with apicolateral teeth located at the mesial margins of lateral rims (Fig. 52A), the endophallic median longitudinal band longer (Fig. 52A), and the basal tube narrowly apically (Fig. 52E).

***Stenus hagai* Naomi**
(Figs. 53A–F, 130F)

Stenus hagai Naomi, 1997f: 138; Herman, 2001: 2211; Naomi & Puthz, 2013: 138.

Stenus zimmermanni curvaticellus Naomi, 1997f: 142 (*partim*).

Type material examined. Holotype of *S. hagai*: ♂ (CBM), Kurakake Pass, Irihirose-mura, Niigata Pref., 11. vi. 1995, K. Haga leg. Paratypes of *S. hagai*: 1 ♀ (cN), same data as holotype. Paratype of *S. zimmermanni curvaticellus*: 1 ♂ (cN), Near Atsumi, Yamagata Pref., 16. vii. 1960, Y. Shibata leg.

Distribution. Japan (Honshu: Yamagata and Niigata Prefs.).

Redescription. Male and female: Brachypterous; body 3.5–3.7 mm (fore body 1.6–1.7 mm) in length, weakly to moderately shining, with antennae relatively short. Head and abdomen black; pronotum and elytra dark red; labrum black; antennae dark red; legs reddish brown, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round, dense, small, almost regular. Pronotum with surface weakly uneven; punctures round, very dense. Elytra with surface uneven; punctures round, very dense, rough, subrugous. Legs short; tarsi with 4th tarsomere very weakly bilobed. Abdomen wide, weakly convex above; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while puncture in posterior segments round to elliptical, moderately dense, very small and regular. Lateroventrites horizontal or mesiodorsal in position, narrow, punctate.

Male: Seventh ventrite (Fig. 53B) posteromedially with a large, bell-shaped depression, which is arcuately emarginate; 8th ventrite (Fig. 53B) posteromedially with a relatively small emargination, and centrally with an elongate-subovoidal depression, which becomes shallower posteriorly; 9th tergum (Fig. 53A) with ventral apophyses moderately long, thick; 9th ventrite (Fig. 53E) elongate, very finely serrate posteriorly, with stem elongate-subrectangular in shape, apicolateral teeth each short, indistinctly bi- or tridentate apically, apicolateral setae short; 10th tergum (Fig. 53A) entire. Aedeagal median lobe (Fig. 53D) elongate-ovoidal in shape, pointed apically; apical sclerotized area triangular in shape, flat ventrally, partly covered with sparse setae of different length, with a dense tuft of long setae just behind the apicolateral hump; apicomedian subtransparent area large, subovoidal in shape; apicolateral humps medium-sized, rounded, each located near lateral margin of median lobe. Endophallic median longitudinal bands (Fig. 53D) rather broad, moderately long; expulsion hook (Fig. 53D) almost C-shaped, with anterolateral arm long, thin; basal tube (Fig. 53D) large, baculiform. Parameres (Fig. 53D) slender; stem mesially with several short setae; apical area weakly swollen mesially, furnished mesially with 14 to 15 thin, short setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 53F) without ventral apophyses; gonocoxites (Fig. 53C) each irregularly serrate posteriorly, with apicolateral teeth short, incurved, bi- or tridentate apically, apicolateral setae short; 10th tergum (Fig. 53F) entire.

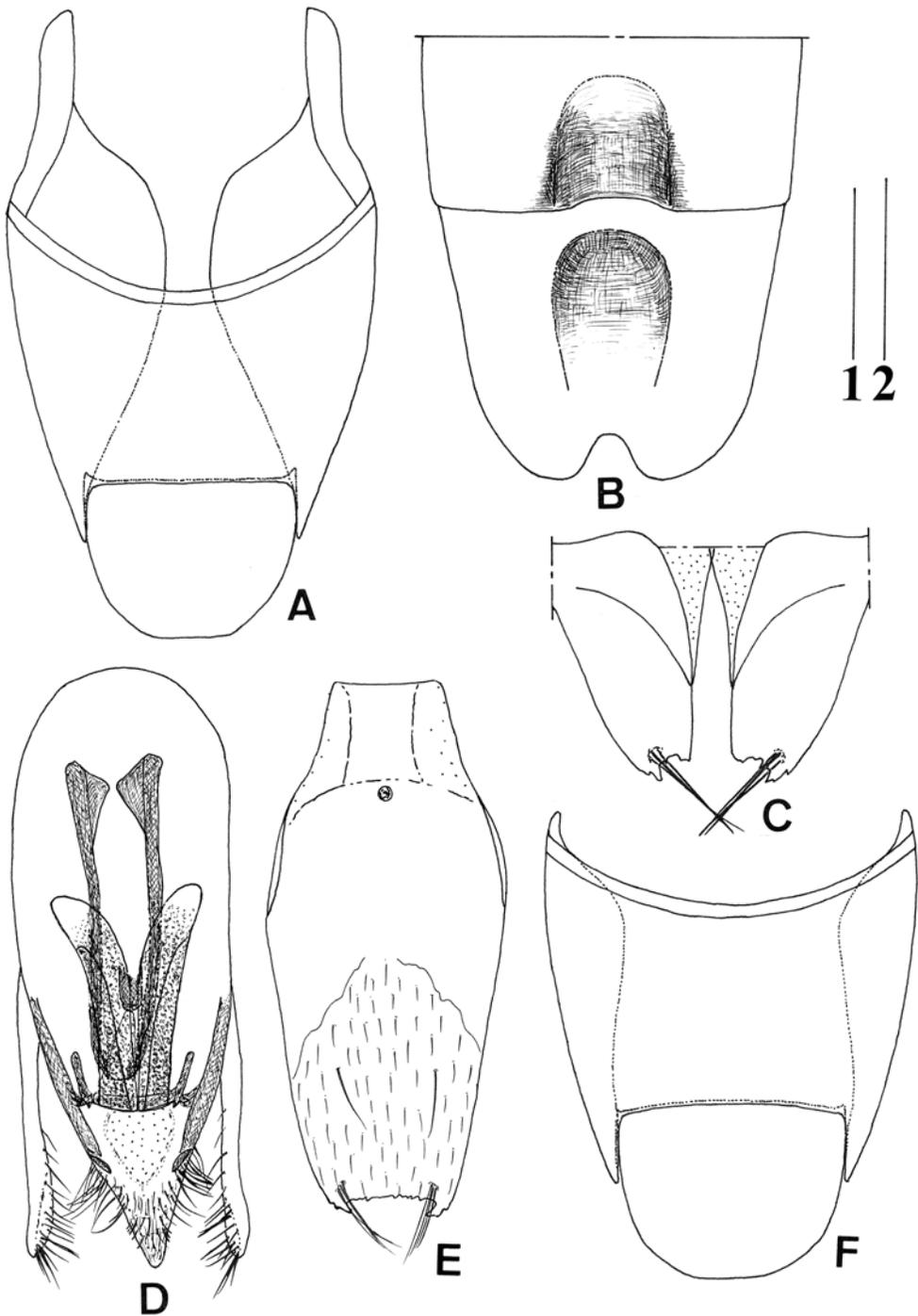


Fig. 53. *Stenus hagai* Naomi (Irihirose, Niigata). A, 9th and 10th terga of male; B, 7th to 8th ventrites of male; C, gonocoxites; D, aedeagus; E, 9th ventrite of male; F, 9th and 10th terga of female. Scale 1: 0.2 mm for A, C-F; scale 2: 0.3 mm for B.

Spermatheca not observable.

Biology and ecology. *Stenus hagai* is distributed in the mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus hagai* is allied to *S. curvaticellus*, but it is separable from the latter by the 5th and 6th ventrites of male without modifications, and the aedeagal median lobe elongate-ovoidal in shape, with apical sclerotized area triangular in shape, flat ventrally, and with a dense tuft of long setae just behind the apicolateral hump (Fig. 53D). Notice here that the apical sclerotized area of median lobe is usually weakly convex ventrally in *Stenus*, and thus the flat condition of apical sclerotized area is a diagnostic (apomorphic) condition for the species in which the condition is found (see also descriptions of *S. intumescens* and *S. yasutoshii*).

Etymology. This species is named in honour of Mr. Kaori Haga (Saitama) who collected the type material of this species.

Stenus curvaticellus Naomi

(Figs. 54A–G, 130G)

Stenus zimmermanni curvaticellus Naomi, 1997f: 142; Herman, 2001: 2439; Naomi & Puthz, 2013: 138.

Stenus curvaticellus Naomi, 1997f: Naomi & Ito, 2014: 288.

Type material examined. Holotype of *S. zimmermanni curvaticellus*: ♂ (CBM), Nabetani, Tatsunokuchi-cho, Ishikawa Pref., 21. iv. 1995, Y. Sugie leg. Paratypes of *S. zimmermanni curvaticellus*: 1 ♂ (cN), same locality, 10. iv. 1995, Y. Sugie leg.; 1 ♂ (cN), same locality, 13. iv. 1995, Y. Sugie leg.; 1 ♀ (cN), same locality, 15. iv. 1995, Y. Sugie leg.; 1 ♀ (cN), same locality, 18. iv. 1995, Y. Sugie leg.; 1 ♂ (cN), same locality, 4. vi. 1995, Y. Sugie leg.; 1 ♀ (cN), same locality, 11. iv. 1995, Y. Sugie leg.

Other material examined. [HONSHU] 1 ♂ 1 ♀, Ohno City, Fukui Pref., 24. vii. 2010, M. Sato leg.

Distribution. Japan (Honshu: Ishikawa and Fukui Prefs.).

Redescription. Male and female: Brachypterous; body 3.3–4.3 mm (fore body 1.5–2.1 mm) in length, weakly to moderately shining, with antennae relatively short. Body black, slightly with reddish tinge on pronotum and elytra; labrum black; antennae reddish brown; legs reddish brown, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round to elliptical, dense to very dense, small. Pronotum with surface weakly uneven; punctures round, very dense, various in size. Elytra with surface uneven; punctures round, very dense, sometimes subrugous. Legs short; tarsi with 4th tarsomere very weakly bilobed. Abdomen moderately wide, well convex above; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense to dense, and small in anterior segments, while punctures in posterior segments round to elliptical, moderately dense and very small. Lateroven- trites mesiodorsal in position, narrow, punctate.

Male: Fifth ventrite (Fig. 54A) posteromedially with a flat area, which is covered sparsely with setae; 6th ventrite (Fig. 54A) posteromedially with a very shallow depression, which is shallowly emarginate, and covered sparsely with setae; 7th ventrite (Fig. 54A) posteromedially with a moderately deep depression, which is arcuately emarginate, and covered densely with short, thin setae; 8th ventrite (Fig. 54A) posteromedially with a medium-sized emargination, and centrally with an elongate-subovoidal depression which becomes shallower posteriorly; 9th tergum

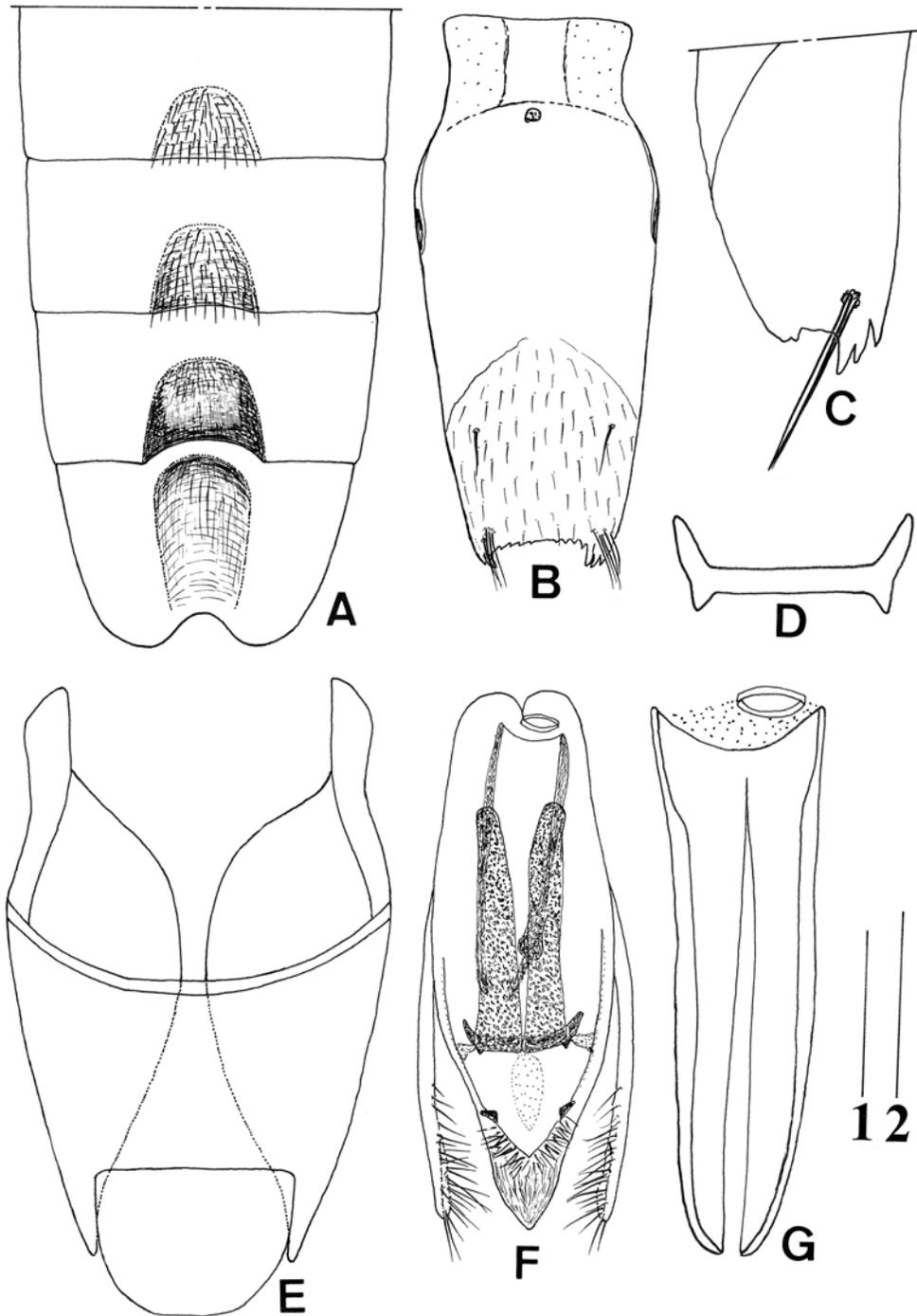


Fig. 54. *Stenus curvaticellus* Naomi (A, E, Ohno, Fukui; B–D, F, G, Nabetani, Ishikawa). A, 5th to 8th ventrites of male; B, 9th ventrite of male; C, apex of gonocoxite; D, endophallic expulsion hook; E, 9th and 10th terga of male; F, aedeagus; G, basal tube. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B, E, F, 0.1 mm for C, D, G.

(Fig. 54E) with ventral apophyses short, moderately thick; 9th ventrite (Fig. 54B) elongate, irregularly serrate posteriorly, with stem elongate-subrectangular in shape, apicolateral teeth each short, bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 54E) entire. Aedeagal median lobe (Fig. 54F) nearly spindle-shaped, nearly lanceolate apically; apical sclerotized area anteriorly with a V-shaped emargination, and furnished with short setae along the rim of emargination; apicomedian subtransparent area elongate-subovoidal in shape; apicolateral teeth medium-sized, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 54F) long, rather broad; expulsion hook (Fig. 54D, F) thin, almost transverse, with anterolateral arm relatively long; basal tube (Fig. 54F, G) large, baculiform. Parameres (Fig. 54F) slender, weakly incurved; stem mesially with several short setae just before the apical area; apical area hardly swollen mesially, and furnished mesially with 16 to 18 thin setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 54C) each apicomesially with a blunt tooth, apicolateral tooth bi- or trifurcate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus curvaticellus* is distributed in the plains and mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus curvaticellus* was first described by Naomi (1997f) as a subspecies of *S. Stenus zimmermanni*; and this subspecies was later upgraded to a distinct species by Naomi & Ito (2014). The present study shows that *S. curvaticellus* is probably closely allied to *S. hagai* (but not to *S. zimmermanni*); and this species is separable from *S. hagai* by the 5th and 6th ventrites of male with modifications (Fig. 54A), the aedeagal median lobe nearly spindle-shaped, lanceolate apically, with apical sclerotized area weakly convex ventrally, and furnished with short setae along the rim of anterior emargination (Fig. 54F).

***Stenus intumescens* Naomi, Nomura & Puthz sp. nov.**
(Figs. 55A–F, 130H)

Type material examined. [HONSHU] Holotype, ♂ (NSMT-I-C-200318 in NMNST), Uchinokaya, Ina, Nagano Pref., 13. viii. 1999, Y. Hayashi leg.

Distribution. Japan (Honshu: Nagano Pref.).

Description. Male: Brachypterous; body 3.7 mm (fore body 1.8 mm) in length, weakly shining, with antennae short. Body black; labrum black; antennae dark red; legs reddish brown, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round to elliptical, very dense, small. Pronotum with surface uneven; punctures round to almost round, very dense, somewhat rough. Elytra with surface uneven; punctures round to elliptical, very dense, rough. Legs short, moderately thick; tarsi with 4th tarsomere very weakly bilobed. Abdomen moderately wide; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense to dense, and small in anterior segments, while punctures in posterior segments elliptical, moderately dense, and very small. Lateroventrites horizontal or mesio-dorsal in position, narrow, punctate.

Five ventrite (Fig. 55A) posteromedially with a very short depressed area, which is very weakly emarginate; 6th ventrite (Fig. 55A) posteromedially with a shallow depression, which is arcuately emarginate, and covered with short to moderately long setae; 7th ventrite (Fig. 55A) posteromedially with a bell-shaped depression, which is arcuately emarginate, and covered with short setae; 8th ventrite (Fig. 55A) posteromedially with a small emargination, and medially with a large, shallow, elongate depression which becomes shallower posteriorly; 9th tergum (Fig.

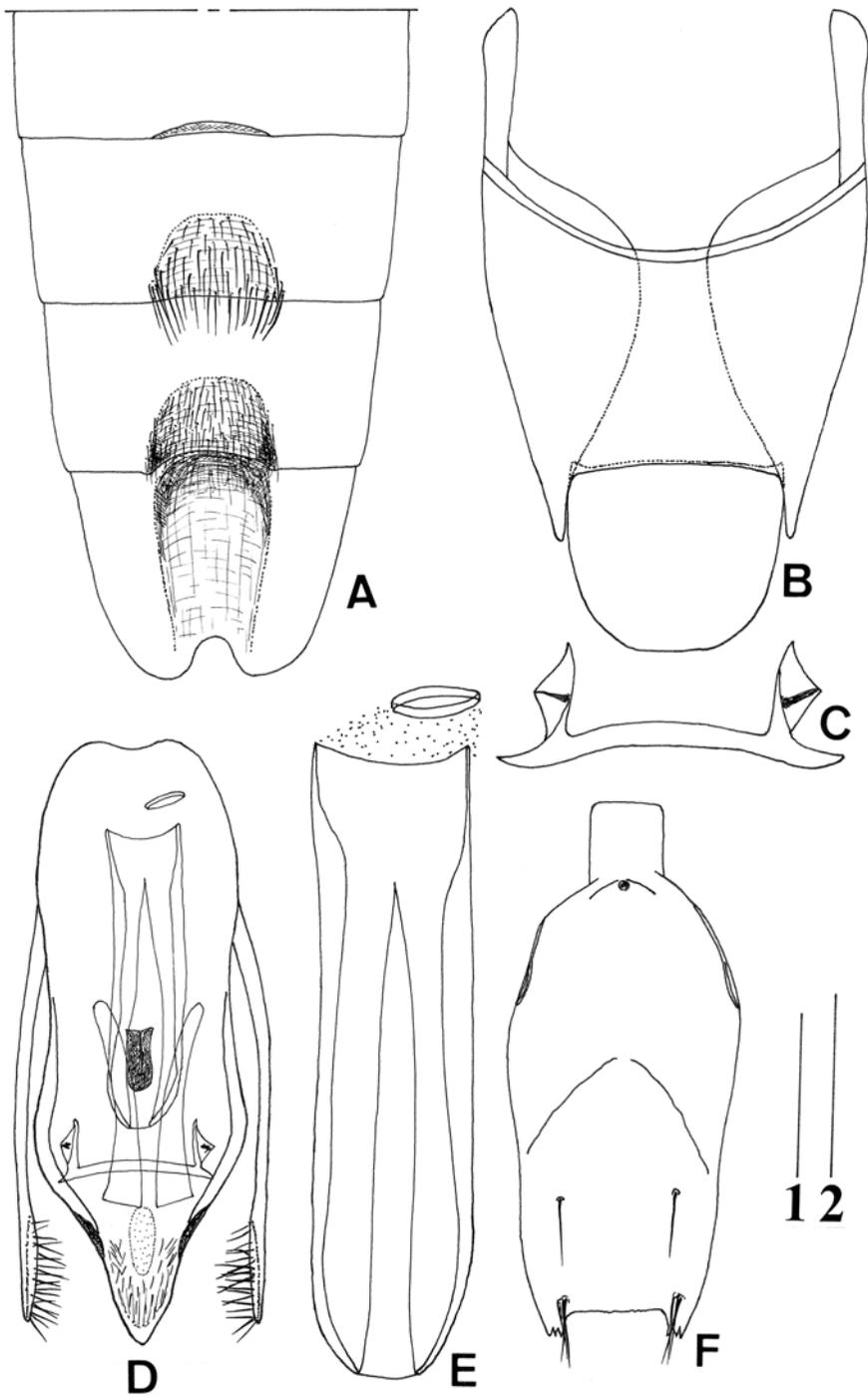


Fig. 55. *Stenus intumescens* Naomi, Nomura & Puthz sp. nov. (Ina, Nagano). A, 5th to 8th ventrites of male; B, 9th and 10th terga of male; C, endophallic expulsion hook; D, aedeagus; E, basal tube; F, 9th ventrite of male. Scale 1: 0.3 mm for A; Scale 2: 0.2 mm for B, D, F, 0.1 mm for E.

55B) with ventral apophyses moderately long; 9th ventrite (Fig. 55F) elongate, hardly serrate posteriorly, with stem elongate-rectangular in shape, apicolateral teeth each short, bi- or tridentate apically, apicolateral setae short; 10th tergum (Fig. 55B) entire. Aedeagal median lobe (Fig. 55D) violin-shaped, nearly lanceolate apically; apical sclerotized area flat ventrally, partly covered with thin, short setae; apicomedian subtransparent area relatively small, elongate-elliptical in shape; apicolateral humps large, rounded, each located at the lateral margins of apical sclerotized area. Endophallic median longitudinal bands (Fig. 55D) moderately long; expulsion hook (Fig. 55D) transverse, very wide, weakly arched anteriorly, with anterolateral arm angulate laterally, sharply pointed anteriorly, posterolateral arm turning laterally, sharply pointed (Fig. 55C); basal tube (Fig. 55D, E) large, baculiform. Parameres (Fig. 55D) slender, thin, weakly incurved; apical area moderately long, furnished mesially with short setae.

Female: Unknown.

Biology and ecology. Only one male of *Stenus intumescens* was presently collected from the mountainous region of Nagano (central Honshu). The beetle inhabits leaf litter in the natural forest.

Remarks. *Stenus intumescens* is allied to *S. hagai* and *S. curvaticellus*, but it is separable from the latter two species by the aedeagal median lobe violin-shaped, with apicolateral hump larger and located at the lateral margin of median lobe (Fig. 55D), and the endophallic expulsion hook wider, with posterolateral arm turning laterally and sharply pointed (Fig. 55C).

Etymology. The specific epithet of this species is derived from the Latin participle “*intumescens*” which means “swelling”; and the apicolateral humps of median lobe are weakly swelling.

***Stenus displicatus* Naomi, Nomura & Puthz sp. nov.**

(Figs. 56A–G, 130I)

Type material examined. Holotype: ♂ (NSMT-I-C-200319 in NMNST), Mt. Ohdai, Nara Pref., 1. v. 1969, T. Ito leg. Paratypes: 2 ♂7 ♀, same data as holotype; 1 ♂1 ♀, Mt. Ohdai, Nara Pref., 20. vii. 1975, T. Ito leg.; 1 ♂1 ♀, same locality, 20. x. 1985, M. Yasui leg.; 1 ♂ (cN), Kouraibiro, Ise City, Mie Pref., 10. i. 1998, H. Yokozeki leg.; 1 ♂ (cN), Mt. Jinro, Ise City, Mie Pref., 22. i. 2004, H. Yokozeki leg.; 1 ♂ (cN), Hirokuri Val., Miyakawa, Mie Pref., 12. vi. 1996, H. Ichihashi leg.

Distribution. Japan (Honshu: Nara and Mie Prefs.).

Description. Male and female: Brachypterous; body small 3.3–3.6 mm (fore body: 1.5–1.7 mm) in length, weakly shining, with antennae short. Body black; labrum black; antennae dark red; legs reddish brown, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round, very dense, distinct. Pronotum with surface uneven; punctures round, very dense, somewhat rough. Elytra with surface rather uneven; punctures round to elliptical, very dense, somewhat rough. Legs moderately long; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen moderately wide; 3rd to 5th or 6th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense to dense, and small in anterior segments, while punctures in posterior segments round to elliptical, moderately dense to dense, and very small. Lateroventrites horizontal or dorsomesial in position, narrow, punctate.

Male: Sixth ventrite (Fig. 56C) posteromedially with a very shallow emargination; 7th ventrite (Fig. 56C) posteromedially with a bell-shaped depression, which is shallowly emarginate posteriorly; 8th ventrite (Fig. 56C) posteromedially with a small emargination, and centrally with a shallow, subovoidal depression; 9th tergum (Fig. 56B) with ventral apophyses straight, moder-

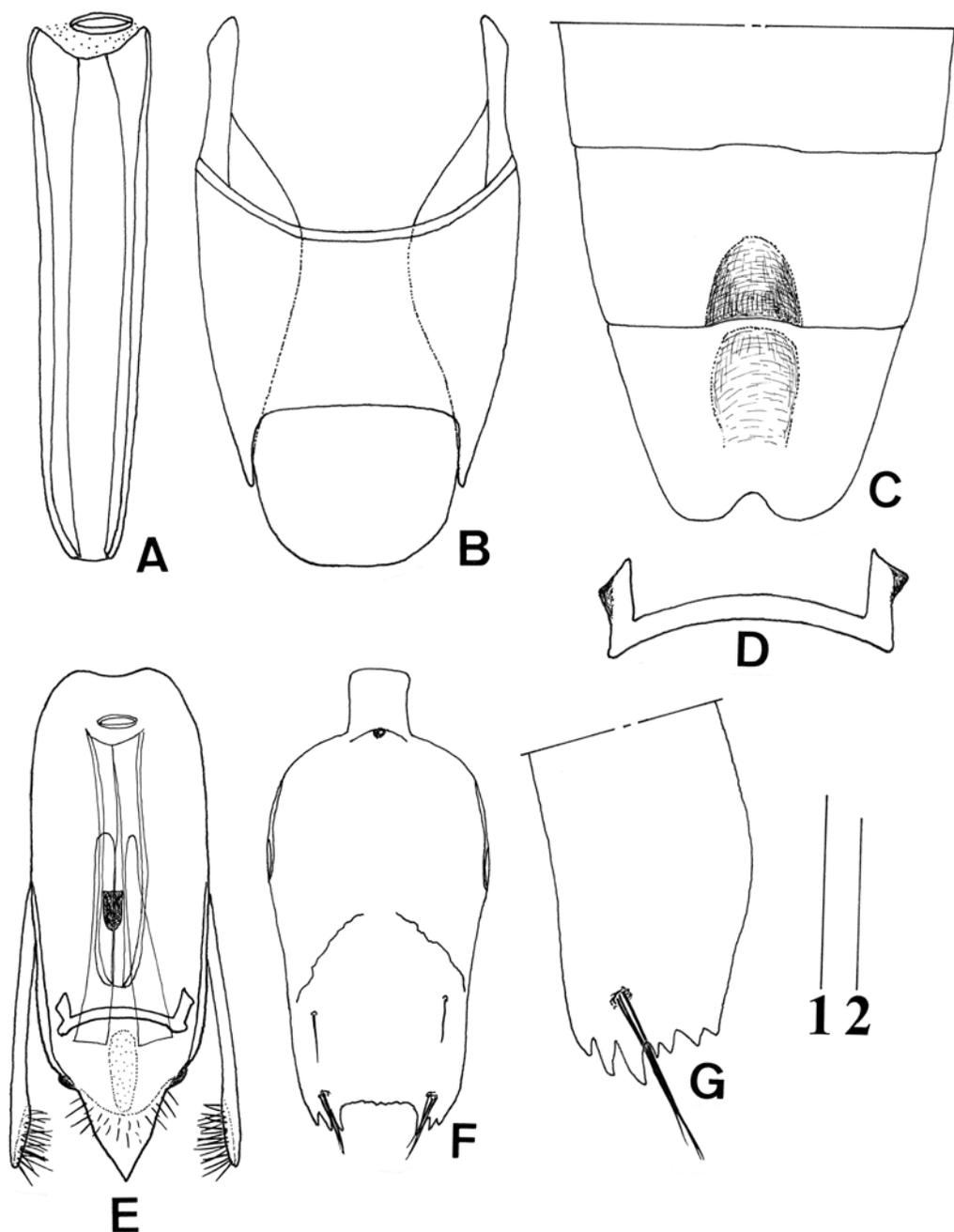


Fig. 56. *Stenus displicatus* Naomi, Nomura & Puthz sp. nov. (Ohdaigahara, Nara). A, endophallic basal tube; B, 9th and 10th terga of male; C, 6th to 8th ventrites of male; D, expulsion hook; E, aedeagus; F, 9th ventrite of male; G, gonocoxite. Scale 1: 0.1 mm for A, D, G, 0.2 mm for B, E, F; scale 2: 0.3 mm for C.

ately long; 9th ventrite (Fig. 56F) elongate, very finely serrate posteriorly, with stem rectangular in shape, apicolateral teeth each short, bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 56B) entire. Aedeagal median lobe (Fig. 56E) wide, strongly narrowed apically behind the rounded apicolateral corners, acutely pointed apically; apical sclerotized area almost pentago-

nal in shape, covered anteriorly with sparse setae; apicomedian subtransparent area elongate-elliptical in shape; apicolateral humps small, rounded, weakly projecting laterally, each located just at the lateral margin behind apicolateral corner. Endophallic median longitudinal bands (Fig. 56E) long; expulsion hook (Fig. 56E) transverse, thin, very wide, weakly arched anteriorly, with anterolateral arm provided laterally with a small sclerotized tooth (Fig. 56D); basal tube (Fig. 56A, E) long, baculiform. Parameres (Fig. 56E) slender, thin; apical area short, weakly swollen mesially, furnished mesially with 18 to 20 short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 56G) each serrate posteriorly, with apicolateral tooth indistinct (or 2 or 3 teeth at apicolateral part), apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus displicatus* is distributed in the low and high mountainous regions of Kii-Peninsula (Honshu). The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus displicatus* is closely allied to *S. toukin*, but this species is separable from the latter by the aedeagal median lobe strongly (or abruptly) narrowed apically behind apicolateral corners to form the pentagonal apical sclerotized area (Fig. 56E) and the endophallic expulsion hook weakly arched anteriorly, with its anterolateral arm provided laterally with a small sclerotized tooth (Fig. 56D).

Etymology. The specific epithet of this species is derived from the Latin participle “*displicatus*” which means “scattered”; and the setae are scattered on the anterior part of the apical sclerotized area of median lobe.

***Stenus toukin* Naomi & Puthz**
(Figs. 57A–E, 130J)

Stenus toukin Naomi & Puthz, 1994a: 216; Herman, 2001: 2419; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Mennoki Pass, Aichi Pref., 13. viii. 1990, S. Nomura leg. Paratype: 1 ♀ (cN), same data as holotype.

Other material examined. [HONSHU] 1 ♂, Inatake-cho, Mennoki Pass, Aichi Pref., 7. ix. 1986, T. Hozumi leg.

Distribution. Japan (Honshu: Aichi Pref.).

Redescription. Male and female: Brachypterous; body small 1.9–2.2 mm (fore body: 1.2–1.3 mm) in length, subcylindrical, weakly shining, with short antennae. Head and abdomen black; pronotum and elytra dark red to almost black; labrum black; antennae dark red; legs dark red, with knees more or less infusate. Head with a pair of longitudinal depressions; punctures round, very dense, regular, distinct. Pronotum with surface weakly uneven; punctures round, very dense. Elytra with surface weakly uneven; punctures almost round to round, very dense. Legs short; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen wide; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, moderately dense, very small, regular and distinct. Lateroventrites horizontal or dorsomesial in position, narrow, punctate.

Male: Seventh ventrite (Fig. 57F) posteromedially with a relatively small, bell-shaped depressed area, which is emarginate posteriorly; 8th ventrite (Fig. 57D) posteromedially with a relatively wide emargination, and centrally with a shallow, subovoidal depression; 9th tergum (Fig. 57A) with ventral apophyses thin, moderately long; 9th ventrite (Fig. 57B) elongate, finely serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth each short, bi- or triden-

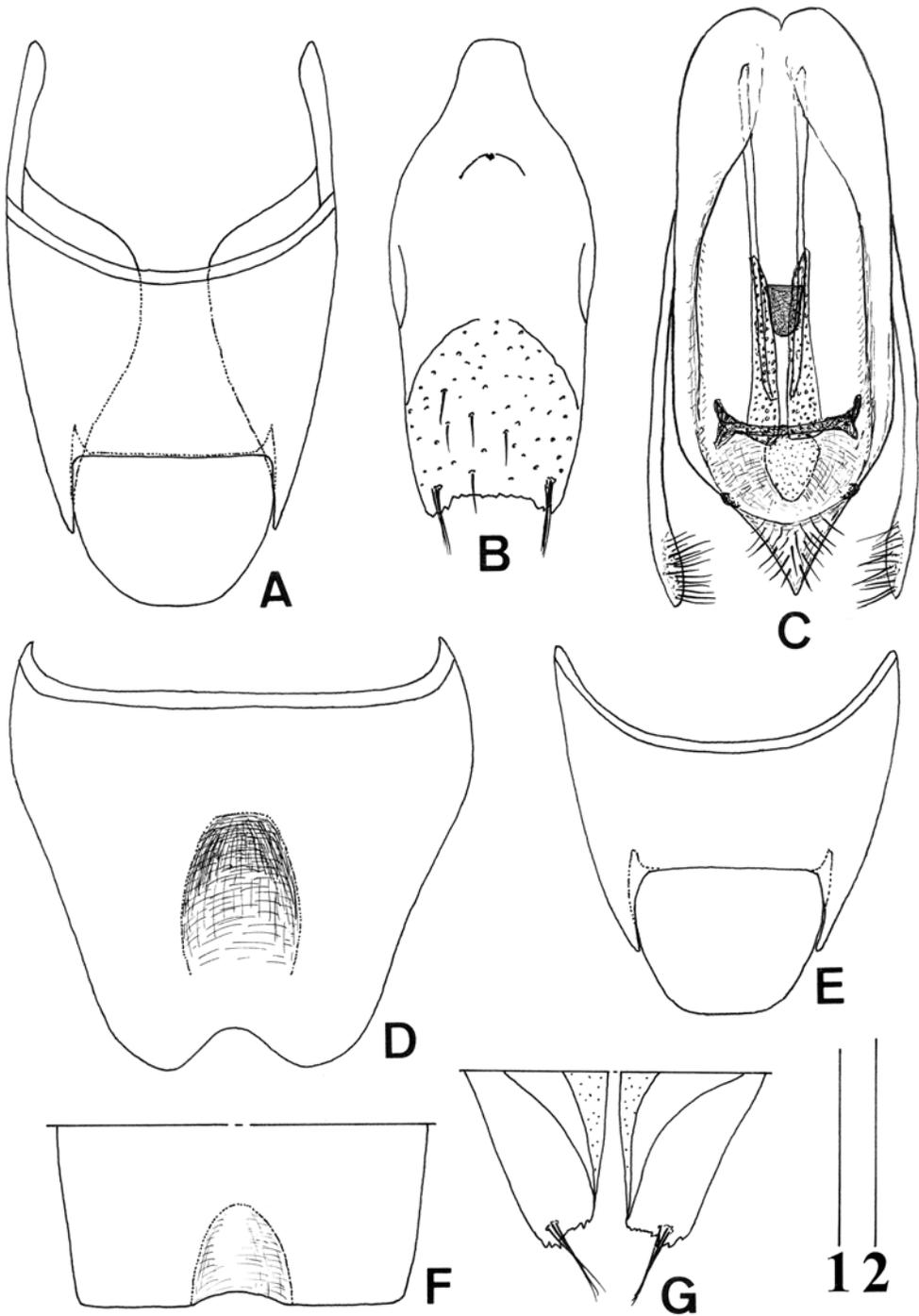


Fig. 57. *Stenus toukin* Naomi & Puthz (Omonoki, Aichi). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, 8th ventrite of male; E, 9th and 10th terga of female; F, 7th ventrite of male; G, apices of gonocoxites. Scale 1: 0.2 mm for A–E, G; scale 2: 0.3 mm for F.

ticulate apically, apicolateral setae short; 10th tergum (Fig. 57A) entire. Aedeagal median lobe (Fig. 57C) wide, strongly narrowed apically behind the rounded apicolateral corners, acutely pointed apically; apical sclerotized area almost triangular in shape, covered sparsely with setae; apicomedian subtransparent area ovoidal in shape; apicolateral humps small, each located at the lateral margin. Endophallic median longitudinal bands (Fig. 57C) moderately long; expulsion hook (Fig. 57C) transverse, very wide, with anterolateral arm a little longer than posterolateral arm; basal tube (Fig. 57C) long, baculiform. Parameres (Fig. 57C) slender, thin, weakly incurved; apical area short, weakly swollen mesially, furnished mesially with 15 to 16 thin, short setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 57E) without ventral apophyses; gonocoxites (Fig. 57G) each irregularly, finely serrate posteriorly, with apicolateral tooth indistinct (or 2 or 3 small setae at apicolateral part); 10th tergum (Fig. 57E) entire. Spermatheca not observable.

Biology and ecology. *Stenus toukin* is distributed in the mountainous regions. The beetles inhabits leaf litter in the natural forests.

Remarks. *Stenus toukin* is closely allied to *S. displicatus*, but it is separable from the latter by the aedeagal median lobe almost uniformly narrowed apically behind the apicolateral corners to form the triangular apical sclerotized area (Fig. 57C) and the endophallic expulsion hook almost transverse or weakly arched posteriorly, with its anterolateral arm simple (Fig. 57C).

Etymology. The specific epithet of this species is derived from a name of ancient Chinese mask "Toukin".

***Stenus ubusuna* Naomi & Ito**
(Figs. 58A–G, 130K)

Stenus ubusuna Naomi & Ito, 2014: 286.

Type material examined. Holotype: ♂ (KUM): Mt. Nonobori, Mie Pref., 3. xi. 1995, H. Yokozeki leg. Paratypes: 1 ♀ (cN), same data as holotype; 1 ♂ (cN), same locality, 23. xi. 1992, H. Yokozeki leg.

Distribution. Japan (Honshu: Mie Pref.).

Redescription. Male and female: Brachypterous; body 2.7–3.2 mm (fore body 1.5–1.6 mm) in length, moderately shining, with antennae relatively short. Head and abdomen black; prothorax and elytra dark red to black; labrum black; antennae and legs dark brown. Head with a pair of broad, longitudinal depressions; punctures round, dense, somewhat rough. Pronotum with surface weakly uneven, with median longitudinal depression indistinct; punctures round, very dense, rough. Elytra with surface uneven; punctures very dense, rough. Legs short; tarsi short, moderately thick, with 4th tarsomere very weakly bilobed. Abdomen weakly narrowed posteriorly; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense, small and distinct. Lateroventrites dorsomesial or horizontal in position, narrow, punctate.

Male: Sixth ventrite posteromedially with a broad-triangular flat area, which is very weakly emarginate posteriorly; 7th ventrite (Fig. 58G) posteromedially with a bell-shaped depression, which is arcuately emarginate posteriorly; 8th ventrite (Fig. 58G) posteromedially with a medium-sized emargination; 9th tergum (Fig. 58E) with ventral apophyses moderately long, each weakly widened at subapical part; 9th ventrite (Fig. 58C) elongate, finely serrate posteriorly, with

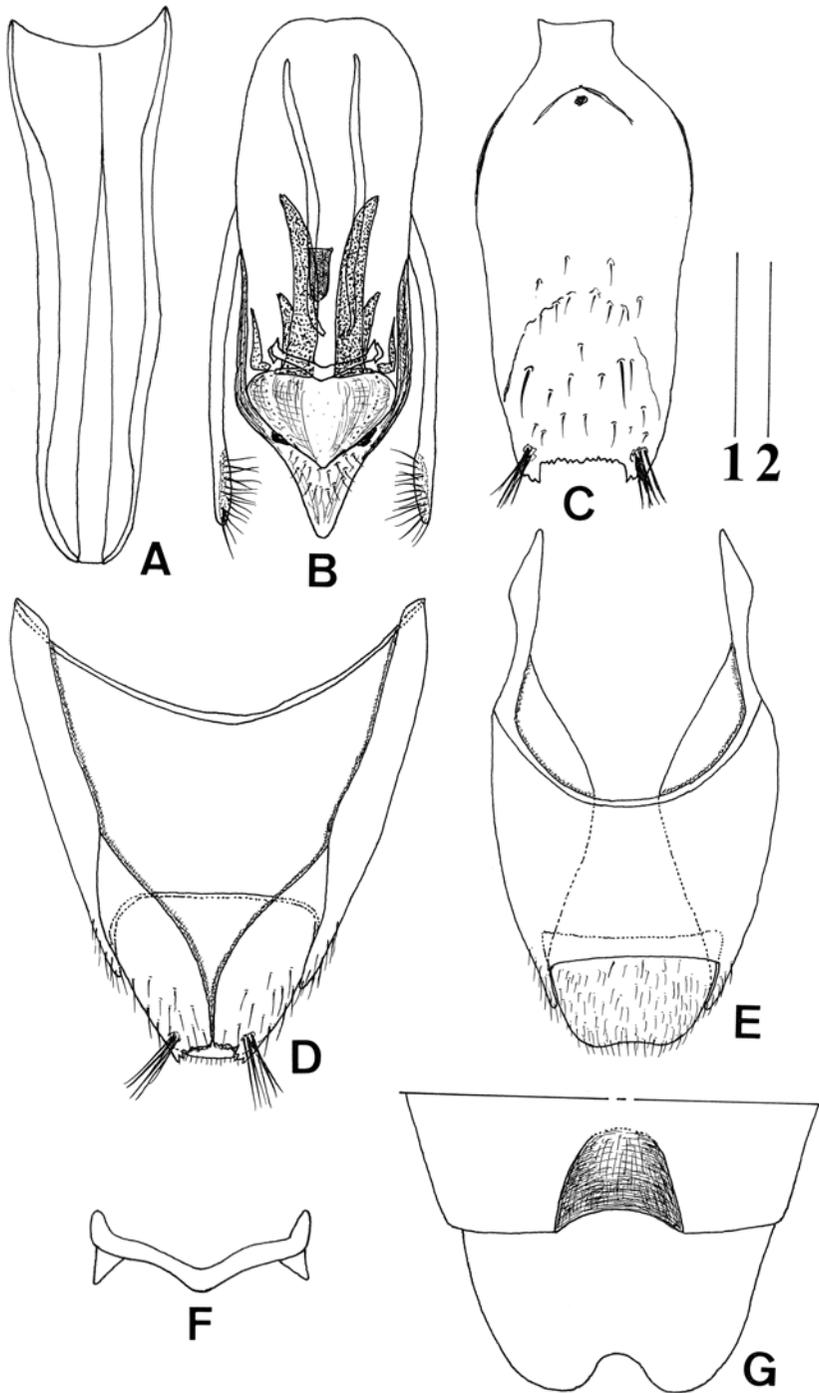


Fig. 58. *Stenus ubusuna* Naomi & Ito (Nonobori, Mie). A, endophallic basal tube; B, aedeagus; C, 9th ventrite of male; D, 9th, 10th terga and gonocoxites of female; E, 9th and 10th terga of male; F, expulsion hook; G, 7th to 8th ventrites of male. Scale 1: 0.2 mm for B, C, D, E, 0.1 mm for A, F; scale 2: 0.2 mm for G.

stem transverse, apicolateral teeth each short, bi- or tridentate apically, apicolateral setae short; 10th tergum almost truncate or very shallowly emarginate posteriorly (Fig. 58E). Aedeagal median lobe (Fig. 58B) violin-shaped, bluntly pointed apically; apical sclerotized area almost subtriangular in shape, sharply emarginate anteriorly, partly covered sparsely with short setae; apicomedian subtransparent area elongate-ovoidal in shape; apicolateral humps medium-sized, each located at the anterior margin of apical sclerotized area. Endophallic median longitudinal bands (Fig. 58B) with ventral bands broad, moderately long, dorsal bands rather short; expulsion hook (Fig. 58B) thin, broad-V-shaped, with its posterolateral arm acutely pointed (Fig. 58F); basal tube (Fig. 58A, B) large, baculiform. Parameres (Fig. 58B) slender, thin, weakly incurved; apical area weakly swollen mesially, furnished mesially with thin setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 58D) without ventral apophyses; gonocoxites (Fig. 58D) each finely serrate posteriorly, with apicolateral tooth short, indistinctly bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 58D) entire. Spermatheca not observable.

Biology and ecology. *Stenus ubusuna* is distributed in the low mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus ubusuna* is allied to *S. displicatus* and *S. toukin*, but this species is separable from the latter two species by the aedeagal median lobe less strongly pointed apically, with apicolateral hump located at the anterior margin of apical sclerotized area (Fig. 58B), and the endophallic expulsion hook broad-V-shaped (Fig. 58F). *S. ubusuna* is also allied to *S. kokie*, but it is separable from the latter by the median lobe with apical sclerotized area almost triangular in shape (Fig. 58B) and the endophallic expulsion hook with its median area bent posteriorly (Fig. 58F).

Etymology. The specific epithet of this species is derived from the Japanese noun 'Ubusuna', which means the guardian angel of native place.

***Stenus kokie* Naomi**
(Figs. 59A–G, 130L)

Stenus kokie Naomi, 2004c: 13.

Type material examined. Holotype: ♂ (CBM), Mt. Bunagadake, Hira, Shiga Pref., 22. vii. 1984, T. Watanabe leg.

Other material examined. [HONSHU] 1 ♂, Mt. Daihi, Kyoto Pref., 30. iv. 1987, T. Ito leg.; 1 ♀, same locality, 22. vii. 1968, T. Ito leg.

Distribution. Japan (Honshu: Shiga and Kyoto Prefs.).

Redescription. Male and female: Brachypterous; body 3.6–3.7 mm (fore body 1.6–1.7 mm) in length, moderately shining, with antennae relatively short. Head and abdomen black; prothorax and elytra dark red to black; labrum black; antennae dark reddish brown; legs dark red, with knees more or less infuscate. Head with a pair of broad, longitudinal depressions; punctures round to elliptical, dense to very dense, small. Pronotum with surface weakly uneven; punctures round, very dense, sometimes subrugose. Elytra with surface uneven; punctures round to elliptical, very dense, rough. Legs short; tarsi short, with 4th tarsomere very weakly bilobed. Abdomen wide; 3rd to 6th terga each with 3 short, basi-longitudinal keels; punctures round, moderately dense and distinct in anterior segments, while punctures in the posterior segments round to elliptical, moderately dense, very small and distinct. Lateroventrites dorsomesial or horizontal in

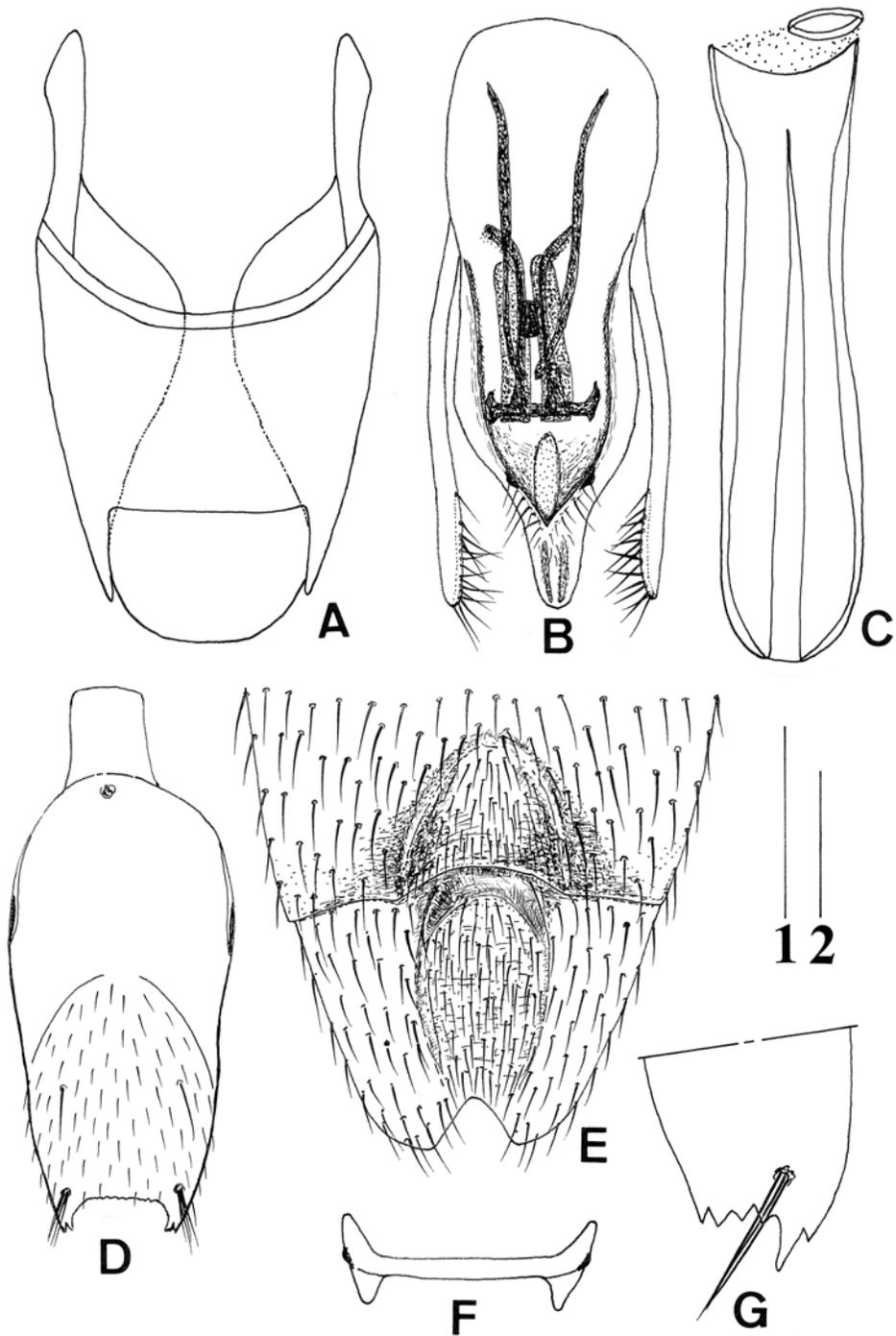


Fig. 59. *Stenus kokie* Naomi (A–F, Hira, Shiga; G, Daihi, Kyoto). A, 9th and 10th terga of male; B, aedeagus; C, endophallic basal tube; D, 9th ventrite of male; E, 7th to 8th ventrites of male; F, expulsion hook; G, apex of gonocoxite. Scale 1: 0.2 mm for A, B, D, 0.1 mm for C, F, G; scale 2: 0.2 mm for E.

position, narrow, punctate.

Male: Sixth ventrite posteromedially with a shallow, semicircular depression, which is weakly emarginate; 7th ventrite (Fig. 59E) posteromedially with a bell-shaped depression, which is arcuately emarginate; 8th ventrite (Fig. 59E) posteromedially with a V-shaped emargination, and medially with a large, shallow, elongate-ovoidal depression; 9th tergum (Fig. 59A) with ventral apophyses moderately long; 9th ventrite (Fig. 59D) elongate, finely serrate posteriorly, with stem rectangular in shape, apicolateral teeth each short, bi- or tridentate apically, apicolateral setae short; 10th tergum (Fig. 59A) entire. Aedeagal median lobe (Fig. 59B) violin-shaped, with apex narrow but still rounded; apical sclerotized area anteriorly with V-shaped emargination, covered sparsely with setae of various length along the rim of emargination; apicomedian sub-transparent area elongate-elliptical in shape; apicolateral humps medium-sized, each located at the anterior margin of lateral rim. Endophallic median longitudinal bands (Fig. 59B) with ventral bands long, dorsal bands moderately long, relatively wide; expulsion hook (Fig. 59B) transverse, thin, with anterolateral arm and postero-lateral arm short, laterally with a small sclerotized hump (Fig. 59F); basal tube (Fig. 59B, C) large, baculiform. Parameres (Fig. 59B) weakly incurved; apical area moderately long, very weakly swollen mesially, and furnished mesially with 16 to 17 thin setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 59G) each distinctly serrate posteriorly, with apicolateral teeth moderately long, bi- or trifurcate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus kokie* is distributed in the low mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus kokie* is allied to *S. ubusuna*, but it is separable from the latter by the aedeagal median lobe with apical sclerotized area longer, narrower and a little more rounded apically (Fig. 59B), and the exdophallic expulsion hook simply transverse (Fig. 59F).

Etymology. The specific epithet of this species "kokie" is derived from the Japanese name of the three small stars located at the eastern side of Aries.

Stenus serratimarginatus Naomi

(Figs. 60A–G, 131A)

Stenus serratimarginatus Naomi, 1997f: 139; Herman, 2001: 2387; Naomi & Puthz, 2013: 138.

Stenus zimmermanni Puthz, 1968b: Naomi & Takeda, 1991: 10.

Type material examined. Holotype: ♂ (CBM), Fudago, Kimitsu City, Chiba Pref., 20. iv. 1989, S. Naomi leg. Paratypes: 4 ♂ (cN), Fudago, Kimitsu City, Chiba Pref., 20. iv. 1989, S. Naomi leg.; 2 ♂2 ♀ (cN), Mt. Kiyosumi, Amatsu-kominato, Chiba Pref., 9. vi. 1991, T. Takeda leg.; 1 ♀ (cN), Uchiurayama, Amatsu-kominato, Chiba Pref., 12. v. 1991, T. Takeda leg.; 1 ♂2 ♀ (cN), Yomogi, Mt. Kiyosumi, Amatsu-kominato, Chiba Pref., 27. v. 1990, T. Takeda leg.; 1 ♀ (cN), same locality, 4. iv. 1990, T. Takeda leg.; 1 ♂ (cN), Yoro Valley, Ichihara City, Chiba Pref., 20. v. 1990, T. Takeda leg.; 1 ♂ (cN), Mt. Daifuku, Ichihara City, Chiba Pref., 29. vi. 1991, T. Takeda leg.; 1 ♂2 ♀ (cN), Chikura-cho, Chiba Pref., 26. vi. 1994, S. Naomi leg.

Distribution. Japan (Honshu: Chiba Pref.).

Redescription. Male and female: Brachypterous; body 2.7–3.6 mm (fore body 1.5–1.6 mm) in length, weakly to moderately shining, with antennae short. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae dark red; legs dark red, with knees more or

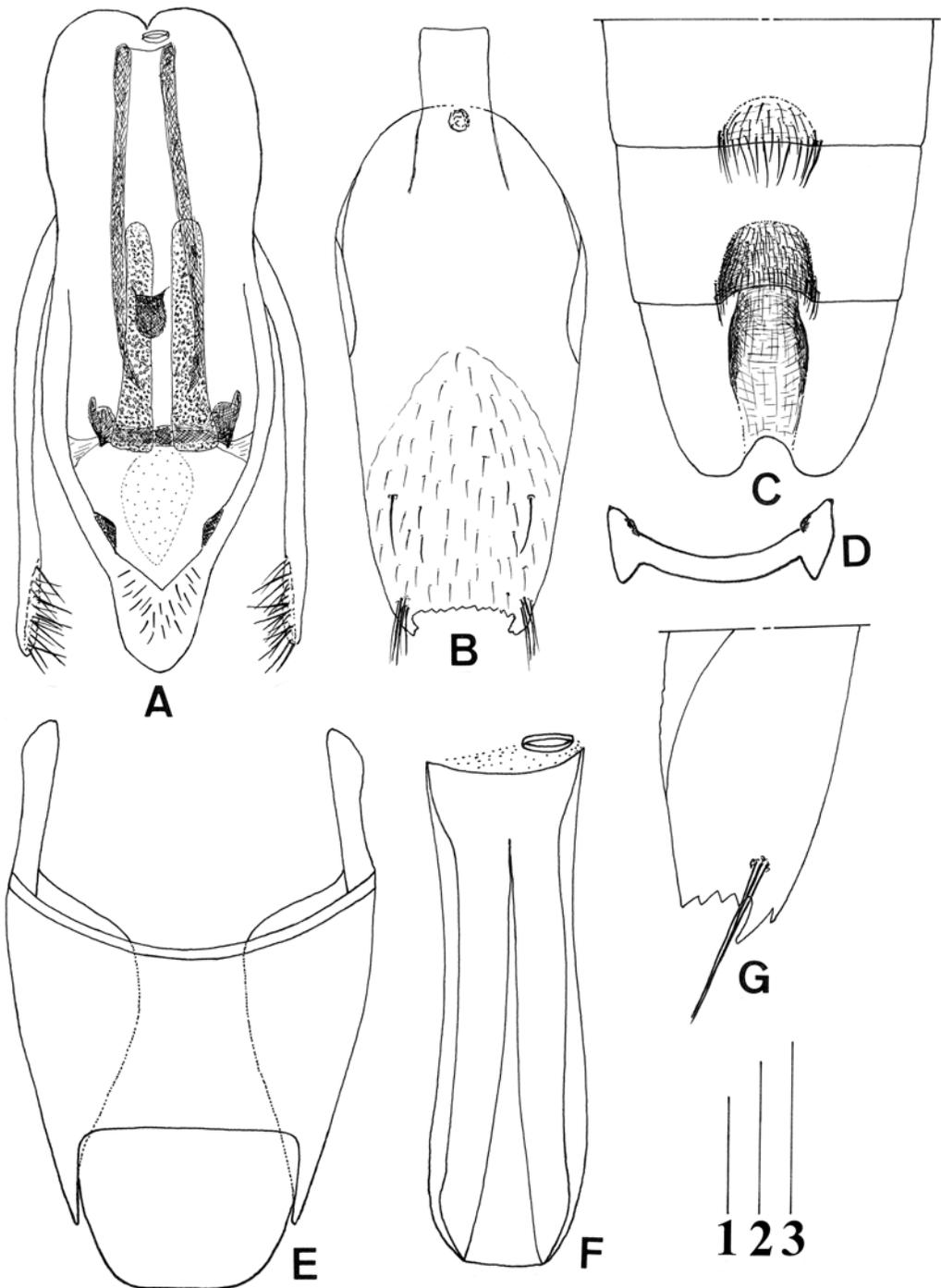


Fig. 60. *Stenus serratimarginatus* Naomi (A, B, D–F, Kimitsu, Chiba; C, G, Kiyosumi, Amatsu-kominato). A, aedeagus; B, 9th ventrite of male; C, 6th to 8th ventrites of male; D, endophallic expulsion hook; E, 9th and 10th terga of male; F, basal tube; G, apex of gonocoxite. Scale 1: 0.1 mm for A, B; scale 2: 0.3 mm for C; scale 3: 0.2 mm for E, 0.1 mm for D, G, F.

less infuscate. Head with a pair of longitudinal depressions; punctures round, dense to very dense, small. Pronotum with surface weakly uneven; punctures round, very dense, somewhat rough. Elytra with surface uneven; punctures round to elliptical, very dense, various in size, rough. Legs short; tarsi with 4th tarsomere very weakly bilobed. Abdomen wide; 3rd to 5th or 6th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense and small in anterior segments, while punctures in posterior segments elliptical, dense, very small and regular. Lateroventrites horizontal or dorsomesial in position, narrow, punctate.

Male: Sixth ventrite (Fig. 60C) posteromedially with a semicircular flat area, which is very shallowly emarginate, and also furnished with moderately long setae along the posterior margin; 7th ventrite (Fig. 60C) posteromedially with a bell-shaped depression, which is arcuately emarginate, and covered densely with thin, short setae; 8th ventrite (Fig. 60C) posteromedially with a medium-sized emargination, and medially with an elongate depression which becomes shallower posteriorly; 9th tergum (Fig. 60E) with ventral apophyses moderately long; 9th ventrite (Fig. 60B) elongate, moderately serrate posteriorly, with stem rectangular in shape, apicolateral teeth each short, weakly incurved, bidentulate apically, apicolateral setae short; 10th tergum (Fig. 60E) entire. Aedeagal median lobe (Fig. 60A) violin-shaped, bluntly angulate apically; apical sclerotized area distinctly incised anteriorly, covered anteromedially with sparse, short setae; apicomedian subtransparent area large, subovoidal in shape; anterolateral humps large, each located at the mesial margin of lateral rim (Fig. 60A). Endophallic median longitudinal bands (Fig. 60A) moderately long, wide; expulsion hook (Fig. 60A) transverse, arc-shaped, anterolateral arm basimesially with a small sclerotized hump (Fig. 60D); basal tube (Fig. 60A, F) large, baculiform. Parameres (Fig. 60A) slender, weakly incurved; apical area short, weakly swollen mesially, covered mesially with 18 to 19 thin, short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 60G) each serrate posteriorly, with apicolateral tooth bifurcate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and ecology. *Stenus serratimarginatus* is presently indigenous to the southern part of Boso-Peninsula, Chiba. This species is distributed in the plains and low mountainous regions there. The beetles inhabit leaf litter in the natural forests, and also moist litter heaped near the mountain streams.

Remarks. Naomi & Takeda (1991) first recorded *Stenus serratimarginatus* as *S. zimmermanni* from Boso-Peninsula. Naomi (1997f) later regarded and described those local populations as a new species independently from *S. zimmermanni*. *S. serratimarginatus* is closely allied to *S. zimmermanni*, but it is separable from the latter by the 6th ventrite of male with posteromedian flat area (Fig. 60C), the aedeagal median lobe with apical sclerotized area blunt apically, and covered anteromedially with sparse, short setae (Fig. 60A), and the endophallic expulsion hook with anterolateral arm shorter, basimesially with a small sclerotized hump (Fig. 60D).

Stenus zimmermanni Puthz

(Figs. 61A–E, 131B)

Stenus zimmermanni Puthz, 1968b: 43; Herman, 2001: 2439; Naomi & Puthz, 2013: 138.

Stenus sakura Hromádka, 1979a (*partim*).

Type material examined. Holotype: ♀ (MHNG), Mt. Takao, Hachioji, Tokyo, 8. iv. 1966, G. Zimmermann leg. [examined by Puthz]. Paratype of *S. sakura*: 1 ♀ (cP), Chuzenji, Nikko,

Tochigi Pref., 13. xi. 1953, K. Sawada leg.

Other material examined. [HONSHU] 1 ♂, Kirizumi Spa, Matsueda-cho, Gunma Pref., 22. vii. 1990, T. Kishimoto leg.; 1 ♂1 ♀, same locality, 25. v. 1962, Y. Shibata leg.; 1 ♂2 ♀, Mt. Jyomine, Yoshida-cho, Saitama Pref., 12. ix. 1999, S. Arai leg.; 2 ♂, Mt. Ryogami, Ryogami-mura, Saitama Pref., 10. v. 1997, M. Maruyama leg.; 1 ♂, same locality, 31. x. 1999, T. Shimada leg.; 1 ♂, Mt. Takao, Tokyo, 6. vii. 1985, M. Tao leg.; 1 ♀, same locality, 10. x. 1992, S. Hashimoto leg.; 1 ♀, same locality, 14. v. 1977, M. Tao leg.; 2 ♂, Umenoki-daira, Hachioji City, Tokyo, 17. iv. 1996, M. Maruyama leg.; 1 ♂, Mt. Mitake, Tokyo, 6. v. 1962, Y. Shibata leg.; 1 ♂, Near Atsugi, Kanagawa Pref., 7. iv. 1960, Y. Shibata leg.; 1 ♂, Uchinokaya, Ina, Nagano Pref., 13. viii. 1999, Y. Hayashi leg.; 1 ♂, Mt. Amagi, Izu Pen., Shizuoka Pref., Y. Watanabe leg.

Distribution. Japan (Honshu).

Redescription. Male and female: Brachypterous; body 3.5–3.7 mm (fore body 1.6–1.7 mm) in length, weakly to moderately shining, with antennae short. Head and abdomen black; pronotum and elytra dark red; labrum black; antennae dark red; legs dark red, with knees more or less infusate. Head with a pair of longitudinal depressions; punctures round, dense, almost regular. Pronotum with surface uneven; punctures round, very dense, somewhat rough. Elytra with surface uneven; punctures round, very dense, rough. Legs short; tarsi with 4th tarsomere very weakly bilobed. Abdomen wide, weakly convex above; 3rd to 5th terga each with 3 short, basolongitudinal keels; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, moderately dense, very small and regular. Lateroventrites almost horizontal or dorsomesial in position, narrow, punctate.

Male: Seventh ventrite (Fig. 61G) posteromedially with a semicircular depression, which is arcuately emarginate; 8th ventrite (Fig. 61G) posteromedially with a relatively wide emargination, and medially with an elongate depression which becomes shallower posteriorly; 9th tergum (Fig. 61B) with ventral apophyses long; 9th ventrite (Fig. 61C) elongate, hardly serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth each short, di- or trifurcate apically; 10th tergum (Fig. 61B) very shallowly emarginate. Aedeagal median lobe (Fig. 61A) violin-shaped, acutely pointed apically; apical sclerotized area subtriangular in shape, anterolaterally with a pair of setose areas; apicomedian subtransparent area elongate-elliptical in shape; anterolateral humps medium-sized, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands (Fig. 61A) long; expulsion hook (Fig. 61A) transverse, arc-shaped, with anterolateral arm distinctly longer than posterolateral arm (Fig. 61F); basal tube (Fig. 61A, D) large, baculiform. Parameres (Fig. 61A) slender, thin; apical area weakly swollen mesially, covered mesially with 18 to 19 thin, short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 61E) each serrate posteriorly, with apicolateral teeth each distinctly bi- or trifurcate apically. Spermatheca not observable.

Biology and ecology. *Stenus zimmermanni* is distributed in the plains and mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus zimmermanni* is closely allied to *S. serratimarginatus*, but it is separable from the latter by the 6th ventrite of male without modification, the aedeagal median lobe with apical sclerotized area acutely pointed apically, and anterolaterally with a pair of setose areas (Fig. 61A), and the endophallic expulsion hook with anterolateral arm longer and simple (Fig. 61F).

Etymology. This species was named in honour of Mr. Gustav Zimmermann, a member of the Berlin Philharmonic Orchestra, who collected the holotype of this species.

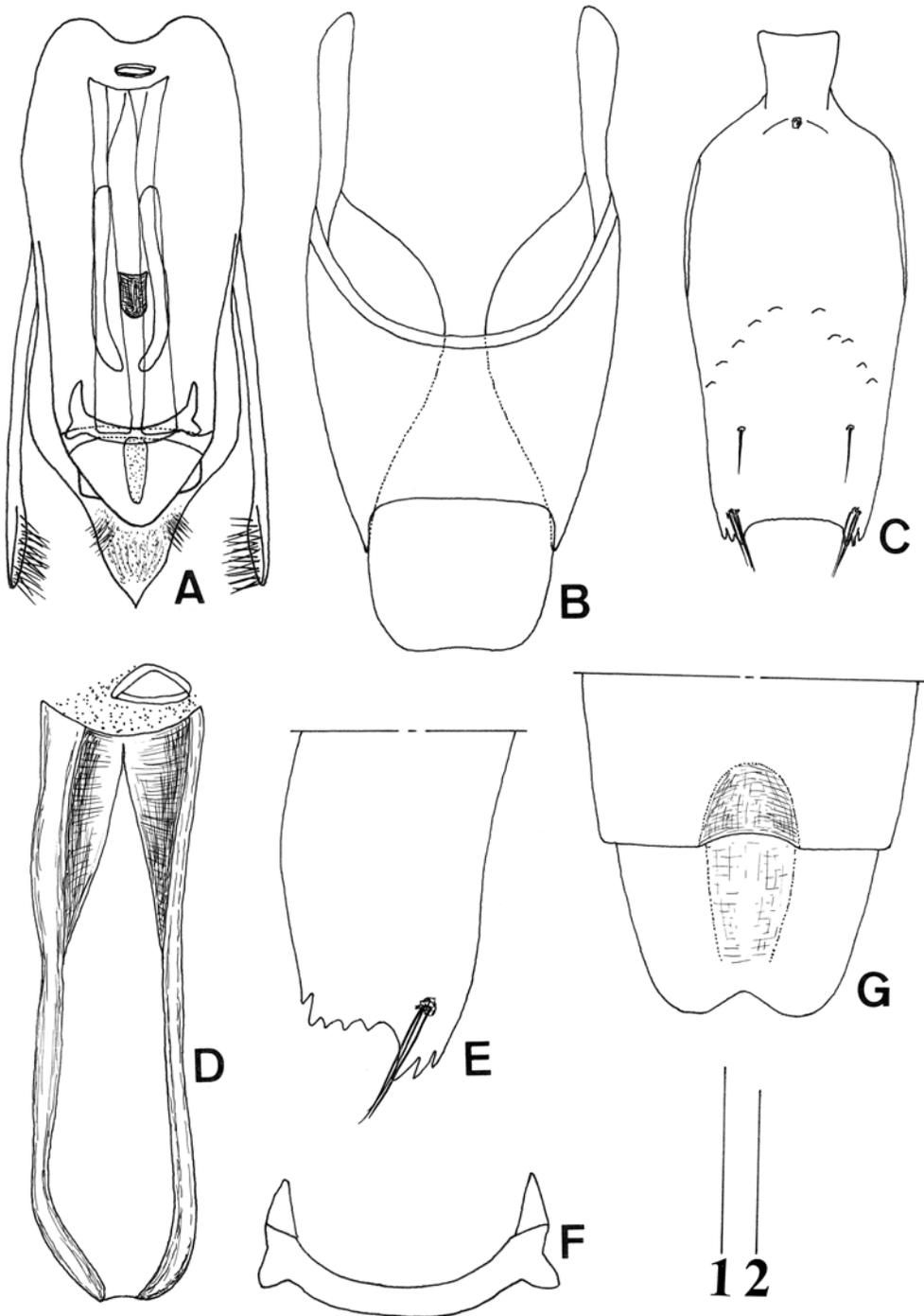


Fig. 61. *Stenus zimmermanni* Puthz (A, B, D–F, Takao, Tokyo; C, G, Hachioji, Tokyo). A, aedeagus; B, 9th and 10th terga of male; C, 9th ventrite of male; D, endophallic basal tube; E, apex of gonocoxite; F, expulsion hook; G, 7th to 8th ventrites of male. Scale 1: 0.2 mm for A–C, 0.1 mm for D–F; scale 2: 0.3 mm for G.

***Stenus yasutoshii* Naomi**
(Figs. 62A–G, 131C)

Stenus yasutoshii Naomi, 1997f: 137; Herman, 2001: 2438; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Near Akazawa-Spa, Masuho, Yamanashi Pref., 4. v. 1974, Y. Shibata leg. Paratypes: 2 ♀ (cN), same data as holotype.

Distribution. Japan (Honshu: Yamanashi Pref.).

Redescription. Male and female: Brachypterous; body 3.2–3.6 mm (fore body 1.5–1.7 mm) in length, weakly to moderately shining, with antennae relatively short. Head and abdomen black; pronotum and elytra dark red; labrum black; antennae dark red; legs dark red, with knees more or less infuscate. Head with a pair of longitudinal depressions; punctures round, dense, almost regular. Pronotum with surface uneven; punctures round, very dense, somewhat rough. Elytra with surface uneven; punctures round, very dense, rough. Legs short; tarsi with 4th tarsomere very weakly bilobed. Abdomen wide, weakly convex above; 3rd to 5th terga each with 3 short, basilongitudinal keels; punctures round to elliptical, moderately dense, and distinct in anterior segments, while punctures in posterior segments elliptical, moderately dense, very small and regular. Lateroventrites almost horizontal in position, narrow, punctate.

Male: Sixth ventrite posteromedially with a very shallow emargination; 7th ventrite (Fig. 62G) posteromedially with a semicircular depression, which is arcuately emarginate; 8th ventrite (Fig. 62E) posteromedially with a small emargination, and centrally with an elongate-ovoidal depression which becomes shallower posteriorly; 9th tergum (Fig. 62A) with ventral apophyses moderately long; 9th ventrite (Fig. 62B) elongate, irregularly serrate posteriorly, with stem elongate-subrectangular in shape, apicolateral teeth each short, bi- or tridentate apically; 10th tergum (Fig. 62A) entire. Aedeagal median lobe (Fig. 62B) violin-shaped, distinctly angulate apicolaterally, then almost abruptly constricted to form the apical sclerotized area which is flat ventrally, rounded apically and covered sparsely with short setae; apicomedian subtransparent area ovoidal in shape; anterolateral humps small, each located at the anterolateral corners of apical sclerotized area. Endophallic median longitudinal bands (Fig. 62C) very long, broad at base, gradually divergent anteriorly; expulsion hook (Fig. 62C) arc-shaped, with anterolateral arm shortly incurved apically; basal tube (Fig. 62C) large, baculiform. Parameres (Fig. 62B) slender, thin, very weakly incurved; apical area weakly swollen mesially, furnished mesially with 18 to 19 thin, (mostly) short setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 62D) without ventral apophyses; gonocoxites (Fig. 62F) each irregularly serrate posteriorly, with apicolateral teeth each bi- or trifurcate apically, apicolateral setae short; 10th tergum (Fig. 62D) entire. Spermatheca not observable.

Biology and ecology. *Stenus yasutoshii* is distributed in the mountainous regions. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus yasutoshii* is closely allied to *S. hououmontis*, but it is separable from the latter by the aedeagal median lobe with apical sclerotized area rounded apically (Fig. 62C) and the endophallic expulsion hook with anterolateral arm shortly incurved (Fig. 62C).

Etymology. This species was named in honour of an eminent staphylinist, Mr. Yasutoshi Shibata (Tokyo) who collected the type material of this species.

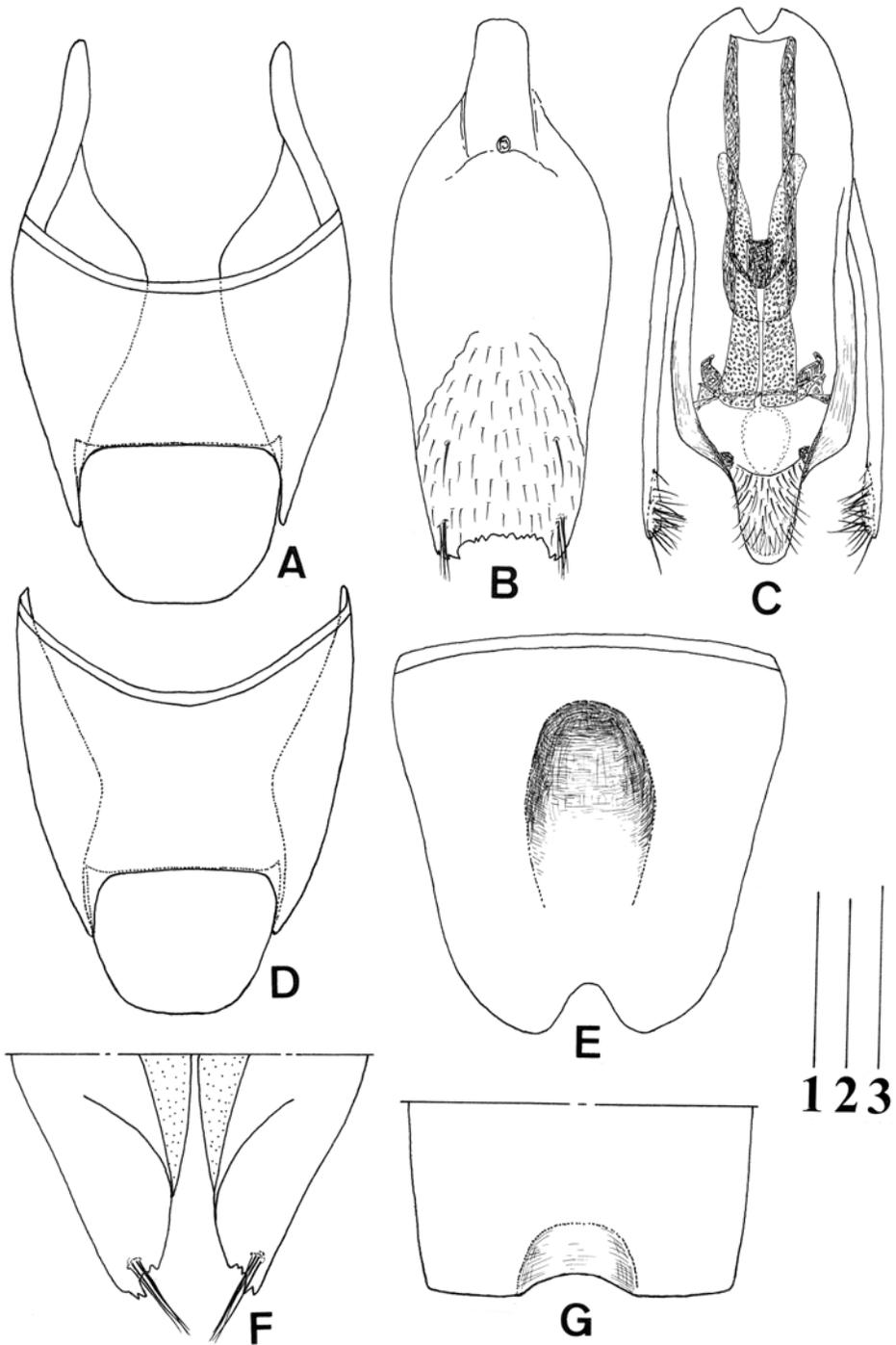


Fig. 62. *Stenus yasutoshii* Naomi (Masuho, Yamanashi). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, 9th and 10th terga of female; E, 8th ventrite of male; F, apices of gonocoxites; G, 7th ventrite of male. Scale 1: 0.2 mm for A–D, F; scale 2: 0.2 mm for E; scale 3: 0.3 mm for G.

***Stenus houomontis* Naomi & Ito**
(Figs. 63A–E, 131D)

Stenus houomontis Naomi & Ito, 2014: 283.

Type material examined. Holotype: ♂ (OMNH), Mt. Houo, Yamanashi Pref., 22. viii. 1989, K. Hosoda leg. Paratypes: 2 ♂3 ♀, same data as holotype; 1 ♂, Maruno-cho, Yamanashi Pref., 19. vi. 1992, K. Hosoda leg.; 2 ♂ (cN), Sessokyo, Honkawane-cho, Shizuoka Pref., 9-10. v. 1982, T. Kishimoto leg.

Distribution. Japan (Honshu: Yamanashi and Shizuoka Prefs.).

Redescription. Male and female: Brachypterous; body 2.8–3.0 mm (fore body 1.5–1.6 mm) in length, dull to moderately shining, with antennae relatively short. Body entirely dark red to black; labrum black; antennae and legs dark red to dark brown. Head with a pair of broad, longitudinal depressions; punctures round, dense to very dense. Pronotum somewhat flat on median area, with surface uneven; punctures round, very dense, distinct. Elytra with surface uneven; punctures very dense, rough. Legs short; tarsi short, moderately thick, with 4th tarsomere very weakly bilobed. Abdomen weakly narrowed posteriorly; 3rd to 6th terga each with 3 short, basi-longitudinal keels; punctures small, moderately dense and distinct in anterior segments, while punctures in posterior segments round to elliptical, very small and shallow. Lateroventrites horizontal or dorsomesial in position, narrow, punctate.

Male: Sixth ventrite posteromedially with a triangular flat area, which is very weakly emarginate; 7th ventrite (Fig. 63E) posteromedially with a semicircular depressed area, which is arcuately emarginate; 8th ventrite (Fig. 63E) posteromedially with a small emargination; 9th tergum (Fig. 63A) with ventral apophyses long, thin; 9th ventrite (Fig. 63C) elongate, very finely serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth each very short, bi- or tridenticulate apically; 10th tergum (Fig. 63A) entire. Aedeagal median lobe (Fig. 63B) violin-shaped, widely rounded apicolaterally, and then strongly constricted behind the apicolateral corners to form a lanceolate apical sclerotized area which is acutely pointed apically, and covered sparsely with short setae; apicomedian subtransparent area elongate-ovoidal in shape; anterolateral humps small, each located at the mesial margin of lateral rim. Endophallic median longitudinal bands moderately long; expulsion hook (Fig. 63B) transverse, thin, with anterolateral arm a little longer than posterolateral arm; basal tube (Fig. 63B) large, almost baculiform. Parameres (Fig. 63B) slender, thin, weakly incurved; apical area weakly swollen mesially, furnished mesially with thin, short setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 63D) without ventral apophyses; gonocoxites (Fig. 63D) each irregularly serrate posteriorly, with apicolateral tooth indistinct (or one or two small teeth at apicolateral part); 10th tergum (Fig. 63D) entire. Spermatheca not observable.

Biology and ecology. *Stenus houomontis* is distributed in the mountainous regions up to alpine zones (about 3000 m) in central Honshu. The beetles inhabit leaf litter in the natural forests.

Remarks. *Stenus houomontis* is allied to *S. yasutoshii*, but it is separable from the latter by the aedeagal median lobe with apical sclerotized area lanceolate (Fig. 63B), and the endophallic expulsion hook with anterolateral arm simply turning anterolaterally (Fig. 63B). *S. houomontis* is also allied to *S. takashii*, but it is separable from the latter by the aedeagal median lobe strongly constricted behind apicolateral corners to form the lanceolate apical sclerotized area (Fig. 63B),

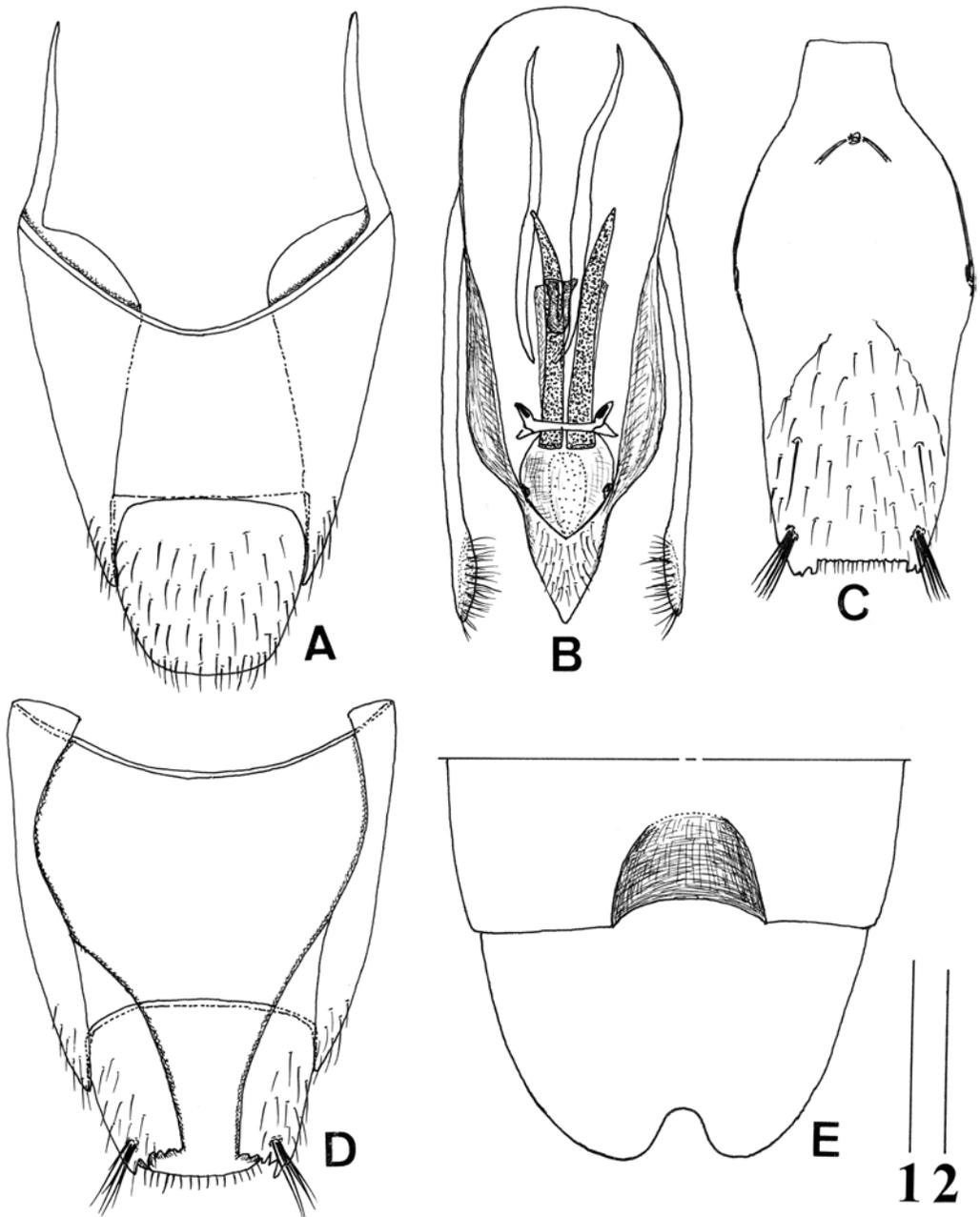


Fig. 63. *Stenus houomontis* Naomi & Ito (Houo, Yamanashi). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, 9th, 10th terga and gonocoxites of female; E, 7th to 8th ventrites of male. Scale 1: 0.2 mm for A–D; scale 2: 0.2 mm for E.

the expulsion hook distinctly thinner (Fig. 63B); and the apicomedian subtransparental area without lateral teeth.

Stenus takashii Naomi
(Fig. 64A–D)

Stenus takashii Naomi, 2004c: 15; Naomi & Puthz, 2013: 138.

Type material examined. Holotype: ♂ (CBM), Yoshizawa, Sakuma, Shizuoka Pref., 30. iv. 1994, T. Watanabe leg.

Distribution. Japan (Honshu: Shizuoka Pref.).

Redescription. Male: Brachypterous; body 3.3 mm (fore body 1.6 mm) in length, moderately shining, with antennae relatively short. Head and abdomen black; pronotum and elytra dark red to black; labrum black; antennae and legs dark red. Head with a pair of longitudinal depression; punctures round, dense to very dense, various in size, distinct. Pronotum with surface weakly uneven; punctures round, very dense, somewhat rough. Elytra with surface uneven, each with a shallow longitudinal depression near humeral area; punctures round to elliptical, very dense, large. Legs relatively short; tarsi with 4th tarsomere very weakly bilobed. Abdomen wide; 3rd to 5th terga each with 3 short, basi-longitudinal keels; punctures round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in the posterior segments elliptical, very small, regular and distinct. Lateroventrites horizontal in position, narrow, punctate.

Seventh ventrite (Fig. 64C) posteromedially with a bell-shaped depression, which is arcuately emarginate; 8th ventrite (Fig. 64C) posteromedially with a V-shaped emargination; 9th tergum (Fig. 64B) with ventral apophyses thin, long; 9th ventrite (Fig. 64D) elongate, finely serrate posteriorly, with stem subquadrangular, arcuately emarginate anteriorly, posterolateral teeth each short, bifurcate apically. Aedeagal median lobe (Fig. 64A) nearly gourd-shaped, with lateral rim wide, apicomedian projection relatively long; apical sclerotized area anteromedially covered with sparse, short setae; apicomedian subtransparent area large, elongate-elliptical in shape, with a pair of pointed teeth near the middle of the lateral sides of subtransparent area; apicolateral humps very large, low, sclerotized, rounded, and each located at the mesial margin of wide lateral rim. Endophallic median longitudinal bands (Fig. 64A) very long, gradually diverging anteriorly; lateral longitudinal bands distinct, short (Fig. 64A); expulsion hook (Fig. 64A) transverse, very thick, stout, with anterolateral arm short, pointed, and a little shorter than posterolateral arm; basal tube (Fig. 64A) large, baculiform. Parameres (Fig. 64A) slender, thin, very weakly incurved; apical area moderately long, weakly swollen mesially, furnished mesially with 20 to 21, thin, short setae.

Female. Unknown.

Biology and Ecology. Only one male of *Stenus takashii* was presently collected in the low mountainous region of Central Honshu (Chubu). The beetle inhabits leaf litter in the natural forest there.

Remarks. Among the Japanese members of *S. humilis* group, *Stenus takashii* is unique in having the following apomorphic characters of aedeagus (Fig. 64A): the median lobe has its broadly expanded lateral rims, with the acutely pointed apicomedian projection; a pair of pointed teeth exist at the middle of the lateral sides of apicomedian subtransparent area; and the endophallic expulsion hook is very thick and stout. However, given structural similarities on the modifications of 7th and 8th ventrites of male, the ventral apophyses of 9th tergum of male, etc., *S. takashii* is probably most closely allied to *S. houomontis*. *S. takashii* is easily separable from *S. houomontis* and also other Japanese members of this species group by the unique characters mentioned above.

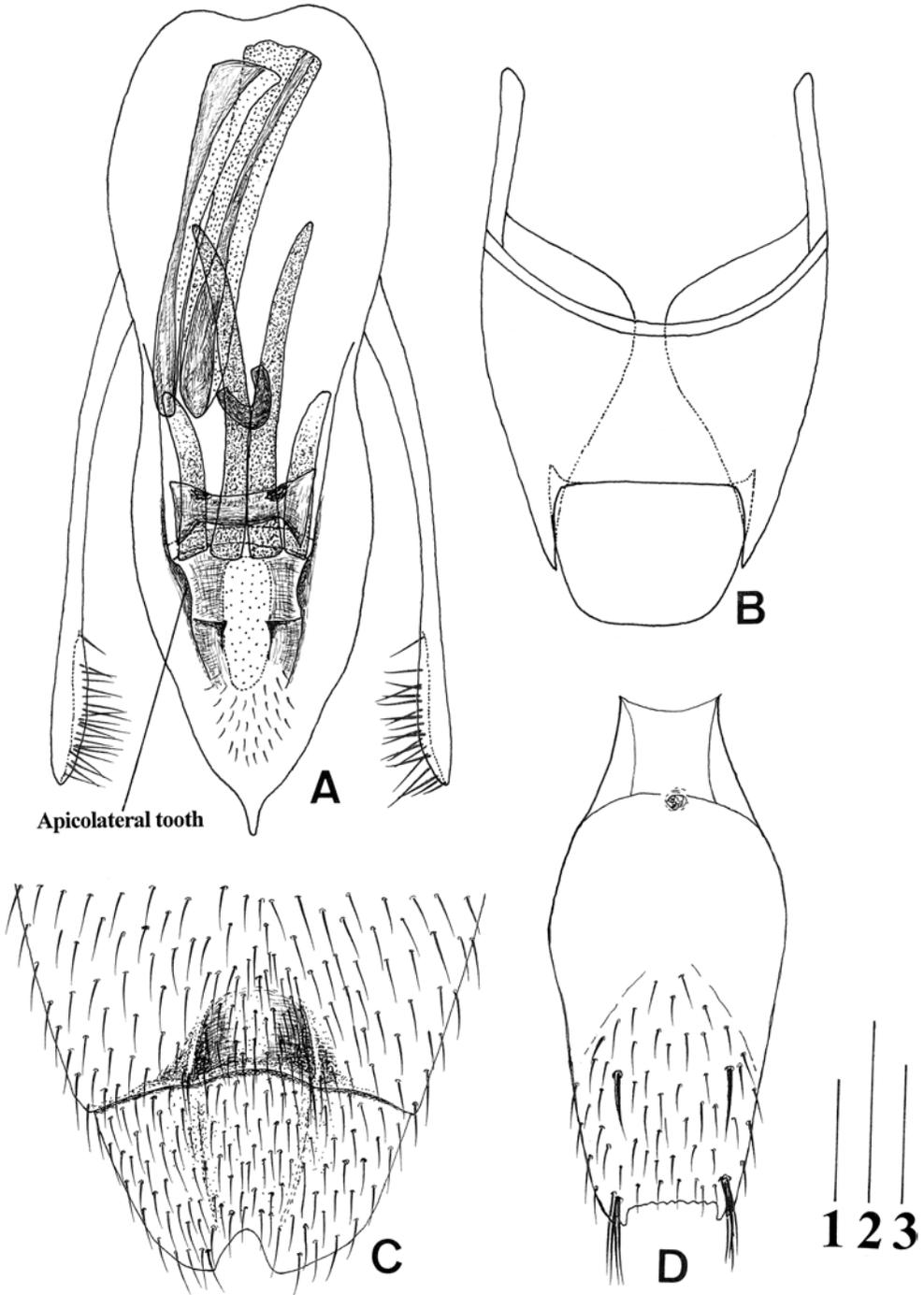


Fig. 64. *Stenus takashii* Naomi (Sakuma, Shizuoka). A, aedeagus; B, 9th and 10th terga of male; C, 7th to 8th ventrites of male; D, 9th ventrite of male. Scale 1: 0.1 mm for A; scale 2: 0.2 mm for B, D; scale 3: 0.2 mm for C.

Etymology. This species is named in honour of Mr. Takashi Watanabe, Kanagawa, who collected the holotype of this species.

Species group of *S. circularis* (Gravenhorst)

S. circularis group (= *S. rugicollis* group; = *S. cameratus* group; Puthz, 2011a: 816) consists of 1 species (*S. sexualis*) in Japan (Puthz, 1968b); see Puthz (2003a: 59–61) regarding a key to species of this group, and see Puthz (1988a: 634) regarding a characterization of this group. Diagnostic characters are as follows: Legs with 4th tarsomere simple; 3rd to 6th (or 7th) terga each with 3 basi-longitudinal keels; lateroventrites ventromesial in position, broad; 9th ventrite of male broad basally, glabrous but with apicolateral teeth and paired macrosetae (Fig. 65F); 10th tergum rather elongate (Fig. 65B, C), with setaceous spot (Puthz, 1988a: 634); aedeagal median lobe often with rather slender apical portion (Fig. 65A; Puthz, 2003a, figs. 4, 7, 9, 13); gonocoxite widely rounded apicomesially (Fig. 65E); spermatheca not observable.

Stenus sexualis Sharp
(Figs. 65A–F, 131E)

Stenus sexualis Sharp, 1874: 84; Herman, 2001: 2387; Naomi & Puthz, 2013: 138; Naomi & Watanabe, 2015: 108.

Type material examined. Syntypes: (NHML, FMCh), type localities: Sapporo (Hokkaido), Miyanosita (Kanagawa) [examined by Puthz in 1965].

Other material examined. [HOKKAIDO]: 1 ♀, Haboro-cho, 24. vii. 1998, K. Haga leg. [HONSHU]: 1 ♂, Shiobara, Tochigi Pref., 17. iv. 1988, S. Ohmomo leg.; 1 ♀, Suidobashi, Shonan-cho, Chiba Pref., 13. iii. 1990, T. Takeda leg.; 1 ♂, Tanida, Shirai-cho, Chiba Pref., 14. ii. 1989, T. Takeda leg.; 1 ♀, Mt. Daifuku, Ichihara C., Chiba Pref., 27. vi. 1991, T. Takeda leg.; 3 exs., Kanagawa Pref.; 1 ♀, Komanoyu, Niigata Pref., 4. vii. 1963, Y. Watanabe leg.; 1 ♂ 1 ♀, Uono River, Kawaguchi-cho, Niigata Pref., 30. iv. 1995, K. Haga leg.; 3 ♂ 5 ♀, Okayama, Sauter; 1 ♀, Bukenji, Kanagawa?, Sauter; 1 ♀, Hichitukabara, Shobara C., Hiroshima Pref., 14. viii. 1974, I. Okamoto leg. [KYUSHU]: 1 ♀, Mt. Sobo, Ohita Pref., 15. vii. 1960, K. Mizusawa leg.

Distribution. Japan (Hokkaido, Honshu, Kyushu); China, Laos.

Redescription. Male and female: Macropterous; body 2.3–2.6 mm (fore body 1.4–1.6 mm) in length, surface strongly shining with interstices between punctures on body lustrous and smooth, antennae short, elytra large, gently convex. Head and abdomen black; pronotum and elytra dark reddish brown; labrum black; antennae dark red; legs yellowish brown to reddish brown. Head with a pair of distinct longitudinal depressions which are convergent anteriorly, median vertexal area between the depressions rather narrow, elongate-triangular; punctures round to elliptical, very dense. Pronotum with surface weakly uneven, often with an indistinct small fovea on the median area before posterior margin; punctures round to elliptical, very dense, sometimes two or more punctures partially fused. Elytra with surface almost even; punctures round, very dense, distinct. Legs moderate in length; tarsi moderate in length, 4th tarsomere simple. Abdomen distinctly narrowed posteriorly (Fig. 131E), covered sparsely with short, thin setae; 3rd to 6th or 7th terga each with 3 basi-longitudinal keels, median keel larger, longer than lateral ones in each segment, median keel on 3rd tergum rather large, almost triangular; punctures basically rather sparse and small on all terga, but punctures on 7th tergum a little larger than those on anterior segments.

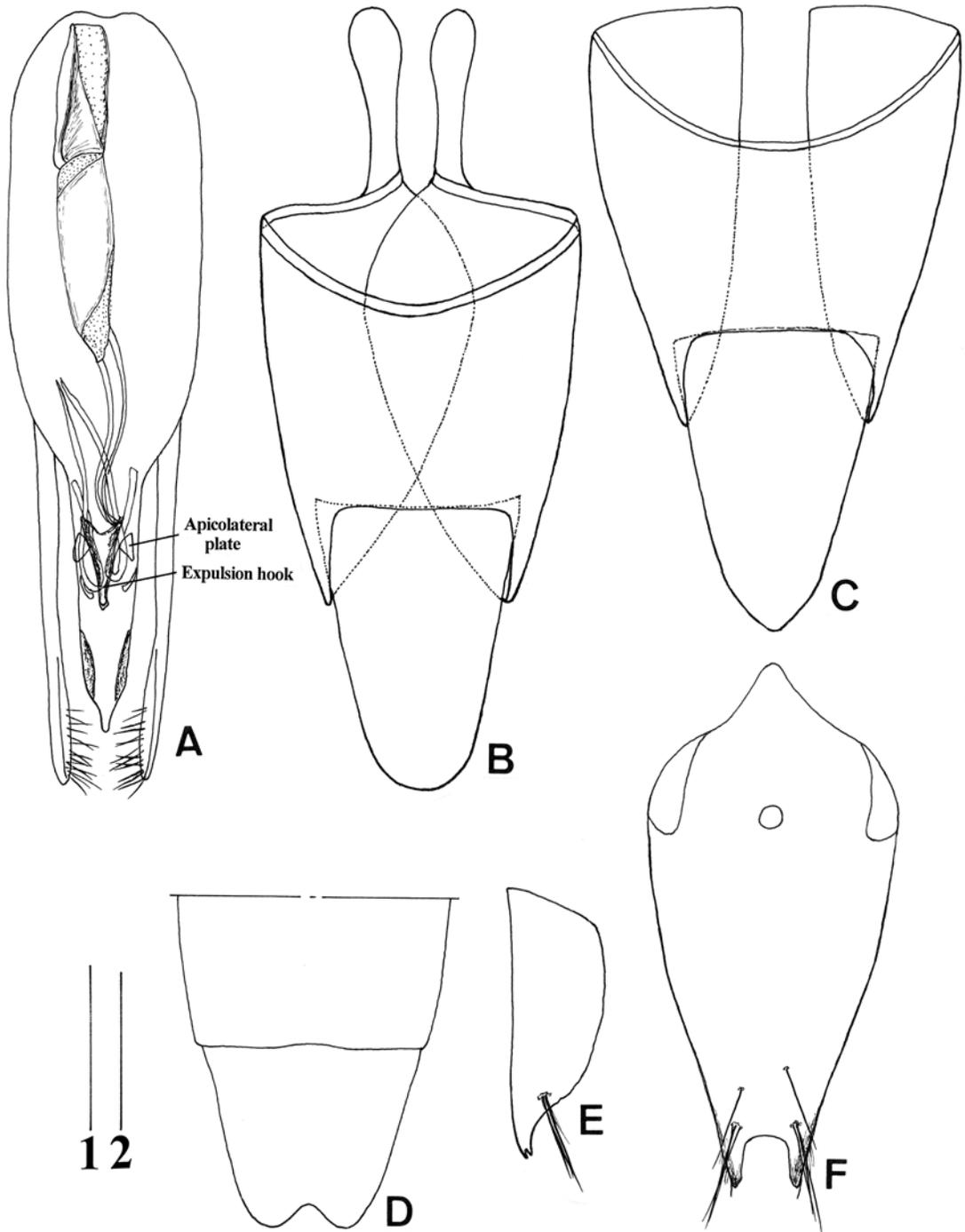


Fig. 65. *Stenus sexualis* Sharp (A, D, Tanida, Chiba; B, F, Uono, Niigata; C, E, Daifuku, Chiba). A, aedeagus; B, 9th and 10th terga of male; C, 9th and 10th terga of female; D, 7th to 8th ventrites of male; E, gonocoxite; F, 9th ventrite of male. Scale 1: 0.1 mm for A–C, E, F; scale 2: 0.2 mm for D.

Lateroventrites ventromesial in position, broad, distinct, punctate.

Male: Seventh ventrite (Fig. 65D) posteromedially with a very shallow emargination; 8th ventrite (Fig. 65D) posteromedially with a subtriangular emargination; 9th tergum (Fig. 65B) with ventral apophyses long, spatulate; 9th ventrite (Fig. 65F) rather wide basally, strongly narrowed apically, with stem subtriangular in shape, apicolateral teeth stout, sclerotized, moderately long, surface glabrous but with macrosetae and apicolateral setae moderately long; 10th tergum (Fig. 65B) elongate, subtriangular in shape, rounded apically. Aedeagal median lobe (Fig. 65A) broad and elongate-elliptical in anterior 2/3, thin and rod-like lobe in posterior 1/3, with a pair of elongate anterolateral impressions, and the apicomedian projection. Endophallic median longitudinal bands (Fig. 65A) very thin, with ventral bands moderately long, dorsal bands short; lateral longitudinal bands (Fig. 65A) very short; expulsion hooks (Fig. 65A) fused to form an arrow-shaped sclerite; apicolateral sclerites (Fig. 65A) widely separated, each very small, triangular in shape; basal tube (Fig. 65A) very long, with basal room partly submembranous, distinctly demarcated from tube body by membranous area, the tube body distinctly divided by a membranous area into the anterior thick rod and the posterior sinuous and attenuate rod. Parameres (Fig. 65A) thin, straight; apical area long, furnished mesially with 14 to 15 short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 65E) each widely rounded apicomesially, narrowed and incurved apically, with apicolateral tooth elongate, bidenticulate apically, apicolateral setae moderately long. Spermatheca not observable.

Biology and Ecology. *S. sexualis* is a rare *Stenus* species in Japan; and it is distributed in the plains and low mountainous regions. The beetles inhabit leaf litter in or near the natural forests or shrubs.

Remarks. *Stenus sexualis* is allied to *S. calcarifer* Puthz, 1991a, but this species is separable from the latter by the elytra with punctures less dense, distinct and regular, the abdomen with punctures finer, and the aedeagal median lobe much thinner in apical 1/3 (Fig. 65A). This species is here first recorded from Kyushu.

Species group of *S. javanus* Cameron

S. javanus group consists of 1 species in Japan (Puthz, 1973a); see Puthz (1980b, 2009b) regarding a taxonomy of this group. Diagnostic characters are as follows: Head about as wide as elytra (Fig. 131F); legs with 4th tarsomere simple; lateroventrites ventromesial in position, moderately broad; 9th ventrite of male very sparsely setous, with paired macrosetae and acute apicolateral teeth (Fig. 66E); 10th tergum transverse (Fig. 66C); aedeagal median lobe with flagellum very long, parameres large, characteristically sinuous medially (Fig. 66A); endophallic expulsion hooks separated (Fig. 66A); gonocoxite with acute apicolateral tooth (Fig. 66F); spermatheca being of *guttalis* form (Figs. 7B, 66B).

Stenus riukuensis Puthz

(Figs. 66A–F, 131F)

Stenus riukuensis Puthz, 1973a: 6; Herman, 2001: 2369; Naomi & Puthz, 2013: 138; Puthz, 2012b: 91; Puthz, 2013: 1296.

Type material examined. Holotype: ♀ (NMNH), type locality: Amami-Oshima (Nansei Isls.) [examined by Puthz].

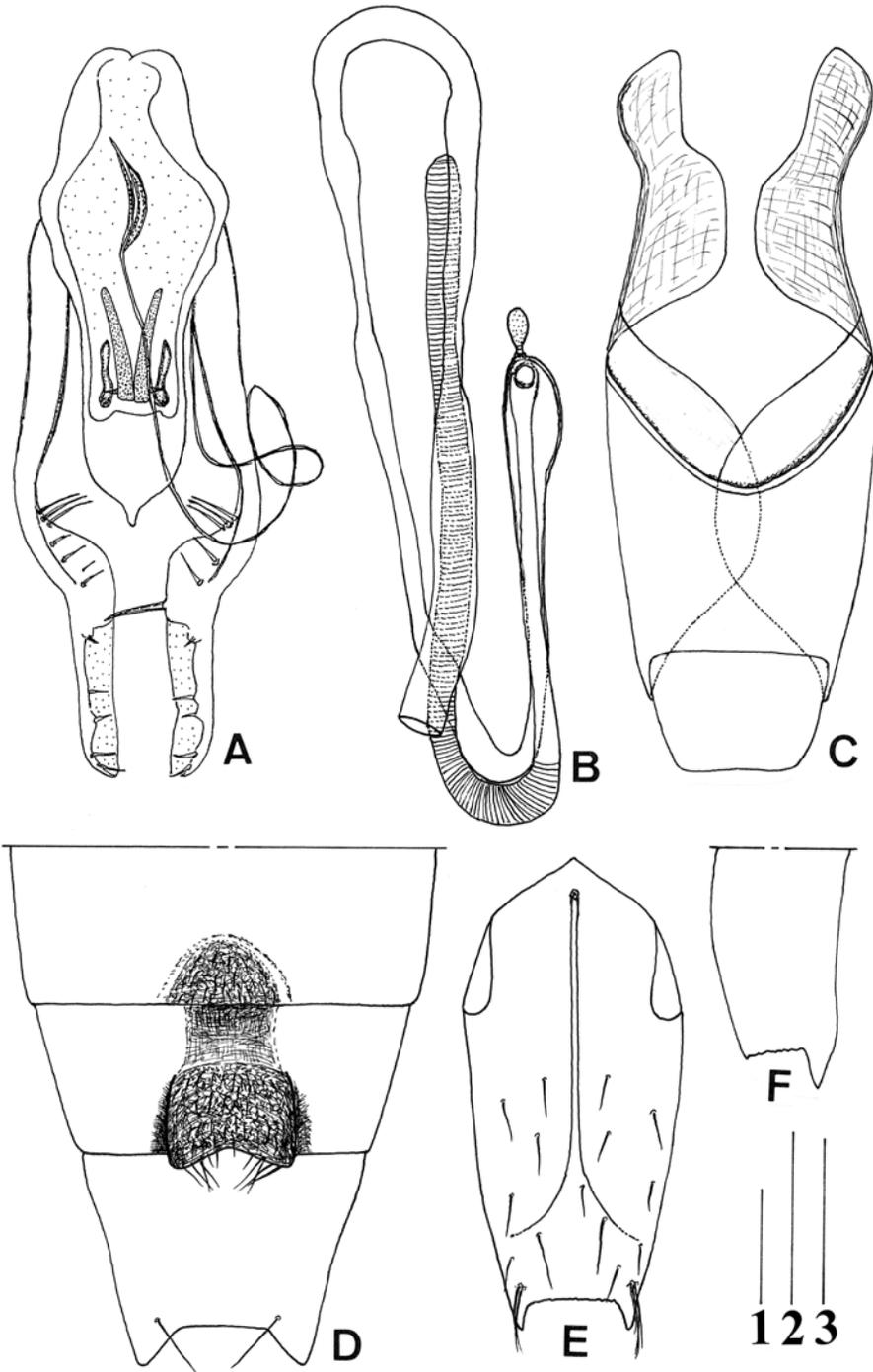


Fig. 66. *Stenus riukiensis* Puthz (A, C, D, E, Hatsuno, Amami Is.; B, F, Yona, Okinawa Is.). A, aedeagus; B, spermatheca; C, 9th and 10th terga of male; D, 6th to 8th ventrites of male; E, 9th ventrite of male; F, apex of gonocoxite. Scale 1: 0.1 mm for A, C; scale 2: 0.1 mm for B, F, 0.2 mm for E; scale 3: 0.2 mm for D.

Other material examined. [NANSEI ISLS.]: 3 ♂, Hatsuno, Amami Is., Kagoshima Pref., 27. iii. 1978, S. Naomi leg.; 1 ♂, Yona, Okinawa Is., Okinawa Pref., 13. iii. 1985, S. Nomura leg.; 1 ♀, Yona, Kunigami-son, Okinawa Is., Okinawa Pref., 6. v. 1991, T. Ueno leg. [TAIWAN]: 1 ♂ (cS), Taiwan, Kaohsiung Hsien, Tengchih, 1610m, 24. iv. 1990, A. Smetana leg.; 1 ♂ 1 ♀ (cS), Taiwan, Taitung Hsien, Hsinkangshan above Chengkang, 750m, 18. iv. 1998, A. Smetana leg.

Distribution. Japan (Nansei Is.: Amami Is., Okinawa Is.); Taiwan, Malaysia, Laos.

Redescription. Male and female: Macropterous; body 2.5–2.7 mm (fore body 1.4–1.5 mm) in length, somewhat robust, moderately shining, with short antennae and relatively long legs. Head black; pronotum and elytra dark reddish brown, lustrous; abdomen black but apical segments dark red; labrum black; antennae and legs almost clear yellowish brown to reddish brown. Head wide, with a pair of longitudinal depressions, median vertexal area between the depressions rather narrow; punctures round to elliptical, very dense, various in size, distinct. Pronotum with surface weakly uneven, often with an indistinct small fovea on the median area before posterior margin; punctures round, very dense, various in size. Elytra with surface weakly uneven; punctures round to almost round, very dense, various in size. Legs with tarsi relatively long, 4th tarsomere simple. Abdomen distinctly narrowed posteriorly (Fig. 131F); terga without basi-longitudinal keels; punctures round to elliptical, moderately dense, various in size, and distinct in anterior segments, while punctures in posterior segments elongate-ovoidal to elliptical, large, distinct, and almost regularly arranged longitudinally. Lateroventrites ventromesial in position, distinct, and set with some moderately large punctures.

Male: Sixth ventrite (Fig. 66D) posteromedially with a semicircular flat area; 7th ventrite (Fig. 66D) posteromedially with a large, moderately deep concavity, which is broadly emarginate posteriorly and strongly ridged laterally, with its posterolateral part weakly projecting posteriorly beyond the posterior margin of segment; 8th ventrite (Fig. 66D) broadly emarginate posteriorly, apicolaterally with triangular pointed projection; 9th tergum (Fig. 66C) with ventral apophyses large, each mesially with the flap which is rather wide basally; 9th ventrite (Fig. 66E) widely rounded anterolaterally, hardly serrate posteriorly, with the median thread-like, sclerotized area running longitudinally, apicolateral teeth pointed, surface very sparsely setous, with macrosetae paired, apicolateral setae short; 10th tergum (Fig. 66C) subtrapezoidal in shape. Aedeagal median lobe (Fig. 66A) nearly fusiform, rounded apicolaterally, with a short apicomedian projection, apical sclerotized area well-developed. Endophallic median longitudinal bands (Fig. 66A) thin, short, divergent anteriorly; expulsion hooks (Fig. 66A) widely separated but connected by a narrow thread (Puthz, 2012, fig. 12), each elongate, rounded posteriorly; flagellum (Fig. 66A) very long and thin, and *in situ* being out from the apical foramen except for its basal portion, basal room crescent in shape. Parameres (Fig. 66A) very large, much extending posteriorly beyond the apex of median lobe, and uniquely sinuous medially, each furnished mesially with setae of various length behind the middle of paramere.

Female: Eighth ventrite distinctly angulate posteromedially; gonocoxites (Fig. 66F) each very finely serrate posteriorly, with apicolateral tooth acute. Spermatheca (Fig. 66B) thin, with 4 distinct turns, capsule and basal valve missing; RT-duct comprising the almost long, apical duct but extending a little proximally beyond the 4th turn; spermathecal duct swollen at the anterior part of duct between 2nd and 3rd turns, and also strongly bent at the 3rd turn, where a small, ovoidal spermathecal gland opens and turns just anteriorly.

Biology and Ecology. *Stenus riukiensis* is distributed in the plains and low mountainous regions in Nansei Is. The beetles inhabit leaf litter in or near the natural forests.

Remarks. *Stenus riukiensis* is closely allied to *S. sannio* Puthz, 1980a from India and Nepal

(see also Puthz, 2012b), but this species is separable from the latter by the 8th ventrite of male posteriorly with a simple, wide emargination (Fig. 66D), and the aedeagal median lobe narrower around the apicolateral corner (Fig. 66D). *S. riukiensis* is also allied to *S. spongifera* Cameron, 1929 from Malaysia and Sumatra, but the punctures are basically finer on body, and the lateroventrites are set with some moderately large punctures (Puthz, 1973a).

Species group of *S. palposus* Zetterstedt

S. palposus group consists of 1 species in Japan; see Puthz (1988b) regarding a characterization of, and a key to the Nearctic species of, this group; and see Puthz (1970) regarding a key to the Palearctic species of this group. Diagnostic characters are as follows: Body covered with silvery pubescence (Fig. 131G); maxillary palpi entirely black; legs with 4th tarsomeres simple; abdomen with 4 short basi-longitudinal keels in each of 3rd to 6th terga; lateroventrites ventromesial to horizontal in position; 9th ventrite of male with paired macrosetae and pointed apicolateral teeth (Fig. 67E); 10th tergum elongate, rounded apically (Fig. 67B, C); aedeagal median lobe with apical sclerotized area wide, angulate apicolaterally, often medially with a longitudinal ridge (Fig. 67A); endophallic expulsion hooks fused to form a nearly U- (Fig. 67H) or H-shaped sclerite; gonocoxite with apicolateral tooth incurved, acute (Fig. 67F); spermatheca not observable.

Stenus ruralis Erichson

(Figs. 67A–H, 131G)

Stenus ruralis Erichson, 1840: 697; Herman, 2001: 2374; Naomi & Puthz, 2013: 138; Naomi & Watanabe, 2015: 109.

Type material examined. Lectotype: ♂ (MNB), type locality: Austria [designated by Puthz, 1967: 289].

Other material examined. [HOKKAIDO]: 1 ♂1 ♀, Hakodate, Japan, G. Lewis leg.; 1 ♂, Kucharo Lake, Kawayu, Teshikaga, 6. vi. 1992, M. Ohara leg. [HONSHU]: 1 ♂ (TUAA), Sasaguchi-hama, N.-Echigo (Niigata Pref.), 9. v. 1961, K. Baba leg.; 6 ♂5 ♀, Kamanashi River near Nirasaki, Yamanashi Pref., 1974, H. Franz (Mus. Vienna and cP); 1 ♂, Tatsikama (Tachikawa in Tokyo?), v. 1910, Museum Paris (coll. Jarrige).

Distribution. Japan (Hokkaido, Honshu); Korea, China, Mongolia, Azerbaijan, Russia, Europe.

Redescription. Male and female: Macropterous; body 3.5–4.0 mm (fore body 1.8–2.1 mm) in length, moderately shining, with short antennae and relatively long legs. Body black, covered with silvery pubescence; labrum and maxillary palpi black; antennae with first 2 segments black, 3rd to 11th dark red; legs dark red to black. Head relatively small, hardly concave, with a pair of longitudinal depressions; punctures round to elliptical, very dense, various in size, distinct. Pronotum with surface weakly uneven, with an indistinct median longitudinal depression; punctures round to elliptical, very dense, various in size. Elytra with surface almost smooth or weakly uneven; punctures very dense, round to elliptical in shape but variable from regular to subrugose conditions. Legs with tarsi short, 4th tarsomere simple. Abdomen narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures round, dense and regular throughout, but those in anterior segments a little larger than in posterior segments. Lateroventrites ven-

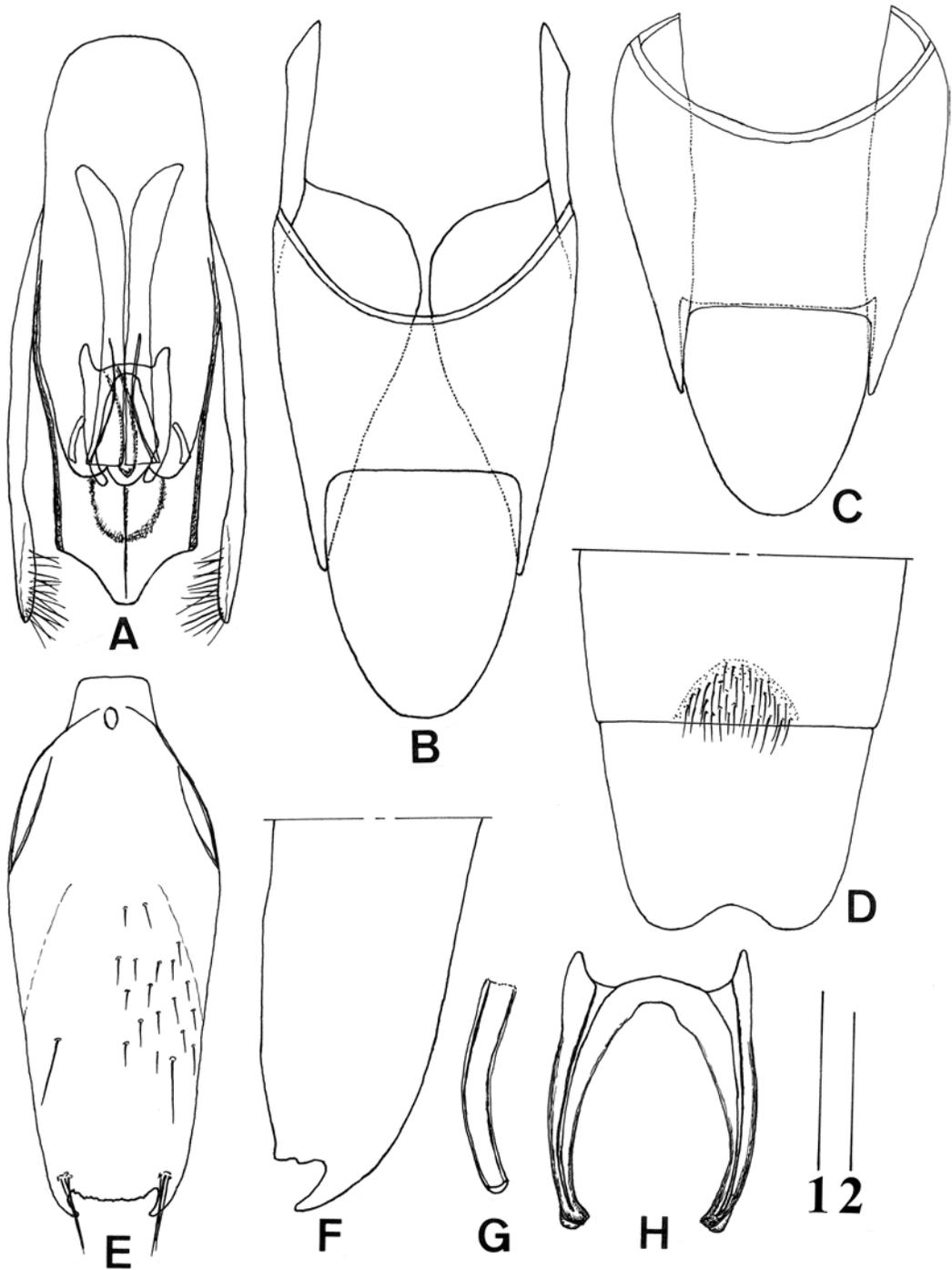


Fig. 67. *Stenus ruralis* Erichson (A, B, D, E, G, H, Teshikaga, Hokkaido; C, F, Liaoning, China). A, aedeagus; B, 9th and 10th terga of male; C, 9th and 10th terga of female; D, 7th to 8th ventrites of male; E, 9th ventrite of male; F, gonocoxite; G, endophallic basal tube (dorsal view); H, expulsion hook. Scale 1: 0.2 mm for A–C, E, 0.1 mm for F–H; scale 2: 0.3 mm for D.

tromesial to horizontal in position, distinct, punctate.

Male: Seventh ventrite (Fig. 67D) posteromedially with a semicircular flat area, which is covered with setae; 8th ventrite (Fig. 67D) posteromedially with an arcuate emargination; 9th tergum (Fig. 67B) with ventral apophyses moderately long; 9th ventrite (Fig. 67E) elongate-subovoidal in shape, arcuate posteriorly and very finely serrate at posterior margin, with stem transverse, apicolateral teeth thin, strongly incurved, macrosetae paired, apicolateral setae short; 10th tergum (Fig. 67B) elongate, rounded posteriorly. Aedeagal median lobe (Fig. 67A) wide, distinctly angulate apicolaterally, obtusely angulate apically; apical sclerotized area medially with a longitudinal ridge. Endophallic median longitudinal bands (Fig. 67A) very long, a little thick anteriorly; expulsion hooks fused to form a nearly U-shaped sclerite (Fig. 67A), which is provided apicolaterally with a short, pointed projection (Fig. 67H); basal tube (Fig. 67A) short, weakly curved, observable only from the dorsal side (Fig. 67G). Parameres (Fig. 67A) thin, weakly incurved; stem weakly constricted before the apical swollen area, which is furnished with 17 to 18 moderately long setae.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 67C) without ventral apophyses; gonocoxites (Fig. 67F) each with apicolateral tooth strongly incurved, pointed; 10th tergum (Fig. 67C) elongate, rounded posteriorly. Spermatheca not observable.

Biology and Ecology. *S. ruralis* is a very rare *Stenus* species in Japan. Although the information is missing as to the habitats of *S. ruralis* in Japan, but judging from the collecting data, the beetles probably inhabit dry riverbeds in or near the natural forests of plains and low mountainous regions, as in Europe (Ganglbauer, 1895).

Remarks. *Stenus ruralis* was first recorded from Japan (Hokkaido: Hakodate) by Puthz (1968b). *S. ruralis* is allied to *S. palposus* Zetterstedt, 1838, but this species is separable from the latter by the body smaller, and the pronotum broadest near the middle, and gradually, lineally narrowed basally, with its median longitudinal depression indistinct (Lohse, 1964).

Species group of *S. melanarius* Stephens

S. melanarius group consists of 2 species in Japan; see Puthz (1980b) regarding the taxonomy of this group. Diagnostic characters are as follows: Legs with 4th tarsomeres simple; abdomen with 4 short basi-longitudinal keel in each of 3rd to 6th terga, lateroventrites dorsomesial to ventromesial in position, narrow; 9th ventrite of male with apicolateral teeth pointed (Fig. 69D); 10th tergum elongate (Fig. 69A); aedeagal median lobe with apical sclerotized area subtriangular (Fig. 68A) or subrectangular (Fig. 69E); endophallic expulsion hooks fused to form a nearly H-shaped sclerite (Fig. 69F); gonocoxite with apicolateral tooth acutely pointed (Fig. 69G); spermatheca not observable.

Key to the Japanese species of *S. melanarius* group

- 1(2) Body larger (3.5–4.1 mm); elytra with punctures denser, often weakly subrugose; abdomen with anterior segments more densely punctate; aedeagal median lobe broader, with apical sclerotized area subtriangular (Fig. 68A)..... *S. boops* Ljungh
 2(1) Body smaller (2.7–3.3 mm); elytra with punctures sparser, distinct; abdomen with anterior segments less densely punctate; aedeagal median lobe narrower, with apical sclerotized area subrectangular (Fig. 69E, I)..... *S. melanarius* Stephens

Stenus boops Ljungh
(Figs. 68A–F, 131H)

Stenus boops Ljungh, 1810: 158; Herman, 2001: 2095; Naomi & Puthz, 2013: 138.

Type material. Type locality: Skjarsjö.

Other material examined. [HOKKAIDO]: 8 ♂2 ♀, Utonai Lake, Chitose City, 20. vi. 1999, M. Maruyama leg.; 1 ♂1 ♀, Kirakotan, Kushiro Moor, 25. viii. 1980, M. Sato leg.; 1 ♀, Tannocho, 28. viii. 1992, T. Kato leg.; 1 ♀, Ashoro, 13. vi. 1984, O. Tadauchi leg.

Distribution. Japan (Hokkaido); Mongolia, Georgia, Russia, Europe.

Redescription. Male and female: Macropterous; body 3.5–4.1 mm (fore body 1.8–2.1 mm) in length, weakly shining to matt, with short antennae and relatively short legs. Body black; labrum black; antennae with 1 or 2 basal segments black, remaining segments dark red; legs dark red to black. Head relatively small, hardly concave, with a pair of shallow, longitudinal depressions; punctures round to elliptical, very dense, various in size, distinct. Pronotum with surface very weakly uneven; punctures round, very dense, somewhat irregular. Elytra with surface very weakly uneven; punctures round to elliptical, very dense, often subrugose. Legs with tarsi short, 4th tarsomere simple. Abdomen narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures round, moderately dense and very small in anterior segments, while punctures in posterior segments elliptical, dense, very small and regular. Lateroventrites ventromesial to dorsomesial in position, narrow, punctate.

Male: Seventh ventrite posteromedially with a semicircular flat area; 8th ventrite posteromedially with a shallow (Fig. 68D) or moderately deep, broad emargination; 9th tergum (Fig. 68C) with ventral apophyses moderately long; 9th ventrite (Fig. 68B) elongate-ovoidal in shape, arcuate posteriorly and very finely serrate at posterior margin, with apicolateral teeth strongly incurved, acute, macrosetae paired, apicolateral setae moderately long; 10th tergum (Fig. 68C) elongate, rounded posteriorly. Aedeagal median lobe (Fig. 68A) broad, distinctly angulate apicolaterally, with a very small apicomedian projection; apical sclerotized area subtriangular, anterolaterally with an oblique depression. Endophallic median longitudinal bands (Fig. 68A) very long, broad, straight; expulsion hook (Fig. 68A) nearly H-shaped, with posterolateral arm incurved apically; basal tube (Fig. 68A) submembranous except for apical elongate-rectangular sclerite, with a large basal ring. Parameres (Fig. 68A) relatively thick; apical area short, weakly swollen mesially, furnished mesially with 20 to 25 setae of various length.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 68F) each with apicolateral tooth very acute, apicolateral setae long; basal porch of spermatheca (?) existing between the gonocoxites (Fig. 68E) elongate, with sclerotized rim; 10th tergum elongate, obtuse apically. Spermatheca not observable.

Biology and Ecology. *Stenus boops* is distributed in the plains and low mountainous regions in Hokkaido. The beetles inhabit moist litter at or near the shores of rivers, lakes and marshes.

Remarks. *Stenus boops* was first discovered from Japan (Hokkaido) by Naomi & Puthz (1994a). This species is allied to *S. incrassatus* Erichson, 1939 known from the Palaearctic region, but it is separable from the latter by the head wider than pronotum (Fig. 131H), the elytra hardly longer than pronotum, without depression near the suture (Lohse, 1964), and the aedeagal median lobe wider, with its apical sclerotized area subtriangular (Fig. 68A). Among the Japanese members of this species group, *S. boops* is similar to *S. melanarius*, but it is separable from the latter by the body larger (3.5–4.1 mm), the elytra with punctures denser, often weakly subrugose,

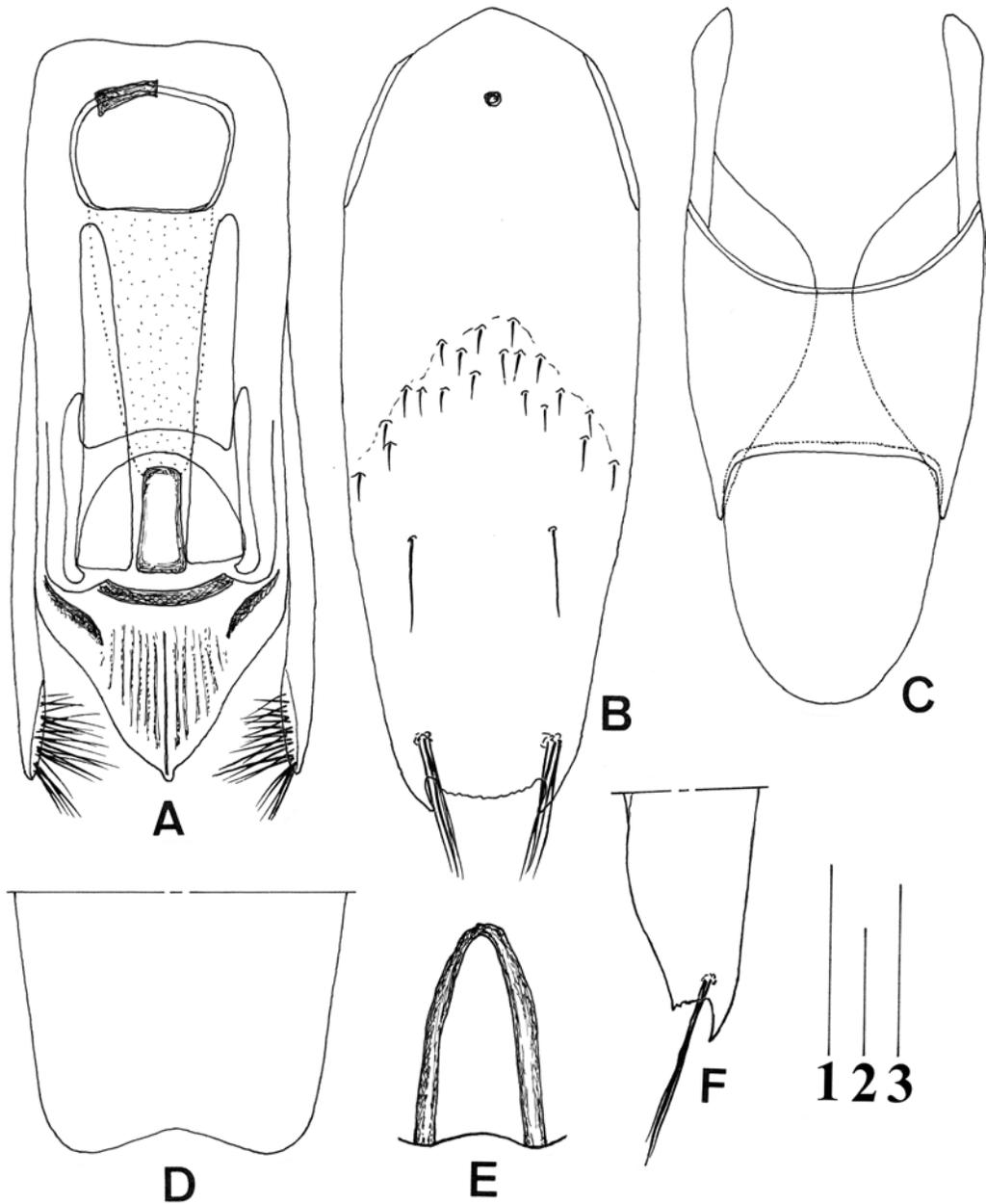


Fig. 68. *Stenus boops* Ljungh (A–C, Kushiro, Hokkaido; D–F, Utonai, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 9th and 10th terga of male; D, 8th ventrite of male; E, basal pouch of spermatheca; F, gonocoxite. Scale 1: 0.2 mm for A, B, F, 0.1 mm for E; scale 2: 0.2 mm for C; scale 3: 0.3 mm for D.

the abdomen with anterior segments more densely punctate, the aedeagal median lobe broader (Fig. 68A), with apical sclerotized area subtriangular, with a very small apicomedian projection (Fig. 68A).

***Stenus melanarius* Stephens**
(Figs. 69A–J, 131I)

Stenus melanarius Stephens, 1833: 299; Herman, 2001: 2276; Puthz, 2008a: 149; Naomi & Puthz, 2013: 138.

Stenus verecundus Sharp, 1874: 81; Puthz, 2008a: 149 (synonym of *S. melanarius*).

Stenus melanarius verecundus Sharp: Benick, 1941: 281.

Stenus hiroyukii Puthz, 2001d: 103. **New synonym.**

Type material. Type localities: Suffolk, New Forest, Bristol.

Other material examined. [HOKKAIDO]: 1 ♂2 ♀, Hyotan Pond, Akan N. P., 4. vii. 1986, S. Nomura leg.; 1 ♀, Akanuma, Kushiro Moor, 28. viii. 1990, M. Sato leg.; 1 ♀, Sapporo Lake, Sapporo City, 21. vi. 1994, T. Kishimoto leg. [HONSHU]: 1 ♀, Obanazawa City, Yamagata Pref., 2. viii. 1994, K. Ohgi leg.; 1 ♀, Akigase, Urawa City, Saitama Pref., 8. v. 1994, K. Ohgi leg.; 1 ♂, Kasumigaseki, Kawagoe, Saitama Pref., 3. iv. 1994, K. Ohgi leg.; 1 ♀, Urawa City, Saitama Pref., 16. iv. 1994, K. Ohgi leg.; 1 ♀, Imori, Saitama Pref., 11. v. 1994, K. Ohgi leg.; 2 ♀, Numata, Gunma Pref., 10. v. 1951, T. Takei leg.; 1 ♂, Watarase River, Fujioka-cho, Tochigi Pref., 1. iv. 1997, M. Maruyama leg.; 1 ♂2 ♀, Nakaminato, Ibaraki Pref., 8. iv. 1978, M. Tao leg.; 1 ♂, Kisarazu City, Chiba Pref., 7. vii. 1985, M. Tao leg.; 1 ♂, Miyauro-cho, Awa-gun, Chiba Pref., 14. v. 1978, M. Tao leg.; 2 ♂2 ♀, Fudago, Kimitsu City, Chiba Pref., 20. iv. 1989, S. Naomi leg.; 1 ♂, Hachioji City, Tokyo Metropolis, 20. v. 1978, M. Tao leg.; 1 ♂, Tama River, Fuchu City, Tokyo Metropolis, 29. viii. 1982, M. Tao leg.; 1 ♀, Yokohama City, Kanagawa Pref., 3. iv. 1977, M. Tao leg.; 1 ♂, Kawasaki City, Kanagawa Pref., 10. iv. 1977, M. Tao leg.; 1 ♀, Noborito, Kanagawa Pref., 25. iii. 1978, M. Tao leg.; 1 ♂, Yokohama City, Kanagawa Pref., 29. iv. 1984, M. Tao leg.; 2 ♀, Tsurumi, Yokohama City, Kanagawa Pref., 16. v. 1987, M. Tao leg.; 1 ♀, Ikenokochi, Fukui Pref., 22. viii. 1974, H. Sasaji leg.; 3 ♂3 ♀, Senami Spa, Murakami, Niigata Pref., 5. v. 2000, M. Nishikawa leg.; 1 ♂, Mt. Komagatake, Kamiina, Nagano Pref., 9. viii. 1959, H. Yokoyama leg.; 1 ♂, Handa City, Shizuoka Pref., 12–14. vii. 1989, S. Saito leg.; 1 ♀, Nisshin, Aichi Pref., 25. xii. 1985, T. Kato leg. [KYUSHU]: 2 ♂4 ♀, Imazu, Fukuoka City, Fukuoka Pref., 29. i. 1989, S. Nomura leg.; 2 ♀, Mt. Tsubaki, Hamatama-cho, Saga Pref., 10. vi. 1990, S. Nomura leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Sado Is., Tane Is.); Korea, Taiwan, China, Philippines, Indonesia, Vietnam, Myanmar, Nepal, India, Sri Lanka, Mongolia, Russia, Georgia, Azerbaijan, Turkey, Iran, Europe, Canada, USA.

Redescription. Male and female: Macropterous; body 2.7–3.3 mm (fore body 1.5–1.7 mm) in length, weakly shining to matt, with short antennae and relatively short legs. Body black; labrum black; antennae with 1 or 2 basal segments black, remaining segments dark red; legs dark red to black. Head relatively small, hardly concave, with a pair of indistinct longitudinal depressions; punctures round to almost round, very dense, various in size, distinct. Pronotum with surface weakly uneven; punctures round to almost round, very dense, somewhat irregular. Elytra with surface very weakly uneven, with weak longitudinal depressions along suture; punctures round to almost round, very dense, distinct. Legs with tarsi short, 4th tarsomere simple. Abdomen narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures very round, sparse to moderately dense, and small in anterior segments, while punctures in 7th and 8th segments round to elliptical, dense and very small. Lateroventrites ventromesial in position, narrow, punctate.

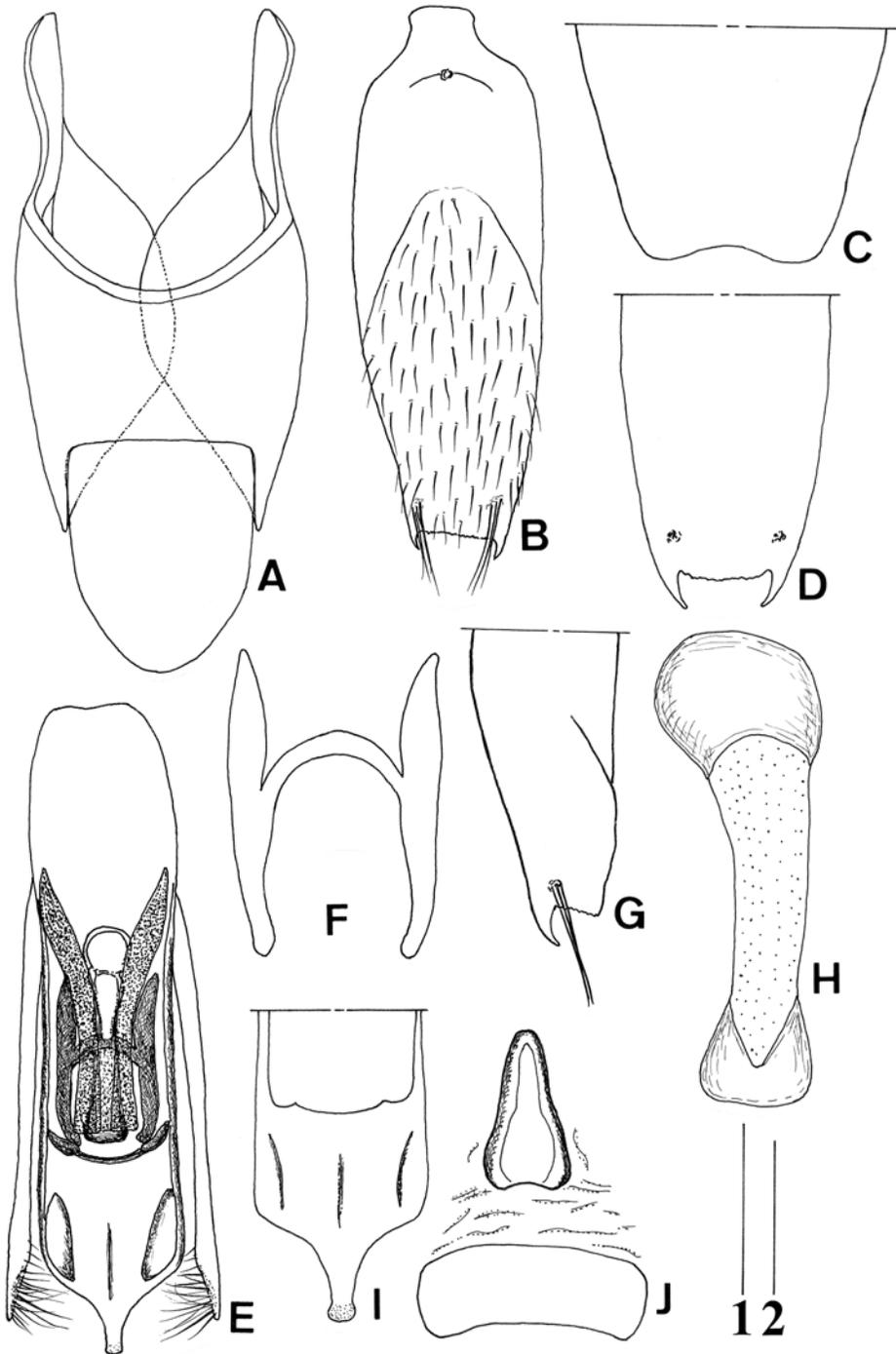


Fig. 69. *Stenus melanarius* Stephens (A, C, D, H, I, Hachioji, Tokyo; B, E, F, Komagatake, Nagano; G, J, Nakaminato, Ibaraki). A, 9th and 10th terga of male; B, 9th ventrite of male; C, apex of 8th ventrite of male; D, posterior half of 9th ventrite of male; E, aedeagus; F, endophallic expulsion hook; G, gonocoxite; H, basal tube; I, posterior half of aedeagus; J, basal pouch of spermatheca and its related sclerite. Scale 1: 0.2 mm for A, B, D, E, G, I, J, 0.1 mm for F, H; scale 2: 0.3 mm for C.

Male: Eighth ventrite (Fig. 69C) posteromedially with a shallow, wide emargination; 9th tergum (Fig. 69A) with ventral apophyses moderately long; 9th ventrite (Fig. 69B, D) elongate-ovoidal in shape, arcuate posteriorly (Fig. 69D) or almost straight at posterior margin (Fig. 69B) which is very finely serrate, with stem short, apicolateral teeth hook-like, strongly acute, apicolateral setae short to moderately long; 10th tergum (Fig. 69A) elongate, rounded apically. Aedeagal median lobe (Fig. 69E) elongate, rounded or obtusely angulate (Fig. 69I) apicolaterally, with apicomedian projection long, weakly swollen at tip; apical sclerotized area (Fig. 69E, I) large, subrectangular, medially with a low longitudinal keel, and anterolaterally with a shallow, oblique impression. Endophallic median longitudinal bands (Fig. 69E) very long, distinctly diverging anteriorly; expulsion hook (Fig. 69E, F) nearly H-shaped, with its connecting rod arcuate anteriorly; basal tube (Fig. 69H) submembranous except for sclerotized basal room and weakly spatulate apical sclerite. Parameres (Fig. 69E) thin, slender, straight, pointed apically; apical area hardly swollen mesially, and furnished mesially with 17 to 18 setae of various length.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 69G) each with apicolateral tooth hook-shaped, very acute, apicolateral setae moderately long; basal pouch of spermatheca (?) elongate (Fig. 69J); a sclerite existing between the gonocoxites transverse (Fig. 69J); 10th tergum elongate, obtusely rounded apically. Spermatheca not observable.

Biology and Ecology. *S. melanarius* is one of the common *Stenus* species in Japan, but relatively rare in Shikoku and Kyushu. It is widely distributed in the plains and low mountainous regions. The beetles have diverse habitat preferences as follows: They inhabit moist places at the shores of rivers, lakes and marshes and the grasslands near there; and they live in the moist litter and near or under stones there. They often walk on wet rocks and mosses near the running water in mountain streams. They also sometimes inhabit the sea algae.

Remarks. Sharp (1874) first described *Stenus verecundus* from Japan as an allied species to *S. melanarius*. Benick (1941) regarded *S. verecundus* as a subspecies of *S. melanarius*; and thus the Japanese population of this *Stenus* species has long been called *S. melanarius verecundus* Sharp by Japanese Coleopterists (e.g., Watanabe, 1985). *S. melanarius* is in fact widely distributed in the whole region of Northern hemisphere; and it shows considerable amounts of intraspecific variations, especially with the density of punctures on body and the size of elytra. Puthz (2008a) re-examined those variations in detail, resulting in the synonymic status of *S. verecundus* with *S. melanarius*. This is also the case of *S. hiroyukii* Puthz, 2001d; and thus *S. hiroyukii* is herein newly placed in synonym with *S. melanarius*.

S. melanarius is allied to *S. subdepressus* Mulsant et Rey, 1861 from Europe, but this species is separable from the latter by the body larger in size (2.7–3.3 mm), the elytra distinctly wider, somewhat longer than pronotum, each with a weak longitudinal depression along suture (Lohse, 1964), and the aedeagal median lobe with apicomedian projection (Fig. 69E, I). Among the Japanese members of this species group, *S. melanarius* is similar to *S. boops*, but this species is separable from the latter by the body smaller, the elytra with punctures a little sparser and distinct, the abdomen with anterior segments sparsely punctate, the aedeagal median lobe narrower (Fig. 69E), with apical sclerotized area subrectangular, with a long apicomedian projection (Fig. 69E, I).

Species group of *S. canaliculatus* Gyllenhal

S. canaliculatus group consists of 2 species in Japan; see Benick (1925) and Ryvkin (2012) for a review of, and a key to the species of this group. Diagnostic characters are as follows: Head

not broader than elytra (Fig. 131K); pronotum usually a median longitudinal furrow; legs with 4th tarsomere simple; abdomen with 4 short basi-longitudinal keels in each of 3rd to 6th terga; lateroventrites ventromesial to horizontal in position, narrow to moderately broad; 9th ventrite of male with apicolateral teeth (Fig. 70B); 10th tergum of male rounded posteriorly (Fig. 70E); aedeagal median lobe relatively broad (Fig. 70C) or slender (Fig. 71A), pointed apically; endophallic expulsion hooks fused to form an almost H- or M-shaped sclerite (Fig. 70C); gonocoxite with apicolateral tooth pointed (Fig. 70B); spermatheca with tube thick, with 3 or 4 turns (Fig. 70D).

The presence of a median longitudinal furrow on the pronotum is a diagnostic character of this species group (Benick, 1925). This will be appropriately considered so, but the median longitudinal furrow is missing on the pronotum in the Japanese species (*S. raddei* and *S. shogun*). As far as *S. raddei* is concerned, the median longitudinal furrow certainly exists at the base of pronotum in the specimens from Maritime Prov., etc., (Ryvkin, 1987c: 157, and by our observation), but it is missing in the specimens from Hokkaido, suggesting that this species shows an infraspecific variation regarding this character.

Key to the Japanese species of *S. canaliculatus* group

- 1(2) Elytra distinctly smaller, narrower (Fig. 131J); abdomen less strongly narrowed posteriorly (Fig. 131J); aedeagal median lobe broader, with apical sclerotized area shorter (Fig. 70C) *S. raddei* Ryvkin
 2(1) Elytra distinctly larger, broader (Fig. 131K); abdomen more strongly narrowed posteriorly (Fig. 131K); and aedeagal median lobe much narrower, with apical sclerotized area longer (Fig. 71A).....*S. shogun* Puthz

Stenus raddei Ryvkin (Figs. 70A–F, 131J)

Stenus raddei Ryvkin, 1987c: 156; Naomi & Puthz, 1994: 219; Herman, 2001: 2365; Naomi & Puthz, 2013: 139; Ryvkin, 2012: 12.

Type material examined. Paratype: 1 ♂ (ZMMSU), type locality: Kedrovaya Pad [examined by Puthz].

Other material examined. [HOKKAIDO]: 1 ♂, Akanuma, Kushiro Moor, 25. viii. 1990, M. Sato leg.; 1 ♂, same locality, 28. viii. 1990, M. Sakai leg.; 1 ♀, On'nenai, Tsurui, Kushiro Moor, 24. viii. 1990, M. Sakai leg.

Distribution. Japan (Hokkaido); China, Russia.

Redescription. Male and female: Macropterous; body 3.3–3.4 mm (fore body 1.6–1.8 mm) in length, weakly to moderately shining, with relatively short antennae and legs. Body black; labrum black; antennae with 1 or 2 basal segments black, remaining segments dark red; legs dark red to black. Head hardly concave dorsally nor with longitudinal depressions; punctures basically elliptical but sometimes round, very dense, various in size. Pronotum with surface very weakly uneven, without median longitudinal depression; punctures round, very dense, various in size, distinct. Elytra with surface very weakly uneven; punctures round, very dense, almost regular, distinct. Legs with fore and mid tarsi short, hind tarsi relatively long, 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal

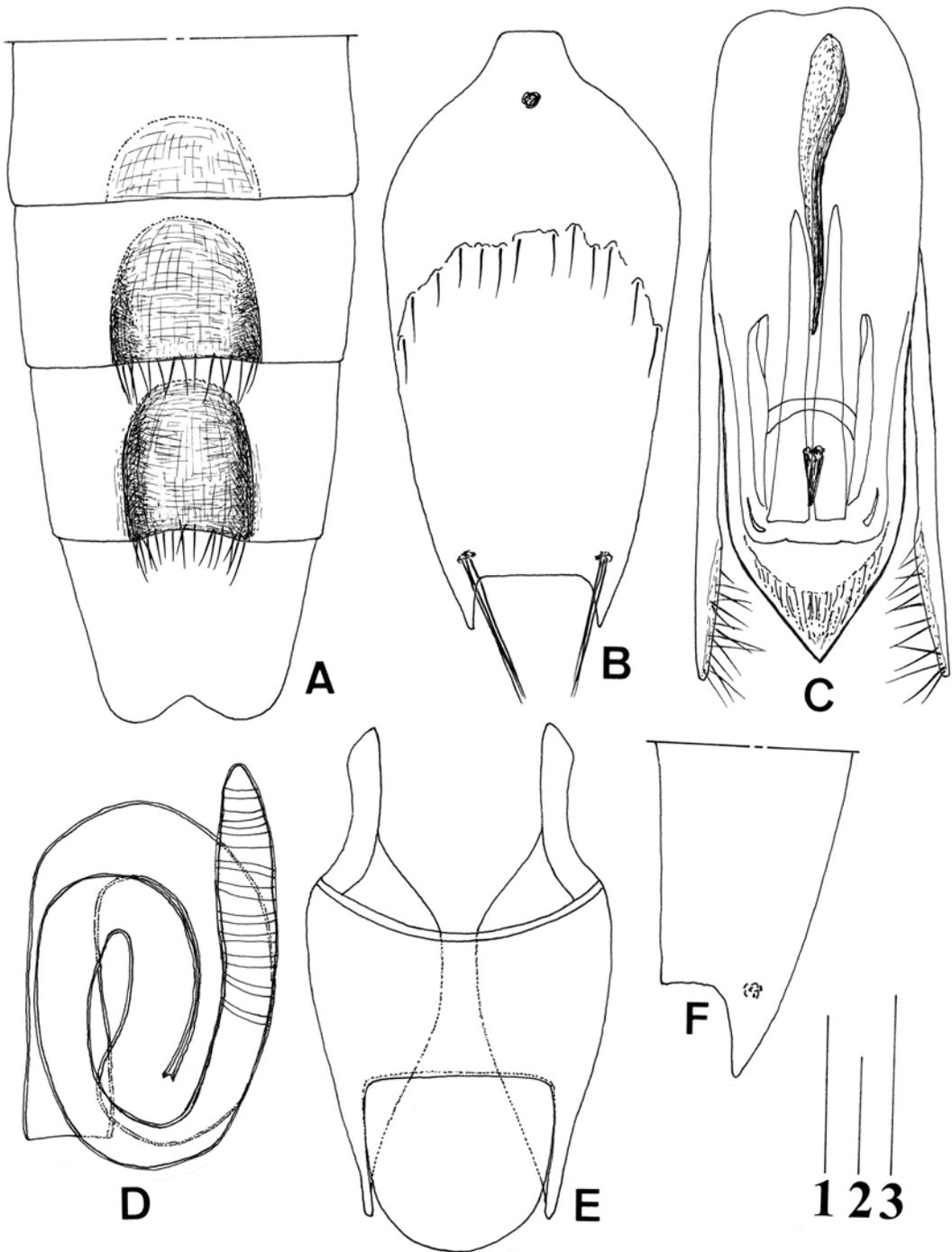


Fig. 70. *Stenus raddei* Ryvkin (A–C, E, Akanuma, Hokkaido; D, F, Amur, Russia). A, 5th to 8th ventrites of male; B, 9th ventrite of male; C, aedeagus; D, spermatheca; E, 9th and 10th terga of male; F, apex of gonocoxite. Scale 1: 0.3 mm for A; scale 2: 0.1 mm for B, C; scale 3: 0.2 mm for E, 0.1 mm for D, F.

keels; punctures sparse and very small in anterior segments, while punctures in posterior segments moderately dense and very small to small. Lateroventrites ventromesial to horizontal in position, narrow to moderately wide, punctate.

Male: Fifth ventrite (Fig. 70A) posteromedially with a semicircular flat area; 6th ventrite (Fig. 70A) posteromedially with a very large, shallow, bell-shaped depression, which is very weakly emarginate posteriorly, and furnished with sparse setae along posterior margin; 7th ventrite (Fig. 70A) posteromedially with a very large, bell-shaped depression, which is arcuately emarginate, and furnished with setae along posterior margin; 8th ventrite (Fig. 70A) posteromedially with a wide, triangular emargination; 9th tergum (Fig. 70E) relatively wide, short, with ventral apophyses relatively long, posterolateral projections long; 9th ventrite (Fig. 70B) wide, widely rounded anterolaterally, with stem short, apicolateral teeth acutely pointed, apicolateral setae long; 10th tergum (Fig. 70E) entire. Aedeagal median lobe (Fig. 70C) relatively wide, rounded apicolaterally, simply pointed apically; apical sclerotized area triangular. Endophallic median longitudinal bands (Fig. 70C) very long, each narrowed apically; lateral longitudinal bands (Fig. 70C) very short and thin; expulsion hook (Fig. 70C) almost H-shaped; basal tube (Fig. 70C) with basal room weakly swollen, tube body rod-like, attenuate; median sclerite (Fig. 70C) arrowhead-shaped, sclerotized. Parameres (Fig. 70C) slender; apical area long, weakly swollen mesially, and furnished mesially with 14 to 15 setae.

Female: Eighth ventrite obtusely angulate posteromedially; gonocoxites (Fig. 70F) each hardly serrate posteriorly, with apicolateral tooth large, acute. Spermatheca (Fig. 70D) with capsule very small, conical; RT-duct moderately long, thick; spermathecal duct thick, tightly coiled, with 4 turns; basal valve not observable.

Biology and Ecology. *S. raddei* is a rare *Stenus* species in Japan; and it is presently known only from Kushiro Moor in Hokkaido. The beetles inhabit moist litter of the grasses grown at the shore of the Moor.

Remarks. *Stenus raddei* was first discovered from Hokkaido, Japan by Naomi & Puthz (1994a). This species is allied to *S. latipennis* Sahlberg, 1880 from Holaractic region and *S. illusor* Ryvkin, 1987c from Russia, but it is separable from the latter two species by the head almost smooth (i.e., not depressed laterally nor convex medially) between eyes, and the aedeagal median lobe not constricted (but only narrowed) near the middle and more strongly pointed at apex (Fig. 70C). Among the Japanese members of this species group, *S. raddei* is similar to *S. shogun*, but it is separable from the latter by the elytra distinctly smaller and narrower, the abdomen less strongly narrowed posteriorly, and the aedeagal median lobe much wider, with apical sclerotized area shorter (Fig. 70C).

Etymology. The specific epithet of this species is named after a Russian zoologist, Mr. G. I. Radde.

***Stenus shogun* Puthz**
(Figs. 71A–F, 131K)

Stenus shogun Puthz, 1987: 45; Herman, 2001: 2388; Naomi & Puthz, 2013: 139; Naomi & Ito, 2014: 290.

Type material examined. Holotype: ♂ (IRSNB), type locality: Nishigo, Uzan, [examined by Puthz].

Other material examined. [HONSHU]: 1 ♂ 2 ♀, Oze Moor, Katashina-mura, Gunma Pref.,

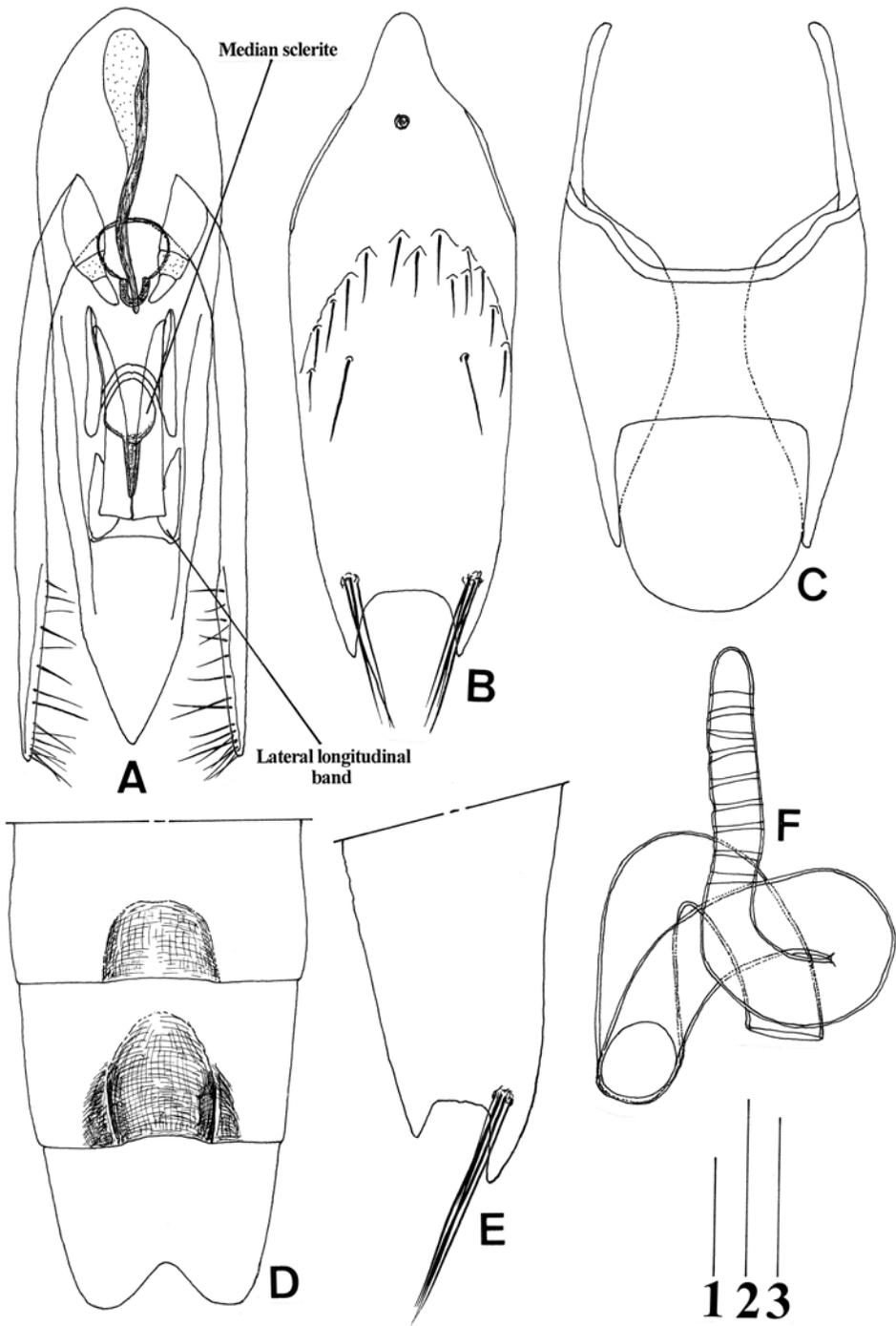


Fig. 71. *Stenus shogun* Puthz (Oze, Gunma). A, aedeagus; B, 9th ventrite of male; C, 9th and 10th terga of male; D, 6th to 8th ventrites of male; E, apex of gonocoxite; F, spermatheca. Scale 1: 0.1 mm for A, B; scale 2: 0.2 mm for C, 0.1 mm for E, F; scale 3: 0.3 mm for D.

23. x. 1994, H. Sakayori leg.

Distribution. Japan (Honshu).

Redescription. Male and female: Macropterous; body 3.3–3.7 mm (fore body 1.7–1.9 mm) in length, moderately to strongly shining, with relatively short antennae and legs. Body black; labrum black; antennae with 1 or 2 basal segments black, remaining segments dark red; legs dark red to black. Head small, with indistinct longitudinal depressions; punctures round to elliptical, very dense, various in size, distinct. Pronotum with surface almost smooth, without median longitudinal depression; punctures round to elliptical, very dense, various in size, distinct. Elytra large, with surface very weakly uneven; punctures round, very dense, almost regular, distinct. Legs with tarsi short, 4th tarsomere simple. Abdomen narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures sparse and very small in all segments. Lateroven-trites ventromesial to horizontal in position, narrow to relatively wide, punctate.

Male: Fifth ventrite posteromedially with a semicircular flat area; 6th ventrite (Fig. 71D) posteromedially with a shallow, bell-shaped depression; 7th ventrite (Fig. 71D) posteromedially with a large, subovoidal depression, which is emarginate posteriorly and distinctly ridged laterally; 8th ventrite (Fig. 71D) posteromedially with a triangular emargination; 9th tergum (Fig. 71C) relatively broad, uniquely bisinuate at anterodorsal margin, with ventral apophyses very thin, long; 9th ventrite (Fig. 71B) elongate, with stem elongate, rounded apically, apicolateral teeth large, acute, macrosetae paired, apicolateral setae long; 10th tergum (Fig. 71C) entire. Aedeagal median lobe (Fig. 71A) very slender, narrowed apically, pointed at apex; apical sclerotized area rather long. Endophallic median longitudinal bands (Fig. 71A) moderately long, each narrowed apically; lateral longitudinal bands (Fig. 71A) wide; expulsion hook (Fig. 71A) almost M-shaped; basal tube (Fig. 71A) with basal room elongate-ovoidal in shape, partly submembranous, tube body short, thin, weakly curved; median sclerite (Fig. 71A) consisting of basal ovoidal plate and apical thin process. Parameres (Fig. 71A) thick, straight, each pointed apically; basal area with posteromesial projection elongate, submembranous at its base; apical area very long, hardly or weakly swollen mesially, and furnished mesially with 15 to 18 setae.

Female: Eighth ventrite obtusely angulate posteromedially; gonocoxites (Fig. 71E) each hardly serrate posteriorly, with apicommesial tooth acute, apicolateral tooth large, pointed, apicolateral setae very long. Spermatheca (Fig. 64F) with capsule small, rounded apically; RT-duct moderately long and thick; spermathecal duct thick, almost tightly coiled, with 3 turns; basal valve not observable.

Biology and Ecology. *S. shogun* is a very rare *Stenus* species in Japan; and it is distributed in the mountainous regions. The beetles inhabit moist litter of grasses grown at the shore of moor.

Remarks. *Stenus shogun* was newly described by Puthz (1987) from Nishigo, Uzan (Honshu?), Japan, based on one male specimen. This species is allied to *S. canaliculatus* Gyllenhal, 1827 from Holarctic region and *S. vinnulus* Casey, 1884 from North America and Finland, but it is separable from the latter two species by the dorsum of body not covered with net-like microsculpture. Among the Japanese members of this species group, *S. shogun* is similar to *S. raddei*, but this species is separable from the latter by the elytra distinctly larger and wider, the abdomen more strongly narrowed posteriorly and the aedeagal median lobe much narrower, with apical sclerotized area longer (Fig. 71A).

Etymology. The specific epithet of this species is named after the Japanese term “Shogun” which means “Shogunate”.

Species group of *S. incanus* Erichson

S. incanus group (including *S. puberulus* group; Puthz, 2002: 131) consists of 2 species in Japan; see Puthz (2002, 2012b) for a characterization and taxonomic information of this group. Diagnostic characters are as follows: Legs with 4th tarsomere simple; abdomen without basi-longitudinal keels on terga; lateroventrites ventromesial to horizontal in position, narrow to moderately wide; 9th ventrite of male with apicolateral teeth acute, apicolateral setae very long (Fig. 72E); aedeagal median lobe narrowed apically, with more or less triangular apical sclerotized area (Fig. 72A); parameres more or less short and thick (Fig. 72A); endophallic expulsion hook with posterior plates widely separated (Fig. 72A); gonocoxite with apicolateral tooth acute, apicolateral setae very long (Fig. 72B); spermatheca not observable.

Key to the Japanese species of *S. incanus* group

- 1(2) Legs reddish brown to dark reddish brown; abdomen with punctures smaller and sparser; 7th ventrite of male posteromedially with a semicircular, shallow depression, which is more shallowly emarginate (Fig. 72C); aedeagus distinctly broader, more obtusely pointed apically (Fig. 72A); parameres longer (Fig. 72A)..... *S. puberulus* Sharp
 2(1) Legs dark red to dark brown; abdomen with punctures larger and denser; 7th ventrite of male posteromedially with a semicircular, flat area, which is more deeply emarginate; aedeagus distinctly narrower, more acutely pointed apically (Fig. 73B); parameres shorter *S. aboblitus* Naomi & Nomura

Stenus puberulus Sharp

(Figs. 72A–F, 131L)

Stenus puberulus Sharp, 1874: 83; Herman, 2001: 2355; Puthz, 2012b: 93; Naomi & Puthz, 2013: 139.

Stenus sasajii Naomi, 1988c: 43.

Type material examined. Syntypes: 2 exs. (NHML), type locality: Mitzuyama, Nagasaki [examined by Puthz].

Other material examined. [HONSHU]: 2 ♂, Shizukuishi River, Morioka, Iwate Pref., 9. v. 1970, J. Kamei leg.; 1 ♀, Honnou City, Saitama Pref., 3. iv. 1994, K. Ohgi leg.; 1 ♂, Mt. Takao, Hachioji, Tokyo Metropolis, 1. vi. 1986, A. Izumi leg.; 1 ♂, Keitokuin, Kosu City, Yamanashi Pref., 8. vii. 1988, T. Ito leg.; 1 ♀, Yanagawa, Ohtsuki City, Yamanashi Pref., 13. v. 1994, H. Hayakawa leg.; 1 ♀, Hohare Pass, Gifu Pref., 8. v. 1986, K. Suzuki leg.; 3 ♂ 3 ♀, Mt. Koya, Wakayama Pref., 2. v. 1968, T. Ito leg.; 1 ♂ 2 ♀, Ina River, Hyogo Pref., 15. iv. 1968, Y. Imai leg.; 1 ♂ 1 ♀, Gohkei, Okayama Pref., 16. v. 1993, T. Ito leg.; 2 ♂, Sandan Valley, Hiroshima Pref., 1. vi. 1986, I. Okamoto leg.; 1 ♀, Kabura-sugi, Saigo-cho, Dogo Is., Oki Isls., Shimane Pref., 17. vii. 2003, T. Shimada leg. [SHIKOKU]: 1 ♀, Amagoi Fall, Kamiyama-cho, Tokushima Pref., 18. v. 1996, M. Yoshida leg. [KYUSHU]: 1 ♀, Kuma River, Hitoyoshi City, Kumamoto Pref., 6. iv. 1977, S. Naomi leg.; 3 ♂, Shiratake, Tsushima Is. Nagasaki Pref., 7. vi. 1988, Y. Hayashi leg.

Distribution. Japan (Honshu, Shikoku, Kyushu; Oki Is., Tsushima Is.).

Redescription. Male and female: Macropterous; body 3.1–3.6 mm (fore body 1.5–1.8 mm) in length, wholly covered with short, silvery pubescence, with antennae short. Body black, weakly

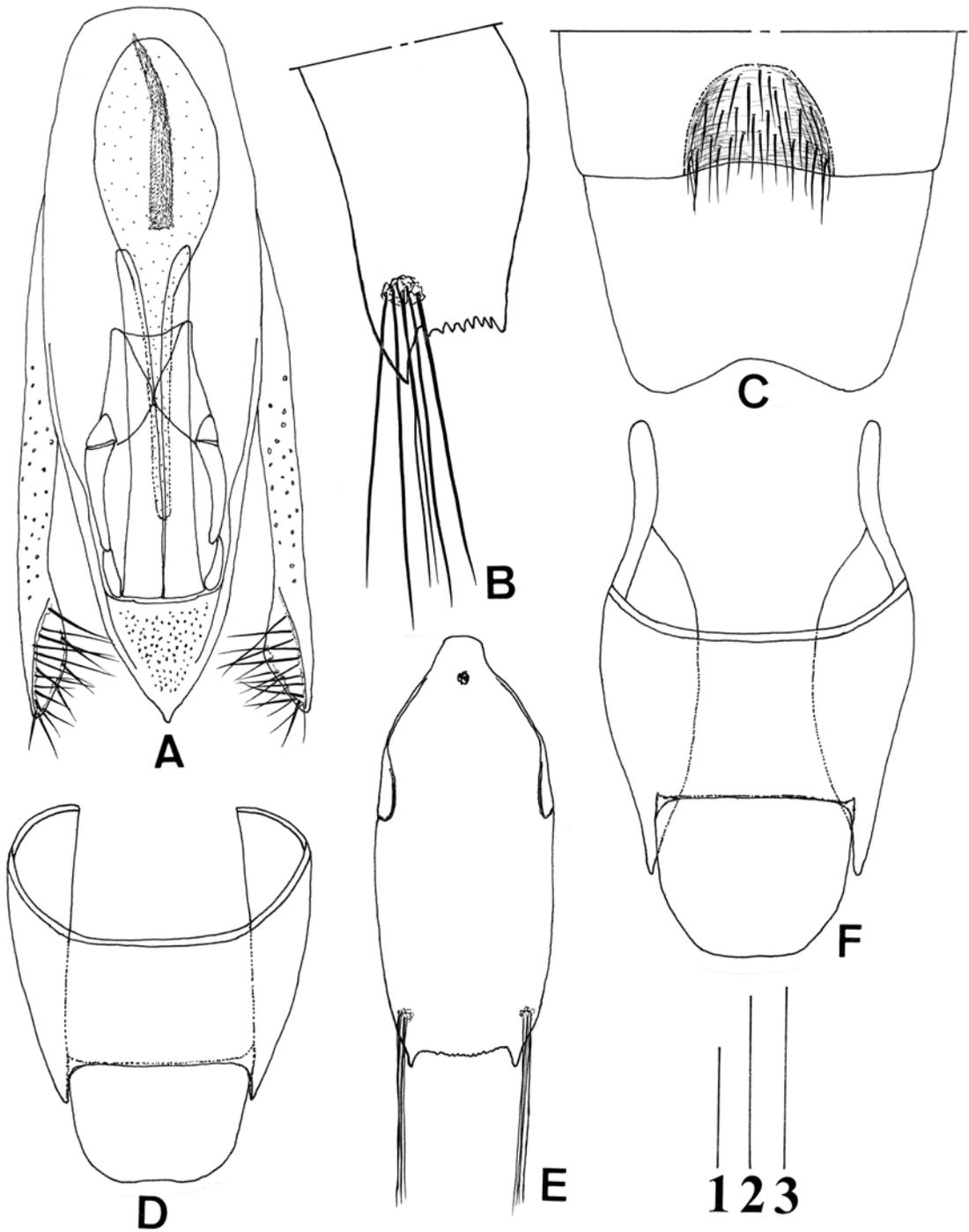


Fig. 72. *Stenus puberulus* Sharp (A, Ina, Hyogo; B, D, Koya, Wakayama; C, E, F, Keitokuin, Yamanashi). A, aedeagus; B, apex of gonocoxite; C, 7th to 8th ventrites of male; D, 9th and 10th terga of female; E, 9th ventrite of male; F, 9th and 10th terga of male. Scale 1: 0.1 mm for A; scale 2: 0.2 mm for C; scale 3: 0.1 mm for B, 0.2 mm for D-F.

shining; labrum black; antennae with 1 or 2 basal segments piceous, lustrous, remaining segments dark red; legs reddish brown to dark reddish brown. Head shallowly concave between eyes, with a pair of distinct longitudinal depressions; punctures round to elliptical, dense, distinct. Pronotum with surface very weakly uneven; punctures round, very dense, almost regular, distinct. Elytra with surface almost smooth, similarly punctate as on pronotum, but punctures a little larger than those on pronotum. Legs with tarsi short, 4th tarsomere simple. Abdomen subparallel-sided; 3rd to 6th terga without basi-longitudinal keels; punctures round, sparse to moderately dense, fine and distinct throughout. Lateroventrites ventromesial to horizontal in position, narrow to moderately wide, punctate.

Male: Body slender; 7th ventrite (Fig. 72C) posteromedially with a semicircular, shallow depression, which is arcuately emarginate and furnished with sparse setae; 8th ventrite (Fig. 72C) posteromedially with a wide-triangular emargination; 9th tergum (Fig. 72F) with ventral apophyses moderately long; 9th ventrite (Fig. 72E) elongate, very finely serrate posteriorly, with stem short, apicolateral teeth short, pointed, apicolateral setae very long; 10th tergum (Fig. 72F) entire. Aedeagal median lobe (Fig. 72A) moderately broad, narrowed apically behind the middle, with apical sclerotized area subtriangular in shape, covered with very small pores, apicomedian projection very small. Endophallic median longitudinal bands (Fig. 72A) very long, almost running in parallel; expulsion hook (Fig. 72A) large, with anterior plates mostly connate, posterior plates widely separated, each well-sclerotized, baculiform, weakly incurved; basal tube (Fig. 72A) entirely membranous, basal room very large, elongate-ovoidal, with a thin, almost straight, setous tube in it, tube body acicular. Parameres (Fig. 72A) very thick, bluntly pointed, extending posteriorly a little before the apex of median lobe; apical area distinctly swollen mesially, furnished with 18 to 19 setae of various length along the mesial margin.

Female: Body thicker than in male; 8th ventrite gently rounded posteriorly; 9th tergum without ventral apophyses (Fig. 72D); gonocoxites (Fig. 72B) each serrate posteriorly, with apicolateral tooth large, acute, apicolateral setae very long; 10th tergum entire (Fig. 72D).

Biology and Ecology. *Stenus puberulus* is distributed in the plains and low mountainous regions in Japan. The beetles inhabit riverbanks and shores of rivers and lakes; and they also live in litter at the grasslands near there.

Remarks. *Stenus puberulus* is closely allied to *S. aboblitus*, but this species is separable from the latter by the legs paler in coloration (reddish brown to dark reddish brown) the abdomen with punctures smaller and sparser, the 7th ventrite of male posteromedially with a semicircular, shallow depression (Fig. 72C), the aedeagal median lobe distinctly broader, and more obtusely pointed apically, with longer paramere (Fig. 72A). *Stenus* species that has been previously recorded from Korea as *S. puberulus* all are *S. pubiformis* Puthz, 2012b. Thus, *S. puberulus* is presently indigenous to Japan.

***Stenus aboblitus* Naomi & Nomura**
(Figs. 73A–F, 132A)

Stenus aboblitus Naomi & Nomura, 2015a: 55.

Stenus puberulus Sharp, 1974: Naomi, 1988c: 39, fig. 1D (*partim*); Puthz, 2012b: 93, 97, figs. 25–26 (*partim*).

Type material examined. Holotype: ♂ (NMNST), Okuyagen, Shimokita Peninsula, Aomori Pref., 2. viii. 1987, S. Nomura leg. Paratypes: 2 ♂ 3 ♀ (cN), same data as holotype; 1 ♂, Ikushina

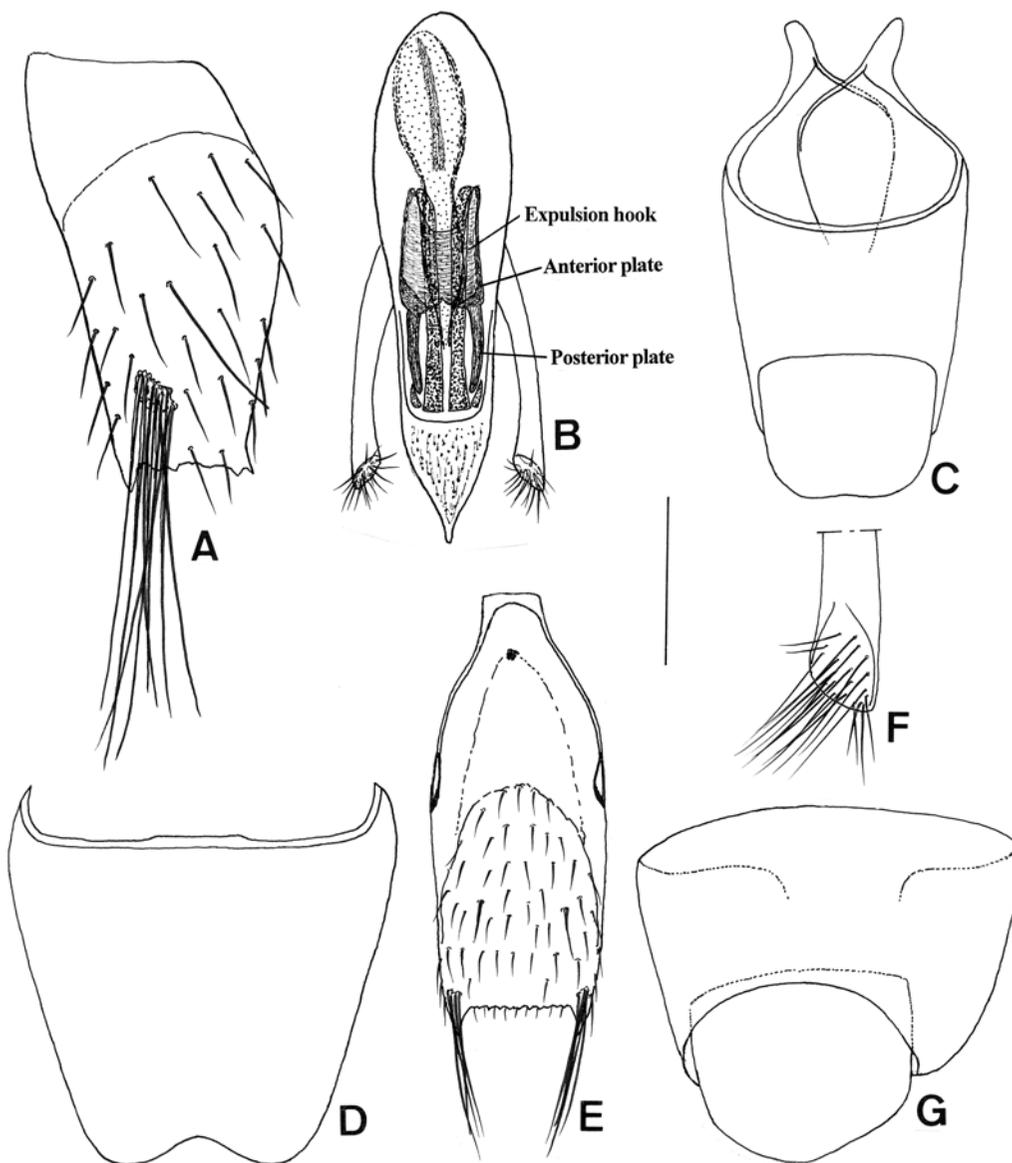


Fig. 73. *Stenus aboblitus* Naomi & Nomura (A–C, E, F, Okuyagen, Aomori; D, Hakken, Hokkaido). A, gonocoxite; B, aedeagus; C, 9th and 10th terga of male; D, 8th ventrite of male; E, 9th ventrite of male; F, apex of aedeagal paramere; G, 9th and 10th terga of female. Scale : 0.1 mm for A, F, 0.2 mm for B–E, G.

River, Ikushina, Shari-cho, Hokkaido, 11. vi. 2014, T. Kato leg.; 1 ♂ 1 ♀ (cN), Mt. Hakken-zan, Hokkaido, 27. v. 1997, N. Nishikawa leg.; 1 ♂ (cN), Misumai, Sapporo, Hokkaido, 7. vii. 1977, S. Naomi leg. [HONSHU]: 1 ♂ (NMNST), Yugawa River, Wakamatsu, Fukushima Pref., 1. viii. 1948, Y. K. leg.; 1 ♂ (cN), Shiobara, Tochigi Pref., 22. viii. 1976, T. Niisato leg.; 1 ♂ (NMNST), Ohme, Tokyo Metropolis, 19. viii. 1976, Y. Kurosawa leg.; 2 ♂ (cN), Yoro Valley, Ichihara, Chiba Pref., 9. v. 1993, K. Ohgi leg.

Other material examined. [HONSHU]: 1 ♀, Sakawa River near Odawara, Kanagawa Pref., 5. v. 1978, S. Morita leg.

Distribution. Japan (Hokkaido, Honshu).

Redescription. Male and female: Macropterous; body 2.7–3.0 mm (fore body 1.5–1.6 mm) in length, wholly covered with short, silvery pubescence, with antennae short. Body black, weakly shining; labrum black; antennae with 1 or 2 basal segments piceous, lustrous, remaining segments dark red; legs dark red to dark brown. Head concave between eyes, with a pair of distinct longitudinal depressions, median longitudinal area between the depressions narrow; punctures round to elliptical, dense, distinct. Pronotum with surface very weakly uneven; punctures round, very dense, regular, distinct. Elytra with surface similarly punctate as on pronotum, but punctures a little larger than those on pronotum. Legs with tarsi short, 4th tarsomere simple. Abdomen subparallel-sided; 3rd to 6th terga without basi-longitudinal keels; punctures dense, distinct, small and round throughout. Lateroventrites ventromesial to horizontal in position, narrow to relatively wide, finely punctate.

Male: Seventh ventrite posteromedially with a lustrous, semicircular flat area, which is moderately emarginate; 8th ventrite (Fig. 73D) posteromedially with a wide emargination; 9th tergum (Fig. 73C) with ventral apophyses short; 9th ventrite (Fig. 73E) elongate, finely serrate posteriorly, with stem relatively short, apicolateral teeth short, pointed, apicolateral setae very long; 10th tergum entire or very weakly emarginate (Fig. 73C). Aedeagal median lobe (Fig. 73B) narrow, gently rounded apicolaterally, with apical sclerotized area moderately long, subrectangular, covered with very small pores, apicomedian projection relatively long. Endophallic median longitudinal bands (Fig. 73B) very long, narrow, almost running in parallel; expulsion hook (Fig. 73B) large, with anterior plates mostly connate, posterior plates widely separated, each well-sclerotized, baculiform, slender, weakly incurved; basal tube (Fig. 73B) entirely membranous, basal room large, elongate-ovoidal, with a thin, setous tube in it, tube body almost baculiform, weakly swollen in the middle. Parameres (Fig. 73B) thick, slightly incurved, rather short, not reaching the apex of median lobe; apical area very short or short, furnished mesially with 17 to 20 short (Fig. 73B) or long (Fig. 73F) setae.

Female: Body thicker than in male; 8th ventrite gently rounded posteriorly; 9th tergum (Fig. 73G) without ventral apophyses; gonocoxites (Fig. 73A) each irregularly serrate posteriorly, with apicolateral tooth acute, apicolateral setae very long; 10th tergum (Fig. 73G) entire.

Biology and Ecology. *Stenus aboblitus* is distributed in the plains and low mountainous regions. The beetles inhabit riverbanks and shores of rivers and lakes; and they also live in litter at the grasslands near there.

Remarks. *Stenus aboblitus* is closely allied to *S. puberulus*, but this species is separable from the latter by the legs darker in coloration (dark red to dark brown), the abdomen with punctures larger and denser, the 7th ventrite of male posteromedially with a semicircular, flat area, the aedeagal medial lobe distinctly narrower, and more acutely pointed apically, with shorter paramere (Fig. 73B).

Species group of *S. gibbicollis* Sahlberg

S. gibbicollis group consists of 5 species in Japan; see Puthz (2002) for a review of this group. Diagnostic characters are as follows: Legs with tarsi short, 1st tarsomere shorter than the following two tarsomeres combined, 4th tarsomere simple; abdomen without basi-longitudinal keels on terga; lateroventrites ventromesial to horizontal in position, basically wide to very wide; 9th tergum with a cleaning comb at posterior margin (in some species; Fig. 76A); 9th ventrite of male without apicolateral teeth but with macrosetae (Fig. 76B); aedeagal median lobe various in

shape, with more or less baculiform endophallic basal tube (Fig. 76C); gonocoxite with apicomesial tooth (Figs. 74D, 77D), apicolateral tooth missing (Fig. 76D); spermatheca sclerotized (Fig. 77A) or not observable.

Key to the Japanese species of *S. gibbicollis* group

- 1(6) Head shorter, with eyes more strongly prominent laterally; lateroventrite wider, with a large, elongate depression; aedeagus very acute apically, with (Fig. 74C) or without (Fig. 76C) the apicalmost globe; gonocoxite basically without apicomesial tooth or with a small one (Fig. 74D); spermatheca not observable.
- 2(5) Apical sclerotized area of aedeagal median lobe without longitudinal impressions, with the apicalmost globe; endophallic expulsion hooks thinner; basal tube longer and broader.
- 3(4) Endophallic median longitudinal bands *in situ* separated (Fig. 74C); expulsion hook with anterior plate shorter than posterior plate (Fig. 74C); basal tube distinctly longer and thicker (Fig. 74B) *S. nomurai* Naomi
- 4(3) Endophallic median longitudinal bands *in situ* contiguous in basal 2/3 (Fig. 75B); expulsion hook with anterior plate about as long as posterior plate (Fig. 75B); basal tube shorter, with a very long, sclerotized lobe located right to the tube body (Fig. 75F)
.....*S. varicosus* Naomi, Nomura & Puthz sp. nov.
- 5(2) Apical sclerotized area of aedeagal median lobe with paired longitudinal impressions, without the apicalmost globe (Fig. 76C); endophallic expulsion hooks wider (Fig. 76C); basal tube shorter and thinner (Fig. 76F–H)*S. mikado* Hromádka
- 6(1) Head longer, with eyes less strongly prominent laterally; lateroventrite narrower, simply punctate; aedeagus simply rounded or obtuse apically; gonocoxite with a large apicomesial tooth (Fig. 77D); spermatheca sclerotized (Fig. 77A).
- 7(8) Aedeagal median lobes wider at apex (Fig. 77C); endophallic expulsion hooks much larger, each elongate (Fig. 77C); paramere more strongly incurved and sclerotized apically, with 4 to 5 short setae (Fig. 77C)*S. pudevactus* Ryvkin
- 8(7) Aedeagal median lobe narrower at apex (Fig. 78C); endophallic expulsion hooks very small, each ginko-shaped (Fig. 78C); paramere less strongly incurved and sclerotized apically, with 7 to 8 short setae (Fig. 78C)*S. miyama* Naomi

Stenus nomurai Naomi sp. propr.

(Figs. 74A–F, 132B)

Stenus nomurai Naomi, 1988c: 45.

Stenus mikado Hromádka, 1979a: Naomi & Puthz, 1994a: 218 (synonym of *S. mikado*).

Type material examined. Holotype of *S. nomurai*: ♀ (KUF), Iwaubetsu, Shiretoko, Hokkaido, 7. vii. 1986, S. Nomura leg. Paratypes of *S. nomurai*: 2 ♂1 ♀ (cN), Mt. Kariba, Shiribeshi, Hokkaido, 12. vi. 1986, S. Nomura leg.

Other material examined. [HOKKAIDO]: 1 ♂, Nukabira, Kamishihoro-cho, 25. vi. 2009, T. Watanabe leg.; 2 ♂, Sekihoku Pass, 27. viii. 1977, M. Sato leg. [HONSHU]: 1 ♂1 ♀, Okukinu, Tochigi Pref., 21. vii. 1987, S. Nomura leg.; 1 ♂1 ♀, Toubaku-zawa, Okuchichibu, Saitama Pref., 5. vi. 1986, K. Nemoto leg.

Distribution. Japan (Hokkaido, Honshu).

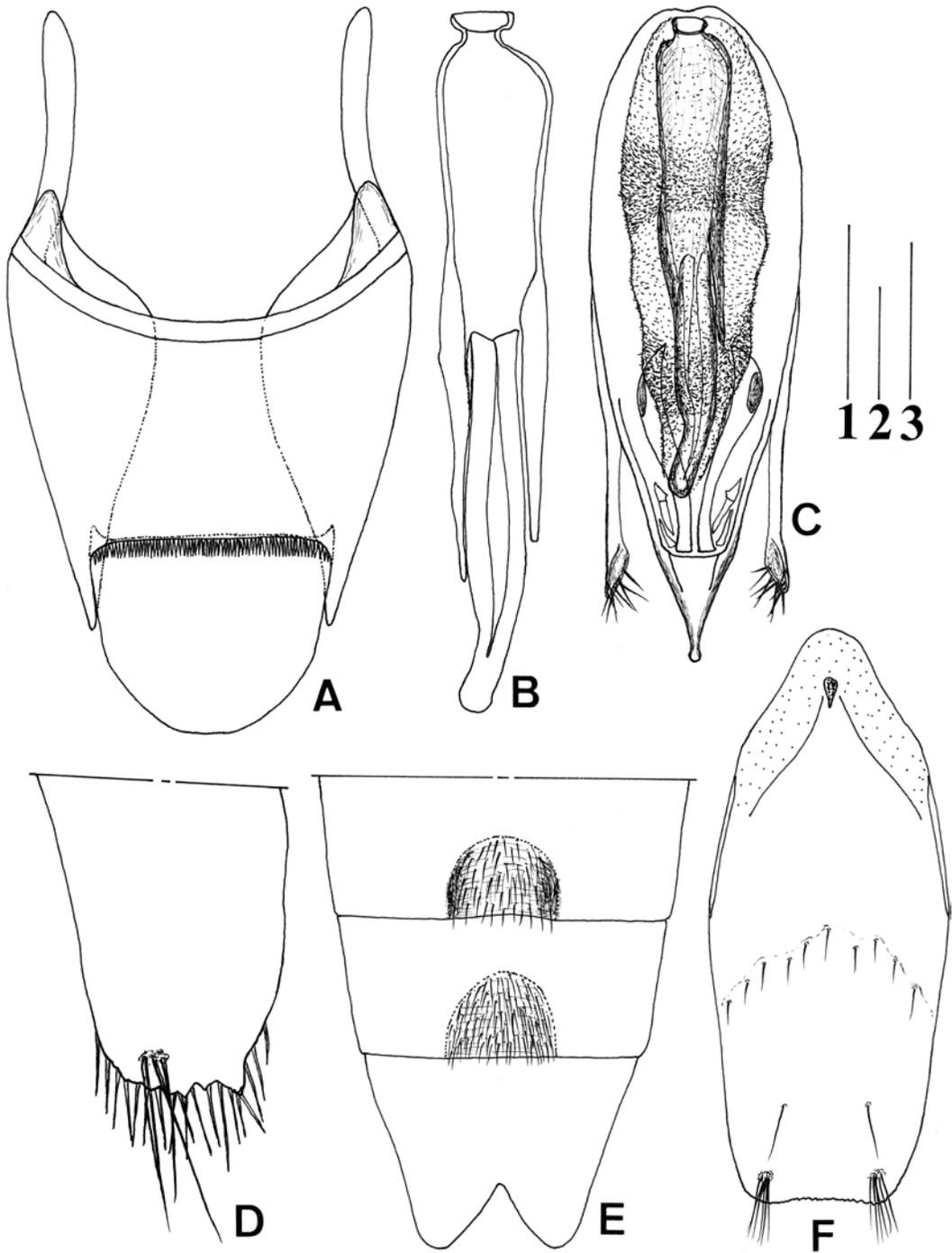


Fig. 74. *Stenus nomurai* Naomi (A–C, Tobakuzawa, Saitama; D, F, Kariba, Hokkaido; E, Sekihoku, Hokkaido). A, 9th and 10th terga of male; B, endophallic basal tube; C, aedeagus; D, apex of gonocoxite; E, 6th to 8th ventrites of male; F, 9th ventrite of male. Scale 1: 0.2 mm for A, B, F, 0.1 mm for D; scale 2: 0.2 mm for C; scale 3: 0.3 mm for E.

Redescription. Male and female: Macropterous; body 3.2–3.5 mm (fore body 1.7–1.8 mm) in length, with head short, eyes large, prominent laterally, abdomen relatively wide, moderately flat or weakly convex dorsally. Body black, moderately shining; labrum black; antennae with basal 1 or 2 segments black, remaining segments dark red; legs dark red to black. Head with a pair of longitudinal depressions; punctures round, sparse, distinct. Pronotum with surface weakly uneven; punctures round, very dense, distinct. Elytra with surface weakly uneven; punctures round, dense to very dense, distinct. Legs moderately long; tarsi with 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 9th tergum (Fig. 74A) posteriorly with cleaning comb relatively short; punctures sparse to moderately dense, small and distinct in anterior segments, while punctures in posterior segments a little smaller and shallower than in anterior segments. Lateroventrites ventromesial in position, wide to very wide, each with a large, elongate depression which almost occupies the anterior 2/3, sparsely punctate in posterior 1/3.

Male: Legs with femora thick; 6th ventrite (Fig. 74A) with a shallow, bell-shaped depression, which is very shallowly emarginate; 7th ventrite (Fig. 74A) posteromedially with a very shallow, bell-shaped depression; 8th ventrite (Fig. 74E) posteromedially with a V-shaped emargination; 9th tergum (Fig. 74A) with anterolateral flaps, ventral apophyses thin, very long; 9th ventrite (Fig. 74F) elongate, very finely serrate posteriorly, rounded apicolaterally, with stem rounded anteriorly, macrosetae paired, apicolateral setae short; 10th tergum (Fig. 74A) entire. Aedeagal median lobe (Fig. 74C) elongate-ovoidal in shape, with apical sclerotized area elongate-triangular, with the apicalmost globe very small. Endophallic median longitudinal bands (Fig. 74C) distinctly diverging anteriorly, each anterolaterally with an ovoidal sclerotized area; expulsion hooks (Fig. 74C) widely separated, each very small, with anterior plate shorter than posterior plate; basal tube (Fig. 74C) very large, long, with tube body baculiform, consisting of basal and apical rods which are partially articulated (Fig. 74B); inner sac wholly enveloped the basal tube, covered densely with very small spicules (Fig. 74C). Parameres (Fig. 74C) very thin; apical area short, distinctly swollen mesially, furnished mesially with 9 to 10 short setae.

Female: Legs with femora thinner than in male; 8th ventrite rounded posteriorly; gonocoxites (Fig. 74D) each irregularly serrate posteriorly, rounded apicolaterally, with a blunt apicomeresial tooth, apicolateral setae long; spermatheca not observable.

Biology and Ecology. *Stenus nomurai* is distributed in the mountainous regions. The beetles inhabit the vicinity of mountain streams; and they are found on and near the stones and mosses near there.

Remarks. *Stenus nomurai* was first described as a new species from Hokkaido, Japan by Naomi (1988c); and after that, Naomi & Puthz (1994a) synonymized *Stenus nomurai* with *S. mikado* Hromádka, 1979. However, *S. nomurai* is obviously different from the latter in structure of the apical part of aedeagal median lobe as well as the structures of endophallic elements (including basal tube, expulsion hooks and median longitudinal bands). Therefore, the name *Stenus nomurai* (Naomi: 1988) is here resurrected from a subjective junior synonym of *S. mikado* (Hromádka: 1979).

S. nomurai is allied to *S. latissimus* Bernhauer, 1938, but this species is separable from the latter by the body smaller in length, 9th ventrite of male shallowly emarginate posteriorly (Fig. 74F), the aedeagal median lobe with apical sclerotized area elongate-triangular in shape, with the apicalmost globe smaller (Fig. 74C), and the endophallic basal tube distinctly longer and thicker (Fig. 74B). Among the Japanese members of this group, *S. nomurai* is allied to *S. varicosus*, but it is separable from the latter by the endophallic median longitudinal bands *in situ* separated (Fig. 74C), the expulsion hook with anterior plate shorter than posterior plate (Fig. 74C) and the basal

tube distinctly longer and thicker (Fig. 74B).

Etymology. The specific epithet of this species is named after the second author Shûhei Nomura.

Stenus varicosus Naomi, Nomura & Puthz sp. nov.
(Figs. 75A–F, 132C)

Type material examined. Holotype, ♂ (No. NSMT-I-C-200320 in NMNST), Onzui Valley, Hyogo Pref., 6. vi. 1984, S. Nomura leg. Paratype 1 ♂ (cN), same data as holotype.

Distribution. Japan (Honshu: Hyogo Pref.).

Redescription. Male: Macropterous; body 3.5 mm (fore body 1.8 mm) in length, with head short, eyes large, prominent laterally, abdomen relatively wide, weakly convex dorsally. Body black, moderately shining; labrum black; antennae and legs dark red to black. Head with a pair of longitudinal depressions; punctures round, sparse to moderately dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, distinct. Elytra with surface weakly uneven; punctures round, dense to very dense, distinct. Legs moderately long; femora thick; tarsi with 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 9th tergum (Fig. 75D) posteriorly with cleaning comb relatively short; punctures moderately dense to dense, small and distinct in anterior segments, while punctures in posterior segments moderately dense to dense, very fine and regular. Lateroventrites ventromesial in position, wide to very wide, each similarly modified and punctate as in *S. nomurai*.

Sixth ventrite (Fig. 75C) posteromedially with a shallow, bell-shaped depression, which is shallowly emarginate posteriorly; 7th ventrite (Fig. 75C) posteromedially with a bell-shaped, flat area, which is very shallowly emarginate posteriorly; 8th ventrite (Fig. 75C) posteromedially with a V-shaped emargination; 9th tergum (Fig. 75D) with ventral apophyses thin, very long; 9th ventrite (Fig. 75A) relatively wide, rounded apicolaterally, very finely serrate posteriorly, with stem elongate, basilateral emarginations deep, narrow, with macrosetae paired, apicolateral setae short; 10th tergum (Fig. 75D) entire. Aedeagal median lobe (Fig. 75B) elongate-ovoidal in shape, with apical sclerotized area elongate-triangular, with the apicalmost globe very small. Endophallic median longitudinal bands (Fig. 75B, E) contiguous in basal 2/3, distinctly diverging anteriorly before the middle, each acutely pointed at anterior tip; expulsion hooks (Fig. 75B) widely separated, each very thin, with anterior plate about as long as posterior plate; basal tube (Fig. 75B) very large, long, with tube body baculiform, thick basally, very thin and subulate apically, with a very long, separated sclerotized lobe existing right to the tube body, weakly turning right apically (Fig. 75F); inner sac wholly enveloped the basal tube, and covered with very fine spicules (Fig. 75B). Parameres (Fig. 75B) very thin; apical area short, swollen mesially, furnished mesially with 8 to 9 setae.

Female: Unknown.

Biology and Ecology. *Stenus varicosus* is presently known only from the mountainous region in Hyogo, Honshu. The beetles inhabit the vicinity of mountain streams; and they are found on and near the stones and mosses near there.

Remarks. *Stenus varicosus* is allied to *S. nomurai*, but this new species is separable from the latter by the endophallic median longitudinal bands *in situ* contiguous in basal 2/3 (Fig. 75B), the expulsion hook with anterior plate about as long as posterior plate (Fig. 75B), and basal tube shorter and thinner (Fig. 75F).

Etymology. The specific epithet of this species is derived from the Latin adjective “*varico-*

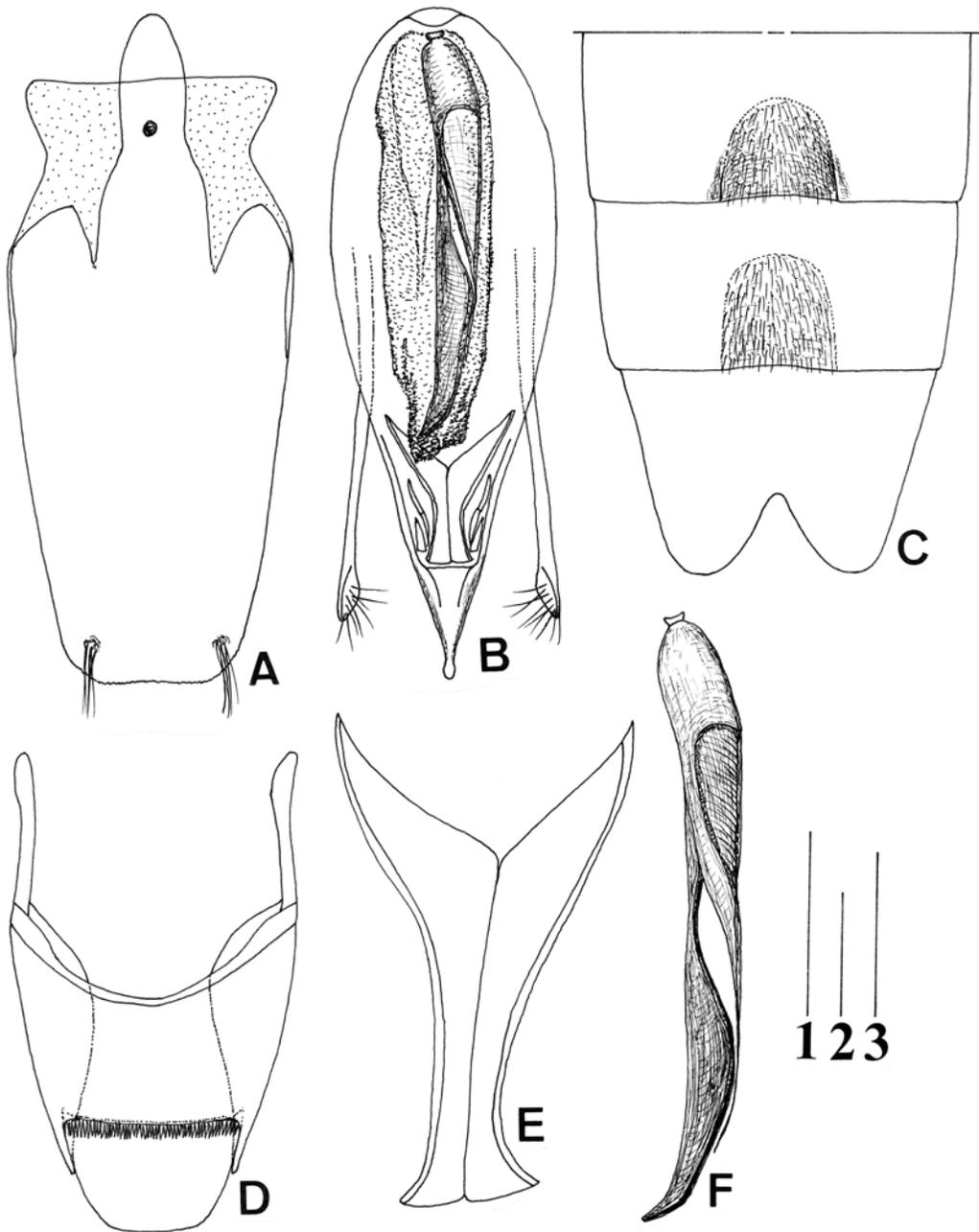


Fig. 75. *Stenus varicosus* Naomi, Nomura & Puthz (Onzui, Hyogo). A, 9th ventrite of male; B, aedeagus; C, 6th to 8th ventrites of male; D, 9th and 10th terga of male; E, endophallic expulsion hook; F, basal tube. Scale 1: 0.2 mm for A, F, 0.1 mm for E; scale 2: 0.2 mm for B, D; scale 3: 0.3 mm for C.

sus", which means "dilated"; and the endophallic median longitudinal bands are obviously dilated anteriorly before the middle (Fig. 75E).

Stenus mikado Hromádka
(Figs. 76A–J, 132D)

Stenus mikado Hromádka, 1979a: 117; Herman, 2001: 2285; Naomi & Puthz, 2013: 139.

Stenus nomurai Naomi, 1988c: 46, fig. 1B (*partim*).

Stenus abbreviatus Naomi, 2015a: 217. **New synonym.**

Type material. Holotype of *S. mikado*: ♂ (cH), Sendai, Oschiu, Japan, 28. x. 1955, Yosio Higo leg. Paratype of *S. mikado*: ♂ (cP), same data as holotype [examined by Puthz]. Holotype of *S. abbreviatus*: ♂ (EUMJ), Omogo, Ehime Pref., Shikoku, 30. iii. 1957, F. Takechi leg. Paratypes of *S. abbreviatus*: 1 ♂ (cN), Takada, Shingu City, Wakayama Pref., 10. viii. 1991, I. Matoba leg.; 1 ♂ (cN), Sandankyo, Hiroshima Pref., 1. vi. 1986, I. Okamoto leg.; 1 ♀ (cN), same locality, 19. vii. 1986, I. Okamoto leg.; 1 ♂ 1 ♀ (cN), Riv. Katsuura, Tonogouchi, Kamikatsu, Tokushima Pref., 6. v. 1996, M. Yoshida leg.; 1 ♀ (cN), Mt. Shiraga, Kumamoto Pref., 18. iv. 1982, I. Ohtsuka leg.

Other material examined. [HONSHU]: 1 ♂, Mt. Mitake, Oume City, Tokyo Metropolis, 26. vi. 1977, M. Tao leg.; 2 ♂, Gozaisho Spa, Mt. Houo, Yamanashi Pref., 16. iv. 1989, K. Hosoda leg.; 3 ♂ 1 ♀, Usokkozawa-goya, Shizuoka City, Shizuoka Pref., 9. x. 1991, H. Kojima leg.; 1 ♀, Abe River, Suruga-ku, Shizuoka City, Shizuoka Pref., 15. vii. 2007, T. Shimada leg.; [NANSEI ISLS.]: 1 ♂, Miyanoura, Yaku Is., Kagoshima Pref., 29. iv. 1984, M. Yasui leg.; 1 ♂ 4 ♀, Kawau-chi River, Uken-son, Amami Is., Kagoshima Pref., 4. v. 1987, S. Nomura leg.; 1 ♂ 1 ♀, Hatsuno, Amami Is., Kagoshima Pref., 4. iv. 1966, H. Nomura leg.; 1 ♂, Maruhata, Amami Is., Kagoshima Pref., 17. vi. 1980, S. Imasaka leg.

Distribution. Japan (Honshu, Shikoku, Kyushu, Nansei Isls.).

Redescription. Male and female: Macropterous; body 3.7–3.8 mm (fore body 1.7–1.8 mm) in length, with head short, eyes large, prominent laterally, abdomen relatively wide, moderately flat or weakly convex dorsally. Body black, moderately shining; labrum black; antennae with basal segments black, apical segments dark red; legs black except for dark reddish tarsi. Head weakly concave between eyes, with a pair of longitudinal depressions; punctures round, dense, various in size, distinct. Pronotum with surface smooth; punctures round, very dense, regular, distinct. Elytra with surface smooth, similarly punctate as on pronotum. Legs relatively short; tarsi with 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 9th tergum (Fig. 76A) posteriorly with cleaning comb relatively short; punctures various in shape, moderately dense, small and distinct in anterior segments, while punctures in posterior segments round, moderately dense, small and regular. Lateroventrites ventromesial in position, wide to very wide, each similarly modified and punctate as in *S. nomurai*.

Male: Legs with femora thick; 6th and 7th ventrites each posteromedially with a very shallow emargination; 8th ventrite (Fig. 76J) posteromedially with a V-shaped emargination; 9th tergum (Fig. 76A) with ventral apophyses thin, very long; 9th ventrite (Fig. 76B) elongate, projecting laterally at base, rounded apicolaterally, very finely serrate posteriorly, with stem elongate, almost rounded apically, macrosetae paired, apicolateral setae short; 10th tergum (Fig. 76A) entire. Aedeagal median lobe (Fig. 76C) bulbous basally, and then gradually becoming narrower apically toward the very acutely pointed apex; apical sclerotized area elongate-triangular in shape, impressed laterally. Endophallic median longitudinal bands (Fig. 76C) short, very thin, each distinctly curved laterally; expulsion hooks (Fig. 76C) separated, each medium-sized, with anterior plate about as long as posterior plate; basal tube with basal room almost spherical, sub-

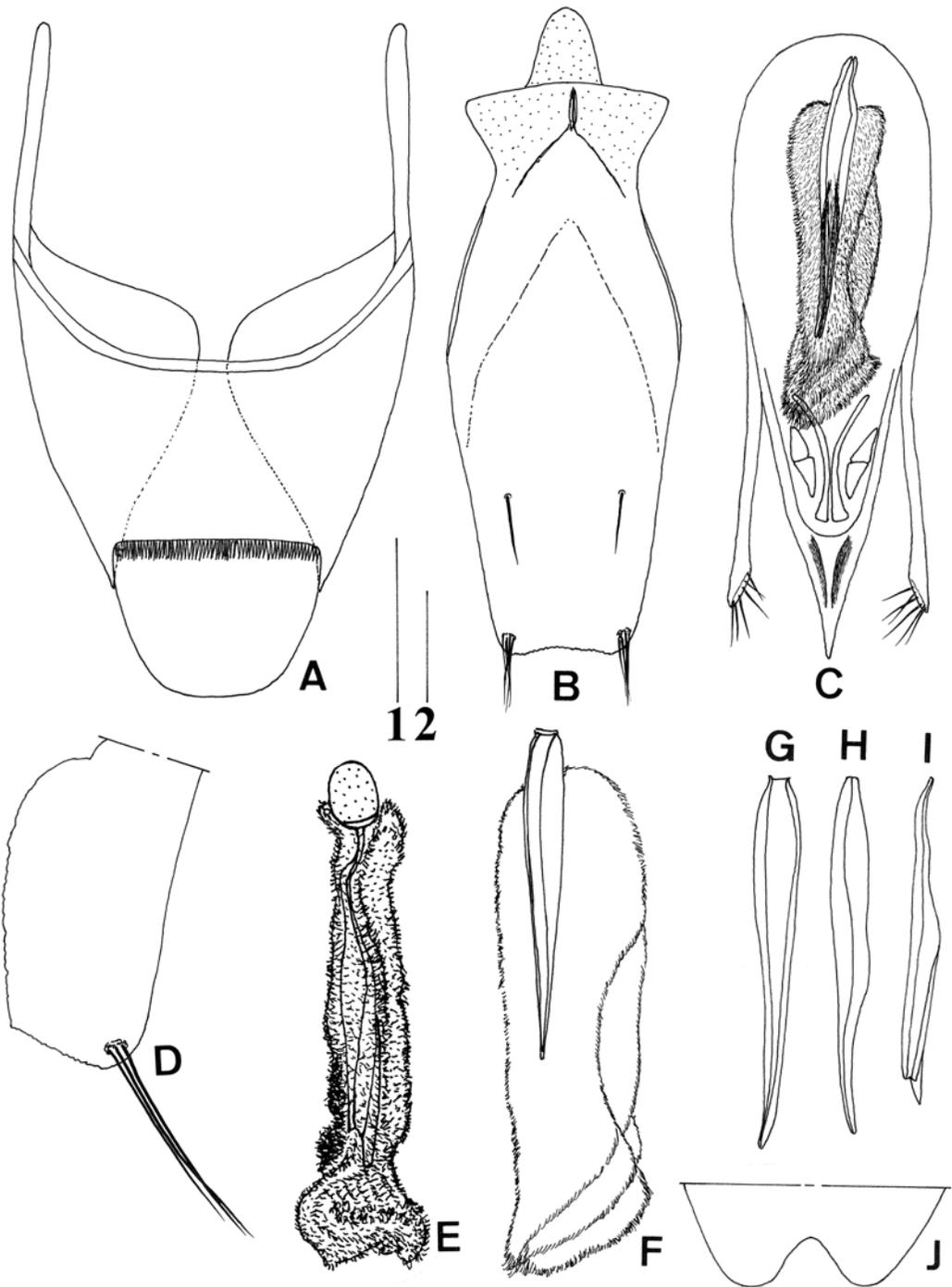


Fig. 76. *Stenus mikado* Hromádka (A, B, J, Takada, Wakayama; C, Omogo, Ehime; D, Katsuura, Tokushima; E, G, H, Gozaishi, Yamanashi; F, Sendai, Miyagi; I, Sandankyo). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, gonocoxite; E, F, endophallic basal tube, with inner sac; G–I, basal tube; J, apex of 8th ventrite of male. Scale 1: 0.2 mm for A, B, E–I, 0.1 mm for D; scale 2: 0.1 mm for C, J.

membranous (Fig. 76E), tube body baculiform but its basal area various in structure (simply narrowed to weakly swollen; Fig. 76C, E–I); inner sac (Fig. 76C, E, F) developed, covered densely with spinules, with its apical part bent left from the ventral side to dorsal direction. Parameres (Fig. 76C) very thin, each weakly curved laterally near the middle; apical area short, weakly swollen mesially, furnished mesially with 5 to 6 setae.

Female: Legs with femora thinner than in male; 8th ventrite rounded posteriorly; gonocoxites (Fig. 76D) each very finely serrate both posteriorly and mesially, angulate apicomesially (with a very small tooth), rounded apicolaterally, with apicolateral setae very long.

Biology and Ecology. *Stenus mikado* is widely distributed in the low and high mountainous regions from Honshu through Shikoku and Kyushu to Nansei Isls. The beetles inhabit the vicinity of mountain streams and the grasses grown near there; and they are found in the moist litters or mosses, and near or under stones there.

Remarks. Hromádka (1979a) first described *Stenus mikado* from Honshu (Tohoku district), Japan; and after that, Naomi (2015a) described *S. abbreviatus* from Honshu (Kinki and Chugoku districts), Shikoku and Kyushu, Japan. During the course of this study, we examined the holotypes of *S. mikado* and *S. abbreviatus*; and we confirmed that *S. abbreviatus* is conspecific with *S. mikado*, given that they show the same structure of aedeagal median lobe and endophallus (i.e., holotype of *S. abbreviatus*: Fig. 76C; and holotype of *S. mikado*; Fig. 76F). Thus, *S. abbreviatus* is herein newly synonymized with *S. mikado*.

All specimens of the various populations examined share basically common structures not only of the body, the aedeagal median lobe and parameres, and also of the endophallic expulsion hooks and median longitudinal bands. On the other hand, structures of the inner sac (e.g., Fig. 76F: Miyagi: Sendai; Fig. 76E: Yamanashi: Gozaishi; Fig. 76C: Ehime, Omogo) and endophallic basal tube (e.g., Fig. 76C: Ehime, Omogo; Fig. 76G, H: Yamanashi, Gozaishi; Fig. 76I, Hiroshima, Sandankyo) more or less vary from one local population to another. No distinct morphological gaps are, however, found among those local populations with respect to these two characters. This means that even if we find two or more seemingly different forms of these characters, there exist intermediate conditions between those different forms of the character in question. Therefore, we here consider the variations to be infraspecific with respect to the structures of inner sac and endophallic basal tube.

S. mikado is allied to *S. nomurai* and *S. varicosus*, but this species is separable from the latter two species by the apical sclerotized area of aedeagal median lobe with paired longitudinal impressions, and without the apicalmost globe (Fig. 76C), the endophallic median longitudinal bands much thinner (Fig. 76C), the expulsion hooks wider (Fig. 76C), the basal tube much shorter and thinner (Fig. 76F–H) and the inner sac more densely covered with spinules throughout, with its apical part bent left from the ventral side to dorsal direction (Fig. 76C).

Etymology. The specific epithet of this species is named after the Japanese term “Mikado”.

Stenus pudefactus Ryvkin

(Figs. 77A–F, 132E)

Stenus pudefactus Ryvkin, 1987a: 124; Herman, 2001: 2357; Puthz, 2009a: 38; Naomi & Puthz, 2013: 139.

Type material. Holotype: ♂ (ZIRAS), type locality: Kunashir Is., Russia.

Other material examined. [HOKKAIDO]: 1 ♂, Shikaribetsu, Kamishihoro, 13. vii. 1992, T.

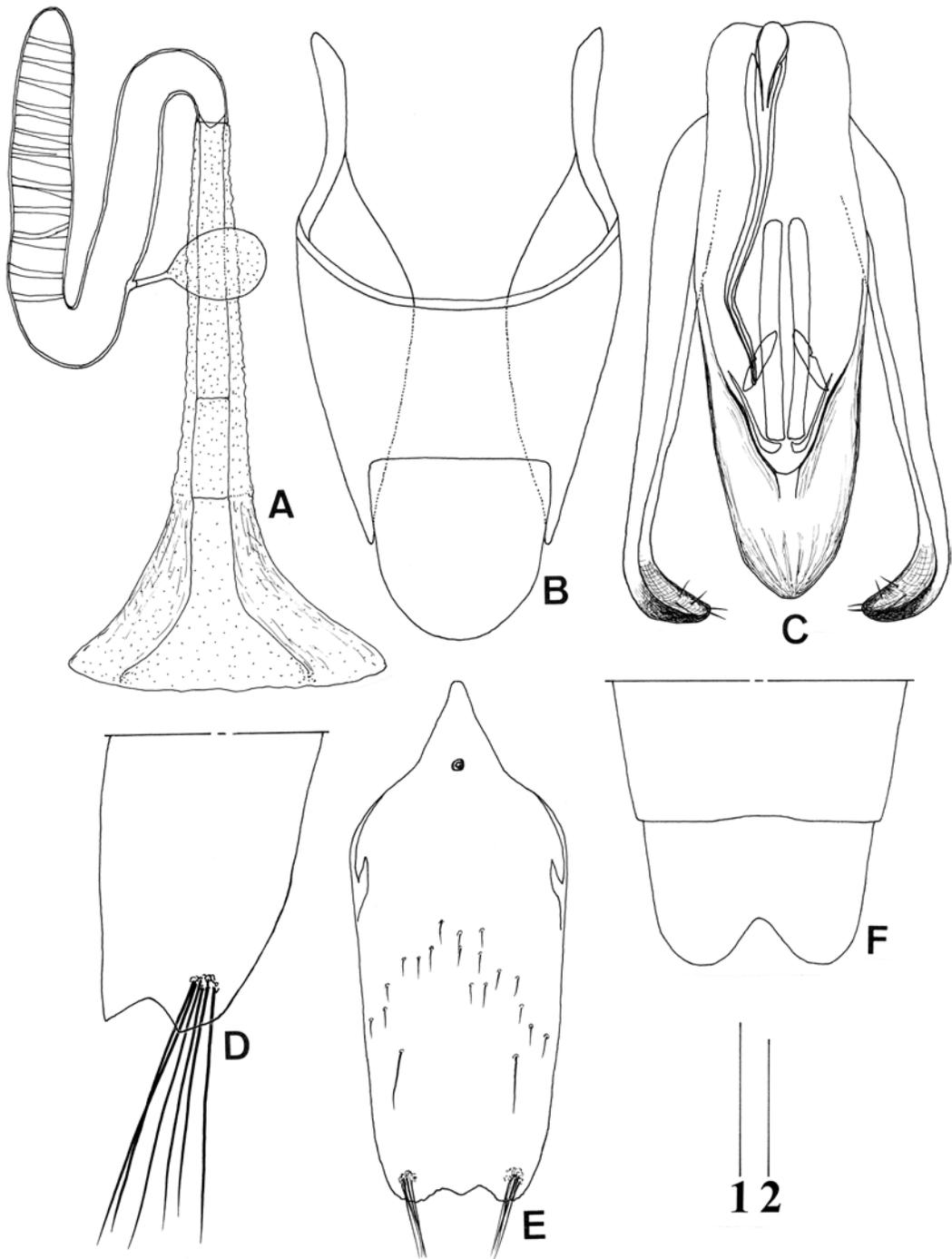


Fig. 77. *Stenus pudefactus* Ryvkin (A, D, Saruru, Hokkaido; B, C, E, F, Shikaribetsu, Hokkaido). A, spermatheca; B, 9th and 10th terna of male; C, aedeagus; D, apex of gonocoxite; E, 9th ventrite of male; F, 7th to 8th ventrites of male. Scale 1: 0.1 mm for A, D, 0.2 mm for B, C, E; scale 2: 0.3 mm for F.

Watanabe leg.; 1 ♂, Sapporo Lake, Sapporo City, 28. vii. 1994, T. Kishimoto leg.; 1 ♂, Saruru River, Erimo-cho, 9. ix. 1994, K. Miyashita leg.; 1 ♀, same locality, 10. ix. 1994, K. Miyashita leg.; 1 ♀, Hirayama, Engaru, Monbetsu, 6. vii. 2013, T. Watanabe leg.; 2 ♂, Mt. Chiroro, Hidaka-cho, 10. vii. 1992, K. Haga leg.

Distribution. Japan (Hokkaido); Russia.

Redescription. Male and female: Macropterous; body 3.9–4.1 mm (fore body 1.8–1.9 mm) in length, with antennae short. Body and its appendages entirely black, moderately shining. Head hardly concave dorsally, with a pair of longitudinal depressions between eyes, median part of vertex distinctly higher in level than inner margin of eyes; punctures round, dense to very dense, distinct. Pronotum with surface weakly impressed on basal 1/3; punctures round, very dense, regular, distinct, interstices between punctures distinctly microsculptured. Elytra with surface weakly impressed around the suture in about basal 1/2, similarly punctate as on pronotum but punctures a little larger than on pronotum, interstices between distinctly microsculptured. Legs moderately long; tarsi with 4th tarsomere simple. Abdomen subparallel-sided or weakly narrowed posteriorly; punctures moderately dense, small and somewhat irregular in anterior segments, while punctures in posterior segments dense, small and regular. Lateroventrites ventromesial or horizontal in position, moderately wide to wide, densely punctate.

Male: Seventh ventrite (Fig. 77F) shallowly emarginate posteromedially; 8th ventrite (Fig. 77F) posteromedially with a V-shaped emargination; 9th tergum (Fig. 77B) with ventral apophyses thin, long; 9th ventrite (Fig. 77E) elongate, rounded apicolaterally, bi-emarginate posteriorly, with stem elongate-triangular in shape, macrosetae paired, apicolateral setae short; 10th tergum (Fig. 77B) entire. Aedeagal median lobe (Fig. 77C) elongate, weakly narrowed apically behind the middle (so that the apical sclerotized area is still wide), and rounded or weakly obtuse apicomediaally. Endophallic median longitudinal bands (Fig. 77C) long, thin, running almost in parallel; lateral longitudinal bands (Fig. 77C) very thin; expulsion hooks (Fig. 77C) separated, divergent posteriorly, each thin, laterally with a small notch at the middle; basal tube (Fig. 77C) with basal room small, globous, tube body slender, attenuate, and once curved right near apical 1/3. Parameres (Fig. 77C) stout, thick, each very strongly incurved apically to form the ladle-shaped apex, which is very strongly sclerotized, with 4–5 short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 77D) each almost rounded apicolaterally, with apicommesial tooth large, acutely pointed, apicolateral setae very long. Spermatheca (Fig. 77A) with two distinct turns; capsule very small; RT-duct thick, straight; spermathecal duct submembranous from the base to 1st turn; basal valve medium-sized; basal pouch large, almost cone-shaped; spermathecal gland elongate-spherical in shape, with its opening located mesially on the tube between 1st and 2nd turns.

Biology and Ecology. *Stenus pudevactus* is distributed in the low and high mountainous regions in Japan. The beetles inhabit the shores of rivers, lakes and marshes and the grasses grown near there; and they are found in moist litters or mosses, and near or under moist stones there.

Remarks. *Stenus pudevactus* was first recorded from Hokkaido, Japan by Puthz (2009a). *S. pudevactus* is considered the sister species of *S. miyama*, but this species is separable from the latter by the 7th ventrite of male modified only by a shallow, posteromedian emargination (Fig. 77F), the aedeagal median lobe wider at apex (Fig. 77C), the endophallic expulsion hook much larger and elongate (Fig. 77C), and the paramere more strongly incurved and sclerotized apically, with 4 to 5 short setae (Fig. 77C).

***Stenus miyama* Naomi**
(Figs. 78A–F, 132F)

Stenus miyama Naomi, 1988c: 47; Puthz, 2009a: 37; Naomi & Puthz, 2013: 139.

Stenus pudefactus Ryvkin, 1987a: Puthz, 1991b: 105.

Type material examined. Holotype: ♂ (KUF), Marunuma, Oku-nikko, Tochigi Pref., 4–5. vii. 1982, S. Naomi leg. Paratype: 2 ♀ (cN), Same data as holotype; 1 ♂ 1 ♀ (cN), Toubaku-zawa, Oku-chichibu, Saitama Pref., 5. vi. 1986, K. Nemoto leg.; 1 ♂ (cN), Kaminikkawa Pass, Mt. Daibosatsu, Yamanashi Pref., 15–18. vii. 1982, S. Naomi leg.

Other material examined. [HONSHU]: 1 ♀, Mt. Zaou, Miyagi Pref., 22–25. viii. 1978, M. Sato leg.; 1 ♂ 2 ♀, Mt. Tashiro, Tateiwa-mura, Fukushima Pref., 24. vii. 1996, S. Naomi leg.; 1 ♂, Mt. Ohdai, Nara Pref. (Yamato), 26. viii. 1979, M. Yasui leg.

Distribution. Japan (Honshu).

Redescription. Male and female: Macropterous; body 3.5–4.1 mm (fore body 1.8–2.1 mm) in length, covered with silvery-white, short setae, antennae short, relatively thick. Body black, weakly shining; labrum black; antennae 1 or 2 basal segments black, remaining segments dark red; legs black except for dark red tarsi. Head hardly concave dorsally, with a pair of longitudinal depressions between eyes; punctures round, very dense, distinct. Pronotum with surface shallowly impressed on basal 1/3; punctures round to elliptical, very dense, distinct, interstices between punctures microsculptured. Elytra with surface weakly impressed around the suture in about basal 1/2, similarly punctate as on pronotum, interstices between punctures microsculptured. Legs moderately long; tarsi with 4th tarsomere simple. Abdomen weakly narrowed posteriorly; punctures sparse to moderately dense and small throughout. Lateroventrites ventromesial or horizontal in position, moderately wide to wide, densely punctate.

Male: Seventh ventrite (Fig. 78D) posteromedially with a wide-subtriangular flat area, which is shallowly emarginate; 8th ventrite (Fig. 78D) posteromedially with a V-shaped emargination; 9th tergum (Fig. 78E) with ventral apophyses long, straight; 9th ventrite (Fig. 78B) elongate, almost rounded or obtusely angulate apicolaterally, bi-emarginate posteriorly, with stem subrectangular, macrosetae paired, apicolateral setae moderately long; 10th tergum (Fig. 78E) entire. Aedeagal median lobe (Fig. 78C) elongate, weakly narrowed apically, obtusely pointed apically, with ventrolateral rims thick. Endophallic median longitudinal bands (Fig. 78C) long, thin, running almost in parallel; lateral longitudinal bands (Fig. 78C) very thin; expulsion hooks (Fig. 78C) separated, each very small, ginkgo-shaped; basal tube (Fig. 78C) with basal room globous, tube body slender, attenuate but bi-sinuous. Parameres (Fig. 78C) stout, thick, strongly incurved apically to form the ladle-shaped apex, which is moderately sclerotized, with 7 to 8 short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 78F) each rounded apicolaterally, with apicommesial tooth, apicolateral setae of various length (moderately long to very long). Spermatheca (Fig. 78A) stout, with two turns; capsule very small; RT-duct very thick; spermathecal duct submembranous behind the middle of duct between 1st and 2nd turns; basal valve relatively short; basal pouch large, bell-shaped; spermathecal gland almost spherical, with its opening located mesially on the tube between 1st and 2nd turns.

Biology and Ecology. *Stenus miyama* is distributed in the high mountainous regions in Honshu. The beetles inhabit the vicinity of mountain streams; and they are found in the moist litters or mosses, and near or under moist stones there.

Remarks. *Stenus miyama* was first described from Honshu, Japan by Naomi (1988c). Puthz

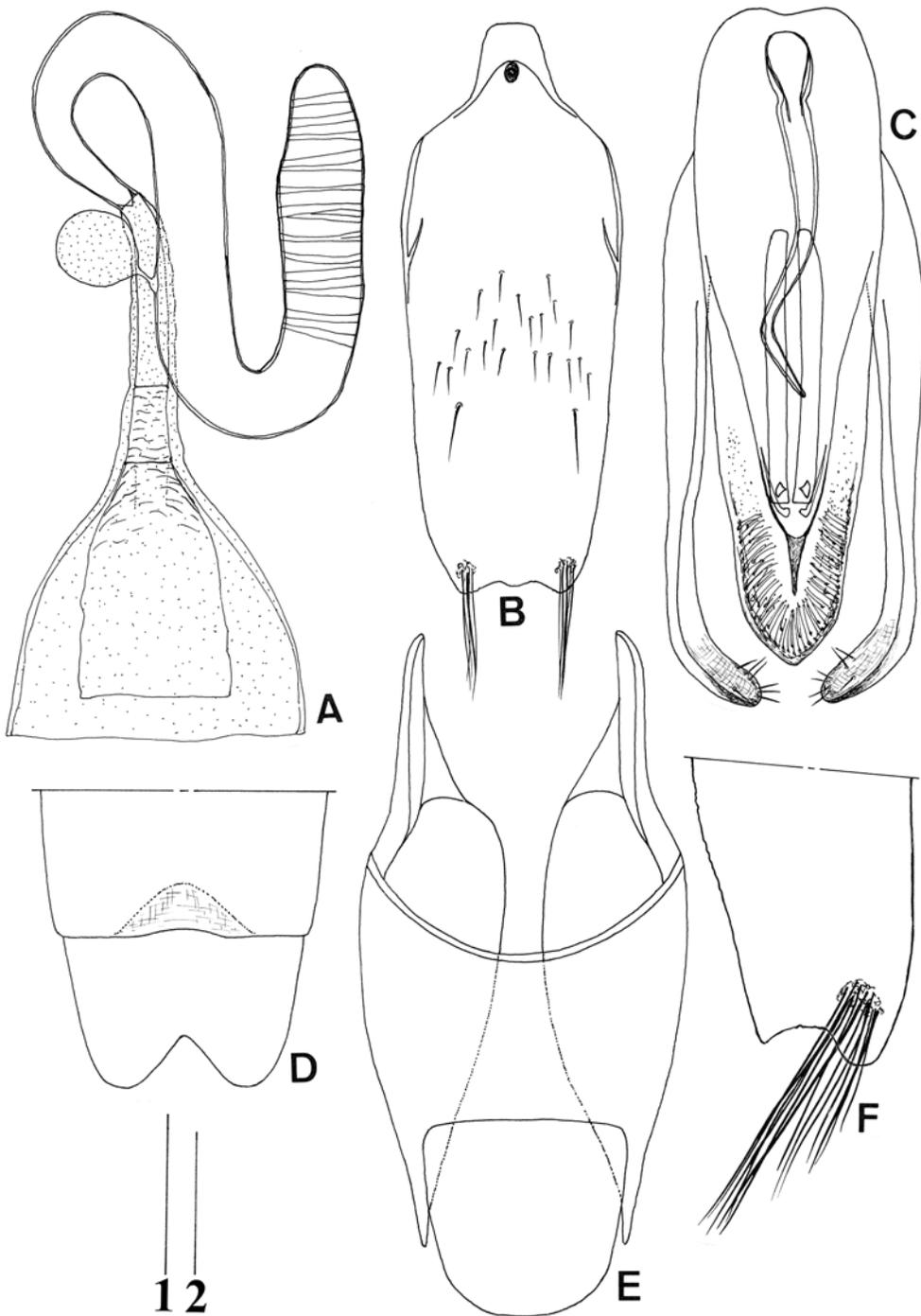


Fig. 78. *Stenus miyama* Naomi (A, F, Tashiro, Fukushima; B–E, Tobaku-zawa, Saitama). A, spermatheca; B, 9th ventrite of male; C, aedeagus; D, 7th to 8th ventrites of male; E, 9th and 10th terga of male; F, apex of gonocoxite. Scale 1: 0.1 mm for A, F, 0.2 mm for B, C, E; scale 2: 0.3 mm for D.

(1991b) synonymized this species with *S. pudevactus* Ryvkin, 1987a; and after that, Puthz (2009a) resurrected this species as a valid species. *S. miyama* is closely allied to *S. pudevactus*, but this species is separable from the latter by the 7th ventrite of male posteromedially with a wide-subtriangular flat area, which is shallowly emarginate posteriorly (Fig. 78D), the aedeagal median lobe narrower apically (Fig. 78C), the endophallic expulsion hook very small and ginko-shaped (Fig. 78C), and the paramere less strongly incurved and sclerotied apically, with 7 to 8 short setae (Fig. 78C).

Etymology. The specific epithet of this species is derived from the Japanese term “miyama”, which means “mountainous regions” where this species is distributed.

Species group of *S. crassus* Stephens

S. crassus group consists of 5 species in Japan; see Puthz (1968a, 2006a) and Ryvkin (2011) regarding reviews and characterization of this group; and see Puthz (1968a) regarding a key to the Palearctic species of this group. Diagnostic characters are as follows: Legs with 4th tarsomere simple; abdomen with 4 short basi-longitudinal keels on terga; lateroventrites missing in 4th to 6th segments; 9th ventrite of male basically with apicolateral teeth pointed, hook-shaped (or incurved) (Fig. 79B); aedeagal median lobe various in shape (Figs. 79A, 81A; see also Puthz, 1968a, 2006a); endophallic expulsion hook medium-sized to large, almost H-shaped (Fig. 80E), M-shaped (Puthz, 2006a, fig. 9), etc.; gonocoxite with apicolateral tooth (Fig. 79F); spermatheca strongly sclerotized, with its duct thick to extremely thick (Fig. 79E).

Key to the Japanese species of *S. crassus* group

- 1(6) Body sparsely covered with short setae (Fig. 132G).
- 2(3) Aedeagal median lobe wider apically, not constricted apicolaterally, with its apical sclerotized area subpentagonal in shape (Fig. 79A) *S. immarginatus* Mäklin
- 3(2) Aedeagal median lobe narrower apically, more or less constricted near the apex, with its apical sclerotized area pentagonal in shape.
- 4(5) Aedeagal median lobe with apical sclerotized area shorter (Fig. 80G); spermatheca with its gland opened simply on the surface of duct (Fig. 80C) *S. tomitaorum* Naomi
- 5(4) Aedeagal median lobe with its apical sclerotized area longer (Fig. 83A); spermatheca with its gland opened on a large tubercle projected from the duct (Fig. 83B) *S. finalis* Ryvkin
- 6(1) Body densely covered with moderately long or long setae (Fig. 132J).
- 7(8) Body covered entirely with very thin, long and suberect setae, with the longest setae almost equal in length to the 1st to 3rd antennal segments taken together; aedeagal median lobe feebly constricted at the base of apical sclerotized area (Fig. 81A); endophallic basal tube shorter, thicker, straight (Fig. 81A) *S. hirtiventris* Sharp
- 8(7) Body covered entirely with thin, moderately long, and declinate setae, with the longest setae almost equal in length to the 1st and 2nd antennal segments taken together; aedeagal median lobe slightly but distinctly constricted at the base of apical sclerotized area (Fig. 82A); endophallic basal tube longer, thinner, with the curved apex (Fig. 82A)
 *S. pilosiventris* Bernhauer

Stenus immarginatus Mäklin
(Figs. 79A–F, 132G)

Stenus immarginatus Mäklin, 1853: 192; Naomi, 1998a: 103; Herman, 2001: 2223; Naomi & Puthz, 2013: 139.

Type material examined. Syntypes: 2 ♀ (ZMH), type locality: Kadjak [examined by Puthz in 1967].

Other material examined. [HOKKAIDO]: 1 ♀, Mt. Teshio, Asahi-cho, 28. vii. 1987, N. Yasuda leg.; 2 ♀, Sekihoku Pass, Rubeshibe-cho, 24. vii. 2000, S. Nomura leg.; 1 ♀, Kamishihoro, 25. vi. 2008, K. Haga leg.; 1 ♀, Upepe-sanke, Mt. Daisetsu, 9. vii. 2002, N. Yasuda leg.; 1 ♀, Ukishima moor, Kamikawa-cho, 24. vii. 2000, S. Nomura leg.

Distribution. Japan (Hokkaido); China, Russia, Canada, USA.

Redescription. Male and female: Macropterous; body 2.1–3.1 mm (fore body 1.2–1.6 mm) in length, subcylindrical, only sparsely, shortly setous, moderately shining, with antennae short, thick. Body black; labrum black; antennae with 1 or 2 basal segments black, remaining segments dark red; legs dark red to black. Head small, weakly convex dorsally, with a pair of longitudinal impressions at sides of median longitudinal swollen area; punctures round to elliptical, dense to very dense, irregular, distinct. Pronotum with surface weakly uneven; punctures round, dense to very dense, somewhat irregular. Elytra with surface moderately uneven; punctures round, dense, almost regular. Legs relatively short; tarsi short, thick, with 4th tarsomere simple. Abdomen narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures round, sparse to moderately dense, and small to medium-sized in anterior segments, while punctures in posterior segments sparse, very small to small, and somewhat irregular. Third lateroventrite distinct, narrow; 4th to 5th lateroventrites each distinct only at base, fused with the corresponding ventrite in the remaining posterior part but tergo-ventrite suture distinct; 6th lateroventrite completely fused with the ventrite, tergo-ventrite suture distinct.

Male: Sixth and 7th ventrites (Fig. 79D) each posteromedially with a semicircular flat area; 8th ventrite (Fig. 79D) posteromedially with a shallow, wide emargination; 9th tergum (Fig. 79C) with ventral apophyses long, almost straight; 9th ventrite (Fig. 79B) wide, irregularly serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth short, acutely pointed, apicolateral setae moderately long; 10th tergum (Fig. 79C) entire. Aedeagal median lobe (Fig. 79A) relatively wide, almost rounded apicolaterally, obtusely angulate apically; apical sclerotized area subpentagonal in shape, mostly covered with short, sparse setae. Endophallic median longitudinal bands (Fig. 79A) long, diverging anteriorly; lateral longitudinal bands (Fig. 79A) very short; expulsion hooks (Fig. 79A) large, connected by a transverse rod to form an almost H-shaped structure, each with posterior plate larger than, and distinctly demarcated by transverse suture from, anterior plate; basal tube (Fig. 79A) with basal room ovoidal, tube body rod-like, once weakly constricted near the middle, with strongly curved apex. Parameres (Fig. 79A) almost straight; apical area long, hardly swollen mesially, and furnished mesially with 14 to 15 setae.

Female: Abdomen distinctly wider than in male; 8th ventrite posteromedially obtuse; gonocoxites (Fig. 79F) each apicomediaally angulate, with apicolateral tooth short, acutely pointed. Spermatheca (Fig. 79E) with capsule almost missing; RT-duct thick, almost straight; spermathecal duct well-sclerotized, coiled with 5 turns, thick but very thick around 3rd turn; basal valve narrow; basal pouch cone-shaped; spermathecal gland very large, with its opening located at the 3rd turn of the duct.

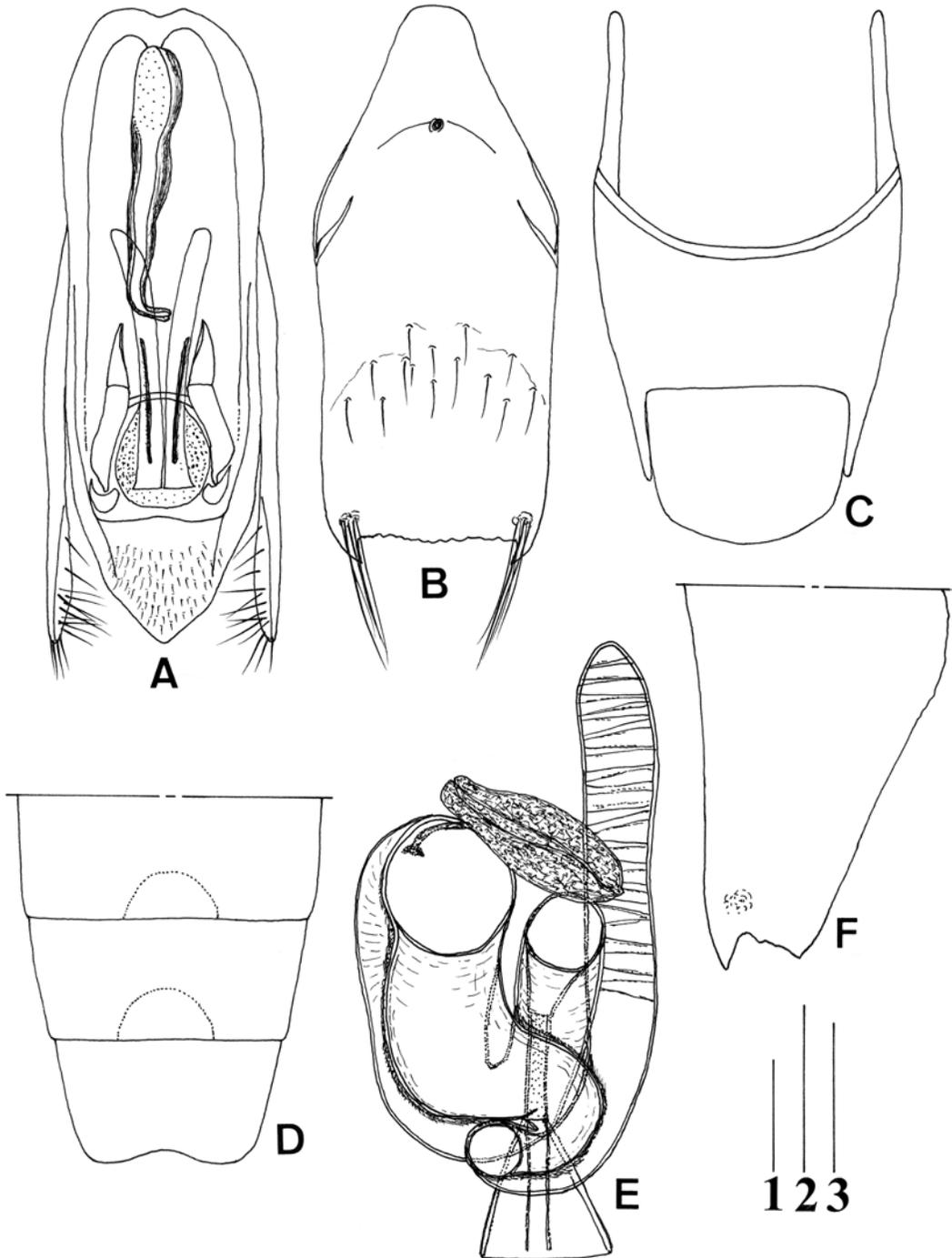


Fig. 79. *Stenus immarginatus* Mäklin (A–D, Ummak, Alaska; E, F, Tesio, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 9th and 10th terga of male; D, 6th to 8th ventrites of male; E, spermatheca; F, gonocoxite. Scale 1: 0.1 mm for A, B; scale 2: 0.2 mm for C, 0.1 mm for E, F; scale 3: 0.3 mm for D.

Biology and Ecology. *Stenus immarginatus* is distributed in the plains, low and high mountainous regions in Hokkaido. No solid data are obtained for the habitats of this species, but the collecting records suggest that the beetles inhabit moist litters of the shores of the rivers, lakes and marshes as well as leaf litter near there.

Remarks. *Stenus immarginatus* was first discovered from Japan (Hokkaido) by Naomi (1998a). This species is allied to *S. formicetorum* Mannerheim, 1843 and *S. transbaicalicus* Bernhauer, 1900, but it is separable from them by the body larger (2.1–3.1 mm) and wider, and the aedeagal median lobe distinctly wider apically (Fig. 72A). Among the Japanese members of this group, *S. immarginatus* is similar to *S. tomitaorum* and *S. finalis*, but this species is separable from the latter two species by the aedeagal median lobe wider apically, and not constricted near the apex, with its apical sclerotized area subpentagonal in shape (Fig. 79A).

***Stenus tomitaorum* Naomi**
(Figs. 80A–H, 132H)

Stenus tomitaorum Naomi, 1989a: 38; Herman, 2001: 2418; Naomi & Puthz, 2013: 139.

Type material examined. Holotype: ♂ (KUF), Kami-shunbetsu, 20. vii. 1977, S. Naomi leg. Paratypes: 4♂1♀ (cN), same data as holotype; 2♂ (cN), Nemuro-shibetsu, 18. vii. 1977, S. Naomi leg.

Other material examined. [HOKKAIDO]: 1♀, Ohtsu, Toyokoro-cho, 27. v. 1990, K. Haga leg.; 1♀, mouth of Tokachi river, 23. v. 1993, K. Shibata leg.; 1♀, On'nenai Tsurui, Kushiro Marsh, 27. viii. 1990, M. Sakai leg.; 1♀, Akanuma, Kushiro Marsh, 28. viii. 1990, M. Sakai leg.; 1♀, same locality and date, M. Sato leg.

Distribution. Japan (Hokkaido).

Redescription. Male and female: Macropterous; body 2.5–3.0 mm (fore body 1.4–1.6 mm) in length, subcylindrical, only sparsely, shortly setous, moderately shining, with antennae short, thick. Body black; labrum black; antennae and legs dark red to black. Head weakly convex dorsally, with a pair of shallow longitudinal depressions; punctures round to elliptical, dense, various in size (including large ones), irregular, sometimes two or more punctures fused to form a very large one. Pronotum with surface vaguely impressed posteromedially; punctures round, very dense, almost regular. Elytra with surface impressed on basal 1/2 near the suture; punctures round, very dense, almost regular. Legs relatively short; tarsi short, with 4th tarsomere simple. Abdomen narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures round to elliptical, sparse to moderately dense, small and irregular in anterior segments, while punctures in posterior segments sparse to moderately dense, very small to small, and somewhat irregular. Third lateroventrite distinct, narrow, narrowed posteriorly; 4th to 6th lateroventrites each distinct only about at basal 1/2, fused with the corresponding ventrite in the remaining posterior part, but tergo-ventrite suture distinct.

Male: Eighth ventrite (Fig. 80D) posteriorly with a shallow, wide emargination; 9th tergum (Fig. 80B) with ventral apophyses moderately long; 9th ventrite (Fig. 80A) wide, weakly arcuate posteriorly, indistinctly serrate at posterior margin, with stem wide, rounded anteriorly, apicolateral teeth incurved, acutely pointed, apicolateral setae long; 10th tergum (Fig. 80B) subhexagonal in shape. Aedeagal median lobe (Fig. 80G) elongate, weakly constricted at the base of apical sclerotized area, and obtusely angulate apically; apical sclerotized area pentagonal in shape, distinctly demarcated by a transverse suture from the rest of median lobe, covered with very short,

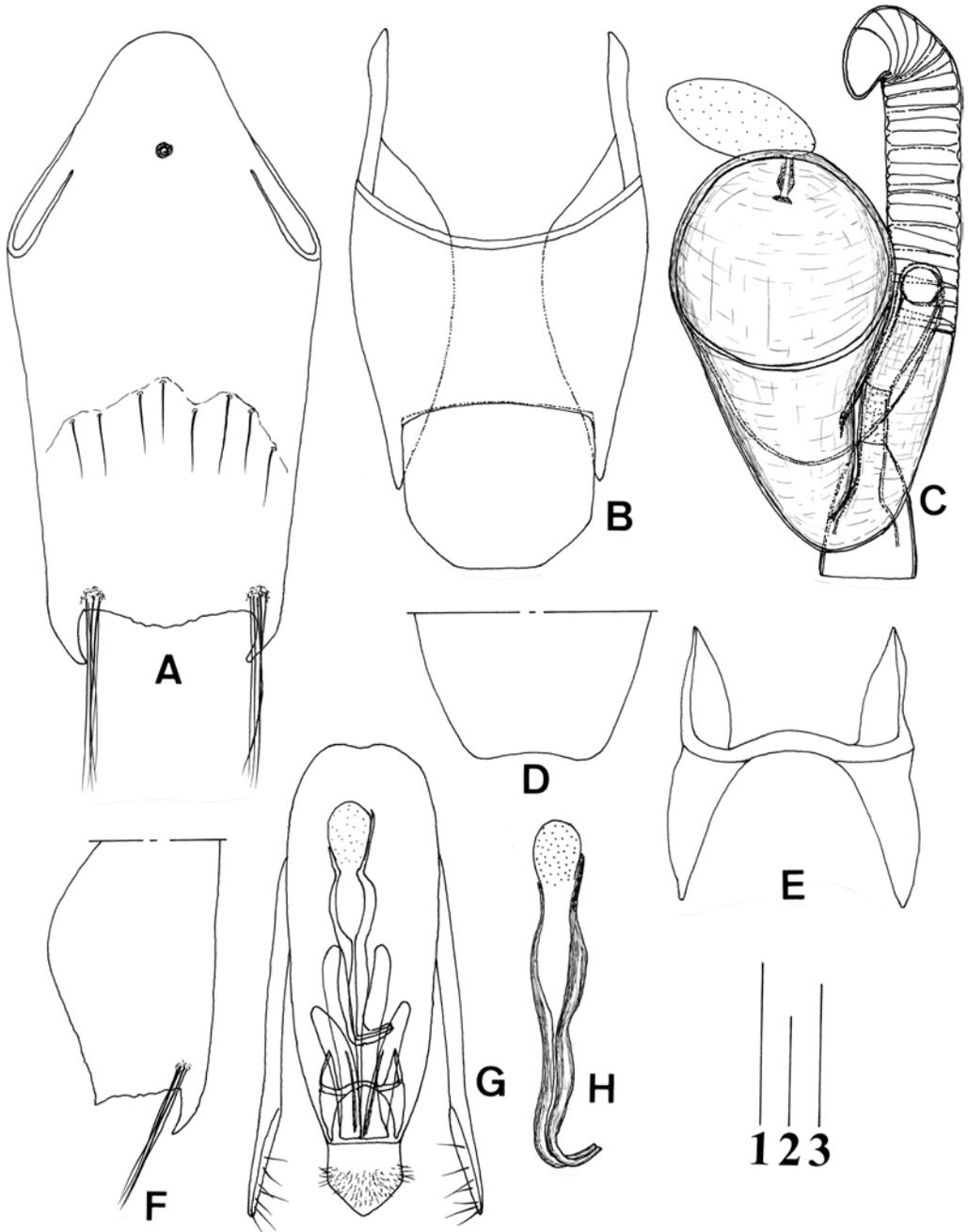


Fig. 80. *Stenus tomitaorum* Naomi (A, B, D, E, G, H, Kamishunbetsu, Hokkaido; C, F, Toyokoro, Hokkaido). A, 9th ventrite of male; B, 9th and 10th terga of male; C, spermatheca; D, apical part of 8th ventrite of male; E, endophallic expulsion hook; F, gonocoxite; G, aedeagus; H, basal tube. Scale 1: 0.1 mm for A, C, F, H, 0.05 mm for E; scale 2: 0.1 mm for B, G; scale 3: 0.3 mm for D.

setae on apical 1/2, and also furnished laterally with 5 to 6 short setae. Endophallic median longitudinal bands (Fig. 80G) with ventral bands long, dorsal bands moderately long, diverging anteriorly; expulsion hooks (Fig. 80G) connected by a transverse rod to form an almost H-shaped structure, each with posterior plate distinctly demarcated by a transverse suture from anterior plate, acutely pointed (Fig. 80E); basal tube (Fig. 80G) with basal room ovoidal, tube body rod-like, moderately thick, constricted near the middle, with strongly curved apex (Fig. 80H). Parameres (Fig. 80G) slender, almost straight; apical area long, hardly swollen mesially, and furnished mesially with 6 to 7 sparse setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 80F) each apicomesially angulate, with apicolateral tooth thin, very acute, apicolateral setae moderately long. Spermatheca (Fig. 80C) with capsule very small, subconical; RT-duct thick, almost straight; spermathecal duct well-sclerotized, coiled with 4 turns, thick but extremely thick around 3rd turn; basal valve narrow, short; basal pouch relatively narrow, subconical; spermathecal gland large, with its opening located at the anterior surface of 3rd turn of the duct.

Biology and Ecology. *Stenus tomitaorum* is distributed in the plains and low mountainous regions in Hokkaido. The beetles inhabit litter in the grasslands, and also moist litter of the grasses grown at the shores of the rivers, lakes and marshes.

Remarks. *Stenus tomitaorum* is allied and also very similar in external structure to *S. crassus* Stephens, 1833 (Ganglbauer, 1895: 582), but this species is separable from the latter by the aedeagal median lobe with apical sclerotized area a little shorter and more strongly angulate laterally (Fig. 80G). Among the Japanese members of this species group, *S. tomitaorum* is similar in external character to *S. finalis*, but this species is separable from the latter by the aedeagal median lobe with apical sclerotized area shorter (Fig. 80G), and the spermatheca with its gland opened on the simple surface of duct (Fig. 80C).

Etymology. The specific epithet of this species is named after Mr. Tsuneo Tomita and Mrs. Yukie Tomita, Kumamoto, who have kindly supported the entomological activity of S.-I. Naomi for very long time from his childhood to the present.

***Stenus hirtiventris* Sharp**
(Figs. 81A–F, 132I)

Stenus hirtiventris Sharp, 1889: 328; Herman, 2001: 2214; Naomi & Puthz, 2013: 139.

Type material examined. Holotype: ♀ (NHML), type locality: Niigata, Japan [examined by Puthz].

Other material examined. [HONSHU]: 1 ♂1 ♀, Tomiyachi, Shariki-mura, Aomori Pref., 30. ix. 1992, S. Nomura leg.; 1 ♂, Mt. Iwaki, Aomori Pref., 29. ix. 1992, M. Sakai leg.

Distribution. Japan (Honshu: Aomori and Niigata Prefs.); China.

Redescription. Male and female: Macropterous / brachypterous; body 2.5–2.7 mm (fore body 1.3–1.4 mm) in length, subcylindrical, moderately shining, densely covered with very thin, long and suberect setae, with antennae short, thick. Head and abdomen black; pronotum and elytra dark red; labrum black; antennae and legs reddish brown to dark red. Head weakly convex dorsally, with a pair of shallow longitudinal depressions; punctures round to elliptical, dense to very dense, distinct. Pronotum with surface smooth or very weakly uneven; punctures round, very dense, various in size, distinct. Elytra with surface almost smooth; punctures round, very dense, almost regular. Legs relatively short; tarsi short, with 4th tarsomere simple. Abdomen weakly

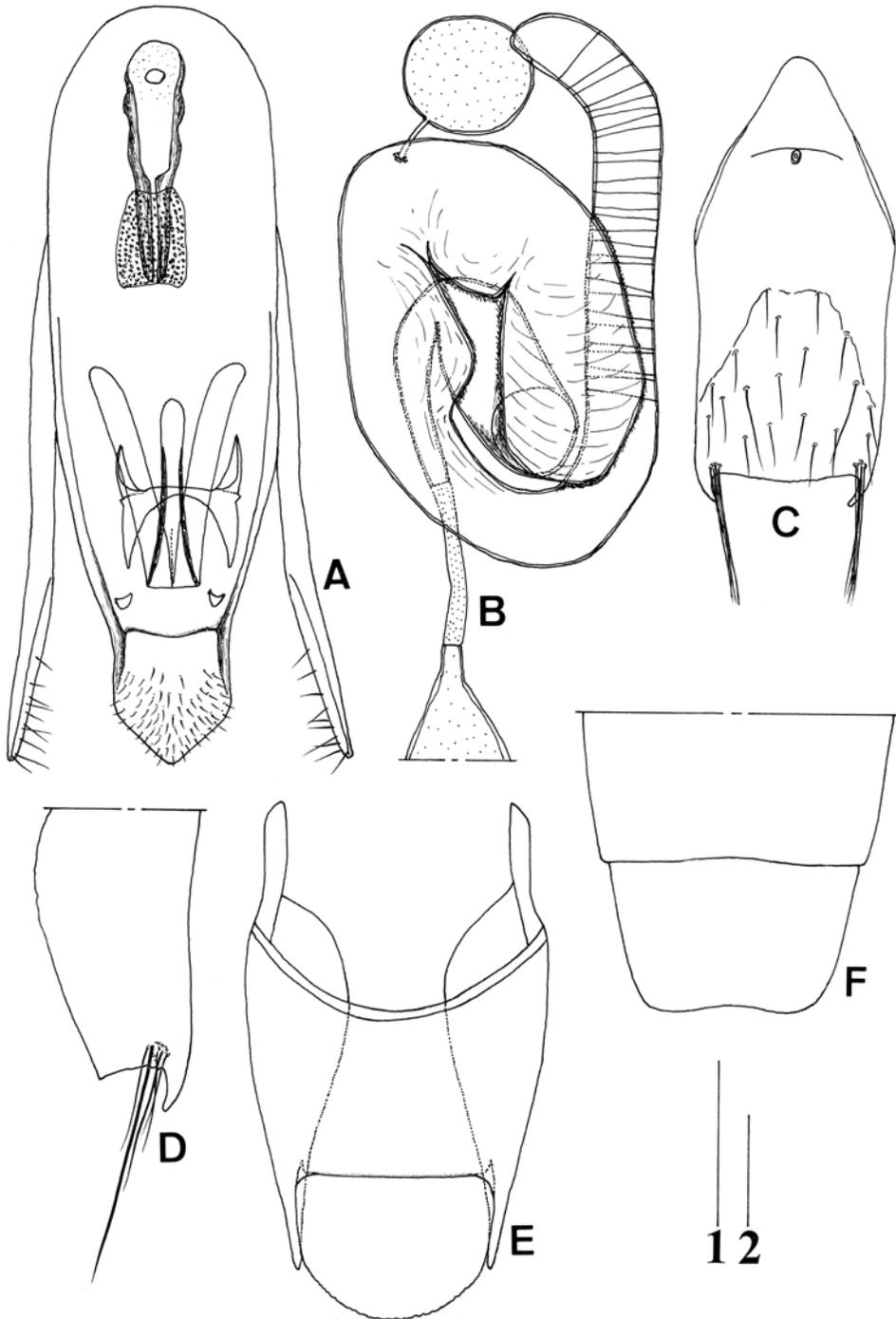


Fig. 81. *Stenus hirtiventris* Sharp (A, Iwaki, Aomori; B–F, Tomiyachi, Aomori). A, aedeagus; B, spermatheca; C, 9th ventrite of male; D, gonocoxite; E, 9th and 10th terga of male; F, 7th to 8th ventrites of male. Scale 1: 0.1 mm for A, B, D, 0.2 mm for F; scale 2: 0.1 mm for C, E.

narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures sparse, small and irregular in all segments. Lateroventrites existing only in 3rd segment, while tergoventrite sutures only existing in 4th to 6th segments.

Male: Seventh and 8th ventrites (Fig. 81F) each posteromedially with a shallow, wide emargination, but the emargination in the 8th a little deeper than in the 7th; 9th tergum (Fig. 81E) with ventral apophyses relatively short; 9th ventrite (Fig. 81C) relatively wide, hardly serrate posteriorly, with stem subtriangular in shape, apicolateral teeth thin, incurved, acute, macrosetae paired, apicolateral setae long; 10th tergum (Fig. 81E) very finely serrate and rounded posteriorly. Aedeagal median lobe (Fig. 81A) elongate, feebly constricted at the base of apical sclerotized area, angulate apically; apical sclerotized area pentagonal in shape, distinctly demarcated by a transverse or arcuate suture from the rest of median lobe, and covered with very short, setae on apical 2/3. Endophallic median longitudinal bands (Fig. 81A) with ventral bands fused to form a single median band which is strongly sclerotized laterally, dorsal bands longer than the ventral band, distinctly diverging anteriorly; expulsion hooks (Fig. 81A) connected by a transverse rod to form an almost H-shaped structure, with posterior plate partially fused with anterior plate, acutely pointed, anterolaterally with a small, pointed tooth; basal tube (Fig. 81A) moderately thick, short, with basal room ovoidal, tube body baculiform, weakly constricted at base. Parameres (Fig. 81A) slender, each weakly curved laterally a little before apical area; apical area very long, hardly swollen mesially, and furnished mesially with 9 to 10 setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 81D) each simply angulate apicomiesially, with apicolateral tooth thin, acute. Spermatheca (Fig. 81B) with capsule short, almost rounded apically; RT-duct thick, relatively long; spermathecal duct well-sclerotized, tightly coiled with 4 turns, thick but very thick around 3rd turn; basal valve rather narrow, long; basal pouch cone-shaped; spermathecal gland large, spherical, with its opening located at the anterior surface of 3rd turn of the duct.

Biology and Ecology. *S. hirtiventris* is a very rare *Stenus* species in Japan; and it is presently known only from the plains and low mountainous regions of Niigata and Aomori in Japan. No solid data are obtained for the habitats of this species.

Remarks. *Stenus hirtiventris* is closely allied to *S. pilosiventris*, but it is separable from the latter by the body covered with very thin, long and suberect setae (Fig. 132I), the aedeagal median lobe only feebly constricted at the base of apical sclerotized area, the apical half of which is covered with short setae (Fig. 81A), the endophallic basal tube distinctly shorter, thicker and straight (Fig. 81A), and the basal valve of spermatheca much longer and thinner (Fig. 81B).

Stenus pilosiventris Bernhauer

(Figs. 82A–F, 132J)

Stenus pilosiventris Bernhauer, 1915: 70; Herman, 2001: 2340; Naomi & Puthz, 2013: 139.

Stenus hirtiventris Sharp, 1889: Naomi, 1989: 40; Naomi & Takeda, 1991: 12.

Type material examined. Holotype: ♀ (FMC), type locality: Gensan, Korea [examined by Puthz in 1970].

Other material examined. [HONSHU]: 1 ♂1 ♀, Watarase Marsh, Koga City, Ibaraki Pref., 28. ix. 1996, K. Haga leg.; 1 ♂, Mikuni-bashi, Watarase Marsh, Ibaraki Pref., 13. ix. 1987, K. Haga leg.; 1 ♂1 ♀, Tajimagahara, Urawa City, Saitama Pref., 28. iv. 1984, K. Nemoto leg.; 4 ♂4 ♀, Tone Canal, Nagareyama City, Chiba Pref., 6. iv. 1990, T. Takeda leg.; 3 ♀, Suidobashi,

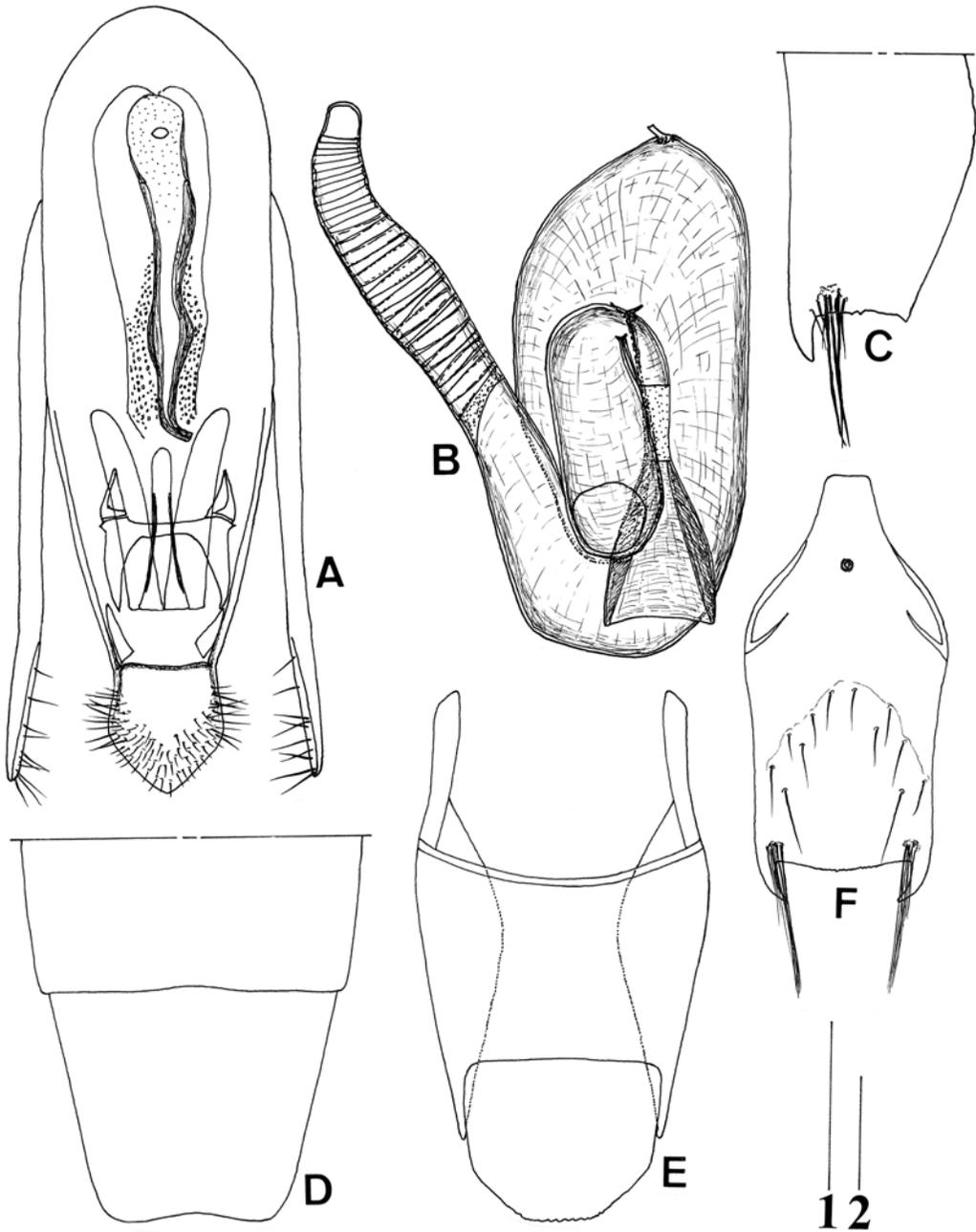


Fig. 82. *Stenus pilosiventris* Bernhauer (A, D, Suidobashi, Chiba; B, C, Sakae, Chiba; E, F, Watarase, Ibaraki).
 A, aedeagus; B, spermatheca; C, gonocoxite; D, 7th to 8th ventrites of male; E, 9th and 10th terga of male; F,
 9th ventrite of male. Scale 1: 0.1 mm for A–C, 0.2 mm for D; scale 2: 0.1 mm for E, F.

Shonan-machi, Chiba Pref., 10. xii. 1989, T. Takeda leg.; 1 ♂, same locality, 9. i. 1990, T. Takeda leg.; 2 ♂ 2 ♀, same locality, 13. iii. 1990, T. Takeda leg.; 1 ♂, Nakaya, Sakae-cho, Chiba Pref., 17. x. 1989, T. Takeda leg.; 1 ♀, Suga-shinden, Sakae-cho, Chiba Pref., 25. iii. 1990, T. Takeda leg.; 2 ♀, Mebuki-Ohashi, Noda City, Chiba Pref., 12. xi. 1989, T. Takeda leg.; 1 ♂, Tomen, Yoro Val-

ley, Chiba Pref., 22. v. 1990, T. Takeda leg.; 1 ♂, Noborito, Kanagawa Pref., 25. iii. 1978, M. Tao leg.; 1 ♀, Mogami River, Bunsui-cho, Niigata Pref., 22. v. 1996, M. Maruyama leg.; 1 ♀, Mikuni-cho, Sakai City, Fukui Pref., 8. v. 2010, M. Saito leg.; 1 ♀, Jinbe-cho, Hiroshima Pref., 4. v. 1986, I. Okamoto leg.; 1 ♀, Haigamine, Hiroshima Pref., 7. ix. 1985, I. Okamoto leg.; 1 ♂, Nikyukyo, Hiroshima Pref., 11. ix. 1985, I. Okamoto leg.; 1 ♂, Kurose-cho, Hiroshima Pref., 15. ii. 1986, I. Okamoto leg. [SHIKOKU]: 3 ♂1 ♀, Shirasaki Lake, Matsuyama City, Ehime Pref., 17. iii. 1991, I. Okamoto leg. [CHINA]: 1 ♀ (cS), China, Gansu, Dalijia Shan, 46 km W Linia, 2980 m, 10. vii. 1994, A. Smetana leg.

Distribution. Japan (Honshu, Shikoku); Korea, China, Mongolia, Russia.

Redescriptions. Male and female: Macropterous; body 2.9–3.3 mm (fore body 1.5–1.7 mm) in length, subcylindrical, weakly to moderately shining, densely covered with thin, declinate, moderately long setae, with antennae short, thick. Head and abdomen black; pronotum and elytra dark red; labrum black; antennae and legs reddish brown to dark red. Head weakly convex dorsally, with a pair of shallow longitudinal depressions; punctures round, very dense, distinct. Pronotum with surface smooth or very weakly uneven; punctures round, very dense, distinct. Elytra with surface almost weakly uneven; punctures round, very dense, distinct. Legs relatively short; tarsi short, with 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures round to elliptical, moderately dense to dense, small and distinct in all segments. Lateroventrites existing only in 3rd segment, while tergo-ventrite sutures only existing in 4th to 6th segments.

Male: Seventh ventrite (Fig. 82D) posteromedially with a very shallow emargination; 8th ventrite (Fig. 82D) posteriorly with a shallow, wide emargination; 9th tergum (Fig. 82E) with ventral apophyses relatively long; 9th ventrite (Fig. 82F) wide, weakly arcuate posteriorly, hardly serrate at posterior margin, with stem elongate-subtrapezoidal in shape, apicolateral teeth thin, incurved, very acute, macrosetae paired, apicolateral setae long; 10th tergum (Fig. 82E) almost subhexagonal in shape, finely serrate posteriorly. Aedeagal median lobe (Fig. 82A) elongate, slightly but distinctly constricted at the base of apical sclerotized area, angulate apically; apical sclerotized area pentagonal in shape, distinctly demarcated by a transverse or arcuate suture from the rest of median lobe, and covered posteriorly with very short setae and also laterally with moderately long setae. Endophallic median longitudinal bands (Fig. 82A) with ventral bands fused to form a single median band, dorsal bands wide, longer than the ventral band; expulsion hooks (Fig. 82A) connected by a transverse rod to form an almost H-shaped structure, with posterior plate almost separated by a narrow submembranous area from and also distinctly larger than anterior plate, and anterolaterally with a small, pointed tooth; basal tube (Fig. 82A) long, with basal room almost ovoidal, tube body rod-like, swollen near the middle, distinctly curved apically. Parameres (Fig. 82A) slender, straight; apical area long, hardly swollen mesially, and furnished mesially with 9 to 10 sparse setae.

Female: Body distinctly wider than in male; 8th ventrite rounded posteriorly; gonocoxites (Fig. 82C) each simply angulate apicomedia, with apicolateral tooth acute. Spermatheca (Fig. 82B) with capsule very small; RT-duct thick, relatively long; spermathecal duct well-sclerotized, tightly coiled with 4 turns, thick but very thick around 3rd turn; basal valve short; basal pouch well sclerotized, almost cone-shaped; spermathecal gland with its opening located at the anterior surface of 3rd turn of the duct.

Biology and Ecology. *Stenus pilosiventris* is distributed in the plains and low mountainous regions in Japan. The beetles inhabit leaf litter in the grasslands and in the forests near grasslands; and they also inhabit moist litter of the grasses grown at the shores of the rivers, lakes and

marshes.

Remarks. *Stenus pilosiventris* was first described from Korea by Bernhauer (1915). It seems that after that, no coleopterists have formally and also correctly recorded this species from Japan, because this species has been taxonomically confused with *S. hirtiventris* (e.g., Naomi, 1989a; Naomi & Takeda, 1991). Naomi & Puthz (2013) simply enumerated *S. pilosiventris* in the Catalog of Japanese Staphylinidae, but they did not add its collecting records there. Given this, we here virtually first record *S. pilosiventris* from Japan.

S. pilosiventris is closely allied to *S. hirtiventris*, but this species is separable from the latter by the body covered with thin, moderately long, and declinate setae (Fig. 132J); the aedeagal median lobe slightly but distinctly constricted at the base of apical sclerotized area, which is covered posteriorly with very short setae, and also laterally with moderately long setae (Fig. 82A), the endophallic basal tube distinctly longer, thinner, and curved apically (Fig. 82A), and the spermatheca with basal valve much shorter and thicker (Fig. 82B).

***Stenus finalis* Ryvkin**

(Figs. 83A–F, 132K)

Stenus finalis Ryvkin, 2011: 62.

Stenus finitor Ryvkin, 2011: Naomi & Ito, 2014: 290.

Type material. Holotype: ♂ (ZMMSU), Sakhalin Is., Korsakovskiy, 4. vi. 1990, K. V. Makarov leg.

Other material examined. [HOKKAIDO]: 1 ♂, Ichani, Shibetsu, Hokkaido, 16. v. 2009, T. Kato leg.

Distribution. Japan (Hokkaido); Russia.

Redescriptions. Male and female: Brachypterous; body 2.3–2.8 mm (fore body 1.2–1.5 mm) in length, weakly to moderately shining, only sparsely, shortly setous, with antennae short, thick. Body black; labrum black; antennae with 1st segment black, remaining segments dark red; legs reddish brown, with knees more or less infuscate. Head weakly convex dorsally, with a pair of shallow longitudinal depressions; punctures round to elliptical, very dense, distinct. Pronotum with surface smooth or very weakly uneven; punctures round, very dense, regular, distinct. Elytra with surface almost even; punctures round, very dense, regular, distinct. Legs short; tarsi short, thick, with 4th tarsomere short, weakly widened apically. Abdomen weakly narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures round to elliptical, sparse to moderately dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, very fine, shallow and regular. Third lateroventrite distinct, narrow; 4th to 5th lateroventrites each distinct only at base, fused with the corresponding ventrite in the remaining posterior part, but tergo-ventrite suture distinct; 6th lateroventrite completely fused with the ventrite, tergo-ventrite suture distinct.

Male: Eighth ventrite (Fig. 83D) posteromedially with a shallow emargination; 9th tergum (Fig. 83E) with ventral apophyses relatively long; 9th ventrite (Fig. 83F) relatively wide, hardly serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth thin, incurved, very acute, macrosetae paired, apicolateral setae long; 10th tergum (Fig. 83E) entire. Aedeagal median lobe (Fig. 83A) elongate, slightly but distinctly constricted at the base of apical sclerotized area, pointed apically; apical sclerotized area elongate-pentagonal in shape, mostly demarcated by a transverse suture from the rest of median lobe, and covered with very short setae except for the

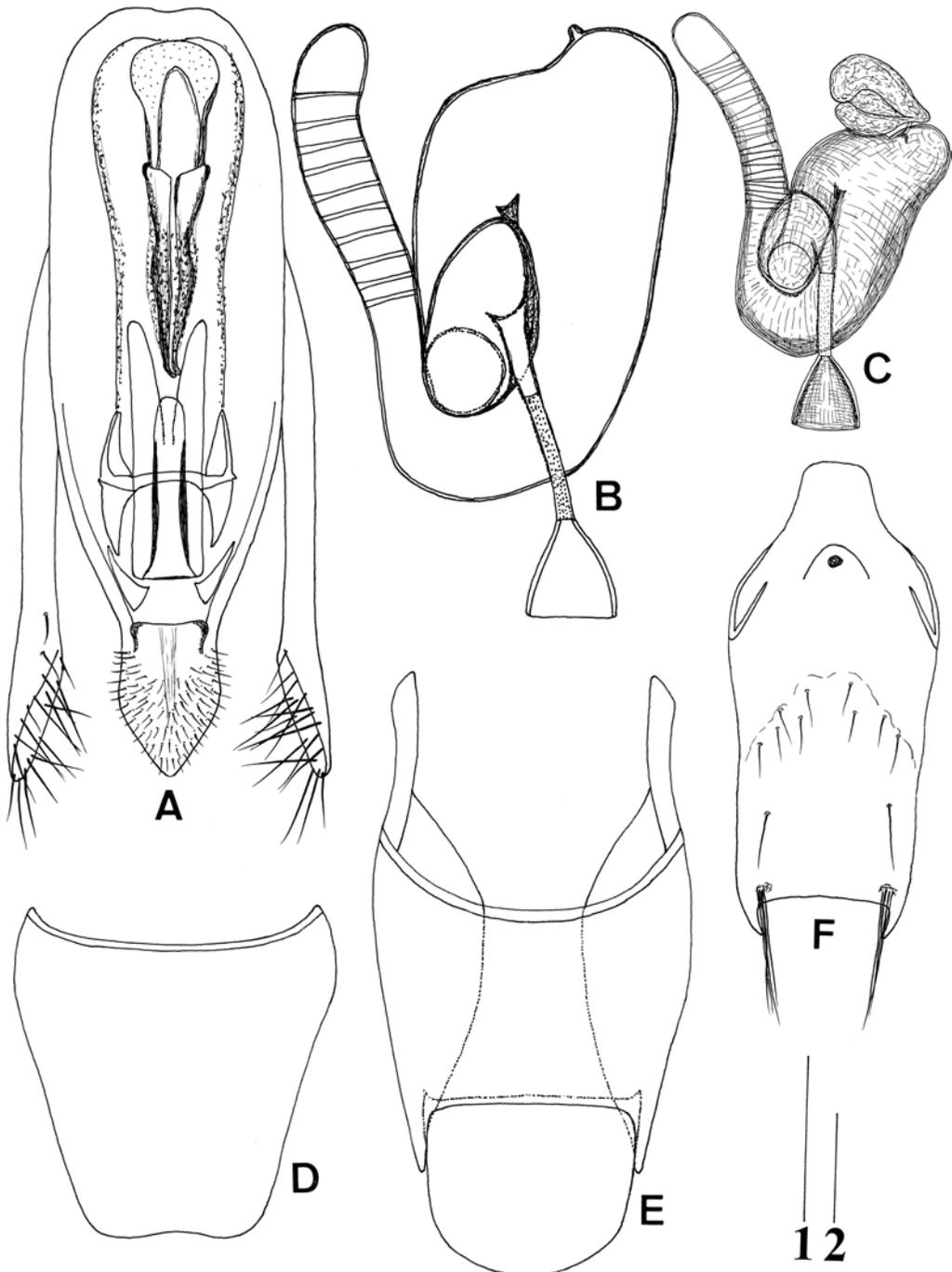


Fig. 83. *Stenus finalis* Ryvkin (A, D–F, Ichani, Hokkaido; B, Sakhalin, Russia); *S. finitor* Ryvkin (C, Amur, Russia). A, aedeagus; B, C, spermatheca; D, 8th ventrite of male; E, 9th and 10th terga of male; F, 9th ventrite of male. Scale 1: 0.1 mm for A–C, 0.2 mm for D; scale 2: 0.1 mm for E, F.

basal part. Endophallic median longitudinal bands (Fig. 83A) with ventral bands fused to form a single median band, dorsal bands long, wide; expulsion hooks (Fig. 83A) connected by a transverse rod to form an almost H-shaped structure, with posterior plate separated by a suture from anterior plate, and anterolaterally with a small, pointed tooth; basal tube (Fig. 83A) with basal room relatively large, ovoidal, tube body rod-like, swollen near the middle, slightly curved apically. Parameres (Fig. 83A) thick; apical area moderately long, swollen mesially at its basal part, and furnished mesially with 15 to 20 setae of various length.

Female: Eighth ventrite rounded posteriorly. Spermatheca (Fig. 83B) with capsule small, rounded apically; RT-duct moderately thick, relatively long; spermathecal duct stout, well-sclerotized, almost tightly coiled with 4 turns, thick but very thick around 3rd turn (at which there is a medium-sized hump laterally); basal valve moderately long, thin; basal pouch almost cone-shaped; spermathecal gland opened on a large tubercle projected from the lateral side of 3rd turn of the duct.

Biology and Ecology. *Stenus finalis* is considered to be a very rare species in Japan; and it is presently known only from Shibetsu, Hokkaido in Japan. The beetles inhabit moist litter of the grasses grown at the shores of marshes. In Sakhalin, the beetles are collected from algae heaped at seashore (Ryvkin, 2011).

Remarks. *Stenus finalis* was first reported as *S. finitor* Ryvkin, 2011 from Japan (Hokkaido) by Naomi & Ito (2014). However, after our closer re-examination of the *Stenus* specimen collected from Hokkaido, it was found that it is *S. finalis* when judging from the structure of aedeagus and related characters as illustrated in Fig. 83. Given this, we here virtually first record *S. finalis* from Hokkaido, Japan.

S. finalis is closely allied to *S. finitor*, but this species is separable from the latter by the median longitudinal part of vertex more strongly convex (Ryvkin, 2011), the apical sclerotized area of aedeagal median lobe wider and shorter, laterally with denser setae (Fig. 83A), the endophallic expulsion hooks a little more widely separated (Fig. 83A), the parameres distinctly thicker (Fig. 83A), and the spermatheca with its duct a little thicker especially around its 3rd turn (Fig. 83B) when compared with that of *S. finitor* (Fig. 83C). Among the Japanese members of this group, *S. finalis* is similar to *S. tomitaorum*, but this species is separable from the latter by the aedeagal median lobe with its apical sclerotized area longer (Fig. 83A), and the spermatheca with its gland opened on a large tubercle projected from the duct (Fig. 83B).

Species group of *S. opticus* Gravenhorst

S. opticus group consists of 1 species in Japan; see Ryvkin (2002) and Puthz (2006a) regarding the review of this group; and see Ryvkin (2002) regarding a key to the Palearctic species of this group. Diagnostic characters are as follows: Legs with 4th tarsomere simple; abdomen with 4 short basi-longitudinal keels on terga; lateroventrites missing in 4th to 6th segments; 9th ventrite of male with apicolateral tooth hook-shaped, pointed (Fig. 84B); aedeagal median lobe with (Fig. 84A) or without endophallic expulsion hooks (Puthz, 2006a); gonocoxite with apicolateral tooth pointed (Fig. 84D); spermatheca not observable.

Stenus strobilus Ryvkin (Figs. 84A–F, 132L)

Stenus strobilus Ryvkin, 2002: 290.

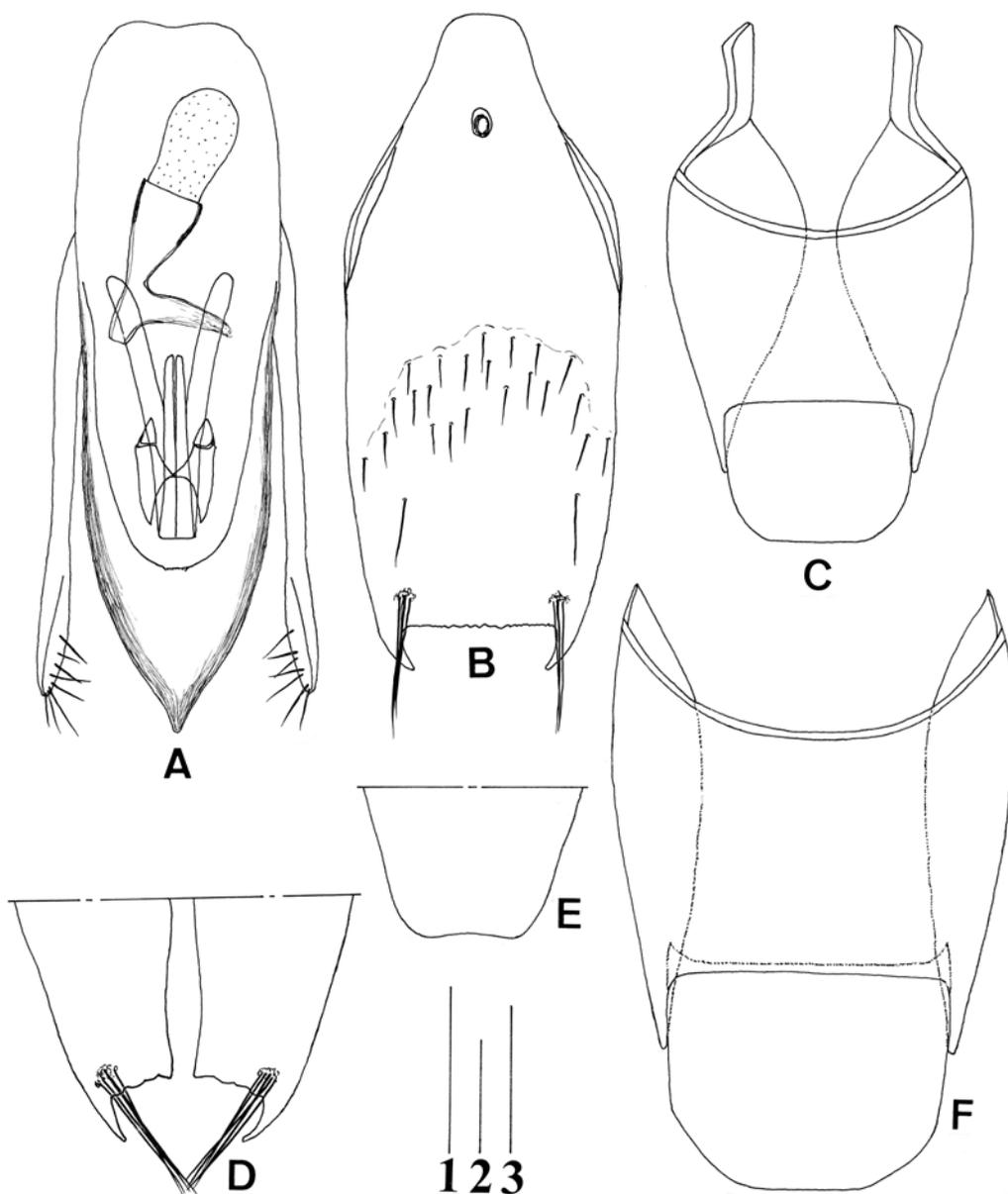


Fig. 84. *Stenus strobilus* Ryvkin (Ebetsu, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 9th and 10th terga of male; D, apices of gonocoxites; E, apex of 8th ventrite of male; F, 9th and 10th terga of female. Scale 1: 0.1 mm for A, B, D, F; scale 2: 0.1 mm for C; scale 3: 0.3 mm for E.

Stenus nubilus Ryvkin, 2002: Naomi, 1997e: 6.

Type material. Holotype: ♂ (ZIRAS), Kiya River mouth, 15–28. v. 1915, Pavlenko leg.

Other material examined. [HOKKAIDO]: 1 ♂ 2 ♀, Echigo Pond, Ebetsu City, 29. iv. 1995, K. Miyashita leg.

Distribution. Japan (Hokkaido); Russia.

Redescriptions. Male and female: Brachypterous; body 2.3–2.8 mm (fore body 1.2–1.4 mm) in length, matt, with antennae relatively short. Body black; labrum black; antennae and legs dark red to black. Head almost flat dorsally, hardly provided with paired longitudinal depressions; punctures round to elliptical, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, regular, distinct. Elytra with surface uneven; punctures round, very dense, somewhat rough. Legs short; tarsi short, with 4th tarsomere simple. Abdomen weakly narrowed posteriorly; 3rd to 6th terga each with 4 short basi-longitudinal keels; punctures round to elliptical, sparse to moderately dense, and small in anterior segments, while punctures in posterior segments elliptical, fine and regular, interstices between punctures microsculptured in all segments. Third lateroventrite distinct, very narrow, narrowed posteriorly; 4th to 6th lateroventrites each completely fused with the corresponding ventrite, tergo-ventrite suture indistinct.

Male: Eighth ventrite (Fig. 84E) posteriorly with a very shallow emargination; 9th tergum (Fig. 84C) with ventral apophyses moderately long and wide; 9th ventrite (Fig. 84B) wide, very finely serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth thin, incurved, very acute, macrosetae paired, apicolateral setae long; 10th tergum (Fig. 84E) entire. Aedeagal median lobe (Fig. 84A) elongate, well sclerotized along the lateral rim, widely rounded apicolaterally, acutely pointed apically; apical sclerotized area moderately long. Endophallic median longitudinal bands (Fig. 84A) with ventral bands very thin, moderately long, dorsal bands long, diverging anteriorly; expulsion hooks (Fig. 84A) connected each other by the mesial point of mesially pointed projection, each hook subtriangular, with posterior plate separated by a transverse suture from, and much larger than anterior plate; basal tube (Fig. 84A) with basal room large, elongate-ovoidal in shape, tube body rather short, thick, with the left, long projection. Parameres (Fig. 84A) slender, almost straight; apical area weakly swollen mesially, and furnished mesially with 6 to 8 sparse setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 84D) each with apicolateral tooth thin, incurved and very acute, apicolateral setae moderately long. Spermatheca not observable.

Biology and Ecology. *Stenus strobilus* is presently known only from Ebetsu, Hokkaido in Japan. The beetles inhabit moist litter of the grasses grown at the shores of pond; and they also inhabit the river mouth (Ryvkin, 2002).

Remarks. *Stenus strobilus* was first recorded as *S. nubulus* from Japan (Hokkaido) by Naomi (1997e), but after our closer examination it is *S. strobilus* as described above. *S. strobilus* is closely allied to *S. nubilus*, but this species is separable from the latter by the elytra along suture longer than pronotum (Ryvkin, 2002), the aedeagal median lobe narrower in apical 1/3 (Fig. 84A), and the endophallic expulsion hooks connected each other by the mesio-medial corner, and each subtriangular in shape (Fig. 84A).

Species group of *S. pubescens* Stephens

S. pubescens group consists of 1 species (exactly, a subspecies of *S. pubescens* : *S. pubescens fraternus*) in Japan; see Puthz (1972b) regarding a taxonomy of, and a key to, *S. pubescens* and its allied species. Diagnostic characters are as follows: Legs with 3rd and 4th tarsomeres strongly bilobed; lateroventrites wide to very wide; 9th ventrite of male with apicolateral teeth pointed (Fig. 85D); aedeagal median lobe heavily sclerotized, gradually tapering apically (Fig. 85C); endophallic expulsion hooks each elongate, thin (Fig. 85C); gonocoxite with apicolateral tooth pointed (Fig. 85B); spermatheca not observable.

Stenus pubescens fraternus Casey
(Figs. 85A–F, 133A)

Stenus pubescens Stephens, 1833: 297.

Stenus pubescens fraternus Casey, 1884: 155; Puthz, 2001a: 38; Herman, 2001: 2357; Naomi & Ito, 2014: 288.

Type material. Syntypes of *S. pubescens fraternus*: 3 exs., type locality: Wyoming Territory, Marquette Lake Superior.

Other material examined. [HOKKAIDO]: 2 ♂ 1 ♀, Mitoyo, Abashiri City, Hokkaido, 6-8. v. 2009, T. Kato leg.; 1 ♂, same locality, 19. v. 2010, T. Kato leg.

Distribution. Japan (Hokkaido); Russia, North America.

Redescription. Male and female: Macropterous; body 4.8–5.7 mm (fore-body 2.5–2.9 mm) in length, robust, relatively flat, weakly shining, with antenna short; surface wholly covered with net-like microsculptures. Body black; labrum black; antennae with 1st segment pitchy black, 2nd to 11th segments reddish brown to brown; legs black except for dark red 4th tarsomere. Head relatively small, hardly concave dorsally, with a pair of short longitudinal impressions at the sides of median longitudinal swollen area; punctures round to elliptical, very dense, almost regular, distinct. Pronotum with surface provided with a pair of oblique, shallow depressions which are divergent anteriorly; punctures round, dense, almost regular, distinct. Elytra elongate-rectangular in shape; surface weakly uneven, similarly punctate as on pronotum. Legs relatively long; tarsi short, with 3rd and 4th tarsomeres strongly bilobed, but 4th tarsomere more strongly bilobed than the 3rd. Abdomen subparallel-sided; punctures basically round, moderately dense, small and regular, but punctures in posterior segments smaller than in anterior segments. Lateroventrites ventromesial in position, wide to very wide, densely punctate, pubescent.

Male. Fourth ventrite posteromedially with a small, shallow semicircular depression which is very shallowly emarginate; 5th ventrite (Fig. 85G) anteromedially with a shallow depression, and posteromedially with a small semicircular depression which is arcuately emarginate, and also at posterolateral parts weakly projects posteriorly and is angulate; 6th ventrite (Fig. 85G) with a similar modification as in 5th, but the depressed area a little more deeper and more strongly emarginate; 7th ventrite (Fig. 85G) anteromedially with a large, shallow depression, and posteromedially with a small, semicircular flat area, which is very weakly emarginate; 8th ventrite (Fig. 85G) posteriorly with a large, wide emargination, and medially with a narrow, longitudinal flat area; 9th tergum (Fig. 85A) stout, ventral apophyses each with a subtriangular, anteromesial flap; 9th ventrite (Fig. 85D) elongate, arcuately emarginate posteriorly, with stem unique in shape, strongly constricted at base, basilateral emarginations large, basilateral processes wide, truncate obliquely, apicolateral teeth small, pointed, apicolateral setae moderately long; 10th tergum (Fig. 85A) entire. Aedeagal median lobe (Fig. 85C) heavily sclerotize, bulbous basally, gradually tapering toward the apex which is narrowly truncate. Endophallic median longitudinal bands (Fig. 85C) short, sclerotized; expulsion hooks (Fig. 85C) separated, each elongate, thin; basal tube (Fig. 85C) with tube body baculiform, moderately swollen laterally at apical part. Parameres (Fig. 85C) very stout, wide and thick; apical area large, triangular, and acutely pointed at the mesial and apical corners, and furnished with 3 to 4 setae at apex, 3 to 4 short setae along posterior margin, and also 2 to 3 short setae at mesial margin.

Female. Eighth ventrite (Fig. 85E) projecting posteriorly at posteromedian part to form a triangular area which is acutely pointed; 9th tergum (Fig. 85F) without ventral apophyses; gono-

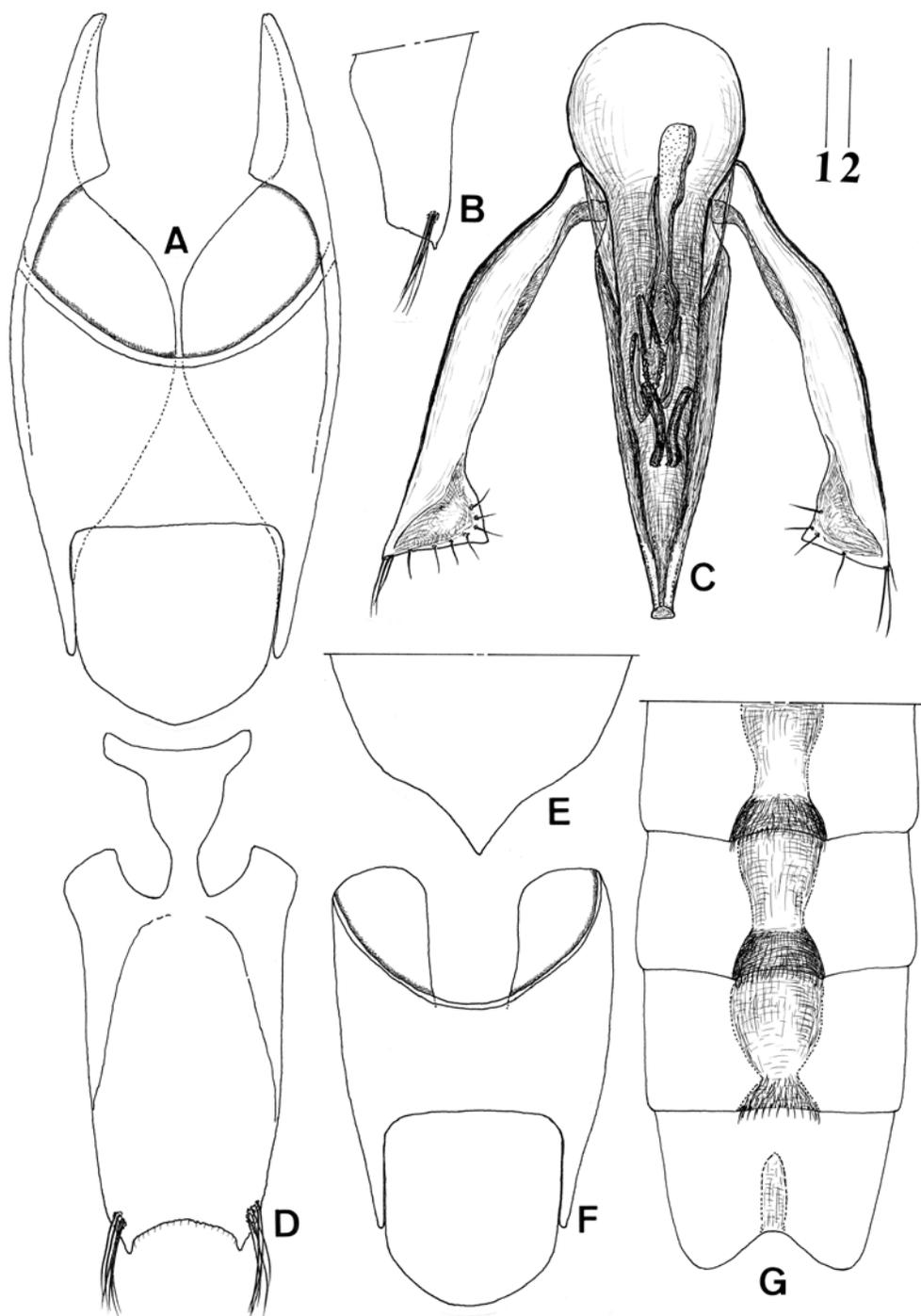


Fig. 85. *Stenus pubescens fraternus* Casey (Abashiri, Hokkaido). A, 9th and 10th terga of male; B, gonocoxite; C, aedeagus; D, 9th ventrite of male; E, apex of 8th ventrite of female; F, 9th and 10th terga of female; G, 5th to 8th ventrites of male. Scale 1: 0.2 mm for A–F; scale 2: 0.3 mm for G.

coxites (Fig. 85B) each with apicolateral tooth very small, pointed, apicolateral setae moderately long; 10th tergum (Fig. 85F) entire. Spermatheca not observable.

Biology and Ecology. *Stenus pubescens fraternus* is a very rare species in Japan; and it is presently known only from the plain of Abashiri, Hokkaido. The beetles live under moist dead leaves near the watersides, but they occasionally climb the stalk of *Carex* and ramble along the leaves, together with *S. bohemicus*.

Remarks. *S. pubescens* is a polytypic *Stenus* species which comprises 2 subspecies: *S. pubescens pubescens* (distribution: Europe and western Siberia) and *S. pubescens fraternus* (distribution: eastern Russian including Kamchatka and north America) (Puthz, 1972b, 2001a). The subspecies *S. pubescens fraternus* only is known from Japan, which was first recorded only recently from Japan by Naomi & Ito (2014). *S. pubescens fraternus* is separable from the nominotypical subspecies by the aedeagal median lobe more slender and narrower, with the apicalmost truncate part of apical sclerotized area distinctly narrower (Fig. 85C; Sanderson, 1946, fig. 19A).

Species group of *S. pallitarsis* Stephens

S. pallitarsis group consists of 3 species in Japan; see Puthz (1972b) regarding the taxonomy of, and a key to, *S. pallitarsis* and its allied species. Diagnostic characters are as follows: Legs with 3rd tarsomere more or less bilobed, 4th tarsomere strongly bilobed; lateroventrites very narrow through narrow to wide or very wide; 9th ventrite of male without apicolateral teeth (Fig. 86B); gonocoxite without apicolateral tooth (Fig. 86D); spermatheca with tube hardly coiled, basal pouch developed. (Fig. 86C).

Key to the Japanese species of *S. pallitarsis* group

- 1(2) Abdomen without basi-longitudinal keel on terga*S. aestivus* Naomi
 2(1) Abdomen with basi-longitudinal keel(s) on terga.
 3(4) Body smaller (3.2–4.0 mm), with elytra wider than long; anterior abdominal segments with punctures larger; aedeagal median lobe narrower, weakly angulate apicolaterally, with paramere shorter (Fig. 87A)..... *S. bifoveolatus* Gyllenhal
 4(3) Body larger (4.5–5.2 mm), with elytra about as long as wide; anterior abdominal segments with punctures smaller; aedeagal median lobe wider, uniformly rounded apicolaterally, with paramere longer (Fig. 88B).....*S. latitarsis* Sharp

Stenus aestivus Naomi (Figs. 86A–F, 133B)

Stenus aestivus Naomi, 1988b: 28; Herman, 2001: 2046; Naomi & Puthz, 2013: 139.

Type material examined. Holotype: ♀ (KUF), Kabuto-mura, Toyotomi-cho, Hokkaido, 12. vii. 1980, H. Takemoto leg.

Other material examined. [HOKKAIDO]: 21 ♂24 ♀, Shirarutoro Lake, Kushiro City, 4. vi. 1991, R. B. Kuranishi leg.; 3 ♀, same locality, 11. vi. 1990, R. Kuranishi leg.; 1 ♀, Akanuma, Kushiro Marsh, 16. vi. 1995, I. Matoba leg.

Distribution. Japan (Hokkaido).

Redescription. Male and female: Macropterous; body 4.0–5.7 mm (fore-body 2.1–2.7 mm) in

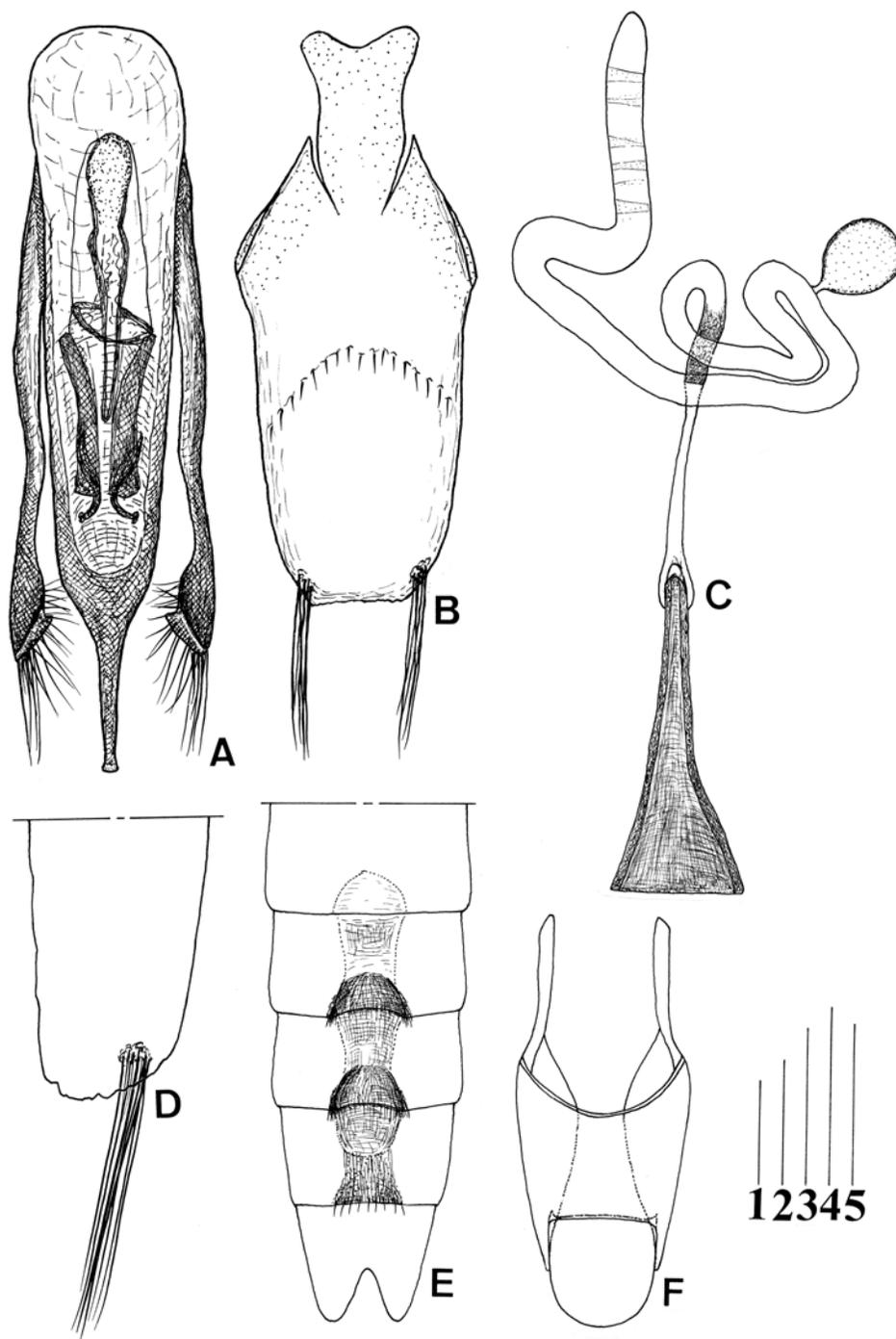


Fig. 86. *Stenus aestivus* Naomi (A, B, E, F, Shirarutoro, Hokkaido; C, D, Akanuma, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, spermatheca; D, apex of gonocoxite; E, 4th to 8th ventrites of male; F, 9th and 10th terga of male. Scale 1: 0.2mm for A; scale 2: 0.2mm for B; scale 3: 0.2mm for C, D; scale 4: 0.5mm for E; scale 5: 0.5mm for F.

length, relatively flat, weakly shining, with short antenna; surface wholly covered with short, silvery-white setae and also reticulately microsculptured. Body black; labrum black; antennae with 1st segment pitchy black, 2nd to 11th segments reddish brown to brown; legs black but tarsomeres reddish brown to dark red. Head relatively small, with a pair of longitudinal impressions at the sides of median longitudinal swollen area; punctures round, dense to very dense, almost regular, distinct. Pronotum with a pair of oblique, shallow depressions, which are divergent anteriorly; surface similarly punctate as on head. Elytra longer than wide, elongate-rectangular in shape; surface weakly uneven, similarly punctate as on pronotum. Legs relatively long; tarsi short, with 3rd and 4th tarsomeres strongly bilobed, but 4th tarsomere more strongly bilobed than the 3rd. Abdomen slender, narrowed posteriorly; punctures basically round, moderately dense, small and regular, but punctures in posterior segments smaller than in anterior segments. Lateroventrites ventromesial in position, wide, densely punctate and pubescent.

Male. Fourth ventrite (Fig. 86E) posteromedially with a semicircular flat area; 5th ventrite (Fig. 86E) anteromedially with a flat area, and posteromedially with a semicircular depression which weakly projects posteriorly and angulate at posterolateral parts, and also is arcuately emarginate posteriorly; 6th ventrite (Fig. 86E) with a similar modification as in 5th; 7th ventrite (Fig. 86E) anteromedially with a shallow depression, and posteromedially with a semicircular flat area, which is very weakly emarginate; 8th ventrite (Fig. 86E) posteromedially with a deep, V-shaped emargination; 9th tergum (Fig. 86F) with ventral apophyses very long; 9th ventrite (Fig. 86B) elongate, almost truncate posteriorly, with stem elongate, emarginate anteriorly, basilateral emarginations very narrow, deep, basilateral processes acutely pointed, apicolateral setae moderately long, apicolateral teeth missing; 10th tergum (Fig. 86F) entire. Aedeagal median lobe (Fig. 86A) slender, strongly sclerotized, with a very long apicomedian projection, which has a very small globe at the apicalmost part. Endophallic median longitudinal bands (Fig. 86A) moderately long; expulsion hooks (Fig. 86A) separated, each very thin, strongly curved laterally at posterior part; basal tube (Fig. 86A) baculiform, with basal room elongate ovoidal, tube body simple, attenuate; inner sac (Fig. 86A) visible, with a ring near the middle of basal tube. Parameres slender, weakly sinuous, strongly sclerotized; apical area unique in shape (Fig. 86A), and furnished with 5 to 6 long setae at the apicalmost part, and also mesially with 17 to 20 setae of various length.

Female. Eighth ventrite almost triangular behind the apicolateral corners, distinctly angulate apically; gonocoxites (Fig. 86D) each almost rounded and irregularly serrate posteriorly, with apicolateral setae very long, apicolateral tooth missing. Spermatheca (Fig. 86C) with capsule small; RT-duct moderately long and thick; spermathecal duct hardly coiled, moderately long, with 5 turns, distal part of the duct between the base and 1st turn moderately sclerotized; basal valve invisible; basal pouch heavily sclerotized, elongate-conical in shape; spermathecal gland spherical, with its opening located on the lateral side of the duct a little distal from the 3rd turn.

Biology and Ecology. *Stenus aestivus* is presently distributed in the plains and low mountainous regions in Hokkaido. The beetles inhabit moist litter of the grasses grown at the shores of rivers, lakes and marshes. They occasionally climb the stalk of *Carex* and other grasses, and ramble along the leaves.

Remarks. *Stenus aestivus* is allied to *S. niveus* Fauvel, 1865 (which is widely distributed in the Holarctic region), but this species is separable from the latter by the aedeagal median lobe with a very long apicomedian projection which has a very small globe at the apicalmost part (Fig. 86A), and the paramere with apical area longer and more strongly pointed apically (Fig. 86A).

Stenus bifoveolatus Gyllenhal
(Figs. 87A–I, 133C)

Stenus bifoveolatus Gyllenhal, 1827: 500; Herman, 2001: 2083; Naomi & Nomura, 2015a: 57.

Type material. Type locality: Suecia.

Other material examined. [HOKKAIDO]: 1 ♂ (NMNST): Mitsumata, Kami-shihoro, Tokachi, 22. vii. 1984, M. Tomokuni leg.; 1 ♂, Akan, 16. vi. 1976, M. Sato leg.; 1 ♀, Furuume, Bihoro-cho, 27. viii. 1993, T. Kato leg.; 1 ♀, Kushihoku Pass, Oketo-cho, 16. vii. 1999, K. Haga leg.; 1 ♀, Aizankei Spa, Kamikawa-cho, 2. vii. 2011, K. Haga leg.; 1 ♂, Nakashibetsu, Shibetsu-gun, 8. v. 2015, T. Kato leg.

Distribution. Japan (Hokkaido); Russia, Kurile, Caucasus, Europe.

Redescription. Male and female: Brachypterous; body 3.2–4.0 mm (fore body: 1.5–1.8 mm) in length, weakly shining, with antennae short. Body black; labrum black; antennae yellow to yellowish brown except for 1st black segment; legs dark red to black but tarsi pale red to reddish brown. Head hardly concave dorsally, with the central part of vertex a little higher in level than mesial margins of eyes, and with a pair of shallow, longitudinal depressions; punctures round, dense, regular, distinct. Pronotum with surface weakly uneven laterally; punctures round, dense, regular, distinct. Elytra wider than long; surface slightly uneven laterally, similarly punctate as on pronotum, but punctures a little larger than those on pronotum (Fig. 87E). Legs relatively short; tarsi short, 3rd tarsomere emarginate posteriorly (or V-shaped), 4th tarsomere strongly bilobed. Abdomen moderately convex dorsally; 3rd tergum with 3 short basi-longitudinal keels, 4th to 6th terga each with 1 short basimedial keel; punctures round, moderately dense to dense, and distinct in anterior segments, while punctures in posterior segments sparse, very small to small and regular. Lateroventrites very narrow or narrow, punctate, pubescent.

Male: Sixth ventrite posteromedially with a shallow, narrow and semicircular depression, which is shallowly emarginate; 7th ventrite medially with an elongate-elliptical depression, which does not reach the posterior margin; 8th ventrite (Fig. 87C) posteromedially with a large, wide emargination; 9th tergum (Fig. 87H) with ventral apophyses long; 9th ventrite (Fig. 87G) rather wide, gently rounded and serrate posteriorly, with stem arcuately emarginate anteriorly, basilateral emarginations indistinct, apicolateral setae moderately long, apicolateral teeth missing; 10th tergum (Fig. 87H) transverse, rounded posteriorly. Aedeagal median lobe (Fig. 87A) well-pigmented, weakly angulate apicolaterally, acutely pointed apically; apical sclerotized area very long, almost parallel-sided before the apical triangular part. Endophallic median longitudinal bands (Fig. 87F) moderately long, with ventral bands strongly narrowed anteriorly, dorsal bands distinctly diverging anteriorly; expulsion hooks (Fig. 87F) small, separated, anterior plate completely fused with posterior plate; median sclerite (Fig. 87A) spear-shaped, acute posteriorly, apicolateral plates fused to form a heart-shaped plate; basal tube (Fig. 87F) located in the sclerotized inner sac, with basal room weakly bulbous, tube body baculiform, simple, pointed. Parameres (Fig. 87A) moderately thick, each reaching posteriorly a little before the apex of median lobe; apical area distinctly swollen mesially, and furnished mesially with about 30 setae of various length.

Female: Eighth ventrite (Fig. 87D) obtusely pointed posteromedially; 9th tergum (Fig. 87B) without ventral apophyses; gonocoxites (Fig. 87I) each rounded and finely serrate posteriorly, without apicolateral tooth; 10th tergum (Fig. 87B) transverse, almost entire. Spermatheca with basal pouch bowl-shaped, but the duct membranous and thus not observable.

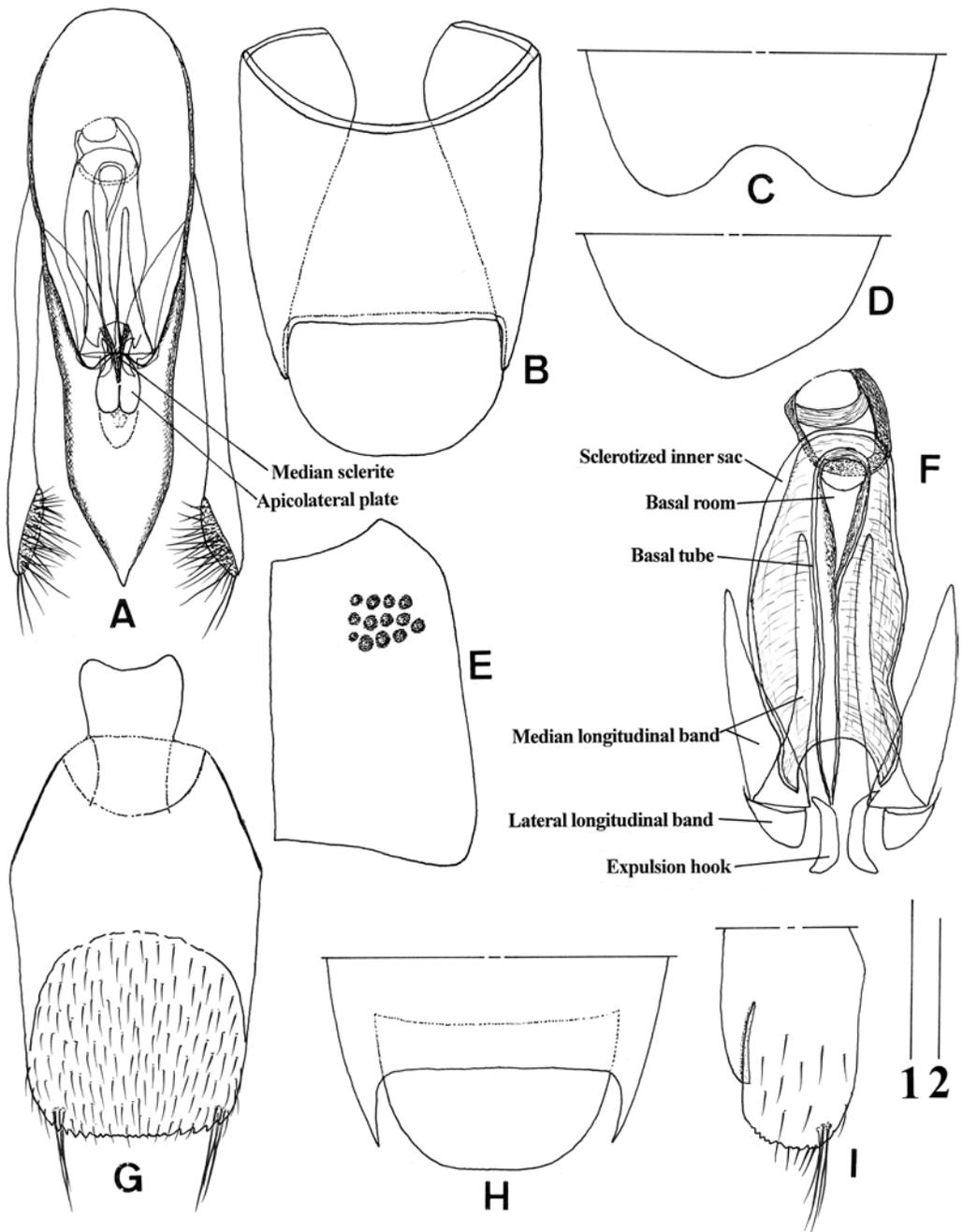


Fig. 87. *Stenus bifoveolatus* Gyllenhal (A, E, F, Akan, Hokkaido; B, D, I, Furuume, Hokkaido; C, G, H, Tokachi, Hokkaido). A, aedeagus; B, 9th and 10th terga of female; C, apex of 8th ventrite of male; D, apex of 8th ventrite of female; E, right elytron; F, endophallic structures; G, 9th ventrite of male; H, 9th and 10th terga of male; I, gonocoxite. Scale 1: 0.2 mm for A–D, G–I, 0.1 mm for F; scale 2: 0.3 mm for E.

Biology and Ecology. *Stenus bifoveolatus* is distributed in the plains and low mountainous regions. No exact data are obtained on the habitats of this species, but the collecting records suggest that the beetles inhabit moist litter of the grasses grown at the shores of rivers, lakes and marshes.

Remarks. *Stenus bifoveolatus* was first recorded only recently from Japan by Naomi & Nomura (2015a). *S. bifoveolatus* is closely allied to *S. latitarsis* from Japan and *S. exter* Puthz, 2006b from Taiwan, but this species is separable from the latter two species by the body smaller (3.2–4.0 mm), with elytra wider than long, the anterior segments of abdomen with punctures larger, the aedeagal median lobe narrower and weakly angulate apicolaterally (Fig. 87A), and the parameres shorter, and not reaching the apex of median lobe (Fig. 87A).

***Stenus latitarsis* Sharp**
(Figs. 88A–G, 133D)

Stenus latitarsis Sharp, 1889: 329; Herman, 2001: 2256; Naomi & Puthz, 2013: 139.

Type material examined. Holotype: ♂ (NHML), paratype: 1 ♀ (NHML), Miyanoshita, Kanagawa [examined by Puthz in 1968].

Other material examined. [HONSHU]: 1 ♂, Ooike, Tsuchiura City, Ibaraki Pref., 23. vi. 1984, S. Ohmomo leg.; 1 ♂, Migimomi, Tsuchiura City, Ibaraki Pref., 3. v. 1984, S. Ohmomo leg.; 1 ♀, Urawa City, Saitama Pref., 16. iv. 1994, K. Ohgi leg.; 1 ♂, Hizaura, Ohara-cho, Chiba Pref., 30. iii. 1990, T. Takeda leg.; 1 ♂, same locality, 23. xii. 1989, T. Takeda leg.; 1 ♀, Nakazawa, Kamagaya City, Chiba Pref., 2. iv. 1990, T. Takeda leg.; 1 ♀, Onari, Chiba City, Chiba Pref., 3. vi. 1990, T. Takeda leg.; 1 ♀, Akame, Mikurashiba, Mobara City, Chiba Pref., 3. vi. 1990, T. Takeda leg.; 1 ♀, Tomigasawa, Shirai-cho, Chiba Pref., 24. vi. 1990, T. Takeda leg.; 1 ♀, Funabashi City, Chiba Pref., 29. v. 1990, T. Takeda leg.; 1 ♀, Kaneoya-cho, Chiba City, Chiba Pref., 21. xi. 1989, T. Takeda leg.; 1 ♂ 3 ♀, Ookusa, Chiba City, Chiba Pref., 24. v. 2005, R. Kuramishi leg.; 3 ♂ 1 ♀, Sakura City, Chiba Pref., 14. v. 1994, K. Ohgi leg.

Distribution. Japan (Honshu).

Redescription. Male and female: Brachypterous; body 4.5–5.2 mm (fore body: 2.1–2.5 mm) in length, moderately shining, with antennae short. Body black; labrum black; antennae with 1st segment black, remaining segments yellow to yellowish brown; legs dark red to black but tarsi pale red to reddish brown. Head hardly concave dorsally, with a pair of shallow, longitudinal depressions at the sides of median longitudinal swollen area; punctures round to elliptical, dense to very dense, various in size. Pronotum with surface weakly uneven laterally, sometimes with a median longitudinal impunctate area; punctures round, dense to very dense, various in size, distinct. Elytra about as long as wide; surface rather uneven, punctures round to elliptical, dense, somewhat irregular. Legs relatively short; tarsi short, with 3rd tarsomere emarginate posteriorly, 4th tarsomere strongly bilobed. Abdomen moderately convex dorsally; 3rd tergum with 3 short, basal keels, 4th to 6th terga each with 1 short, basimedial keel; punctures basically very sparse to moderately dense, small to small and distinct, but somewhat irregular throughout. Lateroven-trites very narrow or narrow, punctate, pubescent.

Male: Sixth and 7th ventrites each posteromedially with a semicircular, flat area; 8th ventrite (Fig. 88F) posteromedially with a large, wide emargination; 9th tergum (Fig. 88D) with ventral apophyses long; 9th ventrite (Fig. 88E) wide, almost rounded and finely serrate apicolaterally, with stem very wide, shallowly emarginate anteriorly, spicolateral setae moderately long, apico-

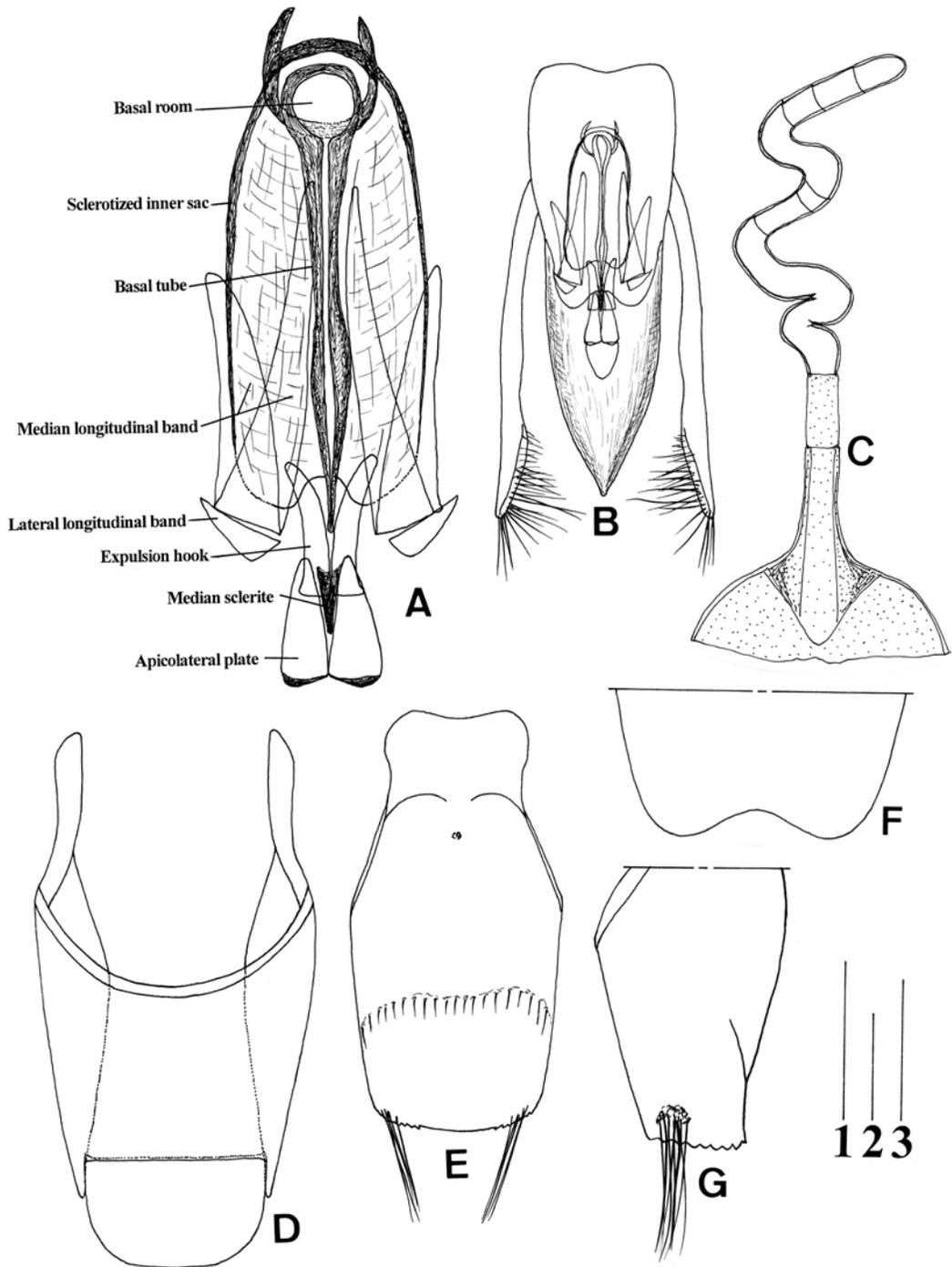


Fig. 88. *Stenus latitarsis* Sharp (A, B, D–F, Ooike, Ibaraki; C, G, Kaneoya, Chiba). A, Endophallic structures; B, aedeagus; C, spermatheca; D, 9th and 10th terga of male; E, 9th ventrite of male; F, apex of 8th ventrite of male; G, gonocoxite. Scale 1: 0.1 mm for A, 0.2 mm for C, G; scale 2: 0.2 mm for B, D, E; scale 3: 0.3 mm for F.

lateral teeth missing; 10th tergum (Fig. 88D) transverse, rounded posteriorly. Aedeagal median lobe (Fig. 88B) well-pigmented, uniformly rounded apicolaterally, acutely pointed apically, with apical sclerotized area very long. Endophallic median longitudinal bands (Fig. 88A) similarly structured as in *S. bifoveolatus*; expulsion hooks (Fig. 88A) contiguous at the posteromesial corners, diverging anteriorly, with anterior plate completely fused with posterior plate; median sclerite (Fig. 88A) spear-shaped, very acute, apicolateral plates contiguous by the posteromesial corners, each plate elongate-triangular in shape, weakly folded along the posterior margin; basal tube (Fig. 88A) very long, with basal room spherical, tube body baculiform, weakly swollen behind the middle, acutely pointed apically. Parameres (Fig. 88B) each very weakly incurved, weakly sinuate at mesial margin, extending posteriorly a little beyond the apex of median lobe; apical area moderately swollen mesially, and furnished mesially with about 30 to 35 setae of various length.

Female: Eighth ventrite obtusely pointed posteromedially; gonocoxites (Fig. 88G) each truncate but serrate posteriorly, and simply angulate apicolaterally (i.e., distinct apicolateral tooth missing), apicolateral setae moderately long. Spermatheca (Fig. 88C) with duct hardly coiled, moderately wide, with 5 turns; capsule, RT-duct and duct not distinctly differentiated; basal valve simple; basal pouch large, bowl-shaped.

Biology and Ecology. *Stenus latitarsis* is distributed in the plains. The beetles inhabit moist litter of the grasses grown at the shores of rivers and ponds; and they also inhabit moist leaf litter heaped in the grasslands.

Remarks. *Stenus latitarsis* is closely allied to *S. bifoveolatus*, but this species is separable from the latter by the body larger (4.5–5.2 mm), with elytra about as long as wide, the anterior segments of abdomen with punctures smaller, the aedeagal median lobe wider and uniformly rounded apicolaterally (Fig. 88B), and the parameres longer and reaching posteriorly a little beyond the apex of median lobe (Fig. 88B).

Species group of *S. flavipes* Stephens

S. flavipes group (Puthz, 2013: 1282) consists of 3 species in Japan; see Puthz (1972b) regarding the taxonomy of, and a key to, *S. flavipes* and its allied species. Diagnostic characters are as follows: Body relatively flat dorsally (Fig. 133E); legs with 2nd to 4th tarsomeres more or less bilobed; lateroventrites very narrow to narrow; 9th ventrite of male without apicolateral teeth (Fig. 89E); aedeagal median lobe with apical sclerotized area developed (Fig. 89A); gonocoxite serrate posteriorly, without apicolateral tooth (Fig. 89F); spermatheca with its duct not coiled with 4 or 5 turns (Fig. 90F).

Key to the Japanese species of *S. flavipes* group

- 1(4) Body wider, with elytral humeri well developed (Fig. 133E); and aedeagal median lobe with apicolateral corners more or less angulate.
- 2(3) Seventh ventrite of male posteromedially with a wider, semicircular flat area (Fig. 89B); aedeagal median lobe simply pointed apicomediaally (Fig. 89A); endophallic expulsion hook smaller, pointed posteromedially (Fig. 89A)..... *S. depressus* Puthz
- 3(2) Seventh ventrite of male posteromedially with a narrower, almost ovoidal depression (Fig. 83B); aedeagal median lobe with a pointed, apicomediaal projection (Fig. 90A); endophallic expulsion hooks larger, widely emarginate posteriorly (Fig. 90A).....

-*S. ancyleus* Naomi, Nomura & Puthz sp. nov.
 4(1) Body narrower, with elytral humeri narrowed (Fig. 133G); and aedeagal median lobe without apicolateral corners (Fig. 91A) *S. benefactor* Ryvkin

***Stenus depressus* Puthz**

(Figs. 89A–F, 133E)

Stenus depressus Puthz, 1973; Naomi, 1988b: 28; Herman, 2001: 2159; Naomi & Puthz, 2013: 139.

Type material examined. Holotype: ♂ (MHNG), paratypes: 2 ♀ (cP), Suputinsky Reserve, Ussurisk, 22. vi. 1967, A. Tichomirova leg. [examined by Puthz].

Other material examined. [HOKKAIDO]: 1 ♂, Tomakomai, 30. vi. 1973; 1 ♀, Mt. Kariba, Shiribeshi, 12. vi. 1986, S. Nomura leg.; 1 ♀, Memanbetsu, 28. v. 1992, T. Kato leg.; 2 ♀, Hyotan Pond, Akan N. P., 4. vii. 1986, S. Nomura leg.; 2 ♂1 ♀, Motobetsu River, Motobetsu-cho, 7. vii. 2004, K. Haga leg.; 2 ♀, Nakayama Pass, 22. vi. 1986, K. Morimoto leg.; 1 ♀, On'nenai, Tsurui, Kushiro Moor, 24. viii. 1990, M. Sakai leg.; 2 ♂1 ♀, Oketo, 14. ix. 1992, T. Kato leg. [HONSHU]: 2 ♂, Yachi Spa, Aomori Pref., 6. viii. 1964, Y. Shibata leg.; 1 ♀, Saitu, Tohoku-machi, Aomori Pref., 3. viii. 1998, H. Yoshitomi leg.; 2 ♀, Mt. Dogyo, Tadami-cho, Fukushima Pref., 2. vii. 1995, K. Haga leg.; 1 ♂, Jikkoku, Ami-machi, Ibaragi Pref., 2. v. 1990, S. Ohmomo leg.; 2 ♂6 ♀, Mt. Kurohime, Shinano-machi, Nagano Pref., 6. vii. 2008, K. Kanno leg.; 1 ♂, Kurakake Pass, Irihiro-mura, Niigata Pref., 11. vi. 1995, K. Haga leg.; 2 ♀, Hiwada, Takane-mura, Gifu Pref., 25. vi. 1995, H. Yoshitomi leg.; 1 ♀, Mennoki Pass., Inabu-cho, Aichi Pref., 30. vi. 1995, H. Yoshitomi leg.; 1 ♀, Mt. Koya, Wakayama Pref., 7. viii. 1984, I. Matoba leg.

Distribution. Japan (Hokkaido, Honshu); Taiwan, China, Russia.

Redescription. Male and female: Macropterous / brachypterous; body 3.5–4.0 mm (fore body: 1.8–2.0 mm) in length, somewhat flat dorsally, moderately shining, with antennae short. Body dark brown to black; labrum black; antennae and legs wholly yellow to pale yellowish red. Head hardly concave dorsally, with a pair of shallow depressions; punctures round, dense to very dense and distinct, but the central part of median longitudinal swollen area almost impunctate. Pronotum with surface even, with a short, median longitudinal impunctate area; punctures round, dense, distinct. Elytra with humeri developed; surface weakly uneven, similarly punctate as on pronotum. Legs relatively short, moderately thick; tarsi short, with 2nd and 3rd tarsomeres each emarginate posteriorly, 4th tarsomere strongly bilobed. Abdomen subparallel-sided; punctures moderately dense, small and distinct in general, but punctures in 8th segment very small and sparse. Lateroventrites narrow, punctate, pubescent.

Male: Fifth ventrite (Fig. 89B) posteromedially with a semicircular, flat area; 6th ventrite (Fig. 89B) posteromedially with a semicircular, shallow depression; 7th ventrite (Fig. 89B) posteromedially with a relatively large, semicircular flat area, which is very shallowly emarginate posteriorly; 8th ventrite (Fig. 89B) posteromedially with a V-shaped emargination; 9th tergum (Fig. 89C) with ventral apophyses long, straight; 9th ventrite (Fig. 89E) wide, rounded apicolaterally, very shallowly emarginate and also serrate posteriorly, with stem transverse, submembranous in marginal part, with apicolateral setae long, apicolateral teeth missing; 10th tergum (Fig. 89C) very shallowly emarginate apicomediaally. Aedeagal median lobe (Fig. 89A) elongate, bulbous basally, narrowed apically toward the pointed apex, with apicolateral corners angulate; apical sclerotized area long, declivous laterally, and anteromedially with a narrow, V-shaped emargi-

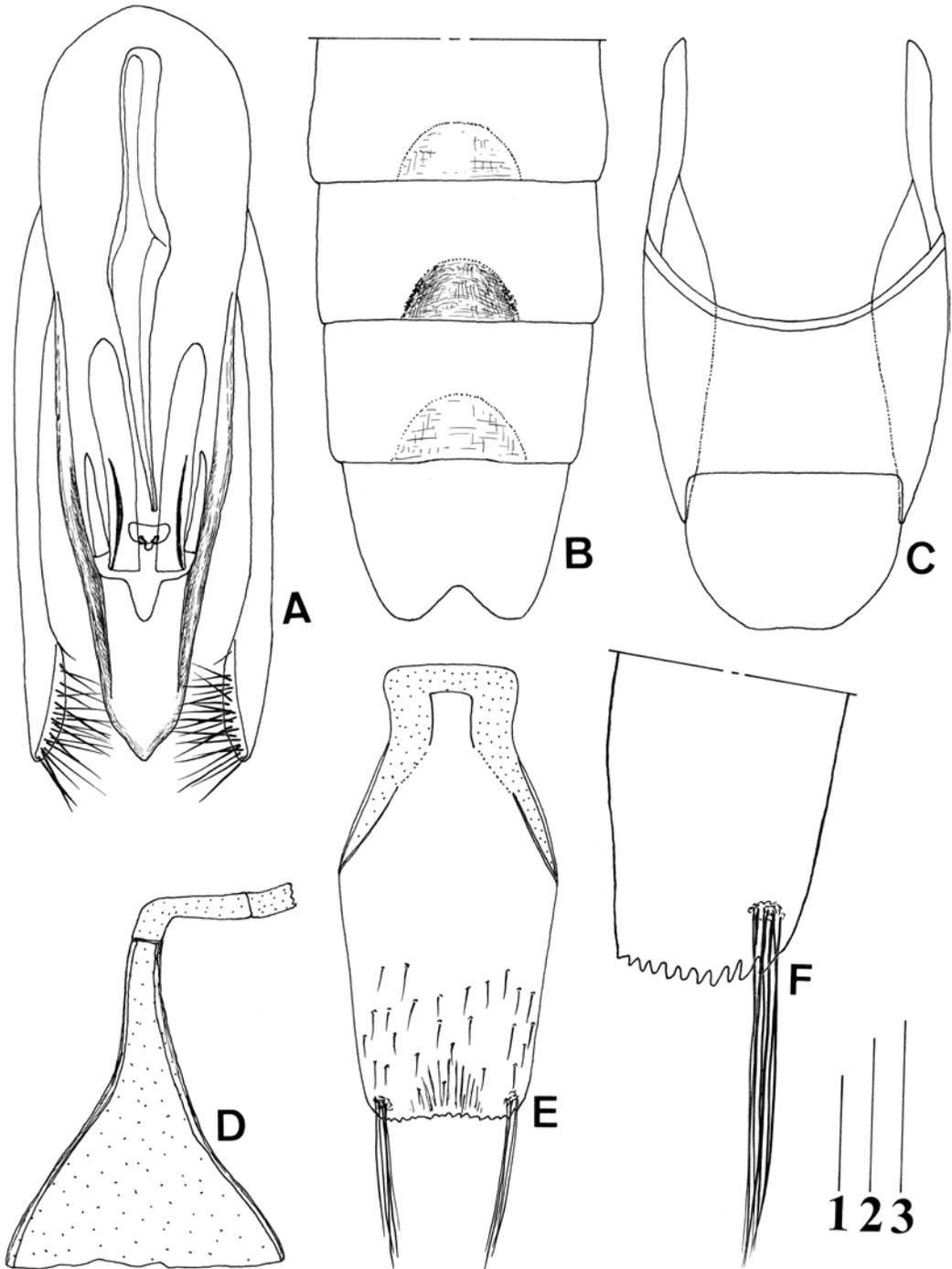


Fig. 89. *Stenus depressus* Puthz (A, B, E, Yachi, Aomori; C, Motobetsu, Hokkaido; D, F, Hyotan, Hokkaido). A, aedeagus; B, 5th to 8th ventrites of male; C, 9th and 10th terga of male; D, basal part of spermatheca; E, 9th ventrite of male; F, apex of gonocoxite. Scale 1: 0.1 mm for A; scale 2: 0.3 mm for B; scale 3: 0.2 mm for C, E, 0.1 mm for D, F.

nation. Endophallic median longitudinal bands (Fig. 89A) moderately long and wide; lateral longitudinal bands (Fig. 89A) short; expulsion hooks (Fig. 89A) fused to form a small, transverse sclerite which is pointed posteromedially; basal tube (Fig. 89A) with basal room invisible, tube body very long, baculiform, swollen near the middle, and simply attenuate behind the middle. Parameres (Fig. 89A) moderately thick, very weakly incurved; apical area distinctly swollen mesially, and furnished mesially with about 22 to 25 setae.

Female: Eighth ventrite obtusely pointed posteromedially; gonocoxites (Fig. 89F) each weakly rounded and also distinctly serrate posteriorly, with apicolateral setae very long, apicolateral tooth missing. Spermatheca with basal pouch large, conical (Fig. 89D); spermathecal duct membranous and thus not observable.

Biology and Ecology. *Stenus depressus* is distributed in the plains and mountainous regions in Japan. The beetles inhabit moist litter of the grasses (e.g., reeds) grown at the shores of rivers, lakes and marshes. They often climb the stalk of *Carex* and other grasses, and ramble along the leaves.

Remarks. *Stenus depressus* was first recorded from Japan (Hokkaido) by Naomi (1988b). This species is allied to *S. flavipes* Stephens, 1833 from Europe, but it is separable from the latter by the coloration of antennae (wholly pale yellow to yellowish red) (Puthz, 1973b). Among the Japanese members of this group, *S. depressus* is allied to *S. ancyleus*, but this species is separable from the latter by the 7th ventrite of male posteromedially with a wider, semicircular flat area (Fig. 89B), the aedeagal median lobe simply pointed apicomediaally (Fig. 89A), and the endophallic expulsion hook completely fused, smaller, and pointed posteromedially (Fig. 89A).

Stenus ancyleus Naomi, Nomura & Puthz, sp. nov.
(Figs. 90A–F, 133F)

Type material examined. [HONSHU]: Holotype, ♂ (No. NSMT-I-C-200321 in NMNST), Asama Spa, Matsumoto City, Nagano Pref., 24. iv. 1996, Y. Furihata leg. Paratypes: 1 ♂ 2 ♀ (cN), same data as holotype.

Distribution. Japan (Honshu: Nagano Pref.).

Description. Male and female: Macropterous; body 3.5–4.1 mm (fore body: 1.8–2.1 mm) in length, somewhat flat dorsally, moderately shining, with antennae short. Body dark brown to black; labrum black; antennae and legs wholly pale yellow to yellowish red. Head hardly concave dorsally, with a pair of shallow depressions; punctures round, dense to very dense and distinct, but the central part of median longitudinal swollen area often impunctate. Pronotum with surface almost even, with a short median longitudinal area which is impunctate but indistinct in outline; punctures round, dense, irregular, distinct. Elytra with humeri developed; surface weakly impressed along suture; punctures round, dense, regular, distinct. Legs relatively short; tarsi short, with 2nd and 3rd tarsomeres each emarginate posteriorly, 4th tarsomere strongly bilobed. Abdomen subparallel-sided; punctures moderately dense, very small to small, distinct. Lateroventrites narrow, punctate, pubescent.

Male: Fifth ventrite (Fig. 90B) posteromedially with a semicircular flat area; 6th ventrite (Fig. 90B) posteromedially with a bell-shaped, shallow depression which is very shallowly emarginate posteriorly; 7th ventrite (Fig. 90B) posteromedially with a subovoidal depression, which is arcuately emarginate posteriorly; 8th ventrite (Fig. 90B) posteromedially with a medium-sized emargination; 9th tergum (Fig. 90C) elongate, with ventral apophyses very long; 9th ventrite (Fig. 90E) elongate, rounded apicolaterally, shallowly emarginate and also finely serrate posteri-

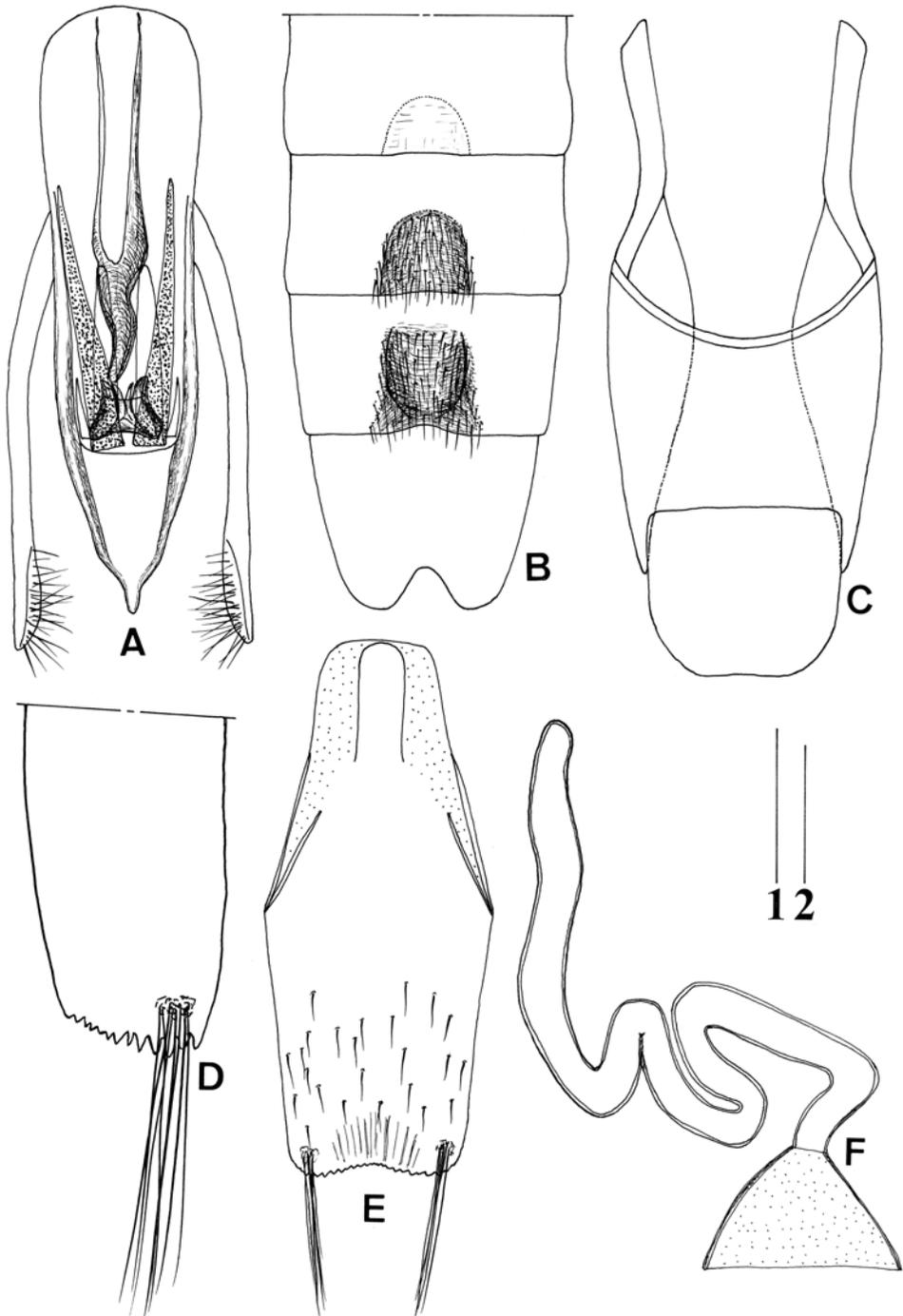


Fig. 90. *Stenus ancyleus* Naomi, Nomura & Puthz sp. nov. (Matsumoto, Nagano). A, aedeagus; B, 5th to 8th ventrites of male; C, 9th and 10th terga of male; D, gonocoxite; E, 9th ventrite of male; F, spermatheca. Scale 1: 0.2 mm for A, C, E, 0.1 mm for D, F; scale 2: 0.3 mm for B.

only, with stem wide, submembranous laterally, apicolateral setae long, apicolateral teeth missing; 10th tergum (Fig. 90C) very shallowly emarginate apicomediaally. Aedeagal median lobe (Fig. 90A) elongate, very weakly constricted near the middle, with the pointed apicomedian projection; apical sclerotized area long, declivous laterally. Endophallic median longitudinal bands (Fig. 90A) with ventral bands relatively short, dorsal bands long, each narrowed anteriorly; lateral longitudinal bands (Fig. 90A) very short; expulsion hooks (Fig. 90A) fused only posteriorly, shallowly emarginate posteriorly, each hook pointed anteriorly; basal tube (Fig. 90A) with basal room very short, tube body very long, baculiform, weakly swollen at the basal 2/3, sinuous behind the swollen area, and pointed apically. Parameres (Fig. 90A) weakly incurved; apical area weakly swollen mesially, and furnished mesially with about 23 to 25 setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 90D) each serrate posteriorly, with apicolateral setae very long. Spermatheca (Fig. 90F) with duct submembranous, not coiled, with 4 or 5 turns; basal pouch conical.

Biology and Ecology. *Stenus ancyleus* is presently distributed only in the mountainous region of Nagano Pref., central Japan. The beetles inhabit moist litter of the grasses grown at the shores of marshes.

Remarks. *Stenus ancyleus* is allied to *S. depressus*, but this species is separable from the latter by the 7th ventrite of male posteromedially with a narrower, subovoidal depression (Fig. 90B), the aedeagal median lobe with its apicomedian projection pointed, (Fig. 90A), the endophallic expulsion hooks partially fused posteriorly, larger, and shallowly emarginate posteriorly (Fig. 90A).

Etymology. The specific epithet of this species is derived from the Latin adjective “*ancyleus*”, which means “ancyleous” or “curved”; and the parameres are weakly curved mesially in the middle as in Fig. 90A.

Stenus benefactor Ryvkin

(Figs. 91A–F, 133G)

Stenus benefactor Ryvkin, 1985: 853; Herman, 2001: 2080; Naomi & Puthz, 2013: 139.

Stenus kanmiyai Naomi, 1988b: 31.

Type material. Holotype: ♂ (ZMMSU), type locality: Primorskii Krai, Sudzkhinskii zapovednik.

Other material examined. [HOKKAIDO]: 1 ♂ 1 ♀, Chitose Lake, Chitose City, 17. vi. 1995, K. Miyashita leg.; 1 ♂, Akanuma, Kushiro Moor, 25. viii. 1990, M. Sato leg. [HONSHU]: 1 ♂ 4 ♀, Takahama, Kamisu-cho, Ibaraki Pref., 19. iii. 2005, M. Maruyama leg.; 3 ♂, Watarase Marsh, Tochigi Pref., 15. ix. 1993, H. Ohkawa leg.; 1 ♀, Watarase River, Fujioka-cho, Tochigi Pref., 1. iv. 1997, M. Maruyama leg.; 1 ♀, Kotanuki Marsh, Inogashira, Fujinomiya City, Shizuoka Pref., 3. viii. 2008, Y. Tahira leg. [SHIKOKU]: 2 ♂ 1 ♀, Ryujindaira, Mt. Saragamine, Ehime Pref., 20. xi. 1993, M. Sakai leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu); Russia.

Redescription. Male and female: Brachypterous; body 3.1–4.0 mm (fore body: 1.4–1.8 mm) in length, rather thin, somewhat flat dorsally, weakly shining, with antennae short. Body dark brown to black; labrum black; antennae and legs wholly pale yellow to yellowish red. Head hardly concave dorsally, with a pair of shallow depressions; punctures round, dense to very dense, distinct. Pronotum with surface even, with a short median longitudinal area which is

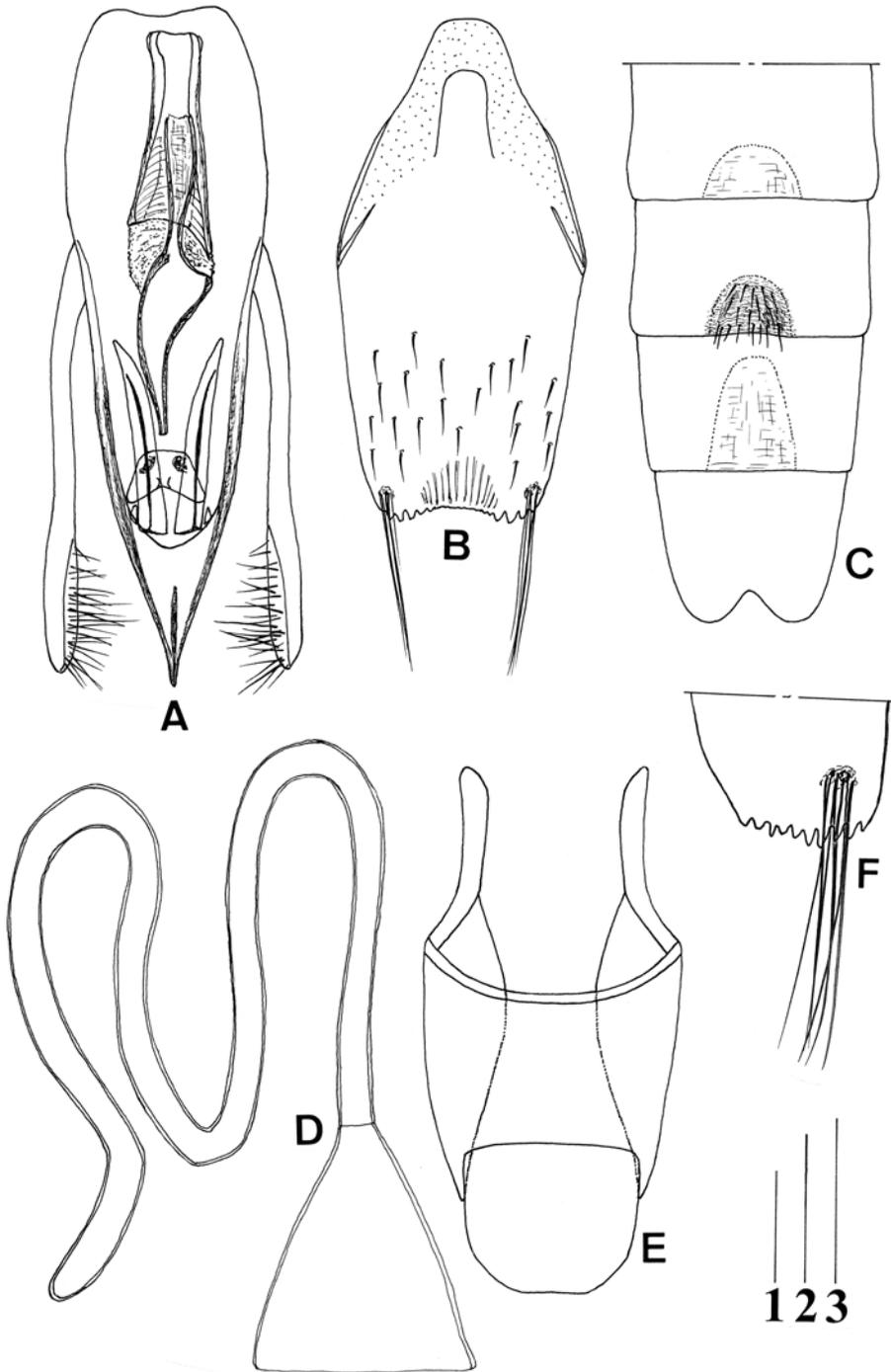


Fig. 91. *Stenus benefactor* Ryvkin (A–C, Akanuma, Hokkaido; D, F, Takahama, Ibaraki; Chitose, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 5th to 8th ventrites of male; D, spermatheca; E, 9th and 10th terga of male; F, apex of gonocoxite. Scale 1: 0.1 mm for A, B; scale 2: 0.3 mm for C; scale 3: 0.1 mm for D, F, 0.2 mm for E.

impunctate; punctures round, dense, almost regular, distinct. Elytra narrowed at humeri; surface similarly punctate as on pronotum. Legs relatively short; tarsi short, with 2nd tarsomere weakly and 3rd one distinctly emarginate posteriorly, 4th tarsomere strongly bilobed. Abdomen subparallel-sided; punctures moderately dense to dense, small, distinct. Lateroventrites very narrow to narrow, punctate, pubescent.

Male: Fifth ventrite (Fig. 91C) posteromedially with a semicircular flat area; 6th ventrite (Fig. 91C) posteromedially with a semicircular, shallow depression which is very shallowly emarginate posteriorly; 7th ventrite (Fig. 91C) medially with an elongate depression; 8th ventrite (Fig. 91C) posteromedially with a V-shaped emargination; 9th tergum (Fig. 91E) with ventral apophyses long; 9th ventrite (Fig. 91B) wide, distinctly serrate apicolaterally, shallowly emarginate posteriorly, with apicolateral setae long; 10th tergum (Fig. 91E) very shallowly emarginate apicomediaally. Aedeagal median lobe (Fig. 91A) bulbous basally, then narrowed apically without apicolateral corners, and very acutely pointed at apex; apical sclerotized area elongate-triangular in shape, ventrally with a median longitudinal keel. Endophallic median longitudinal bands (Fig. 91A) with ventral bands relatively short; lateral longitudinal bands (Fig. 91A) very short; expulsion hooks (Fig. 91A) fused to form a subtrapezoidal sclerite which is widely emarginate posteriorly; basal tube (Fig. 91A) with basal room very narrow, tube body consisting of two partially nested pipes (which each open ventrally), proximal pipe widened posteriorly, distal pipe nested basally in proximal pipe, strongly constricted a little before the middle, with the apical part behind the constriction strongly narrowed to the pointed apex. Parameres (Fig. 91A) each weakly sinuous; apical area weakly swollen both mesially and laterally, and furnished mesially with about 23 to 26 setae.

Female: Eighth ventrite obtusely angulate posteromedially; gonocoxites (Fig. 91F) each serrate posteriorly, with apicolateral setae very long. Spermatheca (Fig. 91D) with duct submembranous, not coiled, with 3 turns; basal pouch large, conical.

Biology and Ecology. *Stenus benefactor* is distributed in the plains and low and high mountainous regions in Japan. The beetles inhabit moist litters of the grasses (e.g., reeds) grown at the shores of the rivers, lakes and marshes; and they often climb the stalk of *Carex* and other grasses, and ramble along the leaves.

Remarks. *Stenus benefactor* is allied to *S. depressus* and *S. ancyleus*, but this species is clearly separable from the latter two species by the body distinctly narrower, the elytra distinctly narrowed at humeral parts (Fig. 133G), and the aedeagal median lobe almost uniformly narrowed apically, without apicolateral corners (Fig. 91A).

Species group of *S. piliferus* Motschulsky

S. piliferus group consists of 5 species in Japan; see Puthz (1972a) regarding a characterization of this group and Puthz (2013) regarding a list of the species of this group. Diagnostic characters are as follows: Vertex narrow with 5 smooth, lustrous areas (Fig. 133L) except for some species; antennae short; pronotum short, convex; legs reddish yellow, but such portions as knees and apices of tibiae often more or less infusate (Figs. 133K, 133L); 3rd and 4th tarsomeres more or less bilobed; lateroventrites and tergo-ventrite sutures on abdomen completely missing; 9th tergum of male usually with ventral apophyses very long, posteriorly with a cleaning comb (Fig. 96A); 9th ventrite of male pubescent posteromedially (Fig. 95D), with apicolateral teeth falcate (Fig. 92G) or acutely pointed (Fig. 96B); aedeagal median lobe various in shape, but usually with inner sac which is at least partially furnished with short spines, spinules and / or small tubercles

(Fig. 96C); gonocoxite usually with apicolateral tooth falcate (Fig. 94E); spermatheca with sclerotized RT-duct (Fig. 92F), entirely with submembranous duct (Fig. 94C), or not sclerotized and thus not observable.

Key to the Japanese species of *S. piliferus* group

- 1(4) Vertex with two or three smooth, lustrous areas, or without such lustrous areas.
 2(3) Body distinctly wider; head without smooth, lustrous areas (Fig. 133H); posterior segments of abdomen with punctures denser; aedeagal median lobe more slender, narrower (Fig. 92B); parameres longer (Fig. 92B) *S. concinnus* Sharp
 3(2) Body distinctly narrower; head with two or three smooth, lustrous areas (Fig. 133I); posterior segments of abdomen with punctures sparser; aedeagal median lobe thicker, wider (Fig. 93D); parameres shorter (Fig. 93D) *S. oliverbetzi* Naomi, Nomura & Puthz sp. nov.
 4(1) Vertex with five smooth, lustrous areas.
 5(6) Body furnished sparsely with long, suberect setae (Fig. 94F); aedeagal median lobe with basal and lateral flaps in basal 2/3 (Fig. 94B) *S. hirtellus* Sharp
 6(5) Body covered only with short setae; aedeagal median lobe without flaps.
 7(8) Body narrower, smaller on average (2.8–4.0 mm); 8th ventrite of male posteromedially with a shallower emargination (Fig. 95A); aedeagal median lobe simply pointed apically (Fig. 95B) *S. oblitus* Sharp
 8(7) Body wider, larger on average (3.6–4.2 mm); 8th ventrite of male posteromedially with a deeper emargination (Fig. 96D); aedeagal median lobe with the very long, lanceolate apico-medial projection (Fig. 96C) *S. piliferus* Motschulsky

Stenus concinnus Sharp (Figs. 92A–G, 133H)

Stenus concinnus Sharp, 1889: 332; Herman, 2001: 2138; Naomi & Puthz, 2013: 139; Puthz, 2013: 1361.

Stenus shaowuensis Puthz, 1968c: 43; Puthz, 2013: 1361 (as synonym of *S. concinnus*).

Type material examined. Holotype: ♂ (NHML), type locality: Niigata, Japan [examined by Puthz in 1969, 2012].

Other material examined. 1 ♀, Mitsui-cho, Wajima City, Ishikawa Pref., 20. x. 1990, K. Yamaaki leg.

Distribution. Japan (Honshu); China.

Redescription. Male and female: Macropterous; body 2.5–3.2 mm (fore body 1.3–1.6 mm) in length, strongly shining, with antennae short, elytra large. Body black; labrum and palpi yellowish brown to reddish brown; antennae with basal segments reddish brown, posterior segments infusate; legs pale yellowish brown to reddish brown, with knees infusate. Head small, simply flat dorsally; punctures round, very dense, various in size, distinct. Pronotum with surface weakly uneven, similarly punctate as on head, but punctures a little larger than those on head. Elytra well-convex dorsally, arcuately emarginate posteriorly; surface weakly uneven, with punctures round, very dense, their interstices very smooth, strongly shining. Legs relatively long; tarsi short, 3rd tarsomere weakly, asymmetrically bilobed with its mesial lap longer than lateral one, 4th tarsomere strongly bilobed. Abdomen cylindrical; 9th tergum (Fig. 92E) with a cleaning

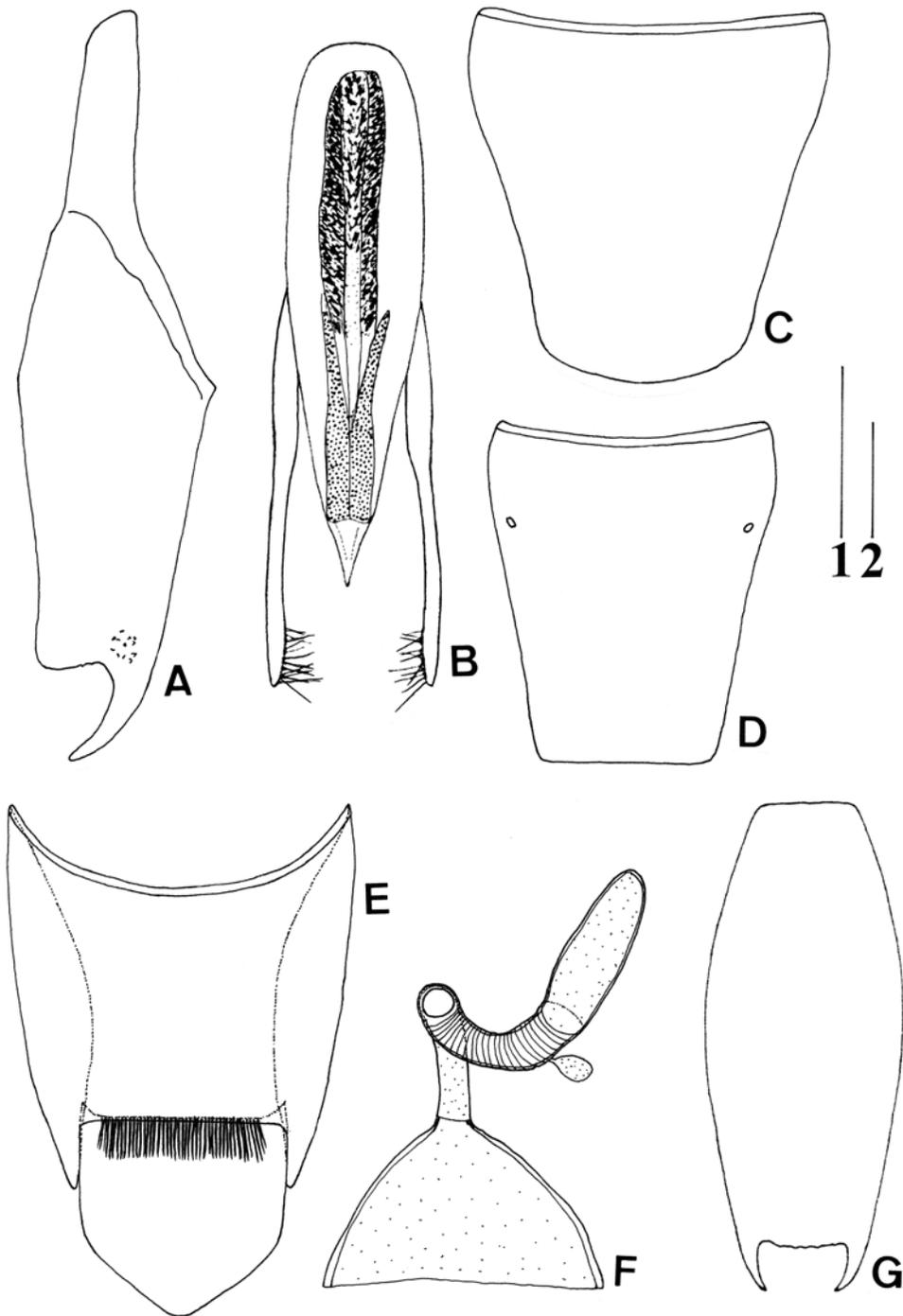


Fig. 92. *Stenus concinnus* Sharp (A, C, D, E, F, Wajima, Ishikawa; B, G, Fukien, China after Puthz, 1968c). A, gonocoxite; B, aedeagus; C, 8th ventrite of female; D, 8th tergum of female; E, 9th and 10th terga of female; F, spermatheca; G, , 9th ventrite of male. Scale 1: 0.1 mm for A, F, 0.2 mm for C, D; scale 2: 0.1 mm for B, E, G.

comb; punctures round, moderately dense to dense, small, distinct. Lateroventrites and tergoventrite sutures missing on abdomen.

Male: Seventh ventrite finely, densely punctate and pubescent at posteromedian part, and very shallowly emarginate posteromedially; 8th ventrite posteromedially with a narrow, subtriangular emargination; 9th ventrite (Fig. 92G) spindle-shaped, very finely serrate posteriorly, with apicolateral teeth falciform, acute; 10th tergum rounded posteromedially. Aedeagal median lobe (Fig. 92B) slender, acutely pointed apically, with apical sclerotized area elongate-triangular in shape. Endophallic median longitudinal bands (Fig. 92B) very long; basal tube (Fig. 92B) rather long, simply acicular; inner sac (Fig. 92B) densely covered internally with spinules and small scales. Parameres (Fig. 92B) each thick basally, very long and extending posteriorly far beyond the apex of median lobe; apical area short, hardly swollen mesially, and furnished mesially with about 10 to 12 short setae.

Female: Eighth tergum (Fig. 92D) truncate posteriorly; 8th ventrite (Fig. 92C) gently rounded posteriorly; gonocoxites (Fig. 92A) each elongate, rounded apicomediaally, with apicolateral tooth long, falciform, acute; 10th tergum (Fig. 92E) subpentagonal in shape, angulate posteromedially. Spermatheca (Fig. 92F) with capsule long, rounded apically; RT-duct moderately sclerotized, weakly curved; spermathecal duct very short; basal valve invisible; basal pouch large, almost cone-shaped; spermathecal gland very small, ovoidal, with its opening located at the lateral side of the apical part of RT-duct.

Biology and Ecology. *Stenus concinnus* was first described from Niigata, Central Japan by Sharp (1889). After that, no additional beetles of this species have been collected from Japan; and thus the present record of this species from Ishikawa (which is geographically placed near the type locality of this species) is probably the 2nd report, suggesting that this is a very rare *Stenus* species in Japan. When considering the previous two records, this species is known only from the plains of the northern part of Chubu district of Honshu. The female beetle of this species examined was collected from litter of the grasses near the paddy fields.

Remarks. *Stenus concinnus* is allied to *S. oliverbetzi*, but this species is separable from the latter by the body distinctly wider (Fig. 133H), the posterior segments of abdomen with punctures denser, the aedeagal median lobe more slender and narrower (Fig. 92B), the endophallic basal tube simply acicular (Fig. 92B) and the paramere longer (Fig. 92B).

***Stenus oliverbetzi* Naomi, Nomura & Puthz sp. nov.**

(Figs. 93A–I, 133I)

Type material examined. Holotype: ♂ (No. NSMT-I-C-200322 in NMNST), Ketsuka, Higashi-matsuyama City, Saitama Pref., 5. iv. 1998, T. Kishimoto leg. Paratypes: 1 ♂2 ♀ (cN), Ushiku Pond, Ryugasaki City, Ibaraki Pref., 18. iii. 1998, C. Ishikawa leg.; 3 ♂4 ♀ (cN), Takahama, Kamisu-cho, Ibaraki Pref., 19. iii. 2005, M. Maruyama leg.; 2 ♂ (cN), Yataba, Hasakimachi, Ibaraki Pref., 23. iv. 1999, T. Kishimoto leg.; 1 ♂1 ♀ (cN), Takahamairi, Ishioka City, Ibaraki Pref., 5. x. 1996, T. Kishimoto leg.; 2 ♀ (cN), same data as holotype; 1 ♂, same locality, 31. viii. 1997, K. Toyoda leg.; 1 ♀ (cN), Shinkoji, Hikage, Tamagawa-mura, Saitama Pref., 24. xi. 1997, K. Toyoda leg.; 1 ♂1 ♀ (cK), Shinshuku-shinden, Showa-machi, Saitama Pref., 23–24. x. 2004, H. Kamezawa leg.; 1 ♀ (cK), same locality, 10. x. 2004, H. Kamezawa leg.; 3 ♂2 ♀ (cN), Teganuma Lake, Sakura City, Chiba Pref., 8. x. 1998, T. Shimada leg.; 1 ♂ (cN), same locality, 11. x. 1998, T. Ishikawa leg.; 1 ♂ (cN), same locality, 8. xi. 1998, T. Ishikawa leg.; 1 ♂ (cN), same locality, 28. iii. 1998, C. Ishikawa leg.; 1 ♀ (cN), Shinjyuku, Tonocho-machi, Chiba

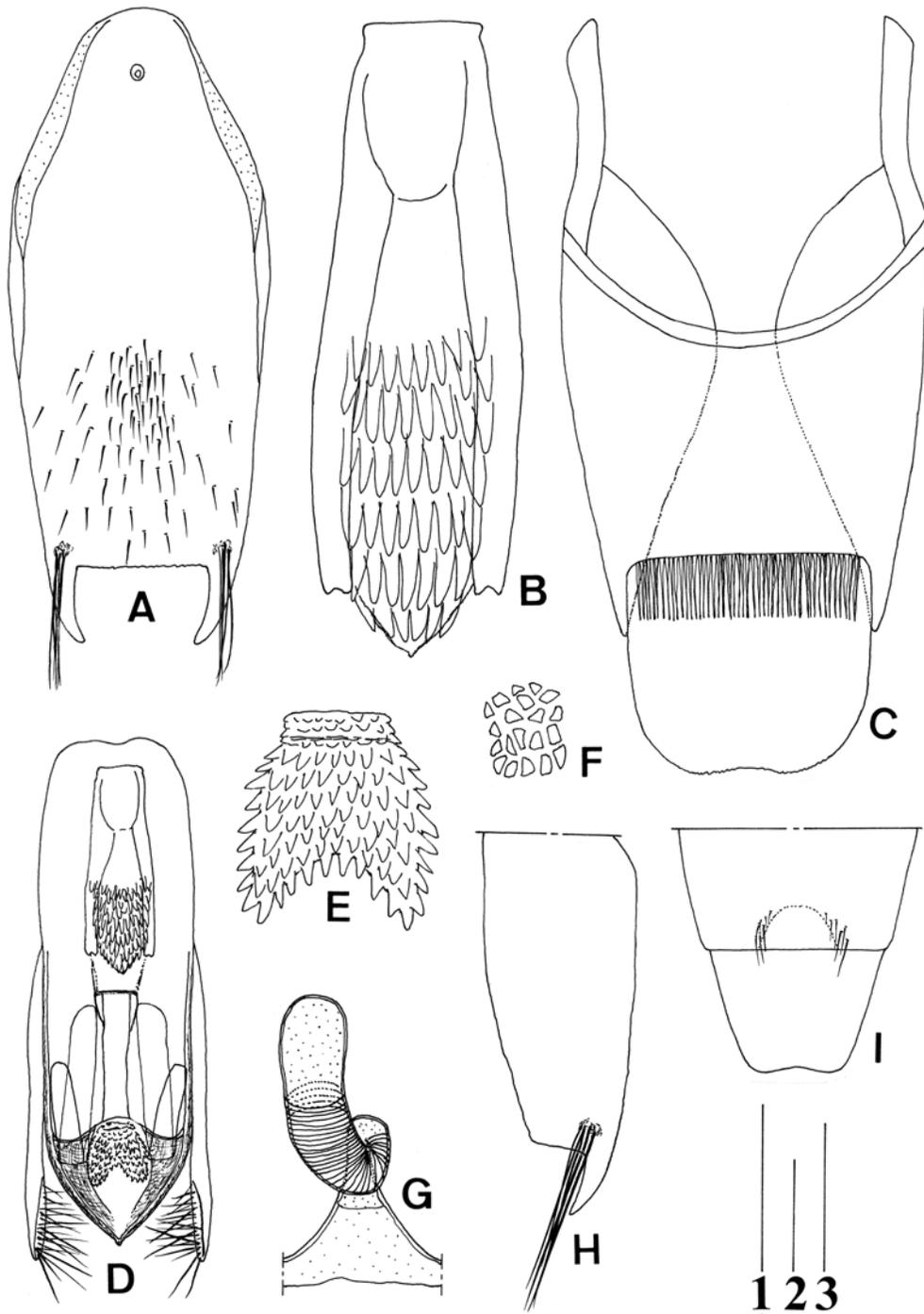


Fig. 93. *Stenus oliverbetzi* Naomi, Nomura & Puthz sp. nov. (A, C, G, H, Ketsuka, Saitama; B, D–F, Ushiku, Ibaraki). A, 9th ventrite of male; B, endophallic basal tube; C, 9th and 10th terga of male; D, aedeagus; E, expulsion hook; F, giraffe's fleck-like pattern on median longitudinal bands; G, spermatheca; H, gonocoxite; I, 7th to 8th ventrites of male. Scale 1: 0.1 mm for A, C, G, H, 0.05 mm for B, E, F; scale 2: 0.1 mm for D; scale 3: 0.3 mm for I.

Prof., 23. iv. 1999, T. Kishimoto leg.; 1 ♀ (cN), Katousu, Sawara City, Chiba Pref., 8. vi. 1996, T. Kishimoto leg.; 1 ♂ (cN), Inzai-mura, Chiba Pref., 28. iii. 1990, T. Takeda leg.; 1 ♀ (cN), Funagata, Noda City, Chiba Pref., 6. iv. 1990, T. Takeda leg.

Distribution. Japan (Honshu).

Description. Male and female: Macropterous; body 2.5–3.2 mm (fore body 1.2–1.4 mm) in length, strongly shining, with antennae short, abdomen slender. Body black but elytra and 8th abdominal segment reddish brown to dark red; labrum reddish brown; antennae with 2 or 3 basal segments reddish brown, remaining segments dark brown; legs yellowish brown to dark reddish brown, with knees infuscate. Head small, almost simply flat dorsally, with 2 or 3 smooth, lustrous areas (two areas are behind the antennal tubercles, and other one is, if present, at the posteromedian area between eyes); punctures round, very dense. Pronotum with surface almost even; punctures round, very dense, distinct. Elytra well-convex dorsally, arcuately emarginate posteriorly; surface almost even, similarly punctate as on pronotum. Legs relatively long; tarsi short, 3rd tarsomere weakly, asymmetrically bilobed with its mesial lap longer than lateral one, 4th tarsomere strongly bilobed. Abdomen cylindrical; 9th tergum (Fig. 93C) with a cleaning comb; punctures round to elliptical and dense to very dense at the bases of 3rd and 4th segments, while punctures on the other parts of abdomen round, sparse and very small to small. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Male: Seventh ventrite (Fig. 93I) posteromedially with a semicircular flat area which is furnished laterally with several setae; 8th ventrite (Fig. 93I) posteromedially with a very shallow emargination; 9th tergum (Fig. 93C) with ventral apophyses moderately long; 9th ventrite (Fig. 93A) elongate-subovoidal in shape, very finely serrate posteriorly, with stem rounded anteriorly, apicolateral teeth long, falciform, apicolateral setae moderately long, surface densely setous only at the median area a little behind the middle; 10th tergum (Fig. 93C) very finely serrate posteriorly, and also posteromedially with a very weakly emargination. Aedeagal median lobe (Fig. 93D) elongate, subparallel-sided, rounded apicolaterally, with a very short apicomedian projection; apical sclerotized area sclerotized laterally, with the apicomedian subtransparent area ovoidal in shape. Endophallic median longitudinal bands (Fig. 93D) wide, with ventral bands longer than dorsal bands, surface covered densely with giraffe's fleck-like pattern (Fig. 93F); expulsion hook (Fig. 93E) almost heart-shaped, covered densely with short, thick spines; basal tube (Fig. 93B) composed of a thick, rod-like structure, and its posterior part just overlapped with inner sac where scale-like denticles are densely arranged (when seen ventrally). Parameres (Fig. 93D) slender, straight; apical area hardly swollen mesially, and furnished mesially with 20 to 22 setae.

Female: Eighth ventrite obtusely angulate posteromedially; gonocoxites (Fig. 93H) each angulate apicomediaally, with apicolateral tooth thin, falciform, acutely pointed, apicolateral setae long. Spermatheca (Fig. 93G) small, with capsule rounded apically; RT-duct moderately sclerotized, curved; spermathecal duct very short; basal valve invisible; basal pouch almost cone-shaped.

Biology and Ecology. *Stenus oliberbetzi* is presently distributed only in the plains of Kanto district, central Japan. The beetles inhabit moist litter of the grasses (e.g., reeds) grown at the shores of the rivers, lakes and marshes.

Remarks. *Stenus oliverbetzi* is allied to *S. concinnus*, but this species is separable from the latter by the body distinctly narrower (Fig. 133I), the posterior segments of abdomen with punctures sparser, the aedeagal median lobe distinctly thicker and wider (Fig. 93D), the endophallic basal tube thicker, composed of a rod-like structure (Fig. 93B); and the paramere shorter (Fig. 93D).

Etymology. The specific epithet of this species is named in honour of a distinguished morphologist and coleopterist Dr. Oliver Betz (University of Tübingen, Tübingen).

***Stenus hirtellus* Sharp**
(Figs. 94A–H, 133J)

Stenus hirtellus Sharp, 1874: 86; Herman, 2001: 2214; Naomi & Puthz, 2013: 139; Puthz, 2013: 1362.

Type material examined. Syntypes: 2 ♂ (NHML), type locality: Orakami Marsh, Nagasaki [examined by Puthz in 1969].

Other material examined. [MALAYSIA]: 1 ♂ 2 ♀, Tapah, 27. ii. 1974, Y. Kiyoyama leg.

Distribution. Japan (Kyushu); China, Taiwan, Malaysia.

Redescription. Male and female: Macropterous; body 3.4–3.6 mm (fore body 1.7–1.8 mm) in length, strongly shining, furnished sparsely with long, suberect setae (Fig. 133J), antennae short. Body dark red to black; labrum dark red; antennae with basal segments yellowish brown, apical segments dark brown; legs yellowish brown to reddish brown, with knees infusate. Head small, with a pair of narrow longitudinal depressions, five smooth, lustrous areas (two areas are behind antennal tubercles; other two areas at posterolateral parts of vertex; and the other area at postero-median area between eyes); punctures round to elliptical, dense. Pronotum with surface almost even, with a median longitudinal area impunctate; punctures moderately round, dense to very dense, distinct. Elytra large, arcuately emarginate posteriorly; surface almost even, similarly punctate as on pronotum. Legs moderately long; femora and tibiae sparsely with long, suberect setae; tarsi short, 3rd tarsomere weakly, asymmetrically bilobed, with its mesial lap longer than lateral one, 4th tarsomere strongly bilobed. Abdomen cylindrical, sparsely with long, suberect setae (Fig. 94F); 9th tergum (Fig. 94A) with a cleaning comb; punctures round, dense and medium-sized in 3rd segment, while punctures in other posterior segments round, sparse and very small to small. Lateroventrites and tergo-ventrite sutures completely missing on abdomen.

Male: Fifth ventrite (Fig. 94F) densely punctate posteromedially; 6th ventrite (Fig. 94F) posteromedially with a shallow depression which is densely punctate and very shallowly emarginate posteriorly; 7th ventrite (Fig. 94F) posteromedially with a relatively small, shallow depression, which is densely punctate and pubescent, and also very shallowly emarginate posteriorly; 8th tergum truncate posteriorly (Fig. 94H); 8th ventrite (Fig. 94F) strongly narrowed posteriorly, posteromedially with a small, V-shaped emargination; 9th tergum (Fig. 94A) with ventral apophyses thin, very long; 9th ventrite (Fig. 94G) with apicolateral teeth falciform, thin, acute; 10th tergum (Fig. 94A) moderately narrowed apically. Aedeagal median lobe (Fig. 94B) fusiform, strongly narrowed apically behind the middle, obtusely pointed apically, and in addition very unique in having the basilateral sclerotized flaps and lateral subtransparent flaps in basal 2/3. Endophallic median longitudinal bands (Fig. 94D) narrow, short; expulsion hooks (Fig. 94D) each very thin, rod-like, weakly curved laterally at anterior and posterior ends; basal tube (Fig. 94D) large, basal room with distinct basal constriction, tube body rod-like, curved twice dorsoventrally; inner sac (Fig. 94D) covered densely with small tubercles. Parameres (Fig. 94B) thin, weakly incurved; apical area rather short, weakly swollen laterally, and furnished with 14 to 16 short setae along the mesial margin.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 94E) each angulate apicomediaally, with apicolateral tooth falcate, slender, acutely pointed. Spermatheca (Fig. 94C) entirely

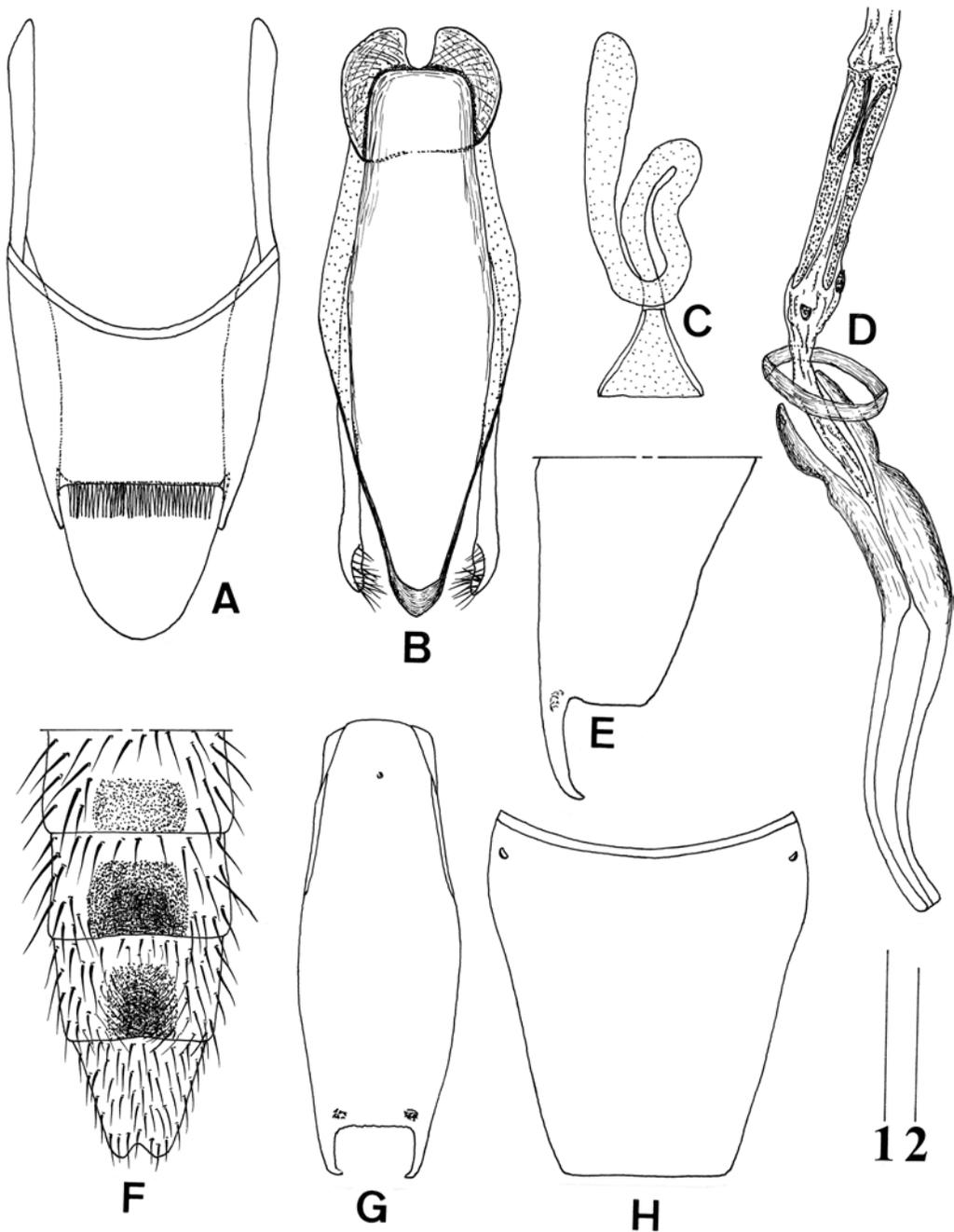


Fig. 94. *Stenus hirtellus* Sharp (Tapha, Malaysia). A, 9th and 10th terga of male; B, aedeagus; C, spermatheca; D, endophallic structures; E, 5th to 8th ventrites of male; F, apex of gonocoxite; G, 9th ventrite of male; H, 8th tergum of male. Scale 1: 0.2 mm for A, B, G, H, 0.1 mm for C–E; scale 2: 0.3 mm for F.

submembranous (i.e., not differentiated into capsule, RT-duct and spermathecal duct), its duct short with 2 turns; basal pouch conical.

Biology and Ecology. In Japan *Stenus hirtellus* was probably collected only once from

Orakami Marsh, Nagasaki Pref. in the second half of 19th century; and after that no additional beetles have been collected, showing that this is a very rare *Stenus* species. The collecting records suggest that the beetles probably inhabit moist litter of the grasses grown at the shores of lakes and marshes.

Remarks. *Stenus hirtellus* is allied to *S. oblitus* and *S. piliferus*, but this species is easily separable from the latter two species by the body covered sparsely with long, suberect setae (Fig. 94F); and the aedeagal median lobe with its basal and lateral flaps in basal 2/3 (Fig. 94B).

***Stenus oblitus* Sharp**
(Figs. 95A–F, 133K)

Stenus oblitus Sharp, 1874: 87; Herman, 2001: 2308; Naomi & Puthz, 2013: 139.

Type material examined. Syntype: ♀ (NHML), type locality: Kobe, Japan [examined by Puthz in 1969].

Other material examined. [HOKKAIDO]: 1 ♂, Takkobu Pond, Kushiro Marsh, 11. vi. 1990, R. Kuranishi leg. [HONSHU]: 3 ♂5 ♀, Shimoyashi, Sendai City, Miyagi Pref., 8. viii. 1994, H. Yoshitake leg.; 1 ♀, Numata, Gunma Pref., 15. v. 1951, T. Takei leg.; 1 ♀, Yaita City, Tochigi Pref., 22. viii. 1987, K. Sato leg.; 1 ♂, Imori, Saitama Pref., 11. v. 1994, K. Ohgi leg.; 1 ♀, Mt. Takao, Hachioji, Tokyo Metropolis, 16. ix. 1960, Y. Shibata leg.; 1 ex., Jinbei-Ohashi, Inbanuma, Chiba Pref., 28. iii. 1990, T. Takeda leg.; 2 ♂, Kamishiro, Nagano Pref., 16. vi. 1960, Y. Shibata leg.; 1 ♀, Shimonogo, Ueda City, Nagano Pref., 17. vi. 1990, K. Sugiyama leg.; 1 ♂1 ♀, Gakuda-cho, Aichi Pref., 22. ix. 1993, R. Kuranishi leg.; 1 ♂, Tako, Onsen-cho, Hyogo Pref., 8-9. x. 1992. [KYUSHU]: 1 ♂, Ukiha-cho, Fukuoka Pref., 14. vi. 1950, N. Gyotoku leg.

Distribution. Japan (Hokkaido, Honshu, Kyushu); Korea, China, Russia, Vietnam.

Redescription. Male and female: Macropterous; body 2.8–4.0 mm (fore body 1.5–1.8 mm) in length, shining, with antennae relatively short. Body black; labrum dark red; antennae with basal segments yellowish brown, apical segments dark brown; legs yellowish brown to reddish brown, but apical part of femur and apical half of tibia dark brown. Head small, with a pair of narrow longitudinal depressions, and five smooth, lustrous areas (two areas are behind antennal tubercles; two areas at posterolateral parts of vertex; and the other area located at posteromedian part between eyes are large, elongate and weakly swollen); punctures round to elliptical, dense. Pronotum with surface almost even, with a median longitudinal area which is impunctate but indistinct in outline; punctures round, very dense, distinct. Elytra large, arcuately emarginate posteriorly; surface almost even, similarly punctate as on pronotum. Legs moderately long; tarsi short, 3rd tarsomere weakly, asymmetrically bilobed, with its mesial lobe longer than lateral one, 4th tarsomere strongly bilobed. Abdomen cylindrical; punctures round to elliptical, very dense and distinct in anterior segments, while punctures in posterior segments sparse and very small. Lateroventrites and tergo-ventrite sutures completely missing on abdomen.

Male: Sixth ventrite (Fig. 95A) sparsely pubescent on posteromedian area, which is very shallowly emarginate; 7th ventrite (Fig. 95A) posteromedially with a bell-shaped, flat area, which is very shallowly emarginate; 8th ventrite (Fig. 95A) distinctly narrowed posteriorly, posteromedially with a V-shaped emargination; 9th tergum (Fig. 95C) with ventral apophyses thin, very long, straight; 9th ventrite (Fig. 95D) widest a little before the middle, bisinuate at posterior margin, with apicolateral teeth short, acutely pointed, apicolateral setae very long; 10th tergum (Fig. 95C) very weakly emarginate posteriorly. Aedeagal median lobe (Fig. 95B) elongate, dis-

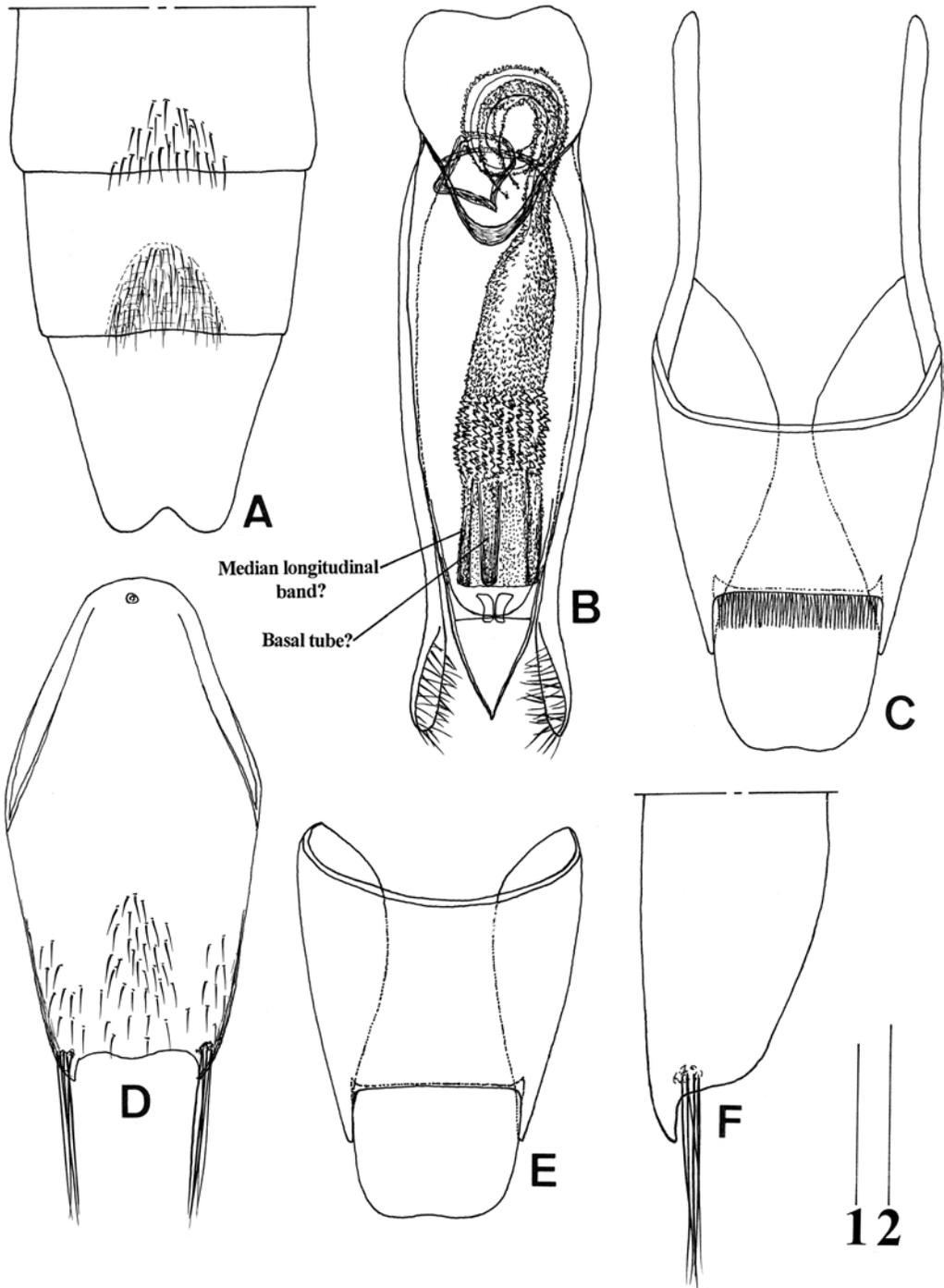


Fig. 95. *Stenus oblitus* Sharp (A–D, Ukiha, Fukuoka; E, F, Shimoyashi, Miyagi). A, 6th to 8th ventrites of male; B, aedeagus; C, 9th and 10th terga of male; D, 9th ventrite of male; E, 9th and 10th terga of female; F, gonocoxite. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B–E, 0.1 mm for F.

tinctly bulbous basally with a constriction at its posterior part, and acutely pointed apically, with apical sclerotized area almost triangular in shape. Endophallic median longitudinal bands? (Fig. 95B) indistinct, located posterolaterally to the inner sac; expulsion hooks (Fig. 95B) paired, very small; basal tube? (Fig. 95B) discernible only at its apical part, which is located in the postero-medial part of inner sac; inner sac (Fig. 95B) widened apically, and covered with lines of small-triangular spines around the posterior 4/5, and also with very small tubercles in most area of the anterior portion. Parameres (Fig. 95B) thin, slender and rounded apically, each gently, uniformly incurved but weakly curved laterally behind the base of apical area; apical area widened dorso-ventrally, and furnished with 30 to 35 short setae along the mesial margin.

Female: Eighth ventrite rounded posteriorly; 9th tergum (Fig. 95E) without ventral apophyses; 10th tergum (Fig. 95E) very weakly emarginate posteriorly; gonocoxites (Fig. 95F) each rounded apicomediaally, with apicolateral tooth pointed, apicolateral setae long. Spermatheca not observable.

Biology and Ecology. *Stenus oblitus* is distributed in the plains and low mountainous regions in Japan. The beetles inhabit litter of the grass lands and natural forests, but they also often live in moist litter of the grasses grown at the shores of the rivers and marshes.

Remarks. *Stenus oblitus* is allied to, and also similar in external structure to *S. piliferus*, but this species is separable from the latter by the body narrower and smaller on average (2.8–4.0 mm), the 8th ventrite of male posteromedially with a shallower emargination (Fig. 95A), the 9th ventrite of male with apicolateral tooth shorter (Fig. 95D), and the aedeagal median lobe simply pointed apically (Fig. 95B).

***Stenus piliferus* Motschulsky**
(Figs. 96A–F, 133L)

Stenus piliferus Motschulsky, 1857: 514; Naomi, 1997b: 746; Herman, 2001: 2339; Naomi & Puthz, 2013: 139; Puthz, 2013: 1362.

Type material. Type locality: Indes orientales.

Other material examined. [NANSEI ISLS.]: 2 ♂♂ ♀♀, Sonai, Iriomote Is., Okinawa Pref., 5. viii. 1985, K. Sugiyama leg.; 2 ♂♂ ♀♀, Nakano, Iriomote Is. Okinawa Pref., 29. iv. 1998, K. Toyoda leg. [TAIWAN]: 2 ♀♀ (cS), Taiwan, Ilan Hsien, Shen-Mi Lake, 1110 m, 9. v. 1995, A. Smetana leg.

Distribution. Japan (Nansei Isls.: Iriomote Is.); China, Oriental region, Australia, Bismarck Isls.

Redescription. Male and female: Macropterous; body 3.6–4.2 mm (fore body 1.7–2.1 mm) in length, robust, shining, with antennae relatively short. Body black; labrum dark red; antennae yellowish brown to reddish brown; legs yellowish brown to reddish brown, but apical part of femur and apical half of tibia often dark brown (Fig. 133L). Head rather small, with a pair of narrow longitudinal depressions, and five smooth, lustrous areas (located as in *S. oblitus*); punctures round, dense, small. Pronotum with surface almost even, densely punctate, with median longitudinal lustrous area and also several small, lateral lustrous areas. Elytra large, arcuately emarginate posteriorly; surface almost even, with punctures round, very dense, distinct. Legs moderately long; tarsi short, with 3rd and 4th tarsomeres similarly bilobed as in *S. oblitus*. Abdomen cylindrical, narrowed posteriorly; punctures round, very dense and distinct in anterior segments, while punctures in posterior segments sparse to moderately dense and very small. Lateroventrites and

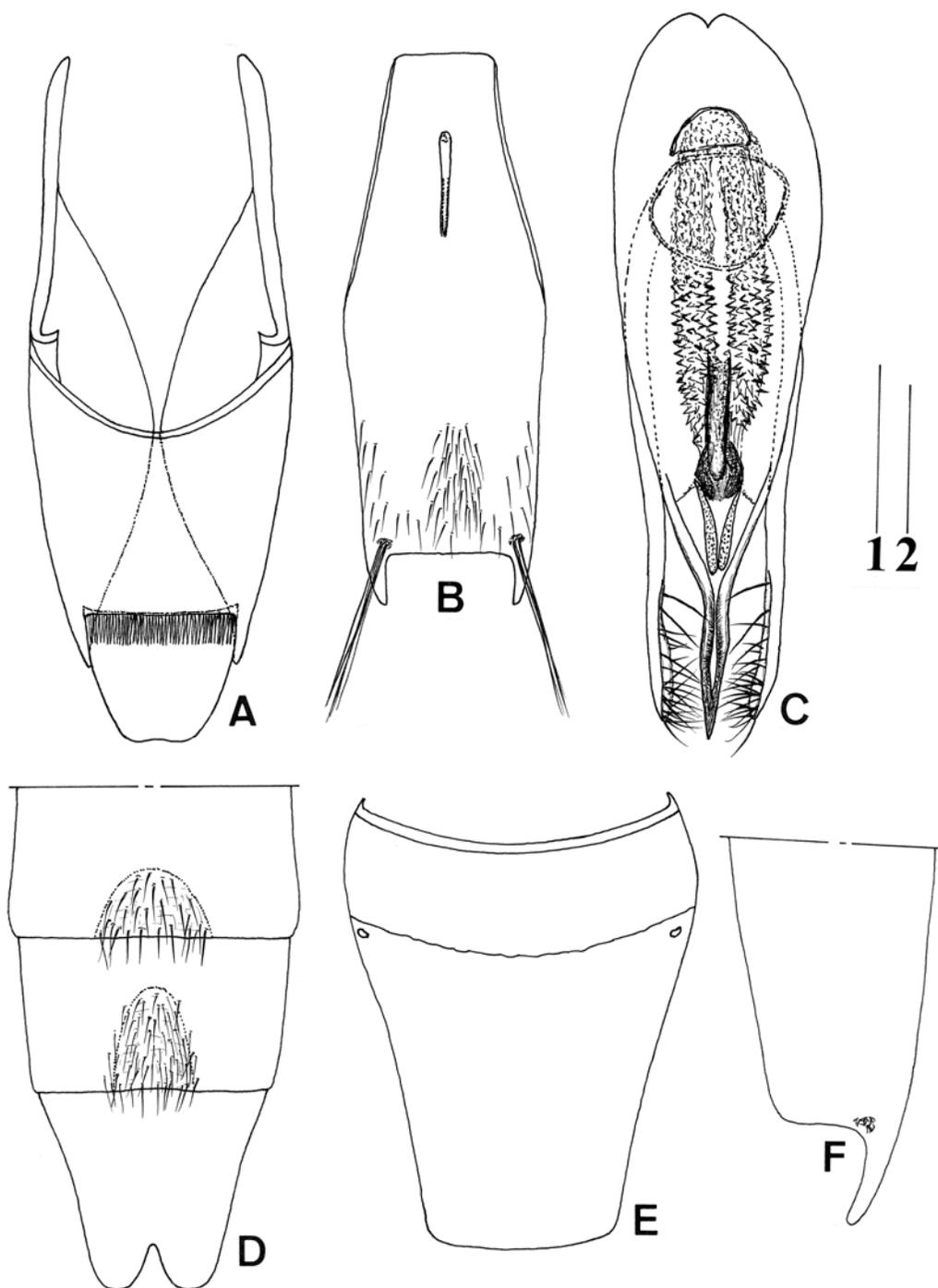


Fig. 96. *Stenus piliferus* Motschulsky (A–E, Sonai, Iriomote Is.; F, Nakano, Iriomote Is.). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, 6th to 8th ventrites of male; E, 8th tergum of male; F, apex of gonocoxite. Scale 1: 0.2 mm for A–C, E, 0.1 mm for F; scale 2: 0.3 mm for D.

tergo-ventrite sutures completely missing on abdomen.

Male: Sixth ventrite (Fig. 96D) posteromedially with a semicircular flat area, which is sparsely pubescent and very shallowly emarginate posteriorly; 7th ventrite (Fig. 96D) posteromedially with an elongate-bell-shaped, flat area, which is pubescent and very shallowly emarginate posteriorly; 8th tergum (Fig. 96E) almost truncate posteriorly; 8th ventrite (Fig. 96D) distinctly narrowed posteriorly, posteromedially with a deep V-shaped emargination; 9th tergum (Fig. 96A) with ventral apophyses thin, very long, straight; 9th ventrite (Fig. 96B) widest near the middle, densely pubescent only posteromedially, with apicolateral teeth thin, pointed apically, apicolateral setae very long; 10th tergum (Fig. 96A) very weakly emarginate posteriorly. Aedeagal median lobe (Fig. 96C) almost elongate-ovoidal in basal 3/4, with the very long, lanceolate apicomedian projection. Endophallic median longitudinal bands (Fig. 96C) very short, narrow; expulsion hooks (Fig. 96C) located anteriorly to the median longitudinal bands, strongly sclerotized; basal tube (Fig. 96C) discernible only at its apical part, which is located in the posteromedian part of inner sac; inner sac (Fig. 96C) large, comprising two lateral longitudinal areas which are covered posteriorly with small-triangular spines, and also anteriorly with very small tubercles. Parameres (Fig. 96C) slender, each gently incurved before the middle; apical area long, and furnished mesially with 23 to 26 setae of moderate length.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 96F) each with apicolateral tooth long, thin, apicolateral setae very long. Spermatheca not observable.

Biology and Ecology. *Stenus piliferus* is widely distributed in the East Asia, Southeast Asia and Australia, but in Japan it is presently distributed only in the plains of Iriomote Is. The beetles inhabit moist litter of the grasses grown at the shores of rivers and wetlands (see also Puthz, 2013).

Remarks. *Stenus piliferus* is presently classified into 8 subspecies on the basis of such characters as aedeagus, punctuation of elytra, coloration of legs, microsculpture of abdomen, etc. (Puthz, 1972a; Puthz, 1994). Of these subspecies, the nominotypical one only is distributed in Japan; and it was first recorded from Japan by Naomi (1997b). This species is allied to, and also similar in external structure to *S. oblitus*, but it is separable from the latter by the body wider and larger on average (3.6–4.2 mm), the 8th ventrite of male posteromedially with a deeper emargination (Fig. 96D), the 9th ventrite of male with apicolateral tooth longer (Fig. 96B), and the aedeagal median lobe with the very long, lanceolate apicomedian projection (Fig. 96C).

Species group of *S. rorellus* Fauvel

S. rorellus group (= *S. cursorius* group) consists of 2 species in Japan; see Puthz (1972a, 2013) regarding a review and characterization of this group; and see Puthz (2013) regarding a key to the Oriental species of this group. Diagnostic characters are as follows: Body matt (Fig. 134A) or weakly shining (Fig. 134B), covered with very dense punctures; head with vertex wide to very wide; antennae short; pronotum short; legs with 4th tarsomere strongly bilobed; latero-ventrites and tergo-ventrite sutures completely missing on abdomen; 9th tergum posteriorly with a cleaning comb (Fig. 97B, C); 9th ventrite of male strongly serrate posteriorly, without apicolateral tooth (Fig. 97A); 10th tergum widely emarginate posteriorly, apicolaterally with a small tooth (Fig. 97B, C); aedeagus narrowed apically to pointed apex, with inner sac furnished with spicules, etc. (Fig. 97F); gonocoxite strongly serrate posteriorly, without apicolateral tooth (Fig. 97E); spermatheca not sclerotized.

Key to the Japanese species of *S. rorellus* group

- 1(2) Body larger (2.7–3.1 mm), matt; antenna with 1st segment reddish brown; 10th tergum less deeply emarginate posteriorly (Fig. 97B, C); aedeagal median lobe wider (Fig. 97F) *S. confertus* Sharp
- 2(1) Body smaller (2.3–2.8 mm), weakly shining; antenna with 1st segment black; 10th tergum more deeply emarginate posteriorly (Fig. 98B, E); aedeagal median lobe narrower (Fig. 98F) *S. dissimilis* Sharp

***Stenus confertus* Sharp**

(Figs. 97A–F, 134A)

Stenus confertus Sharp, 1889: 331; Herman, 2001: 2138; Naomi & Puthz, 2013: 139; Puthz, 2013: 1314.

Stenus cribellatus Motschulsky, 1857: Puthz, 1973c: 51 (as synonym of *S. cribellatus*).

Type material examined. Lectotype: ♂ (NHML), paralectotype: ♂ (NHML), type locality: Sanjyo, Japan, 3. ix. 1881, Lewis. [examined by Puthz in 1969 and designated by Puthz, 1973].

Other material examined. [CHINA]: 1 ♂ 1 ♀, Caota Town, Zhuji City, Zhejiang Prov., 29. x. 2011, Zhao Tie-Xiong leg.

Distribution. Japan (Honshu); China.

Redescription. Male and female: Macropterous; body 2.7–3.1 mm (fore body 1.5–1.6 mm) in length, matt, with short antennae. Body black but pronotum and elytra with a reddish tint; labrum black; antennae reddish brown but 3 to 4 apical segments infusate; legs pale yellowish brown to reddish brown, with knees infusate. Head small, concave dorsally, weakly depressed along mesial margin of eye, median area between the depressions weakly convex; punctures round, very dense, distinct. Pronotum with surface almost even; punctures round, very dense, strong. Elytra well-convex dorsally but shallowly impressed at the basal 1/3 of suture, with humeri developed; surface similarly punctate as on pronotum but punctures a little larger than on it. Legs short; tarsi short, with 4th tarsomere strongly bilobed. Abdomen cylindrical, distinctly narrowed posteriorly; punctures round, very dense and regular, but punctures becoming gradually smaller posteriorly toward 8th segment; 9th tergum posteriorly with a cleaning comb, which is composed of a regular line of thick, straight setae of same length (Fig. 97B, C); 10th tergum widely emarginate posteriorly, apicolaterally with a short, acute tooth at each side (Fig. 97B, C). Lateroven-trites and tergo-ventrite sutures completely missing on abdomen.

Male: Seventh ventrite posteromedially with a shallow, bell-shaped depression, which is shallowly emarginate posteriorly; 8th ventrite (Fig. 97D) posteromedially with a subtriangular emargination; 9th tergum (Fig. 97B) with apicolateral flaps small, ventral apophyses long; 9th ventrite (Fig. 97A) widely emarginate posteriorly, strongly serrate at posterior margin, with stem almost submembranous, apicolateral setae moderately long. Aedeagal median lobe (Fig. 97F) elongate-ovoidal in shape, gently rounded apicolaterally, and acutely pointed apically, with apicolateral rim wide, strongly sclerotized (when seen ventrally). Endophallic median longitudinal bands (Fig. 97F) relatively short, very thin; lateral longitudinal bands (Fig. 97F) very short and thin; expulsion hooks existing as paired very thin, stick-like structures located between the median bands (Fig. 97F); basal tube existing as a densely spiculate flexible tube (Fig. 97B) which is thick and thrice bent. Parameres (Fig. 97F) extending posteriorly a little before the apex

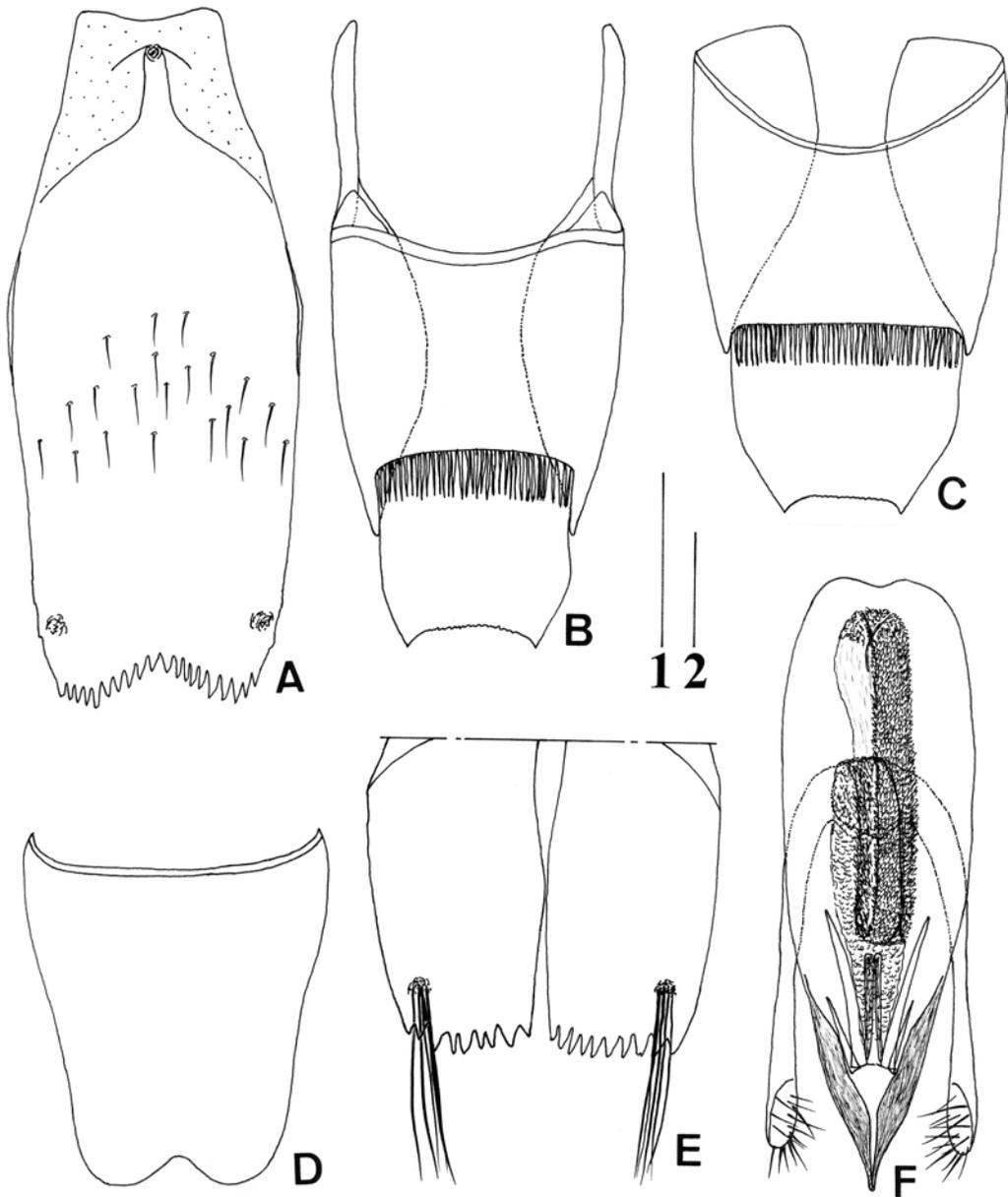


Fig. 97. *Stenus confertus* Sharp (Zhuji, China). A, 9th ventrite of male; B, 9th and 10th terga of male; C, 9th and 10th terga of female; D, 8th ventrite of male; E, gonocoxites; F, aedeagus. Scale 1: 0.1 mm for A, E, 0.2 mm for D; scale 2: 0.1 mm for B, C, F.

of median lobe; each moderately constricted near the middle; apical area short, hardly swollen mesially, and furnished mesially with about 12 to 14 setae.

Female: Eighth ventrite gently rounded posteriorly; gonocoxites (Fig. 97E) each strongly serrate posteriorly, with long apicolateral setae, without distinct apicolateral tooth; 10th tergum (Fig. 97C) more strongly narrowed posteriorly than in male. Spermatheca not observable.

Biology and Ecology. In Japan *Stenus confertus* was collected only once by G. Lewis from

Sanjo (2 exs., 3. ix. 1881) in the late 19th century; and after that, no additional beetles have been collected, showing that this is a very rare *Stenus* species. We have no data regarding the habitats of this species in Japan.

Remarks. *Stenus confertus* was first described by Sharp (1889). The name of this species was once synonymized with *S. cribellatus* Motschulsky, 1857 by Puthz (1973c), but it was resurrected as valid by Puthz (2013). This species is closely allied to *S. kubani* Puthz, 2013 from Laos, but it is separable from the latter by the body smaller in average (2.7–3.1 mm), the 7th tergum with denser punctures, the aedeagal median lobe weakly rounded apicolaterally, with the spiculate, flexible basal tube which is longer and thrice bent (Fig. 97F). Among the Japanese members of this group, *S. confertus* is similar to *S. dissimilis*, but this species is easily separable from the latter by the 1st segment of antenna reddish brown and the 10th tergum less deeply emarginate posteriorly (Fig. 97B, C).

Stenus dissimilis Sharp

(Figs. 98A–F, 134B)

Stenus dissimilis Sharp, 1874: 87; Herman, 2001: 2162; Naomi & Puthz, 2013: 139; Puthz, 2013: 1315.

Type material examined. Holotype: ♂ (NHML), type locality: Japan [examined by Puthz in 1969].

Other material examined. [HONSHU]: 1 ♀, Nomikanayama, Chonan-machi, Chiba Pref., 5. vii. 1989, S. Naomi leg.; 1 ♀, Tsurumi-ku, Yokohama City, Kanagawa Pref., 4. viii. 1984, M. Tao leg.; 1 ♀, Sato, Mikura Is., Izu Isl., Tokyo Metropolis, 15. v. 2013, H. Kamezawa leg.; 1 ♂, Mukogawa, Hyogo Pref., 14. vi. 1939, K. Taniguchi leg. [SHIKOKU]: 1 ♀, Nishinokawa, Tosashimizu City, Kochi Pref., 10. iii. 2007, T. Miyata leg.; 1 ♀, Daimyojika, Shimanto City, Kochi Pref., 10. ii. 2008, T. Miyata leg. [KYUSHU]: 1 ♀, Kueyama, Shimabara, Nagasaki Pref., 27. iii. 1979, S. Imasaka leg. [NANSEI ISLS.]: 1 ♂ 1 ♀, Nagata, Yaku Is., Kagoshima Pref., 7. iv. 1965, M. Yasui leg.; 1 ♀, Mt. Megami, Takara Is., Tokara, Kagoshima Pref., 25. iii. 1992, S. Nomura leg.; 1 ♀, Mt. Yuwan, Amami Is., Kagoshima Pref., 5. v. 1987, S. Nomura leg.; 1 ♀, Shirase River, Kume Is., Okinawa Pref., 14–16. iii. 1998, M. Maruyama leg.; 1 ♀, Ishigaki Is., Okinawa Pref., Jan. 1998–Dec. 1999, K. Takahashi leg.; 1 ♀, same locality, 31. vii.–19. x. 1995, K. Takahashi leg.; 1 ♂, Mt. Omoto, Ishigaki Is., Okinawa Pref., 18. iii. 1997, K. Toyoda leg.; 1 ♂, same locality, 17. iii. 1978, S. Naomi leg.; 1 ♀, same locality, 20. iii. 1978, S. Naomi leg.; 1 ♀, Mt. Banna, Ishigaki Is., Okinawa Pref., 15. iii. 1978, S. Naomi leg.

Distribution. Japan (Honshu, Shikoku, Kyushu; Mikura Is., Nansei Is.); Taiwan, China.

Redescription. Male and female: Macropterous; body 2.3–2.8 mm (fore body 1.3–1.5 mm) in length, weakly shining, with short antennae. Body dark brown to black; labrum black; antennae with 1st segment black, remaining segments yellowish brown to reddish brown; legs pale yellowish brown to reddish brown, with knees infuscate. Head widely but shallowly depressed dorsally, but the depressed area between eyes almost flat; punctures round, very dense, distinct. Pronotum with surface weakly uneven; punctures round, very dense, strong. Elytra well-convex dorsally; surface similarly punctate as on pronotum. Legs short; tarsi short, with 4th tarsomere strongly bilobed. Abdomen cylindrical, narrowed posteriorly; punctures round, very dense and regular, but punctures becoming gradually smaller posteriorly toward 8th segment; 9th tergum posteriorly with a cleaning comb (Fig. 98B, E); 10th tergum widely, moderately deeply emargin-

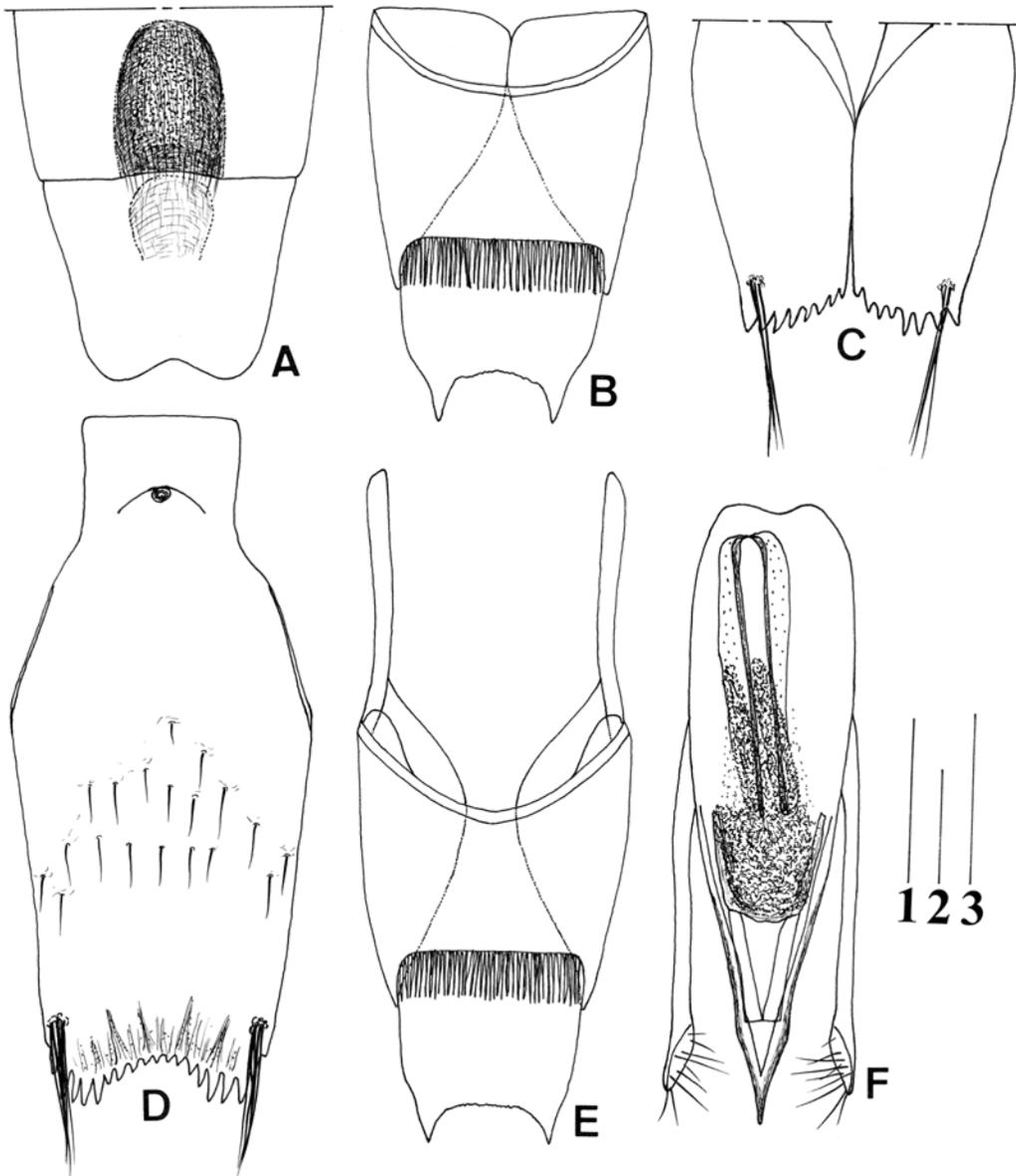


Fig. 98. *Stenus dissimilis* Sharp (Yaku, Kagoshima). A, 7th to 8th ventrites of male; B, 9th and 10th terga of female; C, gonocoxites; D, 9th ventrite of male; E, 9th and 10th terga of male; F, aedeagus. Scale 1: 0.2 mm for A; scale 2: 0.1 mm for B, E, F; scale 3: 0.1 mm for C, D.

ate posteriorly, apicolaterally with an acute tooth at each side (Fig. 98B, C). Lateroventrites and tergo-ventrite sutures completely missing on abdomen.

Male: Seventh ventrite (Fig. 98A) medially with a large, elongate-subovoid depression, which is moderately deep and shallowly emarginate; 8th ventrite (Fig. 98A) anteromedially with a very shallow, subovoid depression, and posteromedially with a wide emargination; 9th tergum (Fig. 98E) with anterolateral flaps rounded, ventral apophyses very long; 9th ventrite (Fig. 98D) widely emarginate and also strongly serrate posteriorly, with stem quadrangular in shape,

apicolateral setae moderately long. Aedeagal median lobe (Fig. 98F) slender, angulate at apicolateral corners, and very acutely pointed apically. Endophallic median longitudinal bands (Fig. 98F) relatively short, diverging anteriorly; expulsion hook (Fig. 98F) U-shaped; basal tube (Fig. 98F) comprising a simple rod wrapped by the inner sac which is posteriorly covered with dense spinules. Parameres (Fig. 98F) slender, almost straight; apical area short, weakly swollen mesially, and furnished mesially with 9 to 10 sparse setae of various length.

Female: Eighth ventrite gently rounded posteriorly; gonocoxites (Fig. 98C) each strongly serrate posteriorly, with apicolateral setae moderately long; 10th tergum (Fig. 98B) a little more strongly narrowed posteriorly than in male. Spermatheca not observable.

Biology and Ecology. *S. dissimilis* is a relatively rare *Stenus* species in Japan; and the beetles inhabit leaf litter in or near the shrubs and forests of plains and low mountainous regions. The beetles were collected by car-net trap in Ishigaki Is., Okinawa.

Remarks. *Stenus dissimilis* is closely allied to *S. bicuspis* Puthz, 1983 from Vietnam, but this species is separable from the latter by the elytra smaller and the lateral part of 10th tergum rounded (Fig. 98B, E). Among the Japanese members of this group, *S. dissimilis* is similar to *S. confertus*, but this species is easily separable from the latter by the 1st segment of antenna black and the 10th tergum more deeply emarginate posteriorly (Fig. 98B, E).

Species group of *S. similis* (Herbst)

S. similis group consists of 7 species in Japan; see Puthz (2008a) regarding a taxonomic information of this group and a key to the species of *S. cicindeloides* complex. Diagnostic characters are as follows: Body robust, with cylindrical abdomen (Fig. 134C); legs with 3th tarsomere more or less emarginate posteriorly, 4th tarsomere strongly bilobed; lateroventrites and tergo-ventrite sutures missing on abdomen; aedeagal median lobe more or less pointed apically (Fig. 99B), with endophallic basal tube thick (Fig. 103A); spermatheca not observable.

The Japanese members of this group will be divided into two subgroups on the basis of the morphology of 9th ventrite of male, gonocoxite, etc. in the following way: (1) *S. bohemicus* and *S. aquilonalis*: 9th ventrite of male with stem elongate and narrow, apicolateral teeth missing; gonocoxite without (distinct) apicolateral teeth (if present it is very small); and aedeagal median lobe simply pointed apically; and (2) *S. sedatus*, *S. weisei*, *S. mercator*, *S. cicindeloides* and *S. kiesenwetteri*: 9th ventrite of male with stem wide, mostly transverse, more or less constricted basally, and widely emarginate anteriorly (or projecting anterolaterally; or bilobed), with apicolateral teeth distinctly pointed; gonocoxite with distinct apicolateral teeth; aedeagal median lobe pointed apically but also with a small globe or tubercle at the apicalmost part.

Key to the Japanese species of *S. similis* group

- 1(4) Antennae with 1st segment dark brown to black; 9th ventrite of male with stem elongate, apicolateral teeth missing (Fig. 99C).
- 2(3) Eighth ventrite of female with posteromedian projection shorter, rounded (Fig. 99H); 9th ventrite of male rounded posteriorly (Fig. 99C); 10 tergum longer, more strongly narrowed apically (Fig. 99A); aedeagal paramere distinctly longer (Fig. 99B).....
..... *S. bohemicus* Machulka
- 3(2) Eighth ventrite of female with posteromedian projection longer, pointed (Fig. 100F); 9th ventrite of male widely emarginate posteriorly (Fig. 100B); 10 tergum shorter, less strongly

- narrowed apically (Fig. 100A); aedeagal paramere distinctly shorter (Fig. 100C)
 *S. aquilonalis* Naomi & Puthz
- 4(1) Antennae with 1st segment yellowish brown; 9th ventrite of male with stem wide, widened anteriorly, apicolateral teeth pointed (Fig. 104A).
- 5(8) Abdomen covered with relatively long, suberect pubescence.
- 6(7) Body more slender (Fig. 134F); aedeagal median lobe with apicolateral part gently rounded (Fig. 102A, B); endophallic expulsion hook simply narrowed apically (Fig. 102F, G); basal tube narrowed apically (Fig. 102E)..... *S. sedatus* Sharp
- 7(6) Body thicker and wider (Fig. 134G); aedeagal median lobe with apicolateral part almost straight (Fig. 103A, B); endophallic expulsion hook weakly spatulate apically (Fig. 103A, H); basal tube gradually widened apically (Fig. 103A, D) *S. weisei* Bernhauer
- 8(5) Abdomen covered with very short, decumbent pubescence.
- 9(12) Elytra without colored maculae; 5th and 6th ventrite of male without modifications.
- 10(11) Body thinner, narrower (Fig. 134E), and black in coloration with weak greenish reflection; pronotum and elytra with punctures smaller.....*S. mercator* Sharp
- 11(10) Body thicker, wider (Fig. 134H), and simply black in coloration; pronotum and elytra with punctures larger*S. cicindeloides* (Schaller)
- 12(9) Elytra with a pair of reddish maculae; 5th and 6th ventrite of male each posteromedially with a depression (Fig. 105A).....*S. kiesenwetteri* Rosenhauer

***Stenus bohemicus* Machulka**

(Figs. 99A–H, 134C)

Stenus bohemicus Machulka, 1947: 88; Herman, 2001: 2094; Naomi & Puthz, 2013: 139.

Type material. Type ♂, type locality: Bohemia mer.: Veselí n. Lužnicí.

Other material examined. [HOKKAIDO]: 1 ♂3 ♀, Ashoro, 25. vi. 1986, K. Morimoto leg.; 1 ♂6 ♀, Nakayama Pass, 22. vi. 1986, K. Morimoto leg.; 1 ♂, Harutori, Kushiro City, 9. vii. 1998, T. Matsumoto leg.; 1 ♀, Yubetsu River, Engaru, 27. vii. 1999, S. Ohmomo leg.; 1 ♀, Obihiro City, 6. vi. 1980, H. Togawa leg.; 1 ♂5 ♀, Iwabokki, Kushiro Moor, 25. viii. 1990, M. Sato leg.; 1 ♂4 ♀, Kirakotan, Kushiro Moor, 25. viii. 1990, M. Sato leg.; 1 ♂2 ♀, Akanuma, Kushiro Moor, 25. viii. 1990, M. Sato leg.; 1 ♀, Shirarutoro, Kushiro Moor, 24. viii. 1990, M. Sato leg.; 1 ♂, same locality, 11. vi. 1990, R. Kuranishi leg.; 1 ♀, same locality, 4. vi. 1991, R. B. Kuranishi leg.; 1 ♀, Guchian. [HONSHU]: 2 ♂2 ♀, Kasamatsu, Towadako-machi, Aomori Pref., 2. viii. 1998, H. Yoshitomi leg.; 1 ♀, Sukayu Spa, Aomori City, Aomori Pref., 2. viii. 1998, A. Ishizuka leg.

Distribution. Japan (Hokkaido, Honshu: Aomori Pref.); Korea, China, Mongolia, Europe.

Redescription. Male and female: Macropterous; body 4.0–5.3 mm (fore body 2.1–2.7 mm) in length, weakly shining, covered with short, silvery pubescence, with antennae short. Body entirely black; labrum black; antennae with 1st and also 2 or 3 apical segments dark brown, remaining segments clear yellow to yellowish red; legs black but tarsi reddish brown. Head not concave dorsally, with a pair of elongate depressions, median area between the depressions weakly convex, and a little higher in level than mesial margin of eye; punctures round, very dense, small, distinct. Pronotum distinctly narrower than elytra; surface behind the middle with a pair of oblique, shallow furrows which converge posteriorly; punctures round to almost round, very dense. Elytra large, shallowly impressed around the basal half of suture, with humeri devel-

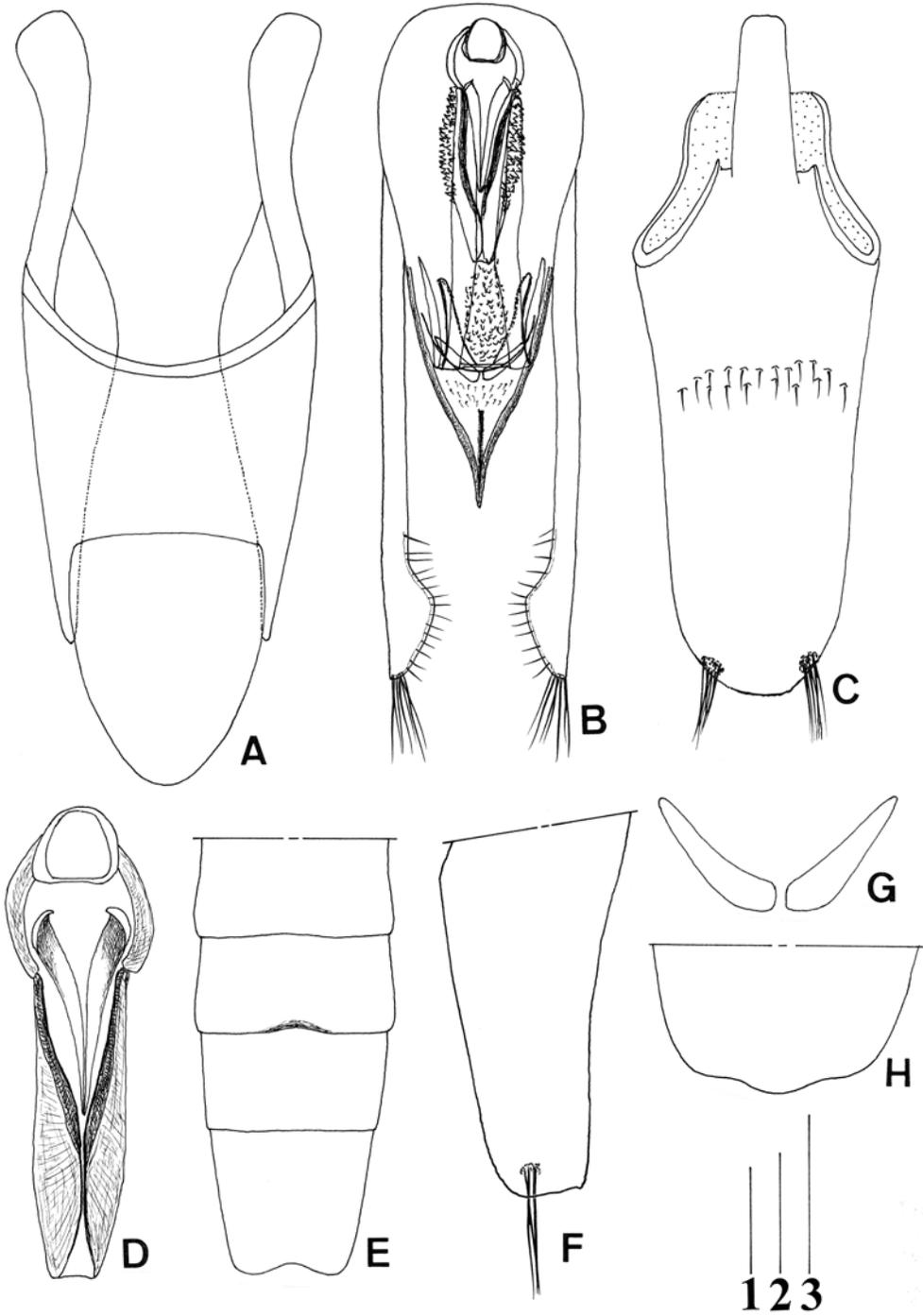


Fig. 99. *Stenus bohemicus* Machulka (A, Akanuma, Hokkaido; B–E, G, Iwabokki, Hokkaido; F, H, Guchian, Hokkaido). A, 9th and 10th terga of male; B, aedeagus; C, 9th ventrite of male; D, endophallic basal tube; E, 5th to 8th ventrites of male; F, gonocoxite; G, expulsion hooks; H, apex of 8th ventrite of female. Scale 1: 0.2 mm for A–C, H, 0.1 mm for D; scale 2: 0.5 mm for E; scale 3: 0.2 mm for F, 0.1 mm for G.

oped; surface similarly punctate as on pronotum. Legs moderately long; tarsi with 3th tarsomere widely emarginate posteriorly, 4th tarsomere strongly bilobed. Abdomen cylindrical, weakly narrowed posteriorly, 3rd tergum with a short, basimedial keel; punctures round, moderately dense to dense, small and somewhat irregular in anterior segments, while punctures in posterior segments round, very dense, small and almost regular. Lateroventrites and tergo-ventrite sutures completely missing on abdomen.

Male: Fifth ventrite (Fig. 99E) posteromedially with a very shallow emargination; 6th ventrite (Fig. 99E) posteromedially with a shallow emargination and also a very narrow, depressed area along the emargination; 7th ventrite (Fig. 99E) without modification; 8th ventrite (Fig. 99E) posteromedially with a wide emargination; 9th tergum (Fig. 99A) elongate, with ventral apophyses thick, weakly spatulate apically; 9th ventrite (Fig. 99C) elongate, rounded posteriorly, with stem elongate-rectangular in shape, with apicolateral setae short, apicolateral teeth missing; 10th tergum (Fig. 99A) elongate, rounded posteriorly. Aedeagal median lobe (Fig. 99B) relatively short, bulbous basally, then strongly narrowed apically toward the acutely pointed apex, with apical sclerotized area ventrally with median longitudinal keel, and lateral rim narrow but distinctly declivent (when seen ventrally). Endophallic median longitudinal bands (Fig. 99B) very long, reaching anteriorly the posterior margin of basal room; lateral longitudinal bands (Fig. 99B) short, thin; expulsion hooks (Fig. 99B, G) comprising the paired elongate sclerites; basal tube (Fig. 99B) robust, basal room connected with a basal-ring-like structure, tube body thick, with sclerotized ventral rims, and a V-shaped sclerite nested within the basal tube (Fig. 99D); inner sac (Fig. 99B) visible with the areas which are covered densely with small spicules along the lateral margins of tube body. Parameres (Fig. 99B) very long, straight, and extending posteriorly much beyond the apex of median lobe; apical area subtriangular, and furnished mesially with 13 to 15 short setae, and 7 to 8 setae of moderate length at the mostapical part.

Female: Eighth ventrite (Fig. 99H) posteromedially with a short, round projection; gonocoxites (Fig. 99F) each angulate apicomedia, rounded apicolaterally, with apicolateral setae moderately long; 10th tergum elongate, rounded posteriorly. Spermatheca not observable.

Biology and Ecology. *Stenus bohemicus* is distributed in the plains and low mountainous regions. The beetles live under dead leaves near the watersides; and they occasionally climb the grasses (such as *Carex*) and ramble along the leaves.

Remarks. *Stenus bohemicus* was first discovered from Japan (Hokkaido) by Naomi (1990c); and it is here first discovered from Honshu (Aomori). This species is allied to *S. tarsalis* Ljungh, 1810, but it is separable from the latter by the body distinctly covered with silvery short pubescence, the elytra distinctly wider than pronotum, the 3rd tergum with a short, basimedial keel, and the aedeagal paramere much longer (Fig. 99B) (Lohse, 1964). Among the Japanese members of this group, *S. bohemicus* is allied to, and also very similar in external structure to *S. aquilonalis*, but it is separable from the latter by the 8th ventrite of female with posteromedian projection shorter and rounded (Fig. 99H), the 9th ventrite of male rounded posteriorly (Fig. 99C), the 10th tergum longer (Fig. 99A), and the aedeagal paramere distinctly longer, with its apical area smaller (Fig. 99B).

***Stenus aquilonalis* Naomi & Puthz**
(Figs. 100A–G, 134D)

Stenus aquilonalis Naomi & Puthz, 1997: 748; Herman, 2001: 2060; Naomi & Puthz, 2013: 139.

Type material examined. Holotype: ♂ (CBM), Daisetsu Lake, Kamikawa, Hokkaido, 11. vi. 1993, N. Yasuda leg. Paratypes: 1 ♀ (cN), same locality as holotype; 1 ♂ (cN), Hoshino, Tochigi City, Tochigi Pref., 25. ii. 1990, H. Yoshitomi leg.

Other material examined. [HOKKAIDO]: 2 ♀, Goshiki Spa, Niseko-machi, 12. vii. 1999. [HONSHU]: 1 ♀, Okukinu River, Shioya-machi, Tochigi Pref., 20. vi. 1998, K. Sato leg.; 1 ♂, Koukawa, Daisen-cho, Tottori Pref., 25. ii. 1990, H. Yoshitomi leg.

Distribution. Japan (Hokkaido, Honshu); Russia (Sakhalin).

Redescription. Male and female: Macropterous; body 4.5–4.9 mm (fore body 2.5–2.7 mm) in length, stout, weakly shining, covered with short, silvery pubescence, and with antennae short. Body entirely black; labrum black; antennae with 1st and also apical 2 or 3 segments dark brown to black, remaining segments yellowish brown to reddish brown; legs black but tarsi reddish brown. Head not concave dorsally, with a pair of elongate depressions, median area between the depressions weakly convex; punctures round, very dense, small, distinct. Pronotum with surface behind the middle with a pair of oblique, shallow furrows which converge posteriorly; punctures round to almost round, very dense, distinct. Elytra large, shallowly impressed around the basal half of suture; surface similarly punctate as on pronotum, but punctures a little larger than those on it. Legs moderately long; tarsi with 3th tarsomere widely emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, 3rd tergum with a short, basimedial keel; punctures round, dense and small in anterior segments, while punctures in posterior segments round to elliptical, very dense, very small and regular. Lateroventrites missing, but only tergo-ventrite sutures existing and extremely thin on 4th to 6th segments.

Male: Seventh ventrite (Fig. 100G) posteromedially with a very shallow emargination; 8th ventrite posteromedially with a simple, shallow emargination or a shallow bi-emargination (Fig. 100G); 9th tergum (Fig. 100A) with posterolateral projections long, ventral apophyses wide, subtriangular in shape; 9th ventrite (Fig. 100B) wide, parallel-sided, weakly angulate apicolaterally, and widely emarginate posteriorly, with stem elongate, weakly apatulate apically, apicolateral setae very long; 10th tergum (Fig. 100A) rounded posteriorly. Aedeagal median lobe (Fig. 100C) weakly constricted at about basal 1/3, gently rounded apicolaterally, and acutely pointed apically; apical sclerotized area ventrally with a median longitudinal keel. Endophallic median longitudinal bands (Fig. 100C) short, ventral bands each strongly sclerotized along mesial margin; expulsion hooks (Fig. 100C, E) paired, connected each other by a mesial corner; basal tube with basal room small, tube body widened toward apex, thick (Fig. 100C) or very thick; inner sac (Fig. 100C) laterally covered with small spicules. Parameres (Fig. 100C) robust; stem with a sclerotized, longitudinal keel; apical area very large, hatchet-shaped, and flat horizontally, and furnished with 13 to 15 setae of various length along mesial margin, with several long setae at the apicalmost part, and also with a few setae on the ventral surface, which is mesially covered with dense, scale-like sculptures.

Female: Eighth ventrite (Fig. 100F) posteromedially with a short, pointed projection; gonocoxites (Fig. 100D) each angulate apicomedia, very finely serrate posteriorly, with apicolateral tooth small, pointed, apicolateral setae very long. Spermatheca not observable.

Biology and Ecology. *S. aquilonalis* is a very rare *Stenus* species in Japan. The beetles live in the vicinity of rivers and torrents running at the mountainous regions.

Remarks. *Stenus aquilonalis* is allied to *S. bohemicus*, but this species is separable from the latter by the 8th ventrite of female with posteromedian projection longer and pointed (Fig. 100F), the 9th ventrite of male wider, and shallowly emarginate posteriorly (Fig. 100B), the 10th tergum shorter, and less strongly narrowed apically (Fig. 100A), and the aedeagal paramere distinctly

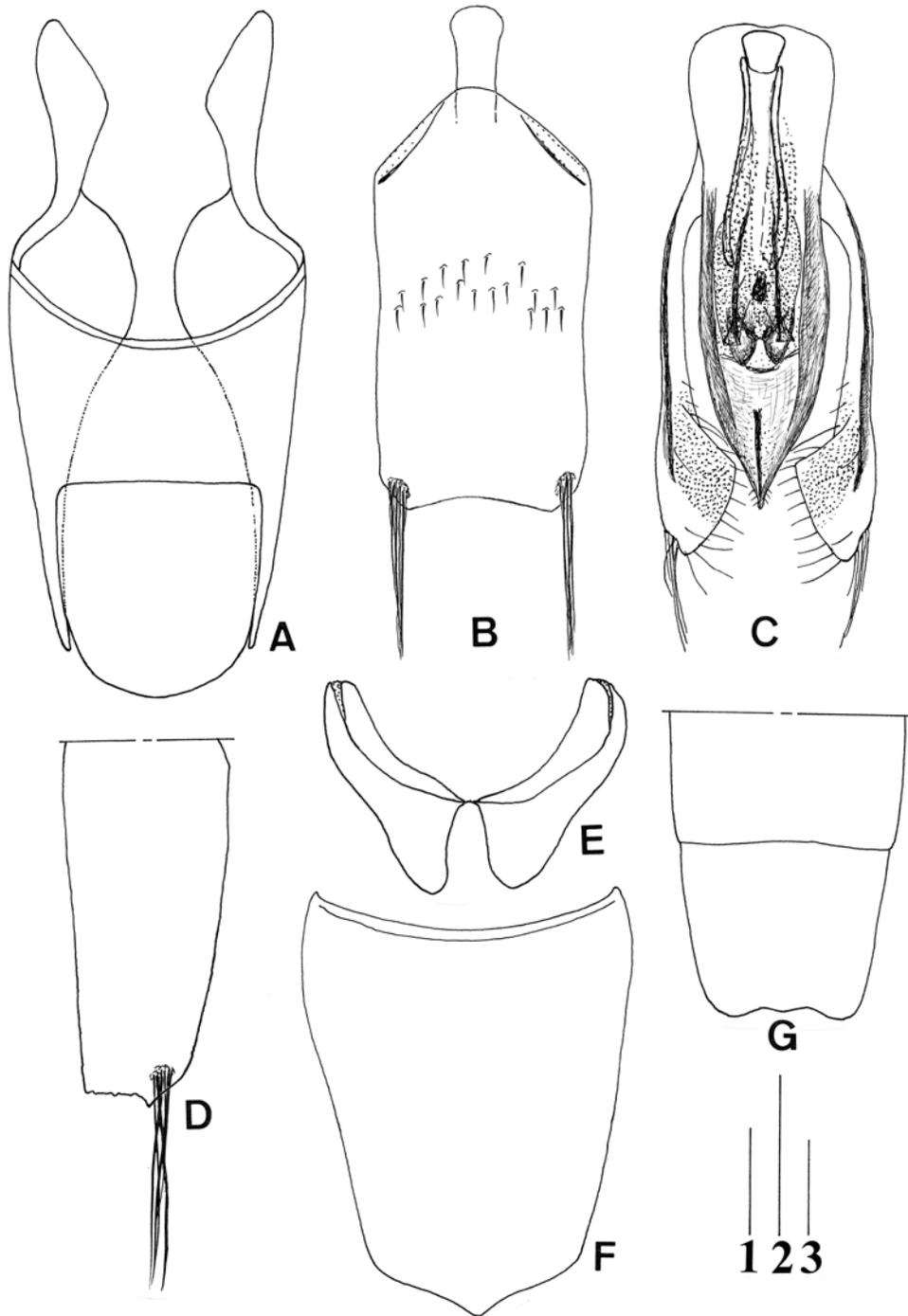


Fig. 100. *Stenus aquilonalis* Naomi & Puthz (A–C, E, G, Hoshino, Tochigi; D, F, Daisetsu, Hokkaido). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, gonocoxite; E, endophallic expulsion hooks; F, 8th ventrite of female; G, 7th to 8th ventrites of male. Scale 1: 0.2 mm for A–C, F; scale 2: 0.2 mm for D, 0.1 mm for E; scale 3: 0.3 mm for G.

shorter, with its apical area larger (Fig. 100C).

Stenus mercator Sharp

(Figs. 101A–G, 134E)

Stenus mercator Sharp, 1889: 333; Herman, 2001: 2283; Naomi & Puthz, 2013: 139.

Type material. Syntypes (NHML), type locality: Junsai, Niigata.

Other material examined. [HOKKAIDO]: 2 ♀, Iwabokki, Kushiro Moor, 25. viii. 1990, M. Sato leg.; 2 ♂1 ♀, same locality, 26. viii. 1990, M. Sato leg.; 5 ♂2 ♀, same locality, 29. viii. 1990, M. Sato leg.; 1 ♂, Kabuto-mura, Toyotomi-machi, 12. vii. 1980, H. Takemoto leg.; 1 ♀, Porotoko Lake, Tomakomai City, 30. v. 1991, R. B. Kuranishi leg.; 3 ♀, Shirarutoro Lake, Kushiro City, 4. vi. 1991, R. B. Kuranishi leg.; 1 ♂1 ♀, Shibetsu River, Shibetsu-cho, 25–28. Vi. 2001, T. Shimada leg. [HONSHU]: 1 ♂2 ♀, Kasumigaura, Ibaraki Pref., 30. iv. 1984, S. Ohmomo leg.; 1 ♂2 ♀, Suidobashi, Shonan-cho, Chiba Pref., 6. i. 1990, T. Takeda leg.; 1 ♂, Misugi-mura, Mie Pref., 29. iv. 1955, Z. Naruse leg. [KYUSHU]: 1 ♀, Imuta, Soyo-cho, Kumamoto Pref., 1. v. 1993, S. Nomura leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu); Korea, China, Russia.

Redescription. Male and female: Macropterous; body 5.3–5.6 mm (fore body 2.5–2.7 mm) in length, shining, covered with very short, decumbent pubescence, with antennae moderately long. Body black, with bluish and/or greenish reflection; labrum black, with its anterior margin reddish brown; antennae clear yellow to reddish brown; legs yellowish brown to reddish brown, but apical part of femur, middle of tibia, and apical part of each of 1st to 3rd tarsomeres infusate. Head with a pair of elongate depressions, median area between the depressions distinctly convex; punctures round, very dense, small, distinct. Pronotum with surface weakly uneven; punctures round to almost round, dense to very dense, distinct. Elytra shallowly impressed around the basal half of suture; surface similarly punctate as on pronotum, but punctures a little larger than those on it. Legs moderately long; tarsi with 3th tarsomere emarginate, 4th tarsomere strongly bilobed. Abdomen strongly cylindrical; punctures dense and very small to small throughout, but becoming on average gradually smaller toward 8th segment. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Male: Eighth ventrite (Fig. 101E) posteromedially with a triangular emargination; 9th tergum (Fig. 101A) elongate, with posterolateral projections long, very acute apically, ventral apophyses long, straight; 9th ventrite (Fig. 101D) distinctly serrate posteriorly, with stem wide, widely emarginate anteriorly, and acutely pointed anterolaterally, apicolateral teeth very acute, apicolateral setae long; 10th tergum (Fig. 101A) entire. Aedeagal median lobe (Fig. 101C) moderately bulbous in basal 2/3, rounded apicolaterally, and strongly narrowed apically with a small subglobose apex; apical sclerotized area subtriangular in shape, with a very small apicoventral protuberance which turns anteriorly. Endophallic median longitudinal bands (Fig. 101C) long, slender; expulsion hooks (Fig. 101C) almost H-shaped, connected by the point a little before the middle of mesial margin, each hook weakly widened posteriorly; basal tube (Fig. 101C) with basal room probably missing, tube body consisting of the straight basal rod and the apical subfusiform structure; inner sac (Fig. 101C) posteriorly covered with small spicules. Parameres (Fig. 101C) thin, slender; apical area short, weakly swollen mesially, and furnished with 21 to 22 setae of various length.

Female: Eighth ventrite (Fig. 101G) obtusely pointed posteromedially; gonocoxites (Fig.

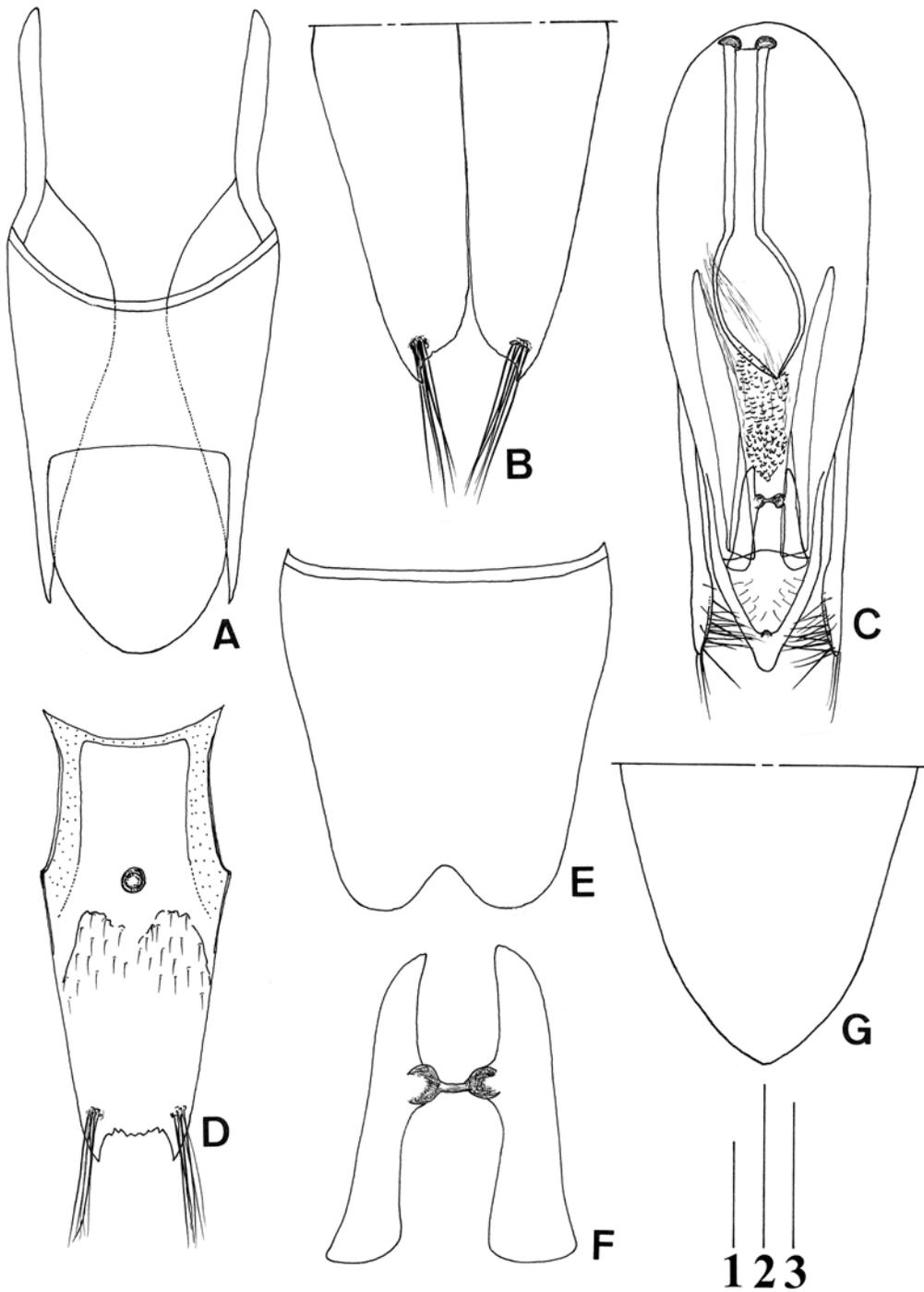


Fig. 101. *Stenus mercator* Sharp (A, E, Misugi, Mie; B–D, G, Suidobashi, Chiba; F, Iwabokki, Hokkaido). A, 9th and 10th terga of male; B, gonocoxites; C, aedeagus; D, 9th ventrite of male; E, 8th ventrite of male; F, endophallic expulsion hook; G, apex of 8th ventrite of female. Scale 1: 0.2 mm for A, C, D; scale 2: 0.2 mm for B, 0.1 mm for F; scale 3: 0.3 mm for E, G.

101B) each narrowed apically, rounded apicomediaally, with apicolateral tooth very acute, apicolateral setae long. Spermatheca not observable.

Biology and Ecology. *Stenus mercator* is distributed in the plains and low mountainous regions. The beetles inhabit the watersides of rivers and marshes.

Remarks. *Stenus mercator* is allied to *S. sedatus* and *S. weisei*, but this species is easily separable from the latter two species by the abdomen covered with very short, decumbent pubescence and also with smaller, denser and more regular punctures (Fig. 134E), and the aedeagal median lobe distinctly wide apically (Fig. 101C).

***Stenus sedatus* Sharp**
(Figs. 102A–H, 134F)

Stenus sedatus Sharp, 1889: 333; Herman, 2001: 2385; Naomi & Puthz, 2013: 140.

Type material examined. Holotype: ♀ (NHML), type locality: Niigata, Japan [examined by Puthz in 1970].

Other material examined. [HONSHU]: 2♂, Saitu, Tohoku-machi, Aomori Pref., 3. viii. 1998, H. Yoshitomi leg.

Distribution. Japan (Honshu); Korea, China?

Redescription. Male: Macropterous; body 4.5–4.6 mm (fore body 2.2–2.3 mm) in length, slender, shining, with antennae long. Body black, with greenish-bluish or coppery reflection; labrum dark brown to black; antennae clear yellow to reddish brown; legs yellowish brown to reddish brown, but knees and apical part of each of 1st to 3rd tarsomeres more or less infuscate. Head laterally with a pair of wide depressions, median longitudinal area between the depressions distinctly convex; punctures round, very dense and small on head, but the median longitudinal area impunctate. Pronotum with surface almost smooth, punctures round and dense to very dense, but a median longitudinal area impunctate and indistinct in outline. Elytra weakly uneven; punctures round, very dense. Legs long; tarsi with 3rd tarsomere weakly emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, covered with relatively long, suberect pubescence; punctures round to elliptical, dense to very dense, and moderately large in anterior parts of 3rd to 6th segments, while they are sparse and very small in posterior parts of 3rd to 6th segments; punctures dense, very small to small in 7th and 8th segments. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Fifth ventrite (Fig. 102H) posteromedially with a short, very shallow depression, which is very shallowly emarginate posteriorly; 6th ventrite (Fig. 102H) posteromedially with a narrow, moderately deep, bell-shaped depression, which is arcuately emarginate posteriorly; 7th ventrite (Fig. 102H) posteromedially with a bell-shaped, flat area, which is very shallowly emarginate; 8th tergum shallowly, widely emarginate posteriorly; 8th ventrite (Fig. 102H) posteromedially with a V-shaped emargination; 9th tergum (Fig. 102C) elongate, with posterolateral projections long, ventral apophyses long, straight; 9th ventrite (Fig. 102D) elongate, with stem wide, weakly constricted at base, and arcuately emarginate anteriorly, apicolateral teeth short, pointed, apicolateral setae moderately long; 10th tergum (Fig. 102C) entire. Aedeagal median lobe (Fig. 102A, B) weakly or moderately bulbous in basal half, gently rounded apicolaterally, and narrowed apically with a small tubercle at the apicalmost part; apical sclerotized area a little behind the middle with a very small apicoventral protuberance which turns anteriorly. Endophallic median longitudinal bands (Fig. 102E) moderately long, ventral bands long, dorsal bands *in situ* with

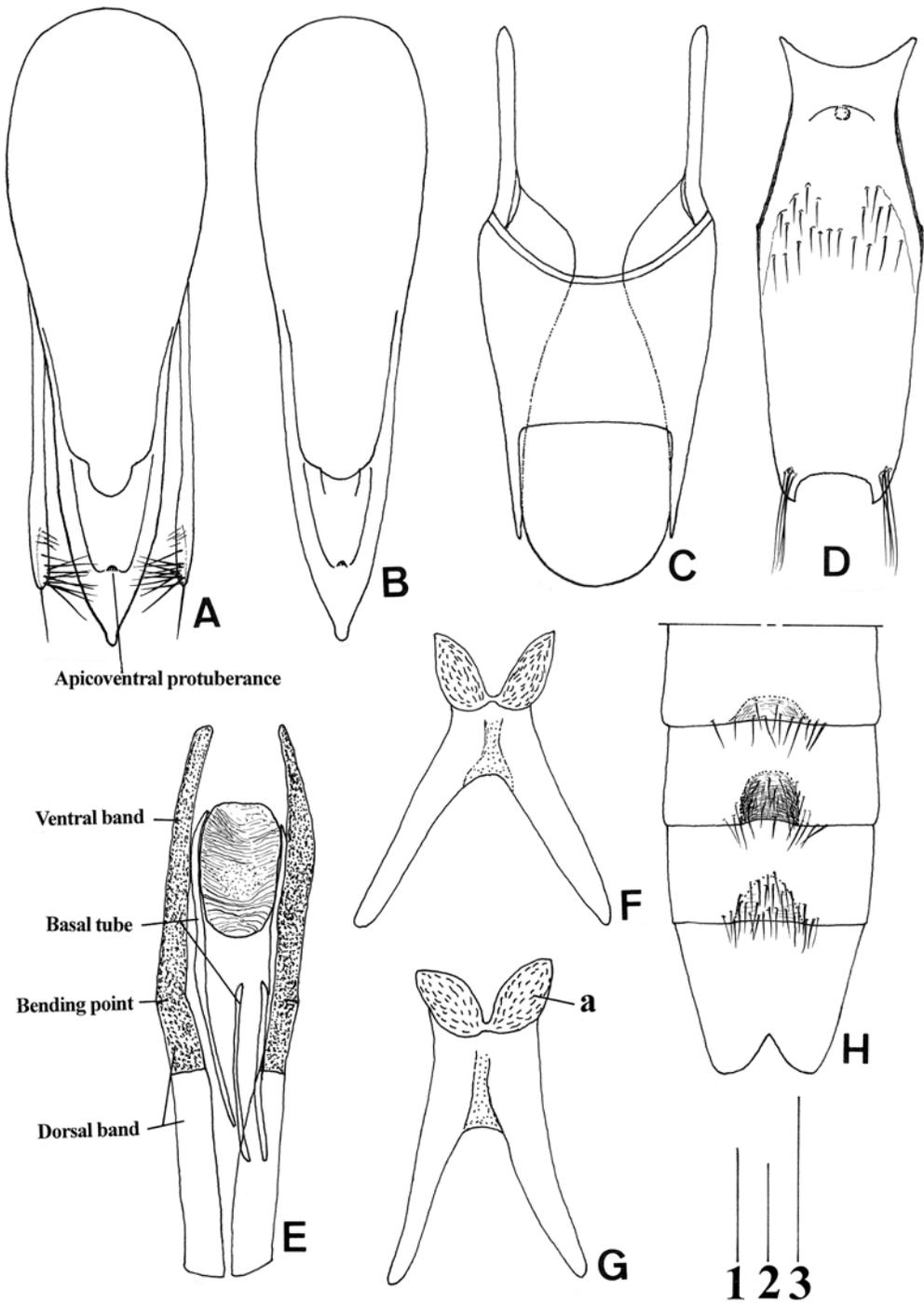


Fig. 102. *Stenus sedatus* Sharp (Saitu, Aomori). A, aedeagus; B, aedeagal median lobe; C, 9th and 10th terga of male; D, 9th ventrite of male; E, endophallic structures; F, G, endophallic expulsion hook; H, 5th to 8th ventrites of male. Scale 1: 0.2 mm for A–D; scale 2: 0.3 mm for H; scale 3: 0.2 mm for E, 0.1 mm for F, G.

anterior 2/3 smooth on the surface; expulsion hooks (Fig. 102F, G) almost V-shaped, fused at least at the anterior 1/3, with each hook simply, weakly narrowed apically; basal tube (Fig. 102E) thick, rod-like, basal room very large but without basal constriction, tube body narrowed apically, with a narrow, rod-like tube partially nested in it; inner sac furnished ventrally with a pair of fusiform sclerites (Fig. 102F, G). Parameres (Fig. 102A) short, thin, slender; apical area very weakly swollen mesially, and furnished with 5 to 6 short, thin setae at the basal part of its mesial side, and with 11 to 12 moderately long setae at the apical half of its mesial side, and also with 1 moderately long seta at the apicalmost part.

Biology and Ecology. *S. sedatus* is a very rare *Stenus* species in Japan; and it is distributed in the plains and low mountainous regions. The beetles inhabit watersides of the rivers and marshes. They occasionally climb the stalk of *Carex* and other grasses, and ramble along the leaves.

Remarks. Only two male specimens of *Stenus sedatus* are examined, but they show variations regarding the following two points. First, median lobe of one male (Fig. 102B) is a little narrower than that of the other male (Fig. 102A); and second, anterior emargination of the apical sclerotized area of median lobe of one male (Fig. 102B) is distinctly shallower than that of the other male (Fig. 102A). However, these two males certainly show the common general shape of median lobe as described above; and furthermore, there is no variation regarding the endophallic structures, suggesting that they belong to the same species.

S. sedatus is the sister species of *S. weisei*, but this species is separable from the latter by the body more slender (Fig. 134F), the 6th ventrite of male posteromedially with a narrower depression (Fig. 102H), the 9th ventrite of male simply, arcuately emarginate (Fig. 102D), the aedeagal median lobe gently rounded at apicolateral part, with the apicoventral protuberance located behind the middle of apical sclerotized area (Fig. 102A, B), the endophallic expulsion hook simply narrowed apically (Fig. 102F, G), and the basal tube narrowed apically (Fig. 102E).

***Stenus weisei* Bernhauer sp. propr.**
(Figs. 103A–H, 134G)

Stenus weisei Bernhauer, 1912: 259.

Stenus sedatus Sharp, 1889: Puthz, 1971c: 14.

Type material examined. Holotype: ♀ (FMC), type locality: Nemoro, Hokkaido [examined by Puthz in 1967].

Other material examined. [HOKKAIDO]: 1 ♂, Shibecha, 16. vi. 1985, M. Abe leg.; 1 ♀, Futatsuyama, Shibecha, 1. ix. 1993, K. Iijima leg.; 3 ♂, Daijyu-cho, 8. vii. 2001, K. Haga leg.; 1 ♂, Zaimoku-cho, Kushiro City, 9. vii. 1998, T. Katsumoto leg.

Distribution. Japan (Hokkaido); Russia (?).

Redescription. Male and female: Macropterous; body 4.6–5.0 mm (fore body 2.5–2.6 mm) in length, elongate but somewhat robust, shining, with antennae long. Body black, with feeble greenish-bluish or coppery reflection; labrum black with its anterior margin reddish brown; antennae clear yellow to reddish brown; legs yellowish brown to reddish brown, but knees and apical part of each of 1st to 3rd tarsomeres infusate. Head laterally with a pair of moderately deep, wide depressions, median longitudinal area between the depressions distinctly convex; punctures round, very dense and small on head, but the median longitudinal area impunctate. Pronotum with surface depressed obliquely on each lateral side; punctures round, dense to very

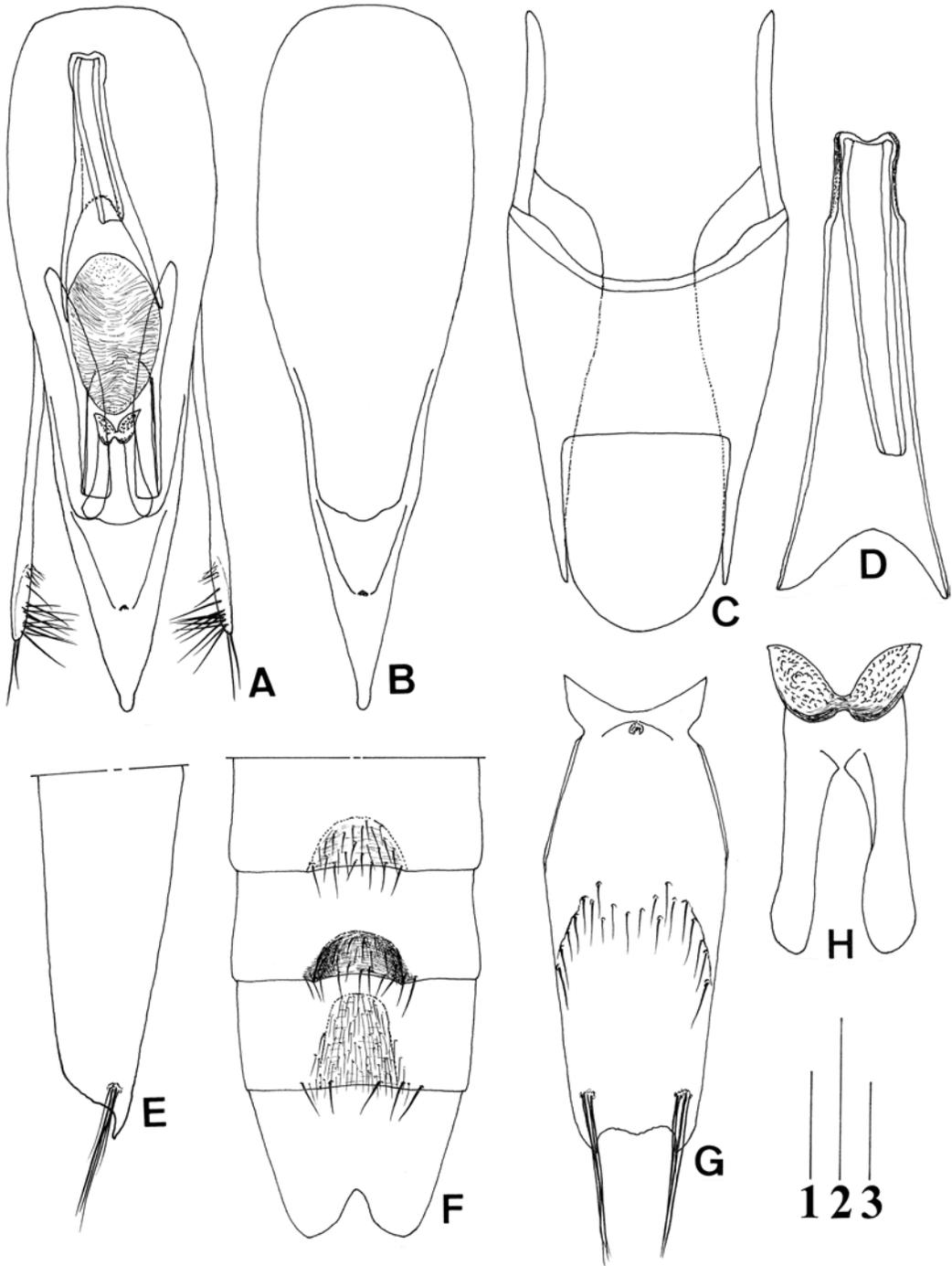


Fig. 103. *Stenus weisei* Bernhauer (A, C, E, G, Shibeche, Hokkaido; B, D, Zaimoku, Hokkaido; F, H, Daijyu, Hokkaido). A, aedeagus; B, aedeagal median lobe; C, 9th and 10th terga of male; D, endophallic basal tube; E, gonocoxite; F, 5th to 8th ventrites of male; G, 9th ventrite of male; H, expulsion hook. Scale 1: 0.2 mm for A–C, G, 0.1 mm for D; scale 2: 0.2 mm for E, 0.1 mm for H; scale 3: 0.3 mm for F.

dense. Elytra with surface weakly uneven; punctures round, very dense, almost regular. Legs long; tarsi with 3th tarsomere weakly emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, covered with relatively long, suberect pubescence; punctures round to elliptical, dense to very dense, and moderately large in anterior parts of 3rd to 6th segments, while they are sparse and very small to small in posterior parts of 3rd to 6th segments; punctures dense, very small to small in 7th and 8th segments. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Male: Fifth ventrite (Fig. 103F) posteromedially with a very shallow, bell-shaped depression, which is shallowly emarginate posteriorly; 6th ventrite (Fig. 103F) posteromedially with a moderately deep depression, which is ridged laterally and arcuately emarginate; 7th ventrite (Fig. 103F) medially with an elongate flat area, which is very shallowly emarginate; 8th ventrite (Fig. 103F) posteromedially with a deep V-shaped emargination; 9th tergum (Fig. 103C) elongate, with posterolateral projections long, ventral apophyses long, straight; 9th ventrite (Fig. 103G) elongate, shallowly bi-emarginate posteriorly, with stem wide, distinctly constricted at base, and arcuately emarginate anteriorly, apicolateral teeth short, pointed, apicolateral setae very long; 10th tergum (Fig. 103C) large, rounded posteriorly. Aedeagal median lobe (Fig. 103A, B) moderately bulbous in basal half, almost uniformly narrowed apically toward the apex with a small tubercle (or a tuberculous apicomedian projection) at the apicalmost part; apical sclerotized area elongate-triangular in shape, at or a little before the middle with a very small apicoventral protuberance. Endophallic median longitudinal bands (Fig. 103A) with ventral bands long, dorsal bands short; expulsion hooks (Fig. 103A, H) fused at anterior part, each elongate, weakly spatulate; basal tube (Fig. 103A, D) with basal room short, narrower than tube body, tube body wide, gradually widened apically, and with a narrow, rod-like tube entirely nested in it; inner sac ventrally with a pair of spindle-shaped sclerites (Fig. 103A, H). Parameres (Fig. 103A) short, thin, slender; apical area weakly swollen mesially, and furnished with 5 to 6 short, thin setae at the basal part of its mesial side, and with 10 to 12 moderately long setae at the apical half of its mesial side, and also with 1 or 2 moderately long seta at the apicalmost part.

Female: Eighth ventrite pointed posteromedially; gonocoxites (Fig. 103E) each slender, rounded apicomesially, with apicolateral tooth very acute, apicolateral setae long. Spermatheca not observable.

Biology and ecology. *S. weisei* is a rare *Stenus* species in Japan; and it is presently distributed in the plains of the eastern part of Hokkaido. The beetles inhabit moist litter of the grasses and reeds grown around the rivers, lakes and marshes. They often climb up the grasses such that they are collected by sweeping those grasses grown at watersides.

Remarks. *Stenus weisei* was first described as a new species by Bernhauer (1912) from "Nemoro" (=Nemuro), Hokkaido; and after that, *Stenus weisei* was synonymized with *S. sedatus* by Puthz (1971c). When considering the above-described morphological differences between these two species, it is however considered that *S. weisei* is not conspecific with *S. sedatus*. Given this, the name *Stenus weisei* is here resurrected from a subjective junior synonym of *S. sedatus* (Sharp: 1889).

S. weisei is closely allied to, and also similar in external structure to *S. sedatus*, but it is separable from the latter by the body thicker (Fig. 134G), the 6th ventrite of male posteromedially with a wider depression (Fig. 103F), the 9th ventrite of male bi-arcuate at posterior margin (Fig. 103G), the aedeagal median lobe almost straight at apicolateral part, with the apicoventral protuberance located at or before the middle of apical sclerotized area (Fig. 103A, B), the endophallic expulsion hook weakly spatulate apically (Fig. 103A, H), and the basal tube gradually widened

apically (Fig. 103A, D).

Etymology. The specific epithet of this species is named in honour of a German coleopterist Dr. Julius Weise.

***Stenus cicindeloides* (Schaller)**

(Figs. 2aC, D, 104A–G, 134H)

Stenus cicindeloides (Schaller, 1783): 324; Herman, 2001: 2121; Naomi & Puthz, 2013: 140.

Stenus cicindela Sharp, 1874: 85.

Type material. No data on type material are obtained (see also Herman, 2001: 2121).

Other material examined. [HOKKAIDO]: 2♂2♀, Ashoro, 25. vi. 1986, K. Morimoto leg.; 1♀, same locality, 26. vi. 1986, K. Morimoto leg.; 1♀, same locality, 24. vi. 1980, H. Takemoto leg.; 1♀, Nakayama Pass, 22. vi. 1986, K. Morimoto leg.; 1♀, Shirarutoro Lake, Kushiro, 4. viii. 1990, R. Kuranishi leg.; 1♂, Aioi, 24. vi. 1986, K. Morimoto leg. [HONSHU]: 2♂1♀, Sekinehama, Sekine, Mutsu City, Aomori Pref., 30. v. 1982, B. Tanaka leg.; 1♀, Mt. Kurikoma, Miyagi Pref., 21. vi. 1983, K. Morimoto leg.; 1♂, Nuruyu, Mt. Kurikoma, Miyagi Pref., 22. vi. 1983, Y. Sawada leg.; 2♂1♀, same locality, 23. vi. 1983, K. Morimoto leg.; 1♂, same locality, 6. viii. 1984, K. Morimoto leg.; 1♀, Mt. Kurikoma, Miyagi Pref., 21. vi. 1983, S. Nomura leg.; 1♂, Komanoyu, Mt. Kurikoma, Miyagi Pref., 21. vi. 1983, S. Nomura leg.; 1♂, Ishidoshuku, Saitama Pref., 11. v. 1986, M. Sato leg.; 1♀, Nakaminato, Ibaraki Pref., 8. iv. 1978, M. Tao leg.; 1♀, Marunuma, Oku-Nikko, Gunma Pref., 4–5. vii. 1982, S. Naomi leg.; 1♀, Shiobara, Tochigi Pref., 22. viii. 1996, T. Niisato leg.; 1♀, Yokohama City, Kanagawa Pref., 1. x. 1983, M. Tao leg.; 1♀, Midori-ku, Yokohama City, Kanagawa Pref., 5. v. 1987, M. Tao leg.; 1♀, Miyaura, Chiba Pref., 4. i. 1984, M. Tao leg.; 1♀, Yamazawa River, Kosuga-mura, Yamanashi Pref., 14. vi. 1991, R. B. Kuranishi leg.; 1♂, Naramata, Ikeda, Fukui Pref., 26. v. 1974, H. Sasaji leg.; 1♀, Fukui City, Fukui Pref., 28. v. 1980, H. Sasaji leg.; 2♀, Ohkochi, Imajo, Fukui Pref., 20. viii. 1973, H. Sasaji leg.; 1♂, Mt. Kyogatake, Ohno, Fukui Pref., 21. vii. 1980, H. Sasaji leg.; 4♂2♀, Kasugai, Aichi Pref., 20. v. 1956, M. Sato leg.; 1♀, Gounodo-koike, Aichi Pref., 9. vi. 1963, Z. Naruse leg.; 2♀, Seki, Gifu Pref., 4. vi. 1953, K. Ohbayashi leg.; 2♀, Wake, Okayama Pref., 17. iv. 1977, S. Naomi leg.; 1♂, same locality, 29. iv. 1977, S. Naomi leg.; 1♀, Okutsu-machi, Okayama Pref., 2. viii. 1977, M. Kaneda leg.; 1♀, same locality, 4. viii. 1977, Y. Tsuda leg.; 1♀, Araki, Saigo-cho, Dogo Is., Oki Isls., Shimane Pref., 7. viii. 2003, Y. Notsu leg. [KYUSHU]: 1♂, Chojabaru, Oita Pref., 26. vii. 1969, K. Kanmiya leg.; 1♂, Mt. Sobo, Oita Pref., 20–24. vii. 1980, K. Konishi leg.; 1♂, Jizobaru, Kokonoe-cho, Oita Pref., 26. v. 1988, K. Morimoto leg.; 1♂, Mt. Kuju, Ohita Pref., 23. ix. 1980, H. Makihara leg.; 1♂, Bogatsuru, Mt. Kuju, Oita Pref., 27. v. 1988, K. Morimoto leg.; 1♂, Mt. Kurodake, Kuju, Oita Pref., 3. ix. 1982, K. Konishi leg.; 1♂, Mt. Hiko, Fukuoka Pref., 13. vi. 1974, M.-T. Chujo leg.; 1♀, Mt. Tachibana, Fukuoka Pref., 7. v. 1980, S. Naomi leg.; 1♀, Chidori Pond, Koga-machi, Fukuoka Pref., 16. xi. 1991, S. Nomura leg.; 2♂2♀, Madara Is., Saga Pref., 1. x. 1989, S. Nomura leg.; 2♀, Teraura, Hizenchō, Saga Pref., 5. vi. 1993, S. Nomura leg.; 2♀, Imari City, Saga Pref., 30. x. 1977, H. Ohishi leg.; 2♂1♀, Kazusa-cho, Nagasaki Pref., 23. ii. 1979, S. Imasaka leg.; 2♂, Kuchinotsu-cho, Nagasaki Pref., 23. ii. 1979, S. Imasaka leg.; 1♀, Mt. Unzen, Nagasaki Pref., 21. viii. 1979, S. Imasaka leg. [TAIWAN]: 43♂57♀ (cS), Taiwan, Ilan Hsien, Shen-Mi Lake, 1110m, 9. v. 1995, A. Smetana leg.; 2♂5♀ (cS), China, N-Yunnan Dali Bai Nat. Aut. Pref. 4km E Dali Er Hai lake, 2020m, 27. viii. 2003, A. Smetana leg.

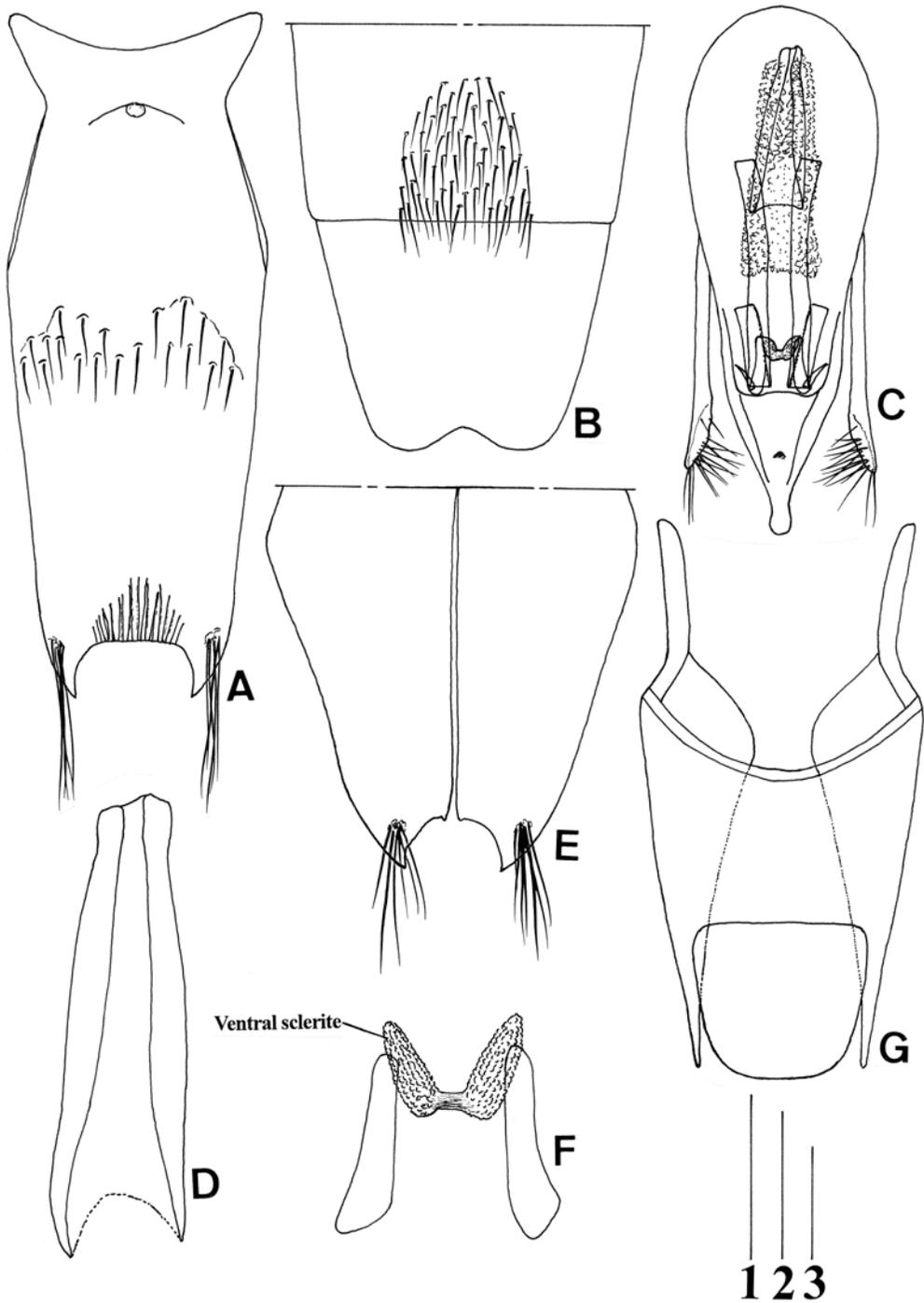


Fig. 104. *Stenus cicindeloides* (Schaller) (A, B, G, Marunuma, Gunma; C, Kuchinotsu, Nagasaki; E, Ohkochi, Fukui; D, F, Ashoro, Hokkaido). A, 9th ventrite of male; B, 7th to 8th ventrites of male; C, aedeagus; D, endophallic basal tube; E, gonocoxites; F, expulsion hooks with elongate-ovoidal sclerites; G, 9th and 10th terga of male. Scale 1: 0.2 mm for A, E, 0.1 mm for D, F; scale 2: 0.3 mm for B; scale 3: 0.2 mm for C, G.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Madara Is.); Korea, Taiwan, China, Vietnam, Mongolia, Russia, Europe, Madeira.

Redescription. Male and female: Macropterous; body 4.0–6.0 mm (fore body 2.3–2.7 mm) in length, robust, shining, with antennae moderately long; paraglossae ovoidal (Fig. 2aC, D). Head and abdomen black; pronotum and elytra dark red; labrum black; antennae with basal segments clear yellow to yellow, apical segments reddish brown; legs yellowish brown to reddish brown, but knees (or apical 1/3 of femora, and lateral surfaces of tibiae of almost full length) and also apical part of each of 1st to 3rd tarsomeres dark red to dark brown. Head with vertex relatively narrow, with a pair of midlateral longitudinal depressions; punctures various in shape and size, and rough on head, but median longitudinal convex area impunctate. Pronotum with surface weakly uneven; punctures dense to very dense, rough, irregular. Elytra with surface weakly uneven; punctures round, dense to very dense. Legs relatively short; tarsi with 3th tarsomere weakly emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, covered with short, decumbent pubescence; 3rd to 5th or 6th terga each with a short basimedial keel; punctures on the anterior parts of 3rd to 6th terga very dense and large, while punctures on the posterior parts of 3rd to 6th terga sparse to moderately dense and small; punctures on 7th and 8th terga sparse to moderately dense, very small to small. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Male: Seventh ventrite (Fig. 104B) posteromedially furnished with moderately dense setae; 8th ventrite (Fig. 104B) posteromedially with a subtriangular emargination; 9th tergum (Fig. 104G) with posterolateral projections very long, ventral apophyses long; 9th ventrite (Fig. 104A) with stem wide, constricted at base, and arcuately emarginate anteriorly, apicolateral teeth very acute, apicolateral setae very long; 10th tergum (Fig. 104G) entire. Aedeagal median lobe (Fig. 104C) bulbous in basal half, gently rounded apicolaterally, and narrowed apically toward the apex with a medium-sized globe at the apicalmost part; apical sclerotized area with a small apicoventral protuberance near the middle. Endophallic median longitudinal bands (Fig. 104C) with ventral bands very long, dorsal bands short; expulsion hooks (Fig. 104C, F) separated, each comprising an elongate sclerite; basal tube (Fig. 104C, D) with basal room short and narrow, tube body baculiform, gradually widened apically; inner sac (Fig. 104C) covered densely with very small spicules, and ventrally with a pair of elongate-ovoidal sclerites (Fig. 104F). Parameres (Fig. 104C) short, thin, slender; apical area short, weakly swollen mesially, and furnished mesially with 12 to 13 setae, and also with 2 or 3 setae at the apicalmost part.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 104E) each pointed or angulate apicomesially, with apicolateral tooth acutely pointed, apicolateral setae moderately long. Spermatheca not observable.

Biology and Ecology. *Stenus cicindeloides* is widely distributed in the plains, low and relatively high mountainous regions in Japan. It shows highly diverse habitats as follows: The beetles live under dead leaves of the grasses grown in the grasslands and around the natural forests. The beetles inhabit the relatively dry, stony riverbanks, and walk around the stones. The beetles also inhabit moist litter of the grasses and reeds grown around the rivers, lakes and marshes. Since they often climb up the grasses, they are collected by sweeping those grasses grown near the watersides.

Remarks. *Stenus cicindeloides* is allied to *S. batac* Puthz, 2008a from Sumatra, but this species is separable from the latter by the vertex of head with punctures larger and denser, the 8th ventrite of male posteromedially with a shorter emargination (Fig. 104B), the aedeagal median lobe with a smaller apicomedian protuberance on apical sclerotized area (Fig. 104C) (Puthz,

2008a). Among the Japanese members of this group, *S. cindeloides* is similar to *S. kiesenwetteri*, but it is easily separable from the latter by the elytron unicolorous (dark red), without colored maculae, and the 5th and 6th ventrites of male without modification.

***Stenus kiesenwetteri* Rosenhauer**
(Figs. 105A–G, 134I)

Stenus kiesenwetteri Rosenhauer, 1856: 76; Herman, 2001: 2246; Naomi & Puthz, 2013: 140.

Type material. Type locality: Erlangen.

Material examined. [HOKKAIDO]: 1 ♂, Iwabokki, Kushiro Moor, 25. viii. 1990, M. Sato leg.; 4 ♂, Chitose Lake, Chitose City, 6. vi. 1999, M. Maruyama leg.; 1 ♀, Echigo Pond, Ebetsu City, 5. vi. 1993, K. Miyashita leg.; 5 ♂ 3 ♀, same locality, 29. iv. 1995, K. Miyashita leg.; 1 ♀, Kimontou Pond, Daijyu-cho, 23. vi. 1993, K. Miyashita leg.; 1 ♀, Ozu, Toyokoro-cho, 5. viii. 1990, K. Haga leg.

Distribution. Japan (Hokkaido); Russia, Europe.

Redescription. Male and female: Macropterous; body 4.7–6.5 mm (fore body 2.6–3.2 mm) in length, robust, weakly shining, with antennae relatively short. Body dark brown to black; elytra with paired reddish maculae (Fig. 134I); labrum black; antennae reddish brown to dark brown; legs with basal 2/3 of femora yellowish brown to reddish brown, apical 1/3 of femora, tibiae and tarsi all dark red to black. Head with vertex relatively narrow, with a pair of midlateral longitudinal depressions; punctures round to elliptical, very dense, various in size. Pronotum with surface almost even; punctures round, very dense, various in size. Elytra with surface weakly uneven; punctures round, dense to very dense, somewhat irregular. Legs thick, moderately long; tarsi with 3th tarsomere emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, covered with thin, short and decumbent pubescence; 3rd to 5th terga each with a short basimedial keel; punctures on the anterior parts of 3rd to 6th terga elliptical to round, very dense and large while punctures on the posterior parts of 3rd to 6th abdominal terga round, sparse to moderately dense, small; punctures on 7th and 8th terga round, dense very, small to small and regular. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Male: Fifth ventrite (Fig. 105A) posteromedially with a bell-shaped, flat area which is depressed along the posterior margin; 6th ventrite (Fig. 105A) posteromedially with a moderately deep depression, which is shallowly emarginate posteriorly; 7th ventrite (Fig. 105A) moderately, densely pubescent posteromedially; 8th ventrite (Fig. 105A) posteromedially with an arcuate emargination; 9th tergum (Fig. 105B) elongate, with posterolateral projections very long, ventral apophyses long; 9th ventrite (Fig. 105D) slender, hardly serrate posteriorly, with stem wide, weakly constricted at base, and arcuately emarginate anteriorly, apicolateral teeth very acute, apicolateral setae long; 10th tergum (Fig. 105B) entire. Aedeagal median lobe (Fig. 105C) elongate, slender, uniformly rounded apicolaterally, and narrowed apically toward the apex, with the apicomedian projection which is rounded apically; apical sclerotized area very long, with a median longitudinal keel. Endophallic median longitudinal bands (Fig. 105C) with ventral bands very long, dorsal bands short; expulsion hooks (Fig. 105C, F) connected by submembranous rod, each posteriorly covered with scale-like microsculptures; basal tube (Fig. 105C, E) short, widened apically; inner sac (Fig. 105C) covered with very small spicules, and ventrally with a pair of ovoidal sclerites. Parameres (Fig. 105C) thin, slender; apical area short, weakly swollen mesially, and furnished mesially with 14 to 15 moderately long setae, and also 1 long seta at the api-

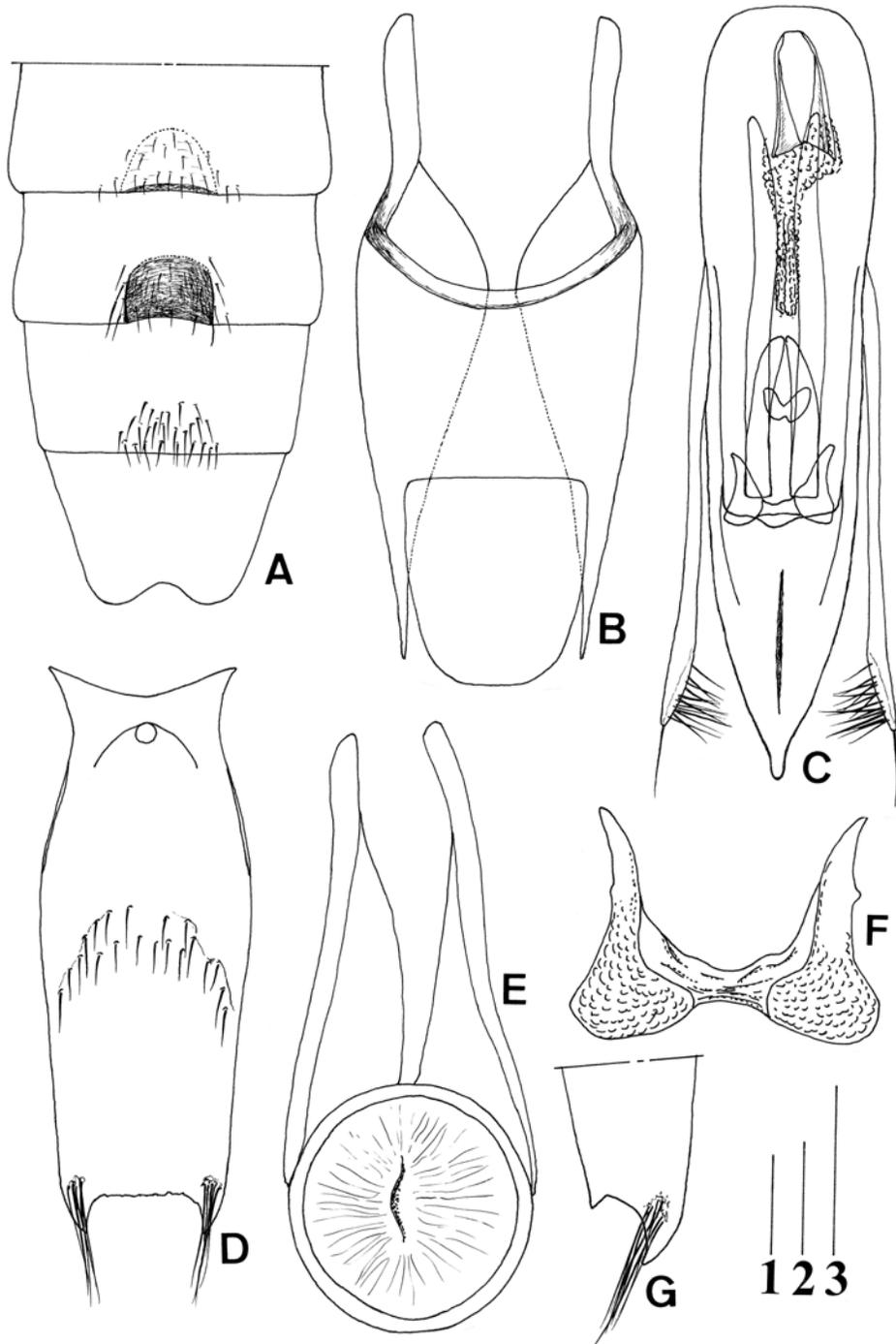


Fig. 105. *Stenus kiesenwetteri* Rosenhauer (A, C, Iwabokki, Hokkaido; B, D-G, Ebetsu, Hokkaido). A, 5th to 8th ventrites of male; B, 9th and 10th terga of male; C, aedeagus; D, 9th ventrite of male; E, endophallic basal tube; F, expulsion hook; G, apex of gonocoxite. Scale 1: 0.3 mm for A; scale 2: 0.2 mm for B-D; scale 3: 0.1 mm for E, F, 0.2 mm for G.

calmost part.

Female: Eighth ventrite angulate posteromedially; gonocoxites (Fig. 105G) each with apicomiesal tooth pointed, apicolateral tooth large, pointed, apicolateral setae long. Spermatheca not observable.

Biology and Ecology. *S. kiesenwetteri* is a rare *Stenus* species in Japan; and it is distributed only in the plains and low mountainous regions of Hokkaido. The beetles inhabit moist litter of the grasses and reeds grown around the rivers, lakes and marshes; they are collected also from sphagnum bogs.

Remarks. *Stenus kiesenwetteri* was first reported from Japan by Puthz (1992). This species is allied to *S. decoripennis* Puthz, 2008a, but it is separable from the latter by the elytral maculae smaller (Fig. 134I), the aedeagal median lobe with apical sclerotized area longer (Fig. 105C), and the endophallic expulsion hook structured as in Fig. 105F (Puthz, 2008a). Among the Japanese members of this group, *S. kiesenwetteri* is similar to *S. cicindeloides*, but it is separable from the latter by the elytron with a reddish macula, and the 5th and 6th ventrites of male each posteromedially with modifications (Fig. 105A).

Etymology. The specific epithet of this species is named in honour of a German entomologist Dr. Ernst A. H. Kiesenwetter.

Species group of *S. cylindricollis* Boheman

S. cylindricollis group consists of 3 species in Japan; see Puthz (1972a, 2013) regarding a characterization of this group. Diagnostic characters are as follows: body rather slender; pronotum distinctly longer than wide; legs yellowish in general, with 3th tarsomere more or less emarginate, 4th tarsomere strongly bilobed; lateroventrites and tergo-ventrite sutures missing on abdomen; 8th ventrite of male posteromedially with a deep emargination (Fig. 106D); 9th tergum posteriorly with a cleaning comb (Fig. 106B); 9th tergum of male posterolaterally serrate, without apicolateral teeth (Fig. 106C); aedeagus various in shape but in Japanese species it is truncate apically (Fig. 106E); endophallic expulsion hooks fused to be a sclerite with two posterior plates or arms (Figs. 106G, 107E); basal tube long and slender (Fig. 107A); gonocoxite distinctly serrate posteriorly, without apicolateral tooth (Fig. 106F); spermatheca consisting of moderately thick duct, uniformly pinstriped, with two turns, spermathecal gland large, spherical (Figs. 106A, 109C).

Key to the Japanese species of *S. cylindricollis* group

- 1(2) Body (especially abdomen) thicker (Fig. 134J); 8th ventrite of male posteromedially with a deep emargination (Fig. 106D); endophallic expulsion hook with its non-fused part of posterior plate wider (Fig. 106 G); aedeagal paramere furnished only with thin setae (Fig. 106E)*S. velox* Sharp
- 2(1) Body (especially abdomen) thinner (Fig. 134K, L); 8th ventrite of male posteromedially with a very deep emargination; endophallic expulsion hook with its non-fused part of posterior plate thinner; aedeagal paramere furnished with short, thick setae as well as common thin setae (Figs. 107A, 108D).
- 3(4) Aedeagal median lobe with apicolateral part a little more strongly rounded (Fig. 107A); endophallic expulsion hook thicker, with (fused) anterior plate on each side almost turning anterolaterally (Fig. 107E).....*S. hanami* Hromádka

4(3) Aedeagal median lobe with apicolateral part a little less strongly rounded (Fig. 108D); endophallic expulsion hook thinner, almost transverse (Fig. 108H).....*S. plagiocephalus* Benick

***Stenus velox* Sharp**
(Figs. 106A–G, 134J)

Stenus velox Sharp, 1889: 333; Herman, 2001: 2429; Puthz, 2012a: 155; Naomi & Puthz, 2013: 140.

Type material examined. ♂ lectotype (NHML): Tokio, 25. IX. - 27. IX. 81; 1 ♂ 1 ♀ paralectotypes (NHML, FMC): Nikko, June 1880; 1 ♀ (FMC): Fukushima. Notes: In the NHML there are two syntypes; and one syntype is also deposited in the FMC. Puthz designated a male collected from Tokyo as the lectotype in 1969; the specimen was dissected and has the labels as follows: ♂ lectotype / Puthz 1969; Japan G. Lewis 1910-320; Tokio 25. IX. - 27. IX. 81; *Stenus velox* Sharp Puthz vid. 1969. Although a syntype (female; collected from Nikko) was labeled “type” by Sharp, but it was not chosen as the lectotype because it is female specimen. In the NHML there is another ♀ from “Oyayama, 28. IV. 1881”, but it probably belongs to a different species. The type material was re-examined in 1997 by Puthz.

Other material examined. [HONSHU]: 1 ♂, Hirokawara, Yamagata Pref., 1. vi. 1961, Y. Kimura leg.; 1 ♂, Kurino-machi, Tochigi Pref., 20. v. 1991, K. Sato leg.; 1 ♂ 1 ♀, Mt. Takao, Hachioji City, Tokyo Metropolis, 23. vi. 1996, H. Yoshitake leg.; 1 ♂, Hikagezawa, Mt. Takao, Tokyo Metropolis, 20. iv. 1997, S. Nomura leg.; 1 ♀, Nagatsuda, Yokohama City, Kanagawa Pref., 27. x. 1994, T. Kishimoto leg.; 1 ♂, Yamakita-machi, Mt. Azegamaru, Kanagawa Pref., 27. vi. 1993, K. Haga leg.; 1 ♂, Nabetani, Tatsunokuchi-cho, Ishikawa Pref., 2. vi. 1995, Y. Sugie leg.; 1 ♂, same locality, 4. v. 1995, Y. Sugie leg.; 1 ♂, same locality, 7. vi. 1995, Y. Sugie leg.; 1 ♂, Nakajima-cho, Ishikawa Pref., 16. viii. 1992, T. Kishimoto leg.; 1 ♀, Mt. Sanjyusanken, Mikata-machi, Fukui Pref., 18. vi. 2009, M. Saito leg.; 1 ♂, Nakago City, Miyama, Gifu Pref., 27. vii. 1996, I. Kiriya leg.; 1 ♀, Otogari, Mino City, Gifu Pref., 21. vi. 1987, Y. Takai leg.; 1 ♀, Kaishonomori, Seto, Aichi Pref., 16. vi. 1996, Y. Takai leg.; 1 ♂, Amagase, Uji City, Kyoto Pref., 4. v. 1955, Takahashi leg.; 1 ♂, Mt. Koya, Wakayama Pref., 7. viii. 1984, I. Matoba leg.; 1 ♀, Hitari, Kumanogawa-cho, Wakayama Pref., 21. iv. 1993, I. Matoba leg. [SHIKOKU]: 1 ♂, Teppoishi River, Omogo Valley, 20. vi. 1992, M. Sakai leg. [KYUSHU]: 1 ♀, Hagi, Gokanoshō, Kumamoto Pref., 11. v. 1982, S. Imasaka leg.; 1 ♂, same locality, 24. vi. 1982, S. Imasaka leg.

Distribution. Japan (Honshu, Shikoku, Kyushu; Oki Is.).

Redescription. Male and female: Macropterous; body 4.0–5.9 mm (fore body 1.9–2.3 mm) in length, slender, weakly to moderately shining, with antennae very long. Body dark brown to black; labrum reddish brown to dark brown; antennae and legs clear yellow to yellowish red. Head concave dorsally, vertex narrow, with a pair of thin longitudinal depressions; punctures round and very dense on head, but median longitudinal convex area impunctate. Pronotum with surface almost smooth; punctures very dense and rough, but median longitudinal narrow area often impunctate. Elytra with surface shallowly depressed around the base of sutural area; punctures very round, dense, regular. Legs thin, very long; tarsi with 3th tarsomere weakly emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, slender; 9th tergum posteriorly with a cleaning comb, which is composed of a regular line of thick, straight setae of same length (Fig. 106B); punctures on 3rd to 7th terga round, dense to very dense, small to medium-sized, and almost regular, while punctures on 8th tergum sparse and very small. Lateroventrites and tergo-

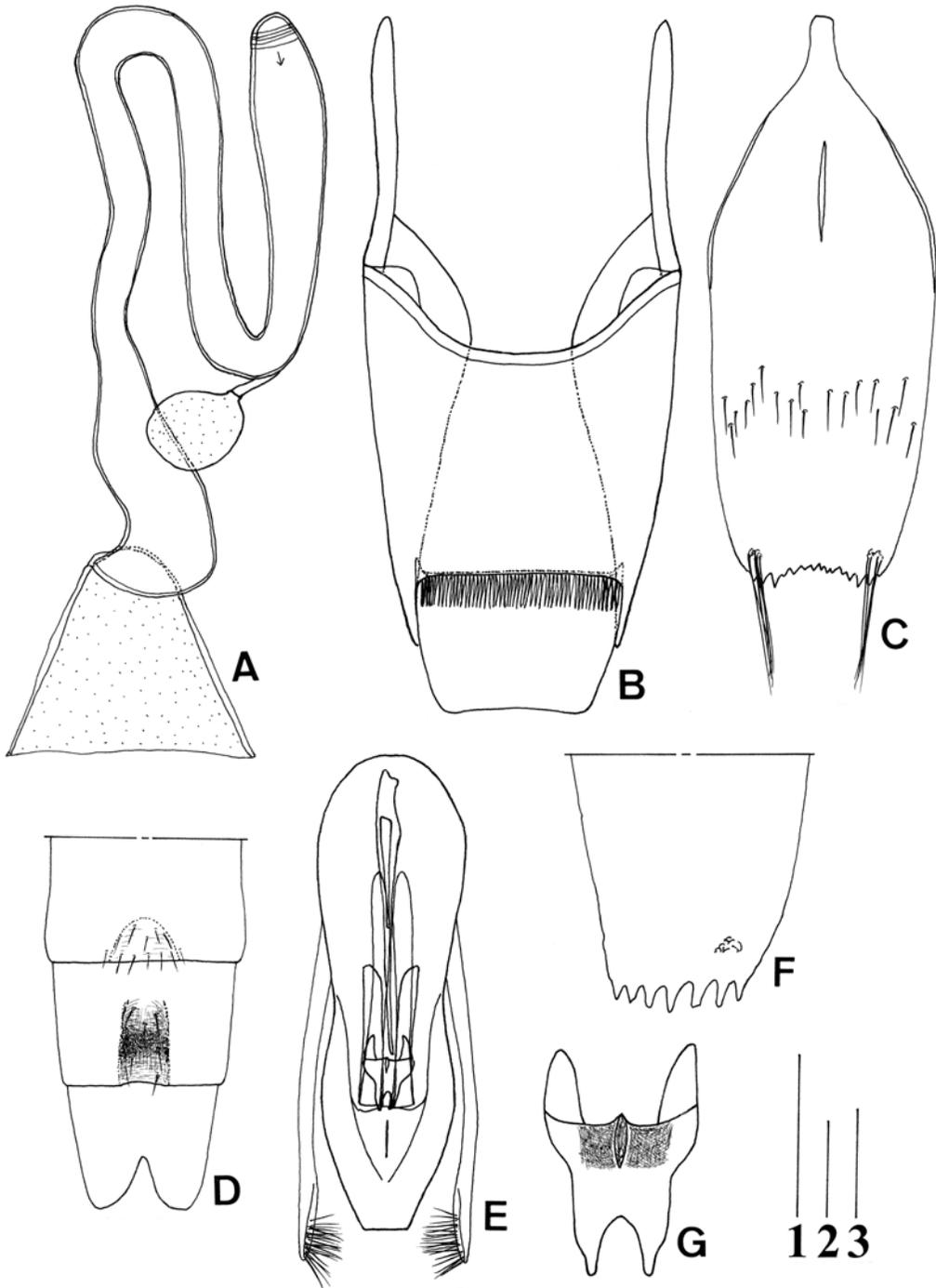


Fig. 106. *Stenus velox* Sharp (A, F, Gokanosho, Kumamoto; B, D, Koya, Wakayama; C, E, G, Amagase, Kyoto). A, spermatheca; B, 9th and 10th terga of male; C, 9th ventrite of male; D, 6th to 8th ventrites of male; E, aedeagus; F, apex of gonocoxite; G, endophallic expulsion hook. Scale 1: 0.1 mm for A, F, G, 0.2 mm for B, C; scale 2: 0.3 mm for D; scale 3: 0.2 mm for E.

ventrite sutures missing on abdomen.

Male: Sixth ventrite (Fig. 106D) posteromedially with a bell-shaped, flat area; 7th ventrite (Fig. 106D) medially with an elongate depression, which is deepest at the median part; 8th ventrite (Fig. 106D) posteromedially with a deep, V-shaped emargination; 9th tergum (Fig. 106B) with anterolateral flaps small, ventral apophyses long, straight; 9th ventrite (Fig. 106C) gently rounded anterolaterally, distinctly serrate posteriorly, with stem very thin, elongate-rectangular in shape, with apicolateral setae moderately long; 10th tergum (Fig. 106B) trapezoidal, very shallowly emarginate posteriorly. Aedeagal median lobe (Fig. 106E) nearly violin-shaped, with truncated apex; apical sclerotized area developed, with a longitudinal keel before the middle. Endophallic median longitudinal bands (Fig. 106E) with ventral bands very long, dorsal bands moderately long; expulsion hooks (Fig. 106E) fused medially to form a unique sclerite (Fig. 106G), with non-fused parts of anterior plates widely separated, and non-fused parts of posterior plates each narrowed posteriorly; basal tube (or flagellum; Fig. 106E) thin, attenuate. Parameres (Fig. 106E) slender, weakly incurved; apical area short, weakly swollen mesially, and furnished mesially with 22 to 25 setae.

Female: Sixth ventrite posteromedially with a very shallow emargination; 8th ventrite rounded posteriorly; gonocoxites (Fig. 106F) each strongly serrate posteriorly, without apicolateral tooth. Spermatheca (Fig. 106A) consisting simply of moderately thick duct and uniformly pinstriped in its whole length, with two turns, so that it does not differentiate into the capsule, RT-duct and spermathecal duct; basal porch conical, submembranous; spermathecal gland large, spherical, with its opening located at the posterior corner of 2nd turn of the duct.

Biology and Ecology. *Stenus velox* is distributed in the plains and low mountainous regions. This species is arboreal but the collecting records suggest that this may also inhabit leaf litter in natural forests.

Remarks. *Stenus velox* is closely allied to *S. hanami* and *S. plagiocephalus*, but this species is separable from the latter two species by the body thicker (Fig. 134J), the 8th ventrite of male posteromedially with a shallower emargination (Fig. 106D), and the endophallic expulsion hook with non-fused part of posterior plate wider (Fig. 106G).

***Stenus hanami* Hromádka**

(Figs. 107A–H, 134K)

Stenus hanami Hromádka, 1979: 65; Herman, 2001: 2211; Puthz, 2012a: 155; Naomi & Puthz, 2013: 140.

Type material examined. Holotype: ♂ (MHNG), type locality: Miyanoshita, Kanagawa [examined by Puthz].

Other material examined. [HONSHU]: 1 ♂, Ootaki-cho, Isumi-gun, Chiba Pref., 11. ix. 1992. [SHIKOKU]: 1 ♂, Ohuchi, Inomachi, Kochi Pref., 12. ii. 2007, T. Miyata leg.

Distribution. Japan (Honshu, Shikoku).

Redescription. Male: Macropterous; body 4.3–4.8 mm (fore body 2.2–2.5 mm) in length, very slender, weakly to moderately shining, with antennae long. Body dark brown to black; labrum reddish brown to dark brown; antennae and legs clear yellow to yellowish red. Head simply concave dorsally, without median longitudinal convex area; punctures round, dense, almost regular. Pronotum elongate, with surface almost smooth; punctures round, very dense, almost regular. Elytra with surface gently convex, smooth, and similarly punctate as on pronotum, but

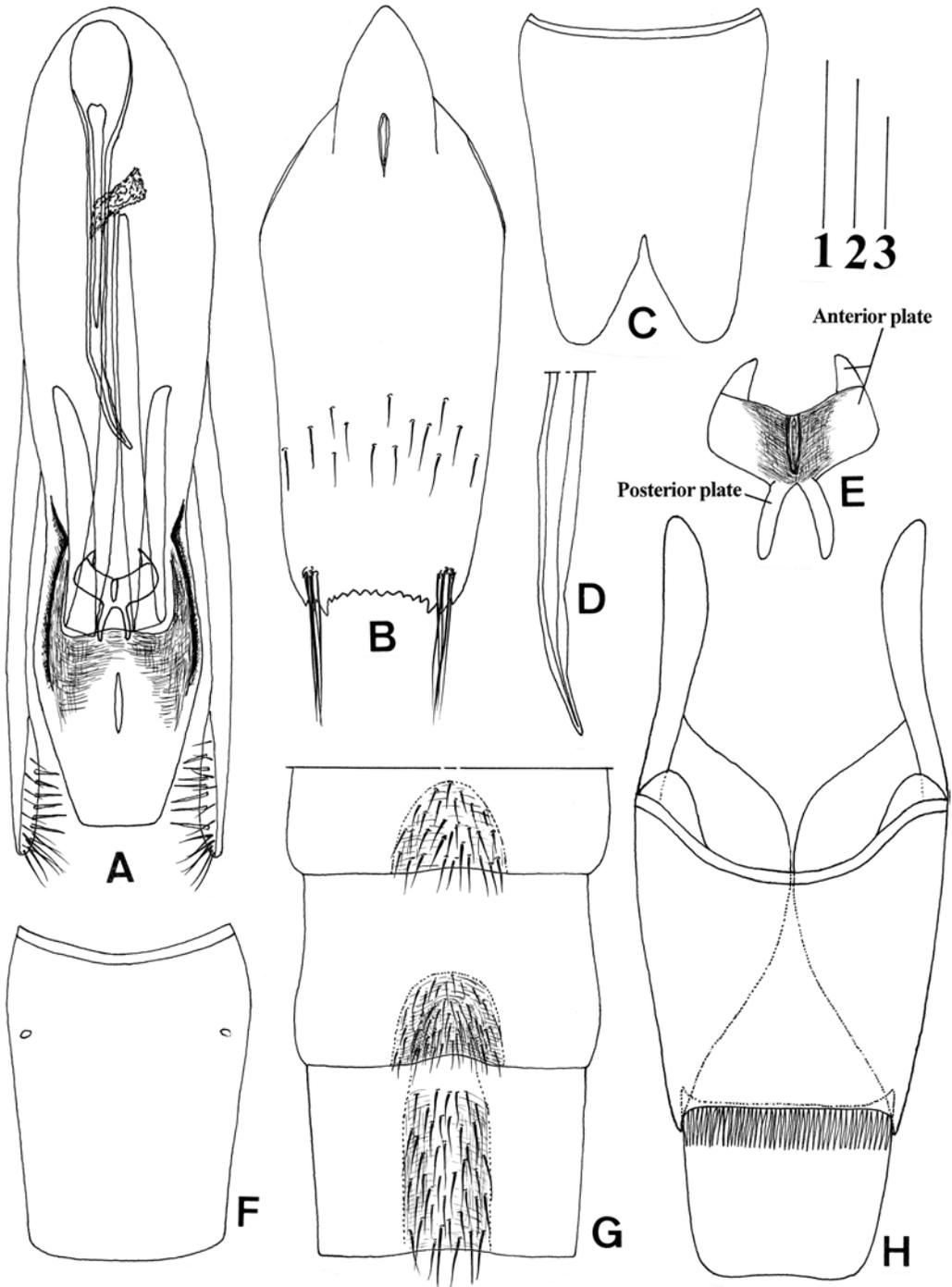


Fig. 107. *Stenus hanami* Hromádka (A, C, E–G, Ohuchi, Kochi; B, D, H, Ohtaki, Chiba). A, aedeagus; B, 9th ventrite of male; C, 8th ventrite of male; D, apical half of endophallic basal tube; E, expulsion hook; F, 8th tergum of male; G, 5th to 7th ventrites of male; H, 9th and 10th terga of male. Scale 1: 0.2 mm for A, B, H, 0.1 mm for D, E; scale 2: 0.3 mm for C, G; scale 3: 0.2 mm for F.

punctures a little larger than those on it. Legs thin, very long; tarsi each with 3th tarsomere weakly emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, very slender; 9th tergum posteriorly with a cleaning comb (Fig. 107H); punctures on 3rd to 7th terga similarly punctate as on elytra, while punctures on 8th tergum sparse and very small. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Fifth ventrite (Fig. 107G) posteromedially with a bell-shaped, flat area, which is very shallowly emarginate posteriorly; 6th ventrite (Fig. 107G) posteromedially with a bell-shaped, flat area, which is emarginate posteriorly and also shallowly depressed in its mesial part; 7th ventrite (Fig. 107G) medially with an elongate depression, which is shallowly emarginate posteriorly; 8th ventrite (Fig. 107C) posteromedially with a very deep, V-shaped emargination; 9th tergum (Fig. 107H) with anterolateral flaps rounded anteriorly, posterolateral projections very short, ventral apophyses long, thick; 9th ventrite (Fig. 107B) distinctly serrate posteriorly, with stem relatively wide, pointed anteriorly, with apicolateral setae moderately long; 10th tergum (Fig. 107H) subtrapezoidal, very shallowly emarginate posteriorly. Aedeagal median lobe (Fig. 107A) elongate, moderately constricted near apical 2/5, and truncate apically, with a sclerotized, obtuse tooth at the ventrolateral rim on each side; apical sclerotized area developed, with a short, median longitudinal keel. Endophallic median longitudinal bands (Fig. 107A) with ventral bands very long, dorsal bands moderately long; expulsion hooks (Fig. 107A) fused medially to form a unique sclerite (Fig. 107E), the anterior plates widely fused basally, with non-fused parts of anterior plates short, widely separated, and the posterior plates V-shaped, each plate (or arm) rather thin; basal tube (Fig. 107A, D) with basal room elongate-ovoidal, tube body baculiform, attenuate, but weakly turned left apically; only near the anterior ends of ventral bands, inner sac (Fig. 107A) visible, which is covered densely with very small spicules. Parameres (Fig. 107A) slender, very weakly incurved; apical area relatively long, weakly swollen mesially, and furnished with 12 to 13 short to moderately long, thin setae at the apicalmost part and near the ventral margin of apical area, and also with 6 to 7 short, thick setae near its dorsal margin.

Female: Not studied.

Biology and Ecology. *S. hanami* is a very rare *Stenus* species in Japan. It is distributed in the plains and low mountainous regions. No ecological information of this species is obtained.

Remarks. *Stenus hanami* is closely allied to *S. plagiocephalus*, but this species is separable from the latter by the aedeagal median lobe with apicolateral part a little more strongly rounded (Fig. 107A), and the endophallic expulsion hook thicker, with its (fused) anterior plate on each side almost turning anterolaterally (Fig. 107E).

Etymology. The specific epithet of this species is derived from a Japanese term “hanami”, which means “cherry blossom viewing”.

***Stenus plagiocephalus* Benick**
(Figs. 108A–H, 109A–E, 134L)

Stenus plagiocephalus Benick, 1940: 567; Herman, 2001: 2343; Naomi & Puthz, 2013: 140; Puthz, 2012a: 155.

Type material examined. Holotype: ♂ (FMC), type locality: Tienmuschan, China [examined by Puthz].

Other material examined. [NANSEI ISLS.]: 1 ♂, Kobo, Miyako, Ishigaki Is., Okinawa Pref., 10–20. xi. 1952, C. E. Bohart leg.; 2 ♀, Mt. Banna, Ishigaki Is., Okinawa Pref., 1 ♀, Mt. Omoto,

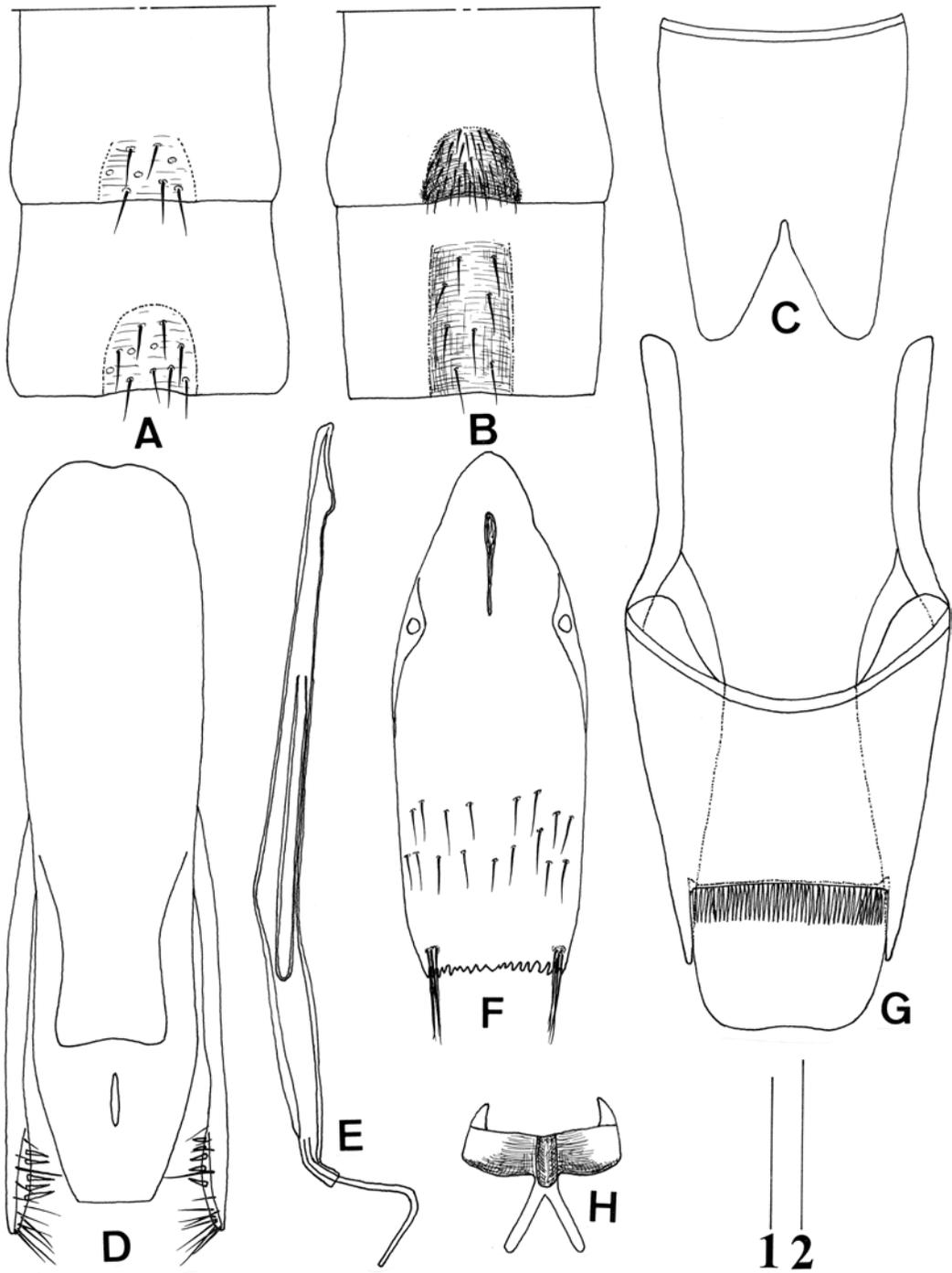


Fig. 108. *Stenus plagiocephalus* Benick (Kobo, Ishigaki Is.). A, 4th to 5th ventrites of male; B, 6th to 7th ventrites of male; C, 8th ventrite of male; D, aedeagus; E, endophallic basal tube; F, 9th ventrite of male; G, 9th and 10th terga of male; H, expulsion hook. Scale 1: 0.3 mm for A–C; scale 2: 0.2 mm for D, F, G; scale 3: 0.1 mm for E, H.

Ishigaki Is., Okinawa Pref., 25–27. iii. 1998, M. Maruyama leg.; 2 ♀, Aira River, Iriomote Is., Okinawa Pref., 13. iv. 2013, I. Tanaka leg.

Distribution. Japan (Nansei Isls.: Ishigaki Is., Iriomote Is.); China.

Redescription. Male and female: Macropterous; body 4.5–4.9 mm (fore body 2.2–2.3 mm) in length, slender, moderately shining, with antennae very long. Body dark brown to black; labrum reddish brown to dark brown; antennae and legs clear yellow to yellowish red. Head almost simply concave dorsally; punctures round and dense on head, but median longitudinal narrow area impunctate. Pronotum elongate, with surface weakly uneven; punctures round, very dense, almost regular. Elytra with surface smooth, and similarly punctate as on pronotum, but punctures a little larger than those on it. Legs thin, very long; tarsi with 3th tarsomere weakly emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical, very slender; 9th tergum posteriorly with a cleaning comb (Figs. 108G, 109E); punctures on 3rd to 6th terga round, moderately dense to dense, and somewhat irregular, while punctures on 7th and 8th terga sparse and very small to small. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Male: Fourth ventrite (Fig. 108A) posteromedially with a bell-shaped, flat area, which is very shallowly emarginate posteriorly; 5th ventrite (Fig. 108A) similarly modified as on 4th ventrite, but the flat area a little more deeply emarginate posteriorly; 6th ventrite (Fig. 108B) posteromedially with a bell-shaped, moderately deep depression, which is arcuately emarginate posteriorly; 7th ventrite (Fig. 108B) medially with an elongate, very shallow depression, which is very shallowly emarginate; 8th ventrite (Fig. 108C) posteromedially with a very deep, V-shaped emargination; 9th tergum (Fig. 108G) with anterolateral flaps rounded anteriorly, ventral apophyses very long; 9th ventrite (Fig. 108F) distinctly serrate posteriorly, with stem obtusely angulate, with apicolateral setae relatively long; 10th tergum (Fig. 108G) subtrapezoidal, very shallowly emarginate posteromedially. Aedeagal median lobe (Fig. 108D) elongate, very weakly constricted near apical 2/5, with truncated apex; apical sclerotized area with a short, median longitudinal keel. Endophallic median longitudinal bands with ventral bands very long; expulsion hooks (Fig. 108H) fused medially to form a unique sclerite, the anterior plates fused at base to form a transverse plate, with non-fused parts of anterior plates short, widely separated and pointed, and the posterior plates V-shaped, each plate (or arm) rather thin; basal tube (Fig. 108E) with tube body very long, slender, baculiform but weakly bent near the apical 1/3 and also distinctly bent near the apex. Parameres slender; stem weakly constricted before the apical area (when seen ventrally); apical area moderately long, weakly swollen mesially, and furnished mesially with 12 to 13 short or moderately long setae, and also with 5 to 6 short, thick setae.

Female: Sixth ventrite posteromedially with a very shallow emargination; 8th tergum (Fig. 109B) truncate posteriorly; 8th ventrite (Fig. 109A) almost rounded posteriorly; 9th tergum (Fig. 109E) with posterolateral projections short; gonocoxites (Fig. 109D) each distinctly serrate posteriorly, with apicolateral setae relatively long. Spermatheca (Fig. 109C) with capsule elongate-ovoidal in shape, large; RT-duct missing; spermathecal duct short, uniformly pinstriped in its whole length, with two turns; spermathecal gland very large, spherical, with its opening located at the lateral corner of 2nd turn of the duct.

Biology and Ecology. In Japan, *Stenus plagiocephalus* is distributed in the plains and mountainous regions of Nansei Isls. No ecological information of this species is obtained.

Remarks. *Stenus plagiocephalus* is first recorded from Japan (Ishigaki Is.) by Puthz (2012a). This species is closely allied to *S. hanami*, but it is separable from the latter by the aedeagal median lobe with its apicolateral part a little less strongly rounded (Fig. 108D), and the endophallic expulsion hook thinner, and almost transverse (Fig. 108H).

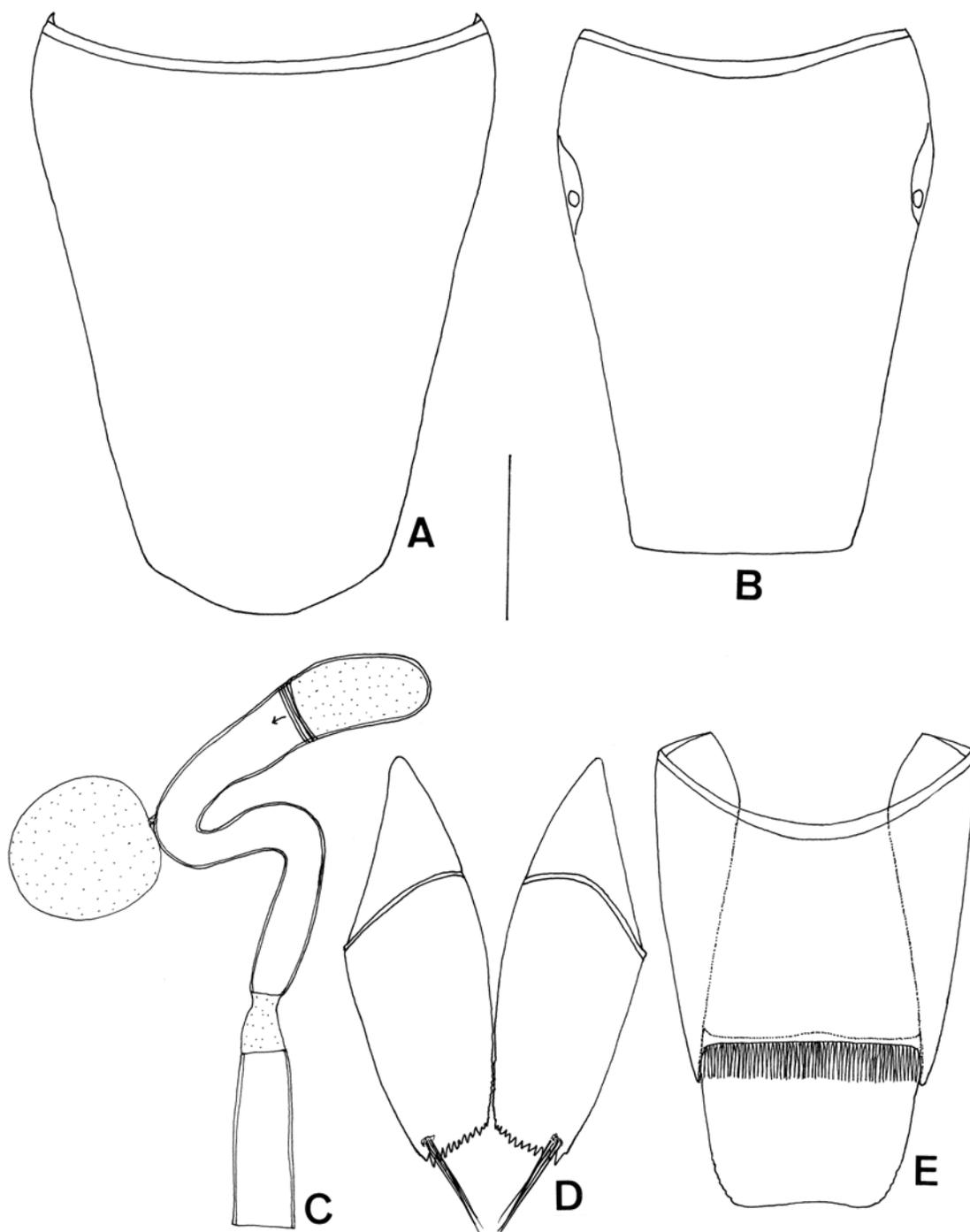


Fig. 109. *Stenus plagiocepalus* Benick (Banna, Ishigaki Is.). A, 8th ventrite of female; B, 8th tergum of female; C, spermatheca; D, gonocoxites; E, 9th and 10th terga of female. Scale 1: 0.2 mm for A, B, D, E, 0.1 mm for C.

Species group of *S. coelogaster* Champion

S. coelogaster group consists of 1 species in Japan; see Puthz (2008a: 187) regarding a characterization of this group; and see also Puthz (2013) regarding the taxonomic information on it. The diagnostic characters are as follows: Head distinctly narrower than elytra (Fig. 135A); legs yellow, tarsus with 2nd and 3rd tarsomeres each weakly emarginate, 4th tarsomere strongly bilobed; lateroventrites and tergo-ventrite sutures missing on abdomen; 8th tergum with linear sculptures on posterior part (Fig. 110F); 9th tergum posteriorly with a cleaning comb (Fig. 110B, C); 9th ventrite of male serrate posteriorly, without apicolateral teeth (Fig. 110D); aedeagal median lobe ventrally with a median longitudinal keel (Fig. 110A); endophallic expulsion hooks consisting of paired small sclerites (Fig. 110A); basal tube short and thick (Fig. 110A); gonocoxite serrate posteriorly, without apicolateral tooth (Fig. 110D); spermatheca not observable.

***Stenus oshimaensis* Naomi**
(Figs. 110A–G, 135A)

Stenus oshimaensis Naomi, 1990c: 198; Herman, 2001: 2316; Naomi & Puthz, 2013: 140.

Type material examined. Holotype: ♂ (KUF), Marubatake, Amami Is., Kagoshima Pref., 22. iii. 1986, T. Ogata leg. Paratypes: 1 ♂ (cN), Hatsuno, Amami Is., Kagoshima Pref., 11. xi. 1962, Y. Miyatake leg.; 1 ♂ (cN), Nishinakama, Amami Is., Kagoshima Pref., 10. iv. 1976, H. Maki-hara leg.; 1 ♂ (cN), Maruhata, Amami Is., Kagoshima Pref., 22. iii. 1986, T. Ogata leg.; 1 ♀ (cN), Kanpira fall, Iriomote Is., Okinawa Pref., 15. iv. 1975, H. Irie leg.

Other material examined. [NANSEI ISLS.]: 1 ♂, Kosugidani, Yaku Is., Kagoshima Pref., 17. v. 1980, Y. Kimura leg.; 1 ♂, Hatsuno, Amami Is., Kagoshima Pref., 2. v. 1977, A. Oda leg.; 1 ♂, same locality, 11. xi. 1962, Y. Miyatake leg.; 2 ♀, Kinsakubaru, Amami Is., Kagoshima Pref., 3. xi. 1984, M. Tomokuni leg.; 1 ♂, Mt. Yuwan, Amami Is., Kagoshima Pref., 29–31. vii. 1963, Y. Hirashima leg.; 1 ♀, same locality, 5. v. 1977, M. Sakai leg.; 1 ♀, Santaro Pass, Sumiyo-son, Amami Is., Kagoshima Pref., 15. x. 1988, K. Morimoto leg.; 1 ♂, Nangawa-rindo, Amami Is., Kagoshima Pref., 8. iv. 1991, K. Matsumoto leg.; 1 ♂, Daikuma, Amami Is., Kagoshima Pref., 1. v. 1977, A. Oda leg.; 1 ♀, Mt. Yui, Amami Is., Kagoshima Pref., 27. iv. 1993, K. Toyoda leg.; 1 ♂, Yona River, Okinawa Is., Okinawa Pref., 7. vi. 1997, K. Haga leg.

Distribution. Japan (Nansei Is.: Yaku Is., Amami Is. Okinawa Is., Iriomote Is.).

Redescription. Male and female: Macropterous; body 3.9–5.2 mm (fore body 2.0–2.3 mm) in length, moderately shining, with antennae long. Body dark brown to black; labrum reddish brown to dark brown; antennae and legs clear yellow to yellowish red. Head not concave dorsally, with a pair of shallow, midlateral longitudinal depressions; punctures moderately dense to very dense, various in size, somewhat irregular. Pronotum with surface almost even; punctures very dense, various in size, somewhat irregular. Elytra with surface smooth, and similarly punctate as on pronotum but punctures a little larger than those on it. Legs moderately long; tarsi with 2nd and 3rd tarsomeres each weakly emarginate, 4th tarsomere strongly bilobed. Abdomen cylindrical; 8th tergum (Fig. 110F) with linear sculptures on posterior part; 9th tergum posteriorly with a cleaning comb (Figs. 110B, C); 10th tergum posteromedially with a very shallow emargination (Figs. 110B, C); punctures on anterior segments sparse to moderately dense and small, while punctures on posterior segments sparse and very small. Lateroventrites and tergo-ventrite sutures missing on abdomen.

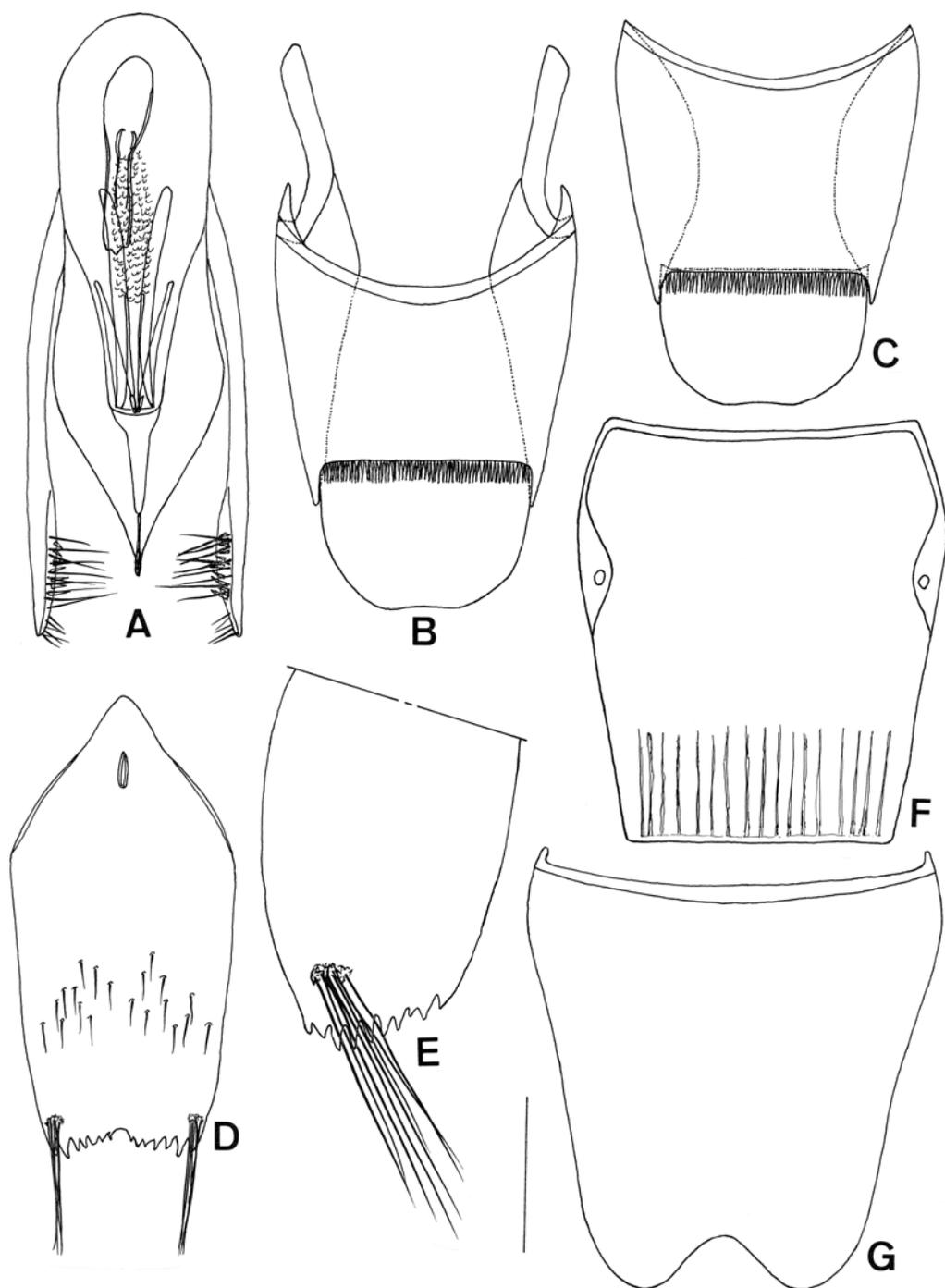


Fig. 110. *Stenus oshimaensis* Naomi (A, Daikuma, Amami Is.; B, Hatsuno, Amami Is.; C, E, Santaro, Amami Is.; D, F, G, Kosugidani, Yaku Is.). A, aedeagus; B, 9th and 10th terga of male; C, 9th and 10th terga of female; D, 9th ventrite of male; E, apex of gonocoxite; F, 8th tergum of male; G, 8th ventrite of male. Scale 1: 0.2 mm for A–D, F, G, 0.1 mm for E.

Male: Fifth to 7th ventrites each posteromedially with an indistinct flat area; 8th ventrite (Fig. 110G) posteromedially with a relatively large emargination; 9th tergum (Fig. 110B) with anterolateral flaps pointed (when seen dorsally), ventral apophyses long; 9th ventrite (Fig. 110D) relatively short and wide, distinctly serrate posteriorly, with stem subtriangular in shape, pointed, with apicolateral setae moderately long. Aedeagal median lobe (Fig. 110A) almost violin-shaped, very acute apically with a very thin apicomedian projection, and with lateral rims very wide; apical sclerotized area apicoventrally with a median longitudinal keel. Endophallic median longitudinal bands (Fig. 110A) with ventral bands long, thin, dorsal bands relatively short, very thin; expulsion hooks (Fig. 110A) consisting of paired small sclerites; basal tube (Fig. 110A) with basal room elongate-ovoidal in shape, tube body short and thick, with the other short tube nested within it; inner sac (Fig. 110A) partly visible at the place where it is densely covered with small scales. Parameres long, weakly incurved; apical area long, weakly swollen mesially, and furnished mesially with 8 to 13 moderately long setae and 8 to 12 short, thick setae, and also apicomediaally with 5 to 6 short setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 110E) each wide, rounded laterally, strongly serrate posteriorly, with apicolateral setae long. Spermatheca not observable.

Biology and Ecology. *Stenus oshimaensis* is presently known from the plains and mountainous regions of Nansei Islands. The beetles have been often collected by the coleopterists who collect cerambycids and other beetles by sweeping or beating method. This suggests that the beetles live on the twigs of trees and also on the grasses in Nansei Isls.

Remarks. *Stenus oshimaensis* is allied to *S. dembickyi* Puthz, 2013 from North India, but this species is separable from the latter by the aedeagal median lobe with apicolateral part distinctly wider and moderately rounded laterally (Fig. 110A). This species is also allied to *S. bidenticollis* Puthz, 1984a from Taiwan, but it is separable from the latter by the pronotum simple, the aedeagal median lobe with apical sclerotized area smaller and shorter (Fig. 110A), and the parameres shorter (Fig. 110A).

Species group of *S. wasmanni* Fauvel

S. wasmanni group (= *S. mombassanus* group) consists of 1 species in Japan; see Puthz (1971a) regarding a characterization of this group; and see also Puthz (2013) regarding the taxonomic information on it. The diagnostic characters are as follows: Antennae short; pronotum short (Fig. 135B); legs yellowish in general, tarsus with 4th tarsomere strongly bilobed; latero-ventrites and tergo-ventrite sutures missing on abdomen; 9th tergum posteriorly with a cleaning comb (Fig. 111D); 9th ventrite of male serrate posteriorly, without apicolateral teeth (Fig. 111B); aedeagal median lobe pointed or subulate apically (Fig. 111A); gonocoxite serrate posteriorly, without apicolateral tooth (Fig. 111F); spermatheca not observable.

Stenus spurius Benick (Figs. 111A–G, 135B)

Stenus spurius Benick, 1929: 260; Herman, 2001: 2399; Naomi & Puthz, 2013: 140; Puthz, 2013: 1327.

Type material. Holotype: ♀ (FMC), type locality: Luzon, Montalban [examined by Puthz in 1973].

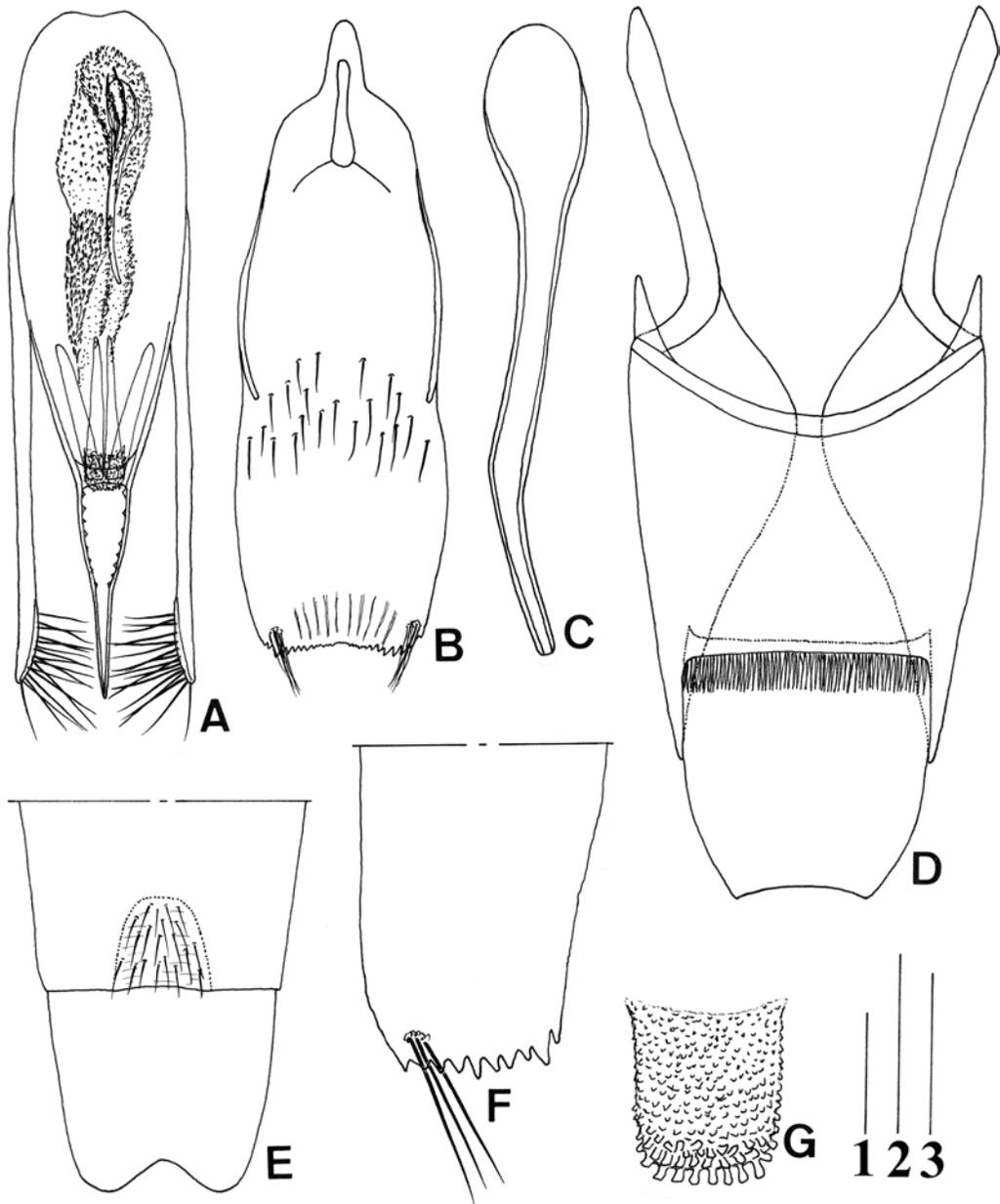


Fig. 111. *Stenus spurius* Benick (A–E, G, Nishinakama, Iriomote Is.; F, Ohtomi, Iriomote Is.). A, aedeagus; B, 9th ventrite of male; C, endophallic basal tube; D, 9th and 10th terga of male; E, 7th to 8th ventrites of male; F, apex of gonocoxite; G, expulsion hook (?). Scale 1: 0.2 mm for A; scale 2: 0.2 mm for B, D, 0.1 mm for C, F, G; scale 3: 0.3 mm for E.

Other material examined. [NANSEI ISLS.]: 1 ♂1 ♀, Nishinakama, Iriomote Is., Okinawa Pref., 28. iii. 2001, K. Emoto leg.; 1 ♀, Shiiminato, Ohtomi, Iriomote Is., Okinawa Pref., 31. xii. 1997, Y. Kurosa leg.; 2 ♀, Takada-rindo, Ishigaki Is., Okinawa Pref., 15. v. 2012, I. Tanaka leg.; 4 ♀, Ohtomi, Iriomote Is., Okinawa Pref., 31. xii. 2001, H. Watanabe leg.; 4 ♀, Nakamagawa-rindo, Iriomote Is., Okinawa Pref., 30. xii. 1997, I. Matoba leg.

Distribution. Japan (Nansei Isls.: Iriomote Is.); Taiwan, Philippines, Indonesia, Laos.

Redescription. Male and female: Macropterous; body 4.0–4.3 mm (fore body 2.0–2.2 mm) in length, moderately shining, with antennae short. Body dark brown to black; labrum reddish brown to dark brown; antennae yellow to yellowish red, with apical segments infuscate; legs yellowish brown to reddish brown, with knees more or less infuscate. Head concave dorsally, with a pair of thin, longitudinal furrows which converge anteriorly; punctures round and dense on head, but the small area of central part impunctate. Pronotum with surface almost even; punctures round, very dense. Elytra with surface smooth, and similarly punctate as on pronotum, but punctures a little larger than those on it. Legs relatively short; tarsi with 4th tarsomere strongly bilobed. Abdomen cylindrical; 9th tergum posteriorly with a cleaning comb (Figs. 111D); 10th tergum (Figs. 111D) posteriorly with a shallow, wide emargination; punctures on 3rd to 6th segments round, moderately dense to dense, and small, while punctures on 7th and 8th segments sparse and very small. Lateroventrites and tergo-ventrite sutures missing on abdomen.

Male: Seventh ventrite (Fig. 111E) posteromedially with a bell-shaped, flat area, which is shallowly emarginate posteriorly; 8th ventrite (Fig. 111E) posteromedially with a relatively wide emargination; 9th tergum (Fig. 111D) with anterolateral flaps acutely pointed, ventral apophyses very long; 9th ventrite (Fig. 111B) elongate, weakly constricted near the middle, and minutely serrate apicolaterally, with stem elongate, rounded anteriorly, apicolateral setae short. Aedeagal median lobe (Fig. 111A) elongate-ovoidal in basal 2/3, weakly but distinctly twice constricted near and behind the basal 2/3, with the apex (or apicomedian projection) behind the 2nd constriction simply subulate; apical sclerotized area provided with a line of very small teeth at the mesial side of lateral rim between the 1st and 2nd constrictions. Endophallic median longitudinal bands (Fig. 111A) with both ventral and dorsal bands short; a rectangular structure (Fig. 111A, G) existing near the anterior rim of apical sclerotized area, and covered with small tubercles except for the posterior surface which is covered with small subspatulate knots; basal tube (Fig. 111A, C) with basal room ovoidal, tube body slender, but curved near the apical 1/3; inner sac covered partially with small spicules and tubercles as in Fig. 111A. Parameres long, slender and straight; apical area relatively short, weakly swollen mesially, and furnished mesially with 15 to 18 long setae.

Female: Eighth ventrite obtusely pointed posteromedially; gonocoxites (Fig. 111F) each distinctly serrate posteriorly, with apicolateral setae relatively long. Spermatheca not observable.

Biology and Ecology. In Japan, *Stenus spurius* is presently distributed only in the plains and mountainous regions of Nansei Isls. No ecological data of this species are obtained.

Remarks. *Stenus spurius* was enumerated as a Japanese species by Naomi & Puthz (2013), without collecting data; and thus this species is virtually here first recorded from Japan (Ishigaki Is. and Iriomote Is.). This species is closely allied to *S. wasmanni* Fauvel, 1895, which is distributed widely in the Oriental region, but it is separable from the latter by the aedeagal median lobe weakly but distinctly twice constricted near and behind the basal 2/3, with its apical area behind the 2nd constriction simply subulate, without any laterally swollen area (Fig. 111A).

Species group of *S. pulcher* Motschulsky

S. pulcher group consists of 1 species and 1 subspecies in Japan; see Puthz (1988a) regarding a characterization of this group. This group is a mixed group in that it comprises some varied species-complexes (Puthz, 2013: 1352). Thus, the following characters be presently used only for recognizing the members of this group: Antennae long; tarsus with 3rd tarsomere emarginate api-

cally, 4th tarsomere strongly bilobed; lateroventrites and tergo-ventrite sutures missing on abdomen; 8th tergum widely emarginate posteriorly (Fig. 112G); 9th tergum posteriorly with a cleaning comb (Fig. 112C); 9th ventrite of male without apicolateral teeth (Fig. 112B); endophallic expulsion hooks fused to be a sclerite (Fig. 112H), without separated parts of posterior plates (which exist in *S. cylindricollis* group); gonocoxite without apicolateral tooth (Fig. 112F); spermatheca not observable.

***Stenus flavidulus* Sharp**
(Figs. 112A–H, 135C)

Stenus flavidulus Sharp, 1889: 334; Herman, 2001: 2178; Naomi & Puthz, 2013: 140.

Type material. Syntypes (NHML), type locality: Honjo, Tokio, collected in late autumn and early spring.

Other material examined. [HONSHU]: 4 ♂, Kezuka, Higashi-matsuyama City, Saitama Pref., 31. viii. 1997, K. Toyoda leg.; 1 ♀, same locality, 31. viii. 1997, T. Shimada leg.; 2 ♂ 1 ♀, Doai, Urawa City, Saitama Pref., 21. iii. 1954, H. Kajimura leg.; 2 ♂ 2 ♀, near-Atsugi, Kanagawa Pref., 7. iv. 1960, Y. Shibata leg.; 1 ♀, Nakanogo, Hachijo Is., Tokyo Metropolis, 1. vi. 1964, Y. Hirashima leg. [NANSEI ISLS.]: 1 ♂ 2 ♀, Nagakubo, Yaku-machi, Yaku Is., Kagoshima Pref., 10. viii. 1998, K. Matsumoto leg.

Distribution. Japan (Honshu, Kyushu?; Hachijyo Is., Yaku Is.).

Redescription. Male and female: Macropterous; body 4.0–5.2 mm (fore body 2.2–2.6 mm) in length, slender, moderately shining, with antennae very long. Head unicolorous (reddish brown through dark red to black) or bicolorous (black with median longitudinal area reddish brown); pronotum, elytra and 3rd to 6th abdominal segments pale yellow to yellowish orange or yellowish brown; 7th and 8th abdominal segments dark red to black, but the basal marginal area of 7th segment reddish brown; labrum, antennae and legs yellowish brown to reddish brown. Head hardly concave dorsally, with a pair of longitudinal depressions; punctures round and moderately dense on head but median longitudinal narrow area impunctate. Pronotum with surface almost even; punctures round and dense but median longitudinal narrow area behind the middle impunctate. Elytra with surface smooth; punctures round, very dense and almost regular. Legs long, slender; tarsi with 3rd tarsomere emarginate apically, 4th tarsomere strongly bilobed, with each lobe thick. Abdomen cylindrical, narrowed posteriorly; 8th tergum (Fig. 112G) widely emarginate posteriorly; 9th tergum (Figs. 112C) posteriorly with a cleaning comb; 10th tergum pentagonal in shape, angulate posteromedially (Fig. 112C); punctures on 3rd to 6th segments round, moderately dense and small, while punctures on 7th and 8th segments sparse and very small. Lateroventrites and tergoventrite sutures missing on abdomen.

Male: Seventh ventrite posteromedially with a bell-shaped, flat area, which is shallowly emarginate posteriorly; 8th ventrite (Fig. 112E) posteromedially with a deep V-shaped emargination; 9th tergum (Fig. 112C) elongate, with anterolateral flaps relatively small, ventral apophyses very long; 9th ventrite (Fig. 112B) elongate, finely serrate and also emarginate posteriorly, with stem rounded anteriorly, apicolateral setae long. Aedeagal median lobe (Fig. 112A) very slender, uniformly narrowed toward the apex which has a small globe at the apicalmost part, with lateral rims provided mesially with a pair of pointed teeth located a little behind the basal 1/3; apical sclerotized area very long, with apicomedian subtransparent area rather elongate. Endophallic median longitudinal bands (Fig. 112A) with ventral bands moderately long, thin, dorsal bands

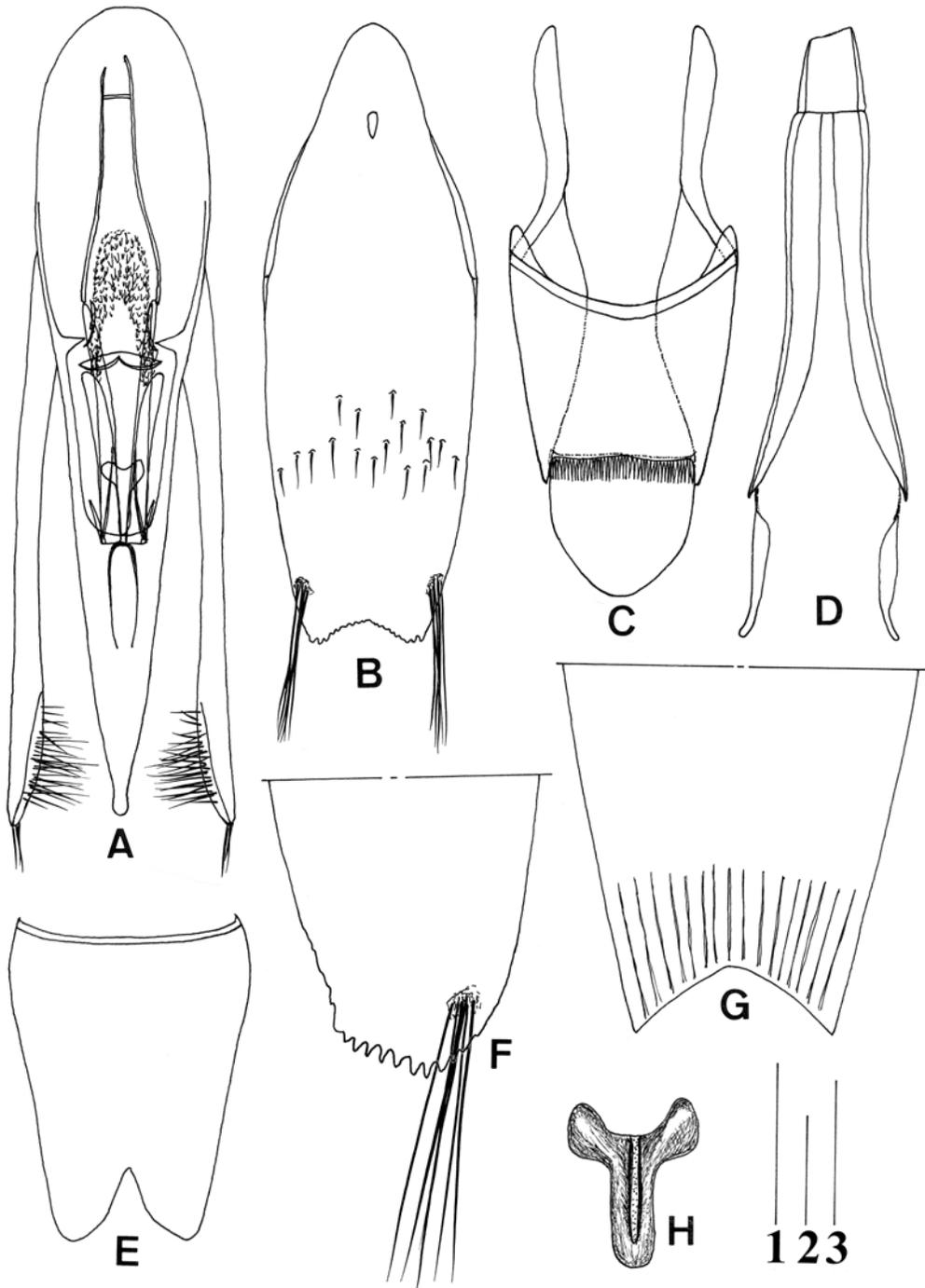


Fig. 112. *Stenus flavidulus* Sharp (Kezuka, Saitama). A, aedeagus; B, 9th ventrite of male; C, 9th and 10th terga of male; D, endophallic basal tube; E, 8th ventrite of male; F, apex of gonocoxite; G, 8th tergum of male; H, expulsion hook. Scale 1: 0.2mm for A, B, G, 0.1 mm for D, F, H; scale 2: 0.2mm for C; scale 3: 0.3 mm for E.

short; expulsion hooks (Fig. 112A, H) fused to form a Y-shaped sclerite; basal tube (Fig. 112A) with basal room a little narrower than the base of tube body, and tube body simply widened apically (Fig. 112D); a pair of elongate sclerites located a little behind basal tube (Fig. 112D), and also a little behind these sclerites, the other transverse, sclerotized sclerite existing, which is emarginate posteromedially (Fig. 112A); inner sac visible near the apex of basal tube (Fig. 112A), where it is covered partially with small, dense spicules. Parameres very long but moderately thick; apical area swollen mesially, and furnished mesially with 26 to 28 setae, and also with 2 or 3 setae at the apicalmost part.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 112F) each distinctly serrate posteriorly, with apicolateral setae long. Spermatheca not observable.

Biology and ecology. *S. flavidulus* is a rare *Stenus* species in Japan; and it is distributed in the plains and low mountainous regions. The beetles inhabit wet litter and grasses in the vicinity of rivers and marshes. It was observed in Saitama that the beetles occasionally climb the stalk of *Phragmites* plants grown at the wetlands located near paddy fields, and they ramble along the leaves (Toyoda, 1999).

Remarks. *Stenus flavidulus* is allied to *S. delectus* Puthz, 1978 from India, Burma and Laos, but this species is separable from the latter by the body bicolorous as described above, the 8th tergum widely emarginate posteriorly (Fig. 112G), and the aedeagal median lobe more slender, with its paramere shorter (Fig. 112A).

Stenus flavidulus paederinus Champion

(Fig. 135D)

Stenus paederinus Champion, 1924: 160.

Stenus flavidulus paederinus Champion: Puthz, 1967: 143; Naomi, 1990c: 197; Herman, 2001: 2178; Naomi & Puthz, 2013: 140.

Type material examined. Syntypes: 1 ♂ 1 ♀ (NHML), type locality: Haldwani District, banks of the Nala Ronsali [examined by Puthz in 1979].

Other material examined. [NANSEI ISLS.]: 1 ♂, Shinmura, Amami Is., Kagoshima Pref., 9. xi. 1962, C. Ohkuma leg.; 1 ♀, Asato, Yoron-cho, Yoron Is., Kagoshima Pref., 20. vi. 1998, M. Kimura leg.; 1 ♀, Mt. Nekumachiji, Ohgimi-son, Okinawa Is., Okinawa Pref., 7. ix. 2003, S. Arai leg.; 2 ♀, Genka River, Haneji, Okinawa Is., Okinawa Pref., 22. ii. 1988, K. Morimoto leg.; 1 ♀, Yona, Okinawa Is., Okinawa Pref., 18. iii. 1975, A. Watanabe leg.; 1 ♂, same locality, 20. iv. 1986, M. Yoshida leg.; 2 ♂, Ishigaki Is., Okinawa Pref., Jan. 1998-Dec. 1999, K. Takahashi leg.; 11 ♂ 6 ♀, Nakano, Iriomote Is., Okinawa Pref., 29. iv. 1998, K. Toyoda leg.; 5 ♂ 5 ♀, same locality, 2. v. 1999, S. Arai leg.

Distribution. Japan (Nansei Is.: Amami Is., Yoron Is., Toku Is., Okinoerabu Is., Okinawa Is., Ishigaki Is. and Iriomote Is.); Taiwan, China, India, Oriental region.

Redescription. *Stenus flavidulus paederinus* is basically the same in morphology as the nominotypical subspecies. It is, however, separable from the latter by the following characters: First, the body coloration is different in the following style (Fig. 135D): head dark red to black; pronotum reddish brown; elytra dark red to black but the anterior and posterior marginal areas yellowish brown to reddish brown in their full width, and the pale-colored area of posterior margin extends anteriorly along the suture so that the pale-colored area form a wide-triangular area, such a triangular pale-colored area also found in the anterior 1/2 of elytra; abdomen with 3rd to 6th

segments reddish brown, but the basimedial parts of 3rd to 5th terga each occasionally with a dark red, subtriangular spot; 7th and 8th segments dark red to black, but the basal marginal area of 7th segment reddish brown. Second, the aedeagal median lobe of *S. flavidulus paederinus* is on average a little narrower and longer than that of nominotypical subspecies (Puthz, 1967).

Biology and ecology. In Japan, *Stenus flavidulus paederinus* is distributed in the plains and low mountainous regions of Nansei Isls. The beetles inhabit wet litter and grasses in the vicinity of marshes. It was observed at the marshes of Iriomote Is. that the beetles live on the leaves and near the roots of *Carex* plants (Toyoda, 1999).

Remarks. *Stenus paederinus* was first described from Haldwani by Champion (1924). Puthz (1967) downgraded it as a subspecies of *S. flavidulus*. Naomi (1990) first recorded *S. flavidulus paederinus* from Japan (Amami Is. and Oknawa Is.). Given the body coloration of this species which is similar to that of *Paederus* species, this subspecies seems to show a Batesian mimicry (Puthz, 1967).

Species group of *S. bispinus* Motschulsky

S. bispinus group consists of 1 species in Japan; see Puthz (1985) regarding a characterization of, and a key to species of this group. Diagnostic characters are as follows: Head with vertex only shallowly concave, flat or weakly convex dorsally, without distinct longitudinal furrows (Fig. 135E); antennae long; legs yellowish in general, tarsus with 3rd tarsomere emarginate apically, 4th tarsomere strongly bilobed; lateroventrites and tergo-ventrite sutures missing on abdomen; 9th tergum posteriorly with a cleaning comb (Fig. 113B); 9th ventrite of male bispinose, with a pair of thin, long, apicolateral teeth (Fig. 113F); endophallus often with fused expulsion hook, and also with median sclerite and apicolateral plates (Fig. 113C; Puthz, 1985); gonocoxite with a thin, long, apicolateral tooth (Fig. 113E); spermatheca (Fig. 113G) sclerotized with RT-duct uniformly pinstriped.

Stenus currax Sharp (Figs. 113A–I, 135E)

Stenus currax Sharp, 1874: 88; Herman, 2001: 2153; Naomi & Puthz, 2013: 140.

Type material examined. Lectotype: ♂ (NHML), type locality: Nagasaki, Japan, Lewis [designated by Puthz in 1985: 84].

Other material examined. [HONSHU]: 1 ♂ 1 ♀, Kamiyukawa, Arida, Wakayama Pref., 3. v. 1974, I. Matoba leg. [SHIKOKU]: 1 ♂, Fukagi, Nakamura City, Kochi Pref., 24. x. 2001; 1 ♂, Nishikawanaka River, Umaji-mura, Kochi Pref., 3. v. 1988, K. Haga leg. [KYUSHU]: 5 ♂ 2 ♀, Uchinoura-machi, Kagoshima Pref., 1. v. 2009, M. Saito leg.

Distribution. Japan (Honshu, Kyushu; Hachijyo Is., Yaku Is.); Taiwan, China, Vietnam, Thailand, Myanmar, Indonesia.

Redescription. Male and female: Macropterous; body 4.0–5.5 mm (fore body 2.0–2.6 mm) in length, moderately shining, with antennae long and thin. Body dark red to black; labrum reddish brown to dark brown; antennae and legs pale yellowish brown to reddish brown. Head shallowly concave dorsally, with a pair of indistinct longitudinal depressions; punctures round to elliptical, dense to very dense. Pronotum with surface almost even; punctures round, very dense, almost regular. Elytra large, well convex dorsally; surface punctate as on pronotum but punctures a little

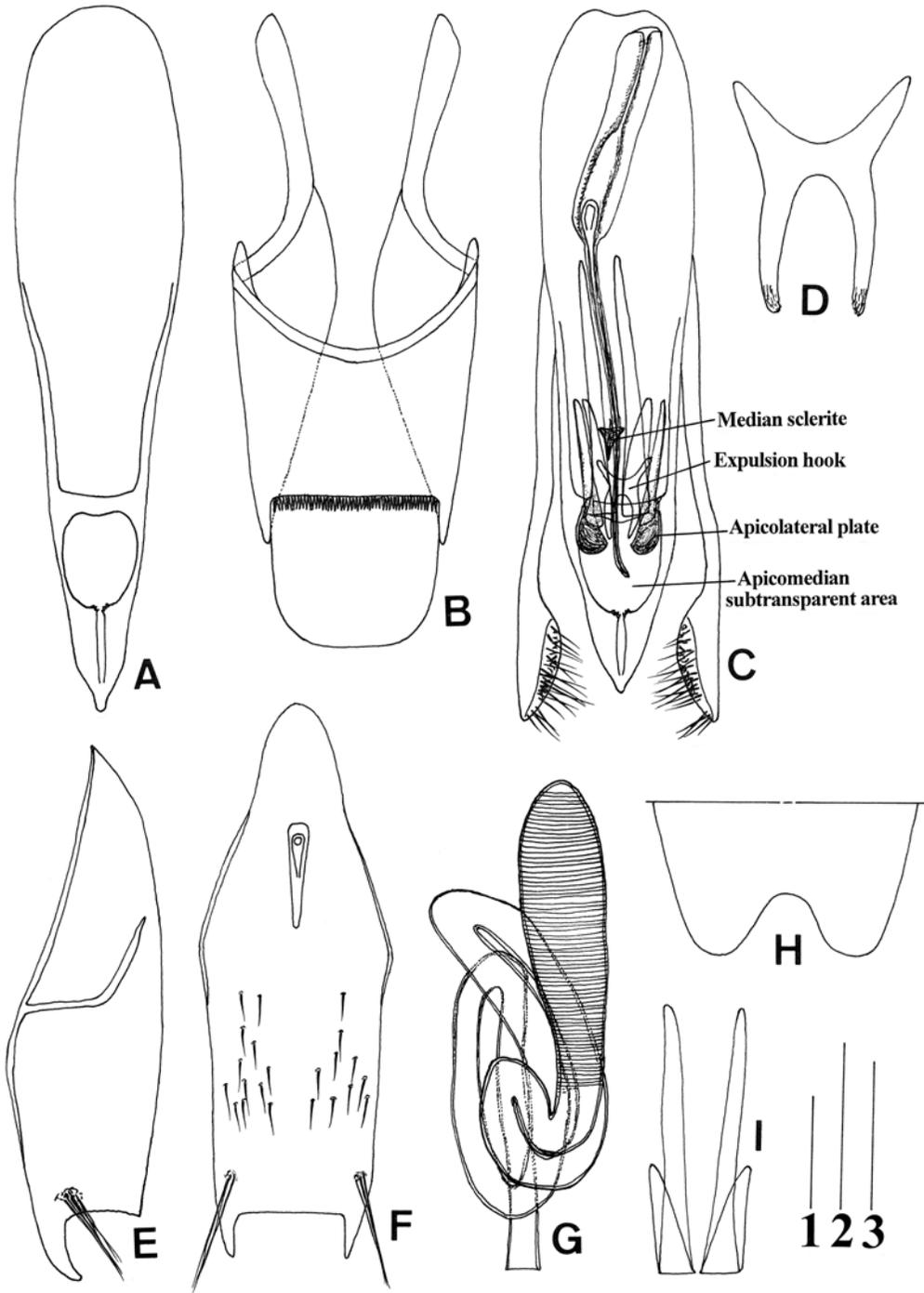


Fig. 113. *Stenus currax* Sharp (A, B, F, H, Fukagi, Kochi; C–E, G, I, Uchinoura, Kagoshima). A, aedeagal median lobe; B, 9th and 10th terga of male; C, aedeagus; D, endophallic expulsion hook; E, gonocoxite; F, 9th ventrite of male; G, spermatheca; H, apex of 8th ventrite of male; I, median longitudinal bands. Scale 1: 0.2 mm for A–C, F, I; scale 2: 0.2 mm for E, 0.1 mm for D, G; scale 3: 0.3 mm for H.

larger than those on it. Legs moderately long; tarsi with 3rd tarsomere widely emarginate apically, 4th tarsomere strongly bilobed. Abdomen relatively thick, subparallel-sided; 9th tergum (Fig. 113B) posteriorly with a cleaning comb; punctures on 3rd to 5th segments moderately dense and small, while punctures on 6th and 8th segments sparse and very small. Lateroventrites and tergoventrite sutures missing on abdomen.

Male: Seventh ventrite posteromedially with a shallow emargination; 8th ventrite (Fig. 113H) posteromedially with a large, U-shaped emargination; 9th tergum (Fig. 113B) with anterolateral flaps relatively small, ventral apophyses very long; 9th ventrite (Fig. 113F) bispinose with a pair of thin, long, apicolateral teeth, apicolateral setae moderately long; 10th tergum (Fig. 113B) entire. Aedeagal median lobe (Fig. 113A, C) elongate, slender and narrowed apically to the pointed apex, with a very short apicomedian projection (or protuberance); apical sclerotized area subtriangular in shape, with the narrow, median longitudinal area less strongly sclerotized, and with a pair of denticulate areas at the middle of anterior margin; apicomedian subtransparent area (Fig. 113C) very large and anteriorly demarcated by the transverse bridge. Endophallic median longitudinal bands (Fig. 113I) with ventral bands moderately long, thin, dorsal bands short, each narrowed anteriorly; expulsion hooks (Fig. 113C, D) fused to form a X-shaped sclerite, posterior plate apically set with scratch-like microsculpture; basal tube (Fig. 113C) longate, pitcher-shaped, distally with an elongate, flagellar duct; median sclerite (Fig. 113C) arrowhead-shaped, strongly sclerotized; apicolateral plates (Fig. 113C) almost bowl-shaped, sclerotized. Parameres very long, slender; stem very thin, and weakly sinuous around the base of apical area; apical area strongly swollen mesially, pallet-like, and furnished mesially with 14 to 20 thin setae, and also with 11 to 14 very short, thick and weakly curved setae.

Female: Eighth ventrite rounded posteriorly; gonocoxite (Fig. 113E) distinctly angulate apicomesially, with apicolateral tooth stout, weakly incurved, apicolateral setae short. Spermatheca (Fig. 113G) with capsule missing; RT-duct rather thick, densely pinstriped; spermathecal duct almost tightly coiled, with 6 turns; basal valve not observable.

Biology and ecology. *Stenus currax* is distributed in the plains and low mountainous regions in Japan. No data are obtained on the ecology and habitats of this species.

Remarks. *Stenus currax* is allied to *S. miriventris* Puthz, 1985 from Thailand, but this species is separable from the latter by the body larger and robuster, the head narrower than elytra, the aedeagal median lobe with wider apex (Fig. 113A, C), the endophallic expulsion hook elongate and pitcher-shaped, distally with an elongate flagellar duct (Fig. 113C), and the apical parameral area distinctly swollen mesially (Fig. 113C) (Puthz, 1985).

The specimens examined show a variation regarding the shape of aedeagal median lobe. The apical part of median lobe is basically narrow, but the apical part of median lobe of a specimen from Fukagi, Shikoku (Fig. 113A) is distinctly narrower than that of Uchinoura, Kyushu (Fig. 113C). The similar variations of aedeagal median lobe shown in the specimens collected from several localities of Southeast Asia were also mentioned by Puthz (1985; figs. 13–16). However, these local populations share the common unique characters of endophallic structures as described above; and thus the structural variation of the apex of median lobe that we observed be considered infraspecific one.

Species group of *S. alpicola* Fauvel

S. alpicola group consists of 2 species in Japan; see Puthz (2003c) regarding a review of this group; and see Ryvkin (2000) regarding a key to some Palaearctic species of this group. Diag-

nostic characters are as follows: Head with vertex hardly concave dorsally, with a pair of very shallow depressions (Fig. 135F); pronotum wider than long, mostly with a median longitudinal depression; legs with tarsi simple; abdomen with lateroventrites ventromesial in position, relatively wide; 9th ventrite of male with apicolateral teeth pointed (Fig. 114B); aedeagal median lobe more or less pointed apically (Fig. 114A); endophallic expulsion hooks fused to form a transverse, U-shaped or M-shaped sclerite (Fig. 114H; Puthz, 2003c); gonocoxite with apicolateral tooth pointed (Fig. 114E); spermatheca with duct short, not coiled (Fig. 114G) or very long, tightly coiled (Puthz, 2003c, figs. 9, 10).

Key to the Japanese species of *S. alpicola* group

- 1(2) Pronotum and elytra less coarsely, more regularly punctate; metaventrite posteromedially with a longitudinal furrow distinct (especially in male); legs reddish brown to dark red; meso- and metatibiae each with a preapical spur longer; aedeagal median lobe with apical sclerotized area longer (Fig. 114A)..... *S. veselovae* Ryvkin
 2(1) Pronotum and elytra more coarsely, more irregularly punctate; metaventrite posteromedially with a longitudinal furrow indistinct; legs yellowish brown to reddish brown; meso- and metatibiae each with preapical spur shorter; aedeagal median lobe with apical sclerotized area shorter (Fig. 115E)..... *S. sibiricus* Sahlberg

Stenus veselovae Ryvkin (Figs. 114A–H, 135F)

Stenus veselovae Ryvkin, 1987b: 273; Herman, 2001: 2431.

Stenus noctivagus Casey, 1884: Naomi, 1997c: 22; Naomi & Puthz, 2013: 140.

Type material. Holotype: ♂ (ZIRAS), S-Jamal, Sr.-Ščuĉje, eluvium, Russia, 1. viii. 1980, E. Veselova leg

Other material examined. [HOKKAIDO]: 1 ♂ 1 ♀, Mt. Yotei, Abuta, 7. vii. 1989, N. Yasuda leg.

Distribution. Japan (Hokkaido); Russia, Europe.

Redescription. Male and female: Brachypterous; body 2.5–3.6 mm (fore body 1.2–1.7 mm) in length, somewhat flat dorsally, weakly shining, with short antennae. Body and labrum dark chocolate brown to black; antennae dark red to chocolate brown; legs reddish brown to dark red, with knees more or less infuscate. Head hardly concave dorsally, with a pair of very shallow depressions, median longitudinal area convex, a little higher in level than mesial margin of eye; punctures round, dense to very dense, somewhat umbilicate. Pronotum with surface weakly uneven, with median longitudinal depression indistinct; punctures round, very dense. Elytra with surface weakly uneven; punctures round, very dense, almost regular. Legs relatively short; tarsi simple. Abdomen relatively wide, weakly convex dorsally; punctures round, very dense and small in anterior segments, while punctures in posterior segments elliptical, very small and regular. Lateroventrites ventromesial in position, relatively wide, punctate.

Male: Metaventrite flat posteromedially, with a short longitudinal furrow (Puthz, 1993, figs. 1–3, 5); meso- and metatibiae each with a preapical spur; 7th ventrite (Fig. 114C) posteromedially with a large, subovoidal flat area, which is shallowly emarginate posteriorly; 8th ventrite (Fig. 114C) posteromedially with a small emargination; 9th tergum (Fig. 114D) with anterolateral

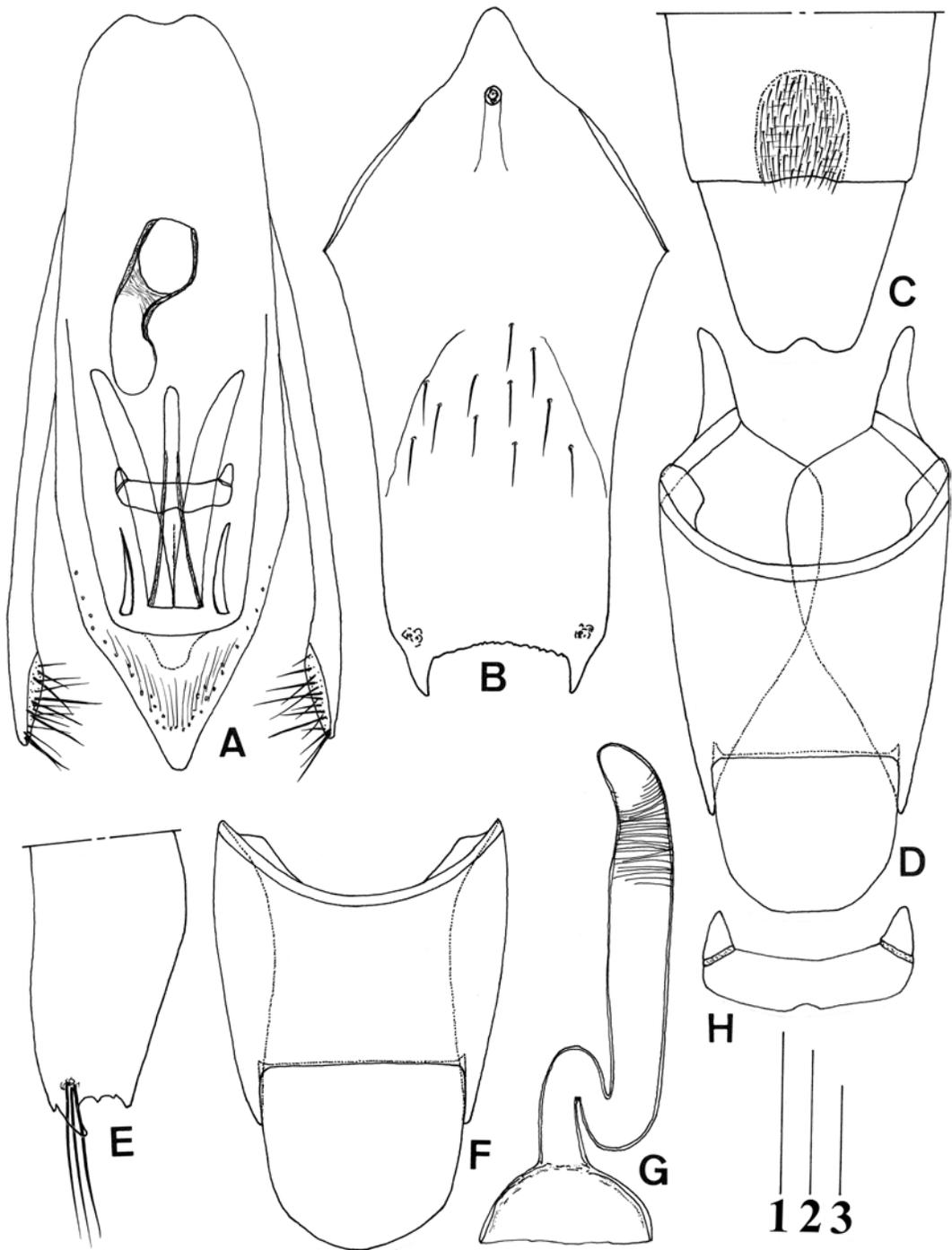


Fig. 114. *Stenus veselovae* Ryvkin (Yotei, Hokkaido). A, aedeagus; B, 9th ventrite of male; C, 7th to 8th ventrites of male; D, 9th and 10th terga of male; E, gonocoxite; F, 9th and 10th terga of female; G, spermatheca; H, endophallic expulsion hook. Scale 1: 0.1 mm for A, B, E, 0.2 mm for G, 0.05 mm for H; scale 2: 0.3 mm for C; scale 3: 0.1 mm for D, F.

flaps subtrapezoidal in shape, ventral apophyses short, narrowed apically; 9th ventrite (Fig. 114B) wide, widest at basal 1/3, very finely serrate posteriorly, gently rounded at apicolateral corners, with stem small, subtriangular in shape, apicolateral teeth short, pointed, apicolateral setae short; 10th tergum (Fig. 114D) entire. Aedeagal median lobe (Fig. 114A) elongate, pointed apically, with apical sclerotized area almost triangular in shape. Endophallic median longitudinal bands (Fig. 114A) with ventral bands partially fused (?), a little shorter than dorsal bands which distinctly diverge anteriorly; expulsion hooks (Fig. 114A, H) fused to form a transverse sclerite which has anterolaterally the separated anterior plates; basal tube (Fig. 114A) short, moderately thick, weakly curved. Parameres (Fig. 114A) slender, weakly incurved; apical area short, weakly swollen mesially, and furnished mesially with 12 to 16 setae of various length.

Female: Metaventrite with a posteromedian longitudinal furrow shallower; 8th ventrite obtusely pointed posteromedially; 9th tergum (Fig. 114F) with anterolateral flaps short; gonocoxites (Fig. 114E) each posteriorly serrate, apicomesially with a pointed tooth, apicolateral tooth pointed, apicolateral setae moderately long; 10th tergum (Fig. 114F) entire. Spermatheca (Fig. 114G) with capsule small, narrowed apically; RT-duct only indistinctly demarcated from the capsule; spermathecal tube very short, thick, with two turns; basal pouch bowl-shaped.

Biology and Ecology. *Stenus veselovae* is widely distributed in the Palaearctic region; and the beetles inhabit litter and mosses in larch (*Larix*) forests and also in other plant communities (Ryvkin, 2000). The beetles were only once collected in Japan from the low mountainous region of Hokkaido; and no solid information is presently obtained regarding the habitats of this species in Japan.

Remarks. *Stenus veselovae* was first recorded from Japan (Hokkaido) as *S. noctivagus* by Naomi (1997c). This species is allied to *S. sibiricus*, but it is separable from the latter by the fore body less coarsely, more regularly punctate, the legs darker in coloration (Ryvkin, 2000), and the aedeagal median lobe with apical sclerotized area narrower and longer (Fig. 114A).

Etymology. This species is named in honour of Ms. E. Veselova (Moscow), who collected the type specimens of this species.

***Stenus sibiricus* Sahlberg**

(Figs. 115A–H, 135G)

Stenus sibiricus Sahlberg, 1880: 79; Herman, 2001: 2388.

Type material examined. Lectotype: ♀ (DEIM), type locality: Imbatsk, Sahlberg [designated by Ryvkin (1987: 272); and examined by Puthz].

Other material examined. [HONSHU]: 1 ♂, Shirakoma, Mt. Kitayatsu, Nagano Pref., 13–16. ix. 1996, T. Ito leg.

Distribution. Japan (Honshu); Russia, Kyrgystan, Mongolia, China, Canada, USA.

Redescription. Male and female: Brachypterous; body 2.5–4.1 mm (fore body 1.2–2.0 mm) in length, somewhat flat dorsally, weakly shining, with short antennae. Body and labrum dark chocolate brown to black; antennae reddish brown, with apical segments infusate; legs yellowish brown to reddish brown, with knees more or less infusate. Head hardly concave dorsally, with a pair of very shallow depressions, median longitudinal area convex; punctures dense to very dense, coarse, somewhat umbilicate. Pronotum with surface uneven, with median longitudinal depression distinct; punctures round, very dense, coarse. Elytra with surface uneven; punctures round to elliptical, very dense, coarse. Metaventrite flat posteromedially, with a longitudinal fur-

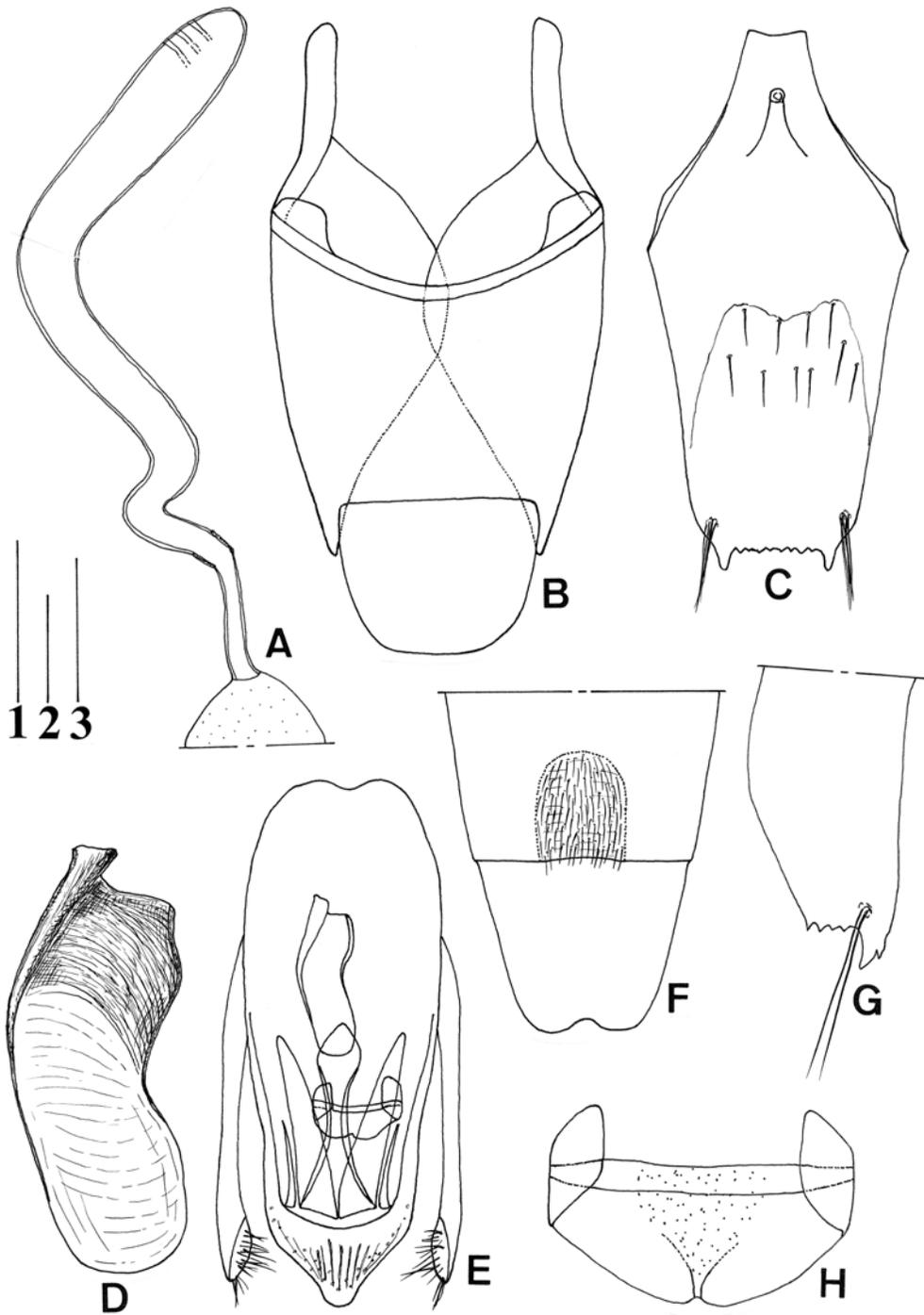


Fig. 115. *Stenus sibiricus* Sahlberg (A, F, G, Amur, Russia; B–E, H, Kitayatsu, Nagano). A, spermatheca; B, 9th and 10th terga of male; C, 9th ventrite of male; D, endophallic basal tube; E, aedeagus; F, 7th to 8th ventrites of male; G, gonocoxite; H, expulsion hook. Scale 1: 0.1 mm for A, G, 0.05 mm for D, H; scale 2: 0.1 mm for B, C, E; scale 3: 0.3 mm for F.

row indistinct (Puthz, 1993, figs. 4, 6). Legs relatively short; tarsi simple. Abdomen relatively wide, weakly convex dorsally; punctures round to elliptical, very dense and small in anterior segments, while punctures in posterior segments elliptical, very small and regular. Lateroventrites ventromesial in position, relatively wide, punctate.

Male: Meso- and metatibiae each with a short preapical spur; 7th ventrite (Fig. 115F) posteromedially with a large, subovoidal flat area, which is very shallowly emarginate posteriorly; 8th ventrite (Fig. 115F) posteromedially with a small emargination; 9th tergum (Fig. 115B) with anterolateral flaps subtrapezoidal in shape, ventral apophyses relatively long; 9th ventrite (Fig. 115C) wide, widest a little behind the basal 1/3, gently rounded at apicolateral corners, and serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth very short, pointed, apicolateral setae short; 10th tergum (Fig. 115B) entire. Aedeagal median lobe (Fig. 115E) wide, rounded at apicolateral corners, and narrow but rounded at apex. Endophallic median longitudinal bands (Fig. 115E) with ventral bands fused (?), with the apex spatulate, dorsal bands rather wide, each narrowed anteriorly; expulsion hooks (Fig. 115E, H) fused to form a transverse, pentagonal-shaped sclerite which has anterolaterally the separated anterior plates; basal tube (Fig. 115D, E) short, moderately thick, and weakly curved. Parameres (Fig. 115E) very weakly incurved; apical area rather short, weakly swollen mesially, and furnished mesially with 8 to 12 setae of various length, and apically with 3 to 4 short setae.

Female: Eighth ventrite obtusely pointed posteromedially; gonocoxites (Fig. 115G) each serrate posteriorly, with apicolateral tooth acutely pointed. Spermatheca (Fig. 115A) consisting simply of a short duct with two turns (not differentiated into capsule, RT-duct and spermathecal duct), but duct of a very short span near the base sclerotized; basal pouch bowl-shaped.

Biology and Ecology. In Japan, *S. sibiricus* is a very rare *Stenus* species; and only one beetle was collected from the mountainous region of Central Honshu. No solid information is presently obtained regarding the habitats of this species in Japan.

Remarks. *Stenus sibiricus* is allied to *S. veselovae*, but this species is separable from the latter by the fore body more coarsely, more irregularly punctate, the legs lighter in coloration, and the aedeagal median lobe with apical sclerotized area shorter (Fig. 115E). *S. sibiricus* is here first recorded from Japan.

Species group of *S. virgula* Fauvel

S. virgula group consists of 1 species in Japan; see Puthz (2013) regarding a review of this group. This may be a mixed group but the following characters can be presently used for recognizing the members of this group: Paraglossae oval; legs with 4th tarsomere strongly bilobed; abdomen with lateroventrites dorsomesial in position, and narrow; 9th tergum posteriorly with a short cleaning comb (Fig. 116B); 9th ventrite of male with apicolateral teeth pointed (Fig. 116C) but sometimes missing (Puthz, 2013); aedeagal median lobe more or less pointed apically (Fig. 116A); gonocoxite with apicolateral tooth pointed (Fig. 116D); paramere often apicomesially with a dorsal flap (Fig. 116A; Puthz, 2013); spermatheca with duct short, relatively thick (Fig. 116G).

Stenus rugipennis Sharp (Figs. 116A–G, 135H)

Stenus rugipennis Sharp, 1874: 85; Herman, 2001: 2373; Naomi & Puthz, 2013: 140.

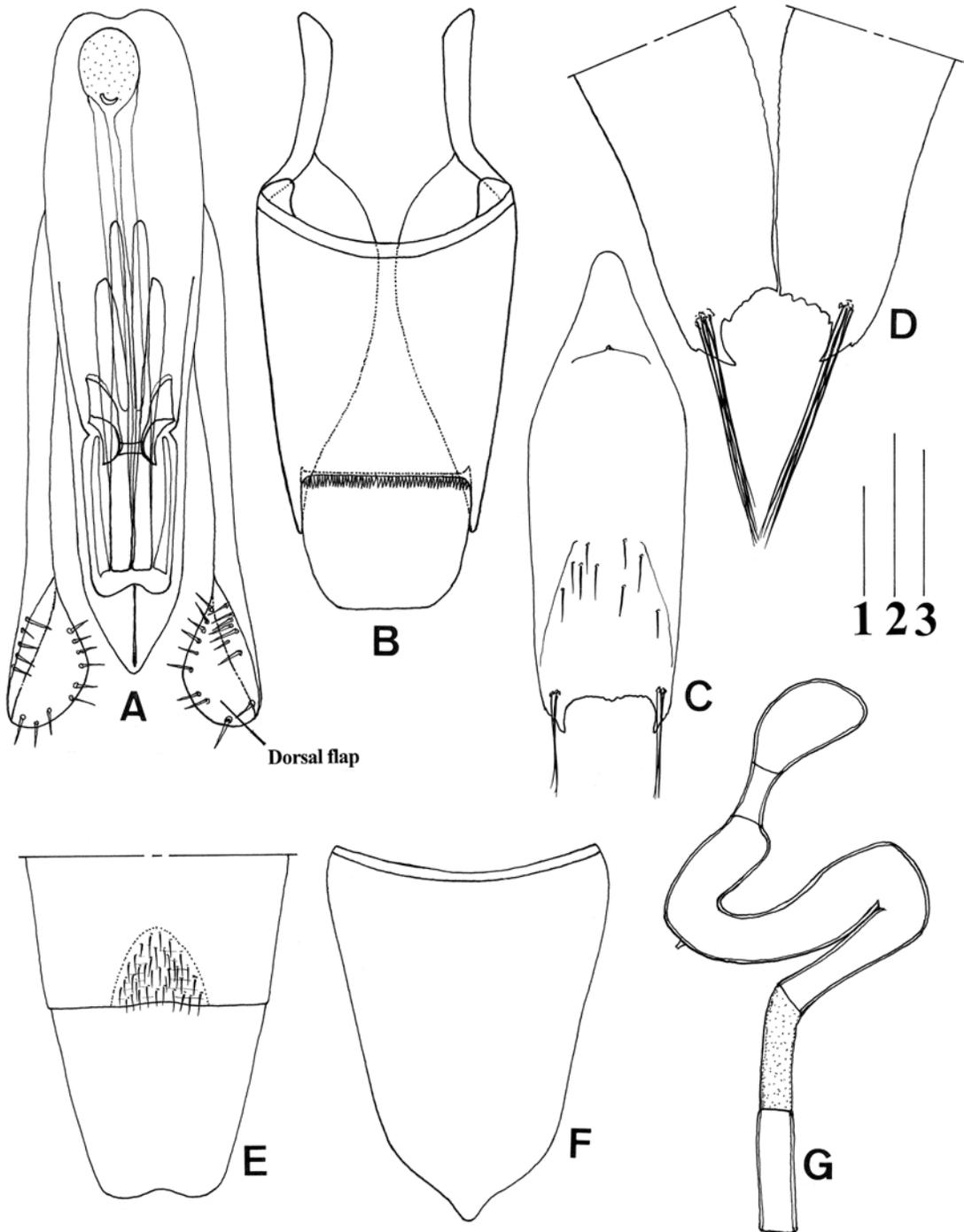


Fig. 116. *Stenus rugipennis* Sharp (A–C, Mihara, Hachijo Is.; D, G, Chimachibo, Saga; E, F, Awa, Okinawa Is.). A, aedeagus; B, 9th and 10th terga of male; C, 9th ventrite of male; D, gonocoxites; E, 7th to 8th ventrites of male; F, 8th ventrite of female; G, spermatheca. Scale 1: 0.1 mm for A, 0.2 mm for F; scale 2: 0.2 mm for B, C, G, 0.1 mm for D; scale 3: 0.3 mm for E.

Stenus sharpianus Cameron, 1930: 205.

Stenus namazu Hromádka, 1979c: 101.

Type material examined. Syntype: ♂ (NHML), type locality: Copper Temple, Nagasaki [examined by Puthz in 1968].

Other material examined. [HOKKAIDO]: 1 ♂, Higashi-Ohnuma, Nanae, Oshima, 14. vi. 1986, S. Nomura leg.; 1 ♀, same locality, 16. vi. 1986, S. Nomura leg.; 1 ♂, Oketo, 21. viii. 1992, T. Kato leg. [HONSHU]: 1 ♂, Yumoto, Oku-Nikko, Tochigi Pref., 19. vii. 1977, M. Tao leg.; 2 ♀, Chikura-machi, Chiba Pref., 26. vi. 1994, S. Naomi leg.; 1 ♀, Mihama, Chiba City, Chiba Pref., 3. ii. 1994, Y. Hagino leg.; 1 ♂, Yokohama C., Kanagawa Pref., 1. x. 1983, M. Tao leg.; 1 ♂, same locality, 21. ix. 1986, M. Tao leg.; 1 ♀, Tsurumi-ku, Yokohama C., Kanagawa Pref., 10. vii. 1983, M. Tao leg.; 1 ♂1 ♀, same locality, 16. v. 1987, M. Tao leg.; 1 ♂, Yorizawa, Mt. Tanzawa, Kanagawa Pref., 10. viii. 1987, M. Tao leg.; 1 ♂1 ♀, Mt. Mihara, Hachijo Is., Izu Isls., Tokyo Metropolis, 2. iv. 1994, S. Naomi leg.; 1 ♂3 ♀, same locality, 3. iv. 1994, S. Naomi leg.; 1 ♂1 ♀, Mt. Oyama, Mikura Is., Izu Isls., Tokyo Metropolis, 7. vi. 1996, S. Naomi & M. Maruyama leg.; 1 ♂1 ♀, Sato-Kawada, Mikura Is., Izu Isls., Tokyo Metropolis, 8. vi. 1996, S. Naomi & M. Maruyama leg.; 1 ♂, Gifu, 26. iv. 1946, K. Ohbayashi leg.; 1 ♀, Higashi-ku, Nagoya City, Aichi Pref., 6. x. 1955, Z. Naruse leg.; 2 ♀, Nisshin, Aichi Pref., 18. xii. 1985, T. Kato leg.; 1 ♀, Mt. Daisen, Tottori Pref., 8. xi. 1977, S. Naomi leg.; 1 ♂, Ukankei, Okayama Pref., 19. iii. 1977, O. Yamaji leg.; 1 ♀, Makiyama, Okayama City, Okayama Pref., 6. iii. 1977, S. Naomi leg.; 2 ♂2 ♀, Bizenhara, Okayama Pref., 26. ii. 1977, S. Naomi leg. [KYUSHU]: 1 ♀, Mt. Tachibana, Fukuoka Pref., 1. vi. 1978, K. Yamagishi leg.; 2 ♀, Otomari, Ume-cho, Ohita Pref., 15. iii. 1986, S. Sasaki leg.; 1 ♀, Chimachibo, Yamauchi-cho, Saga Pref., 23. ix. 1970, Y. Eguchi leg.; 2 ♂, Kazusa, Nagasaki Pref., 27. iii. 1978, S. Imasaka leg.; 1 ♀, Senbuki, Shimabara, Nagasaki Pref., 28. v. 1977, S. Imasaka leg.; 1 ♀, Sugitani, Shimabara, Nagasaki Pref., 23. viii. 1977, S. Imasaka leg.; 1 ♀, Kawachi-son, Kumamoto City, Kumamoto Pref., 14. viii. 1977, S. Naomi leg.; 1 ♂, Kurokami, Kumamoto City, Kumamoto Pref., 30. iii. 1962, H. Aramaki leg. [NANSEI ISLS]: 1 ♂, Funakura, Nakanoshima Is., Tokara Isls., Kagoshima Pref., 13. vii. 1982, Y. Takai leg.; 2 ♂1 ♀, Tete, Toku Is., Kagoshima Pref., 4. v. 1988, S. Nomura leg.; 1 ♀, Mt. Inokawa, Toku Is., Kagoshima Pref., 2. v. 1988, S. Nomura leg.; 2 ♂1 ♀, Akaogi, Amami Is., Kagoshima Pref., 23. iii. 1978, S. Naomi leg.; 1 ♂, Yamatohama, Amami Is., Kagoshima Pref., 24. iii. 1978, S. Naomi leg.; 1 ♂, Hatsuno, Amami Is., Kagoshima Pref., 27. iii. 1978, S. Naomi leg.; 1 ♀, Shinmura, Amami Is., Kagoshima Pref., 28. iii. 1978, S. Naomi leg.; 1 ♂1 ♀, same locality, 9. xi. 1962, C. Ohkuma leg.; 1 ♀, Naze City, Amami Is., Kagoshima Pref., H. Makiyama leg.; 1 ♀, Mt. Yui, Amami Is., Kagoshima Pref., 26. iii. 1979, Y. Tsuda leg.; 4 ♂3 ♀, Awa, Motobu Peninsula, Okinawa Is., Okinawa Pref., 13. iii. 1978, S. Naomi leg.; 1 ♀, Mt. Nishime, Kunigami, Okinawa Is., Okinawa Pref., 19. x. 1987, M. Sakai leg.; 2 ♂1 ♀, Sueyoshi, Naha City, Okinawa Is., Okinawa Pref., 20. v. 1990, T. Ueno leg. [TAIWAN]: 1 ♂ (cS), Taiwan, Taichung Hsien, Anmashan, 2225 m, 3. v. 1990, A. Smetana leg.; 1 ♂ (cS), same locality, 11–15. v. 1992, A. Smetana leg.; 1 ♀, Taiwan, Taichung Hsien, Anmashan Creek, 2185 m, 12. v. 1992, A. Smetana leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu; Mikura Is., Hachijo Is., Ogasawara Isls., Yaku Is., Tokara-Naka Is., Amami Is., Toku Is., Okinawa Is.); Korea, Taiwan, China, Russia (Eastern part).

Redescription. Male and female: Macropterous; body 3.2–4.9 mm (fore body 1.8–2.3 mm) in length, mat, with short antennae. Head black; pronotum, elytra and abdomen dark red; labrum dark red; antennae and legs yellowish brown to reddish brown, with knees weakly infuscate.

Head weakly concave dorsally, with a median longitudinal convex area; punctures round, very dense, small, somewhat umbilicate. Pronotum with surface uneven; punctures round to elliptical, very dense, coarse. Elytra with surface uneven; punctures round to elliptical, very dense and coarse, sometimes two or more punctures partially connate. Legs relatively short; tarsi with 4th tarsomere strongly bilobed. Abdomen relatively wide, convex dorsally; 9th tergum posteriorly with a short cleaning comb (Fig. 116B); punctures basically elliptical and very dense throughout but they become smaller posteriorly toward 8th segment. Lateroventrites dorsomesial in position, narrow, punctate.

Male: Seventh ventrite (Fig. 116E) posteromedially with a bell-shaped, flat area, which is very shallowly emarginate posteriorly; 8th ventrite (Fig. 116E) posteromedially with a small, shallow emargination; 9th tergum (Fig. 116B) elongate, with anterolateral flaps small, ventral apophyses long; 9th ventrite (Fig. 116C) elongate, indistinctly bi-arcuate at posterior margin, with stem rounded anteriorly, apicolateral teeth pointed, apicolateral setae moderately long; 10th tergum (Fig. 116B) entire. Aedeagal median lobe (Fig. 116A) slender and pointed apically, apical sclerotized area subtriangular, ventrally with a median longitudinal suture. Endophallic median longitudinal bands (Fig. 116A) with both ventral and dorsal bands thin, very long and slender, but ventral bands longer than dorsal ones; expulsion hooks (Fig. 116A) separated but connected by a transverse rod, with anterior plate demarcated by a curved suture from posterior plate; basal tube (Fig. 116A) with basal room almost spherical, tube body simple, baculiform, almost straight. Parameres (Fig. 116A) long, each moderately thick basally, and spatulate (when seen ventrally) by apically having a large dorsal flap (which is rounded mesially); apical area furnished mesially with 5 to 8 short, moderately thick setae, and also with 9 to 10 setae of same form along the mesial margin of dorsal flap.

Female: Eighth ventrite (Fig. 116F) weakly protruded and pointed posteromedially; gonocoxites (Fig. 116D) each irregularly serrate posteriorly, with apicolateral tooth acutely pointed, apicolateral setae very long. Spermatheca (Fig. 116G) with capsule subovoidal, constricted basally; RT-duct missing; spermathecal duct short, relatively thick, with two turns; basal valve long; spermathecal gland with its opening located at the posterior side of the 2nd turn of the duct.

Biology and ecology. *S. rugipennis* is a common *Stenus* species in Japan; and it is widely distributed in the plains and mountainous regions there. The beetles inhabit litter in grasslands; and they also inhabit the relatively dried leaf litter near bushes, groves and plantations. The beetles were collected under the piles of dead sugar canes leaved at the fields after the harvest in Amami Is.

Remarks. *Stenus rugipennis* is closely allied to *S. suspectatus* Puthz, 2003a from Taiwan, but this species is separable from the latter by the body larger (Fig. 135H), the endophallic expulsion hooks larger, with anterior plate demarcated by a curved suture from posterior plate (Fig. 116A), and the spermathecal duct longer, with two turns (Fig. 116G; Puthz, 2003a, fig. 23).

Species group of *S. abdominalis* Fauvel

S. abdominalis group consists of 7 species in Japan; see Puthz (1998) regarding a characterization of this group; and see Puthz (2011b) regarding a taxonomic information of this group. Diagnostic characters are as follows: Head with vertex wide (Fig. 135I); paraglossae coniform; legs with 4th tarsomere weakly or strongly bilobed; abdomen with lateroventrites existing or missing; 9th ventrite of male with apicolateral teeth pointed (Fig. 118H); aedeagal median lobe various in shape; apical parameral area usually thick (Fig. 118B) or mesially with a flap (Fig.

121B); gonocoxite with apicolateral tooth pointed (Fig. 118I); spermatheca with duct short (Fig. 118G) to moderately long (Fig. 121F).

Key to the Japanese species of *S. abdominalis* group

- 1(6) Elytron bicolorous, with a pair of yellowish-orange maculae (Fig. 135I); lateroventrites existing on abdomen.
- 2(3) Seventh abdominal ventrite posteromedially with a narrow, parallel-sided depression (Fig. 117G); aedeagal median lobe distinctly wider at apicolateral corners than at base (Fig. 117C)..... *S. bicolon* Sharp
- 3(2) Seventh abdominal ventrite posteromedially with a bell-shaped, flat area or shallow depression; aedeagal median lobe distinctly wider at base than at apicolateral corners.
- 4(5) Elytra dark brown; aedeagus with apical parameral area larger (Fig. 118B); endophallic expulsion hook with posterolateral margin serrate (Fig. 118E)*S. coronatus zipanguensis* Puthz
- 5(4) Elytra reddish brown; aedeagus with apical parameral area smaller (Fig. 119B); endophallic expulsion hook with posterolateral margin simply arcuate (Fig. 119G) ...*S. recurvatus* Naomi
- 6(1) Elytron unicolorous, without maculae (Fig. 135L); lateroventrites missing on abdomen.
- 7(12) Seventh ventrite of male with a shallower depression (Fig. 120D); aedeagal median lobe pointed apically (Fig. 120A); paramere pallet-like, with a mesial flap at apex (Fig. 120A).
- 8(9) Endophallic expulsion hook angulate laterally at about posterior 1/3 (Fig. 120G); spermatheca not coiled, with 4 distinct turns (Fig. 120E) *S. kamezawai* Naomi, Nomura & Puthz sp. nov.
- 9(8) Endophallic expulsion hook simply arcuate laterally; spermatheca being more or less coiled so that no distinct turns exist in the duct.
- 10(11) Aedeagal median lobe with apical sclerotized area pentagonal in shape, angulate laterally near the middle (Fig. 121B); endophallic basal tube thicker, with ventral projections near the middle (Fig. 121H) *S. mysticus* Sharp
- 11(10) Aedeagal median lobe with apical sclerotized area subtriangular in shape, almost straight at lateral margin (Fig. 122B); endophallic basal tube thinner, without ventral projections (Fig. 122E)..... *S. mystiformis* Naomi, Nomura & Puthz sp. nov.
- 12(7) Seventh ventrite of male with a deeper depression (Fig. 123A); aedeagal median lobe truncate apically (Fig. 123C); paramere simply thin, apically without mesial flap (Fig. 123C) *S. omogoensis* Naomi & Watanabe

Stenus bicolon Sharp (Figs. 117A–H, 135I)

Stenus bicolon Sharp, 1889: 328; Herman, 2001: 2081; Naomi & Puthz, 2013: 140; Puthz, 2011b: 592.

Type material examined. Syntype: ♂ (NHML), type locality: Miyanoshita, Kanagawa [examined by Puthz in 1965].

Other material examined. [HONSHU]: 1 ♂, Sengokubara, Hakone, Kanagawa Pref., 25. x. 1985, S. Nomura leg.; 1 ♀, Mt. Azegamaru, Yamakita-machi, Kanagawa Pref., 31. vii. 1993, K. Haga leg.; 1 ♂, Hirano, Shizuoka City, Shizuoka Pref., 11. xi. 2007, T. Shimada leg. [KYUSHU]: 1 ♂, Mt. Fukuchi, Nogata City, Fukuoka Pref., 10. iv. 1993, S. Nomura leg.; 1 ♂, Fudo Pond,

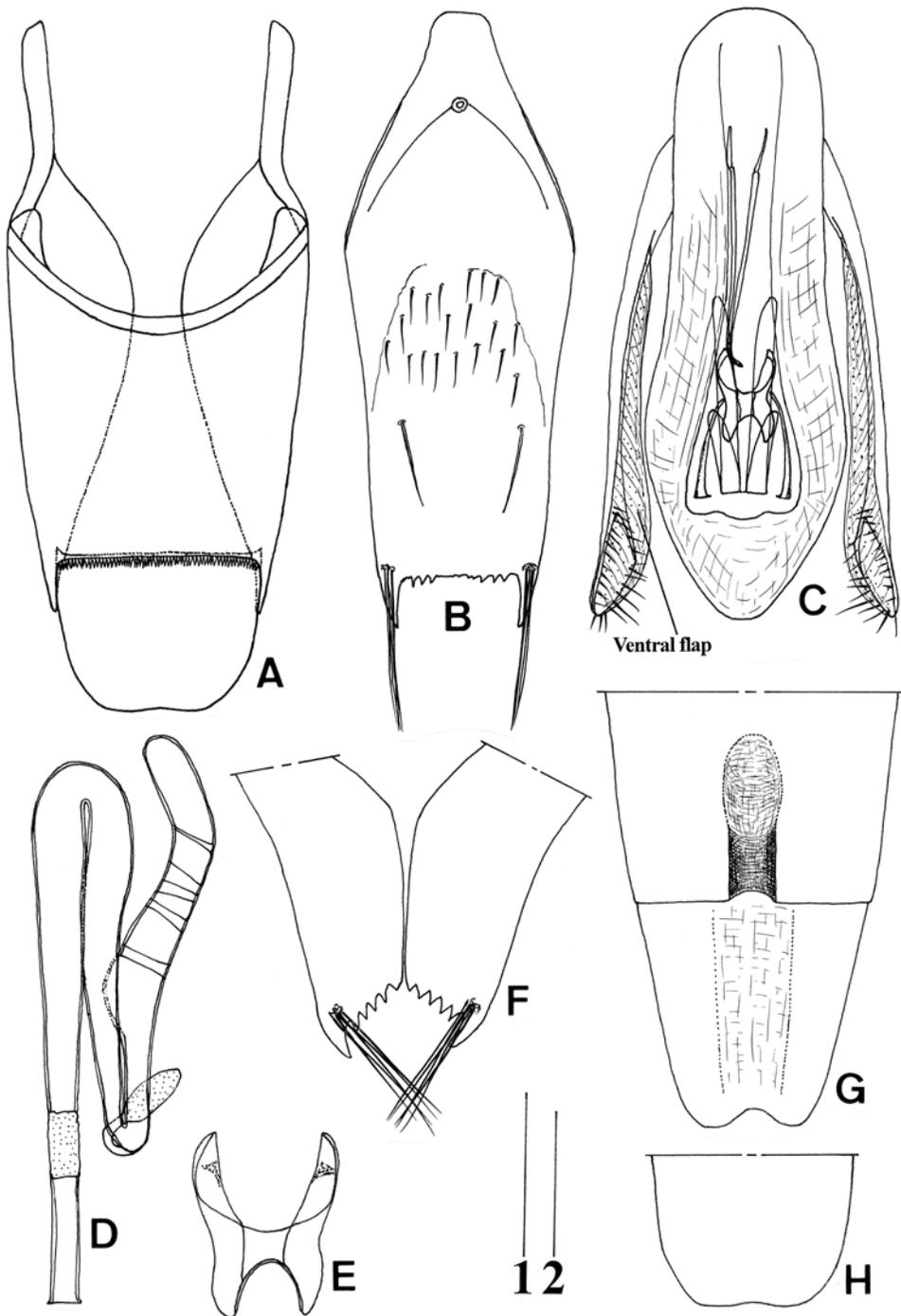


Fig. 117. *Stenus bicolor* Sharp (A, Hirano, Shizuoka; B, C, E, Hakone, Kanagawa; D, F, H, Sata, Kagoshima; G, Maebaru, Fukuoka). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, spermatheca; E, endophallic expulsion hook; F, gonocoxites; G, 7th to 8th ventrites of male. Scale 1: 0.2 mm for A–D, F, H, 0.1 mm for E; scale 2: 0.3 mm for G.

Maebaru City, Fukuoka Pref., 24. x. 1994, S. Nomura leg.; 1 ♀, Mt. Shiratori, Kumamoto Pref., 25. v. 1981, T. Goto leg.; 1 ♀, Sata-cho, Kagoshima Pref., 30. Iv. 1992, K. Haga leg.

Distribution. Japan (Honshu, Shikoku, Kyushu); Taiwan, Indonesia, Myanmar, Thailand, Vietnam, Malaysia.

Redescription. Male and female: Macropterous; body 4.0–6.7 mm (fore body 2.2–2.6 mm) in length, mat, with long antennae. Head and abdomen black; pronotum and elytra dark brown, each elytron with a yellowish-orange, ovoidal macula behind the middle; labrum dark red; antennae yellowish brown to reddish brown, with apical segments infuscate; legs yellowish brown to reddish brown. Head concave dorsally, with a median longitudinal convex area; punctures round, very dense, sometimes irregular. Pronotum with surface uneven; punctures round, very dense, coarse, sometimes weakly rugose. Elytra with surface uneven; punctures round to elliptical, very dense, coarse. Legs relatively long, slender; tarsi thin, with 4th tarsomere strongly bilobed. Abdomen relatively wide, subparallel-sided; 9th tergum posteriorly with a very short cleaning comb (Fig. 117A); 10th tergum very shallowly emarginate posteriorly (Fig. 117A, H); punctures basically round to elliptical, very dense and small in 3rd to 7th segments but they become smaller posteriorly toward the 7th, while punctures in 8th segment sparse and very small. Lateroventrites horizontal to dorsomesial in position, narrow and punctate on abdomen.

Male: Seventh ventrite (Fig. 117G) posteromedially with a rather narrow, parallel-sided depression which is sharply edged laterally, and centrally with an elongate-ovoidal, shallow depression, which is contiguous with the posteromedian depression; 8th ventrite (Fig. 117G) medially with an elongate flat area, and posteromedially with an arc-shaped emargination; 9th tergum (Fig. 117A) elongate, with anterolateral flaps relatively small, ventral apophyses long; 9th ventrite (Fig. 117B) elongate, irregularly serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth long, acutely pointed, apicolateral setae long, and macrosetae paired. Aedeagal median lobe (Fig. 117C) wide and gently rounded laterally in apical half, and rounded apically, with lateral rim and ventral wall rather wide, moderately sclerotized. Endophallic median longitudinal bands (Fig. 117C) thin, with ventral bands moderately long, dorsal bands short; expulsion hooks (Fig. 117C, E) separated but connected by a relatively wide plate, with anterior plate demarcated by an oblique suture from posterior plate; basal tube (Fig. 117C) with basal room composed of paired thin shafts, tube body slender, attenuate but curved at apex. Parameres (Fig. 117C) weakly incurved at base, each provided mesially with a long, low, subtransparent ventral flap from near the base to the apex of paramere; apical area swollen mesially, and furnished with 20 to 25 setae (mostly short) along the mesial margin.

Female: Eighth ventrite sharply angulate posteromedially; gonocoxites (Fig. 117F) each distinctly serrate posteriorly, with apicolateral tooth acutely pointed, apicolateral setae long. Spermatheca (Fig. 117D) with capsule elongate, rounded apically; RT-duct longer than capsule; spermathecal duct thick, swollen mesially at the most distal part, with two turns; spermathecal gland small, elongate-ovoidal, with its opening located at the posterior side of the 2nd turn of the duct.

Biology and ecology. *Stenus bicolon* is distributed in the plains and mountainous regions in Japan; and the beetles inhabit leaf litter in natural forests.

Remarks. Among the members of *S. abdominalis* group, *Stenus bicolon* is allied to the species of *S. coronatus* complex, which is characterized by the peculiar structure of endophallic expulsion hooks (i.e., the posteriorly widened hook with its posterolateral margin serrate; Puthz, 2011b: 587). However, *S. bicolon* is separable from the latter species by having a general type of endophallic expulsion hooks (i.e., no serration is found at the posterolateral margin). *S. bicolon* is also allied to *S. recurvatus* in that they share the similar external structure and the general type of

expulsion hooks, but the aedeagal median lobe is much wider and gently rounded laterally in apical half, (Fig. 117C), and the lateral rim and ventral wall of median lobe is rather wide and distinctly sclerotized (Fig. 117C).

***Stenus coronatus zipanguensis* Puthz**

(Figs. 118A–I, 135J)

Stenus coronatus Benick, 1928: 245; Herman, 2001: 2144; Naomi & Puthz, 2013: 140.

Stenus coronatus zipanguensis Puthz, 1984b: 176.

Stenus zipanguensis Puthz, 1968b: 47.

Stenus zipanguensis watanabei Puthz, 1968b: 49.

Type material examined. Holotype of *S. zipanguensis*: ♂ (ZMH), type locality: Odaira [examined by Puthz].

Other material examined. [HONSHU]: 1 ♀, Mt. Keizuru, Katashina-mura, Gunma Pref., 13. vii. 1996, K. Ishii *et al.* leg.; 1 ♀, Ayame-daira, Oze Moor, Gunma Pref., 25. vii. 1999, H. Tamura leg.; 1 ♀, Karikomi pond, Nikko City, Tochigi Pref., 29. vii. 1999, S. Naomi leg.; 1 ♀, Nikko-zawa-Kinunuma, Kuriyama-mura, Tochigi Pref., 3. ix. 1991, S. Naomi leg.; 1 ♀, Renge Spa, Niigata Pref., 20. viii. 1986, M. Sato leg.; 1 ♂, Nishihotaka-guchi, Gifu Pref., 11. vi. 1980, S. Naomi leg.; 1 ♀, Jigokudani, Mt. Yatsu, Yamanashi Pref., 8. vii. 1982, S. Naomi leg.; 1 ♂, Hirogawara, Hakuho-dani, Yamanashi Pref., 21. vii. 1987, S. Nomura leg.; 1 ♀, same locality, 9–13. vii. 1982, S. Naomi leg.; 1 ♀, Mt. Houo, Nirasaki City, Yamanashi Pref., 13. vi. 1993, K. Hosoda leg.; 1 ♂, same locality, 15. vii. 1993, K. Hosoda leg.; 1 ♀, same locality, 1. viii. 2008, K. Hosoda leg.; 1 ♀, Daibosatsu pass, Yamanashi Pref., 9. vi. 1979, M. Tao leg.; 1 ♂ 1 ♀, same locality, 23. vi. 1985, M. Tao leg.

Distribution. Japan (Honshu).

Redescription. Male and female: Macropterous; body 5.8–7.0 mm (fore body 2.9–3.6 mm) in length, mat, with antennae moderately long. Head and abdomen black; pronotum and elytra dark brown (nearly black), each elytron with a yellowish-orange, ovoidal macula behind the middle but the elytral macula rarely almost missing; labrum dark red; antennae reddish brown to dark reddish brown; legs reddish brown, with knees more or less infuscate. Head concave dorsally, with a pair of longitudinal grooves, median longitudinal area between the grooves well convex; punctures round and very dense on lateral parts of vertex, while punctures on the median convex area only moderately dense. Pronotum with surface strongly uneven, often with an indistinct median longitudinal depression; punctures very dense, strongly coarse. Elytra with surface strongly uneven; punctures round to elliptical, very dense, strongly coarse. Legs relatively long; tarsi thin, with 4th tarsomere strongly bilobed. Abdomen wide; 9th tergum posteriorly with a very short cleaning comb (Fig. 118C); punctures basically round to elliptical, very dense, small and regular throughout, but they are sparse and very small in one or two posterior segments. Lateroventrites horizontal to ventromesial in position, narrow and punctate on abdomen.

Male: Seventh ventrite (Fig. 118D) posteromedially with a bell-shaped, shallow depression, which is very weakly emarginate posteriorly; 8th ventrite (Fig. 118D) posteromedially with a short but elongate flat area in addition to a medium-sized emargination; 9th tergum (Fig. 118C) with anterolateral flaps small, ventral apophyses relatively long; 9th ventrite (Fig. 118H) elongate, distinctly serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth acutely pointed, apicolateral setae short. Aedeagal median lobe (Fig. 118B) elongate, rounded apicolater-

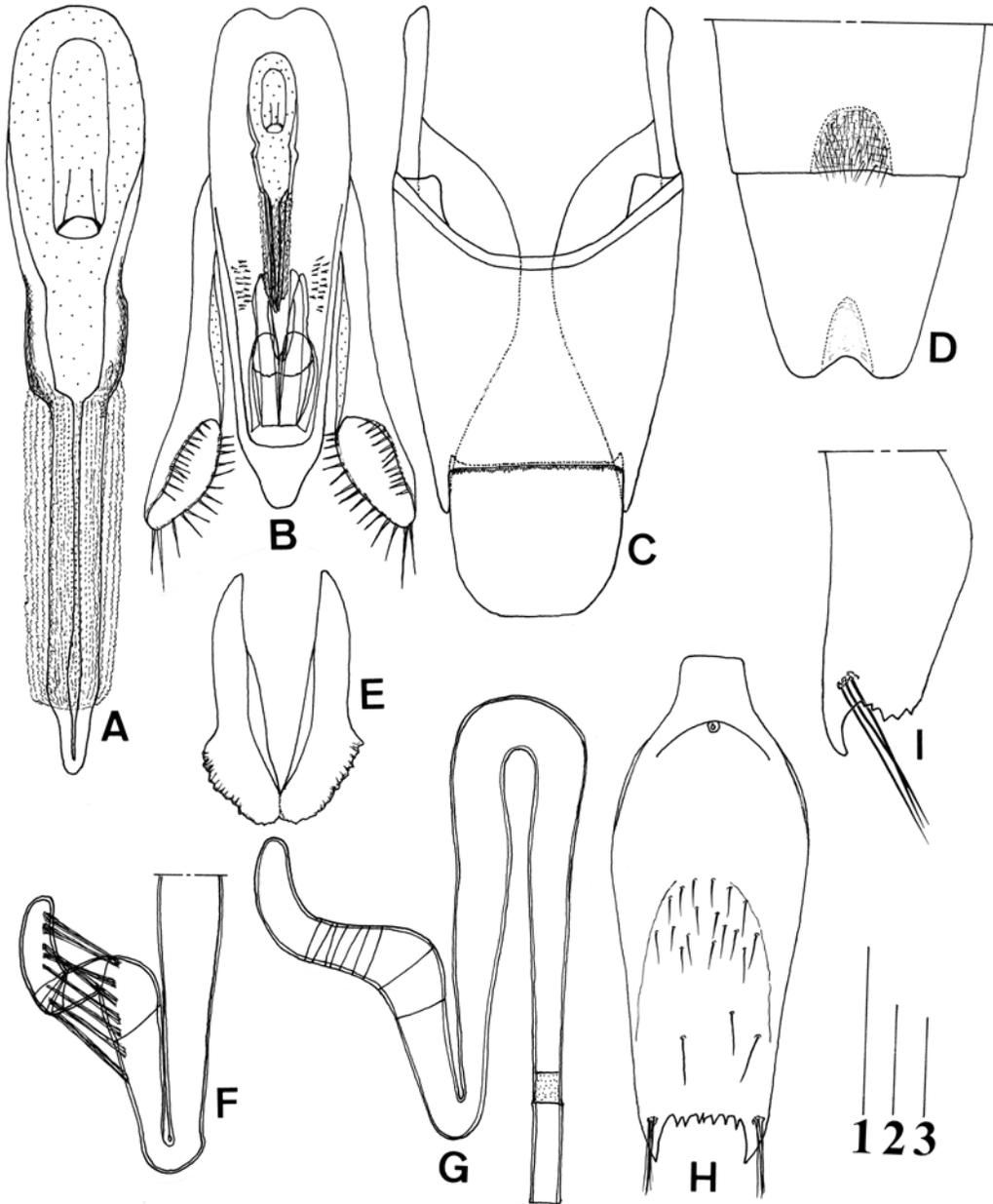


Fig. 118. *Stenus coronatus zipanguensis* Puthz (A–E, H, Hirogawara, Yamanashi; F, G, I, Keizuru, Gunma). A, endophallic basal tube; B, aedeagus; C, 9th and 10th terga of male; D, 7th to 8th ventrites of male; E, expulsion hooks; F, G, spermatheca; H, 9th ventrite of male; I, gonocoxite. Scale 1: 0.1 mm for A, E, 0.2 mm for I; scale 2: 0.2 mm for B, C, F–H; scale 3: 0.3 mm for D.

ally, and narrowed behind the apicolateral corners toward the apex which is still relatively wide and rounded. Endophallic median longitudinal bands (Fig. 118B) with ventral bands moderately long, thin, dorsal bands short, wide; expulsion hooks (Fig. 118B, E) contiguous only at the posteromesial margin, each hook (comprising the fused anterior and posterior plates) elongate, with its posterolateral margin irregularly serrate; basal tube (Fig. 118A, B) with basal room elongate-

ovoidal in shape, submembranous, and tube body consisting of the thick base and the posterior, thin rod almost entirely enveloped by the membrane which is covered regularly with the longitudinal lines of very fine tubercles. Parameres (Fig. 118B) robust, nearly trumpet-shaped; stem provided mesially with a long but very low ventral flap from near the base to the base of apical area; apical area furnished with 25 to 26 (mostly short) setae along the mesial margin.

Female: Eighth ventrite pointed posteromedially; gonocoxites (Fig. 118I) each irregularly serrate posteriorly, with apicolateral tooth incurved, pointed, apicolateral setae long. Spermatheca (Fig. 118F, G) with capsule elongate, rounded apically; RT-duct longer and thicker than capsule; spermathecal duct short, moderately thick to thick, with two distinct turns.

Biology and ecology. *Stenus coronatus* is distributed in the high mountainous regions of central Honshu in Japan; and the beetles inhabit leaf litter in natural forests.

Remarks. Among the members of *S. abdominalis* group, *Stenus coronatus* is allied to *S. bilunatus* Puthz, 1984b from Taiwan, but this species is separable from the latter by the elytral macula shorter, the metaventrite less deeply impressed (Puthz, 2011b, figs. 98, 99), and the endophallic expulsion hook with posterolateral margin less strongly serrate (Fig. 118E). *S. coronatus zipanguensis* was first described as *S. zipanguensis* by Puthz (1968b) based on one male specimen from Japan (Honshu: Odaira); and after the original description, *S. zipanguensis* was treated as a subspecies of *S. coronatus* by Puthz (1984b). *S. coronatus zipanguensis* is separable from the nominotypical subspecies by the smaller elytral macula and the larger punctuation on metathoracic ventrite (Puthz, 2011b, fig. 99).

When a spermatheca of *S. coronatus zipanguensis* was illustrated by the method as described in the introductory part, it had the shape as in Fig. 118G. However, when the spermatheca was embedded into the Euparal, it was found that the RT-duct was bent by two points by contraction of muscles (i.e., contractors) to form a Z-shape as in Fig. 118F. Such deformation of a spermatheca may occur by muscle contraction with the contractors that suddenly absorb some liquid of a highly concentrated Euparal. Given this, the contraction of the RT-ductal part of spermatheca seems to be just the same as in *in vivo* condition, where, by contracting those muscles, a female individual squeezes the sperm (stored at some apical part of spermathecal duct) out of the duct into the genital chamber (in order to fertilize the eggs before oviposition).

Eight contractor muscles observed in the spermatheca of *S. coronatus zipanguensis* are each thin, and each comprises several muscle fibers. Those contractors mostly originate on the lateral surface of the (almost non-stripped) proximal part of RT-duct, and insert on the mesial surface of the capsule or of the striped distal part of RT-duct. Six contractors almost run parallel one another, but two contractors only weakly cross. Note here that the mesial side of the relatively long and regularly striped part of RT-duct in Fig. 118G is strongly folded into a point as in Fig. 118F (just like a movement of accordion) after those muscles were strongly contracted.

Stenus recurvatus Naomi

(Fig. 119A–G)

Stenus recurvatus Naomi, 2015a: 218.

Type material examined. Holotype: ♂ (EUMJ), Mt. Yonaha, Okinawa Is., Okinawa Pref., 1. iv. 1999, T. Kan leg.

Distribution. Japan (Nansei Is.: Okinawa Is.).

Redescription. Male: Brachypterous; body 4.7 mm (fore body 2.1 mm) in length, moderately

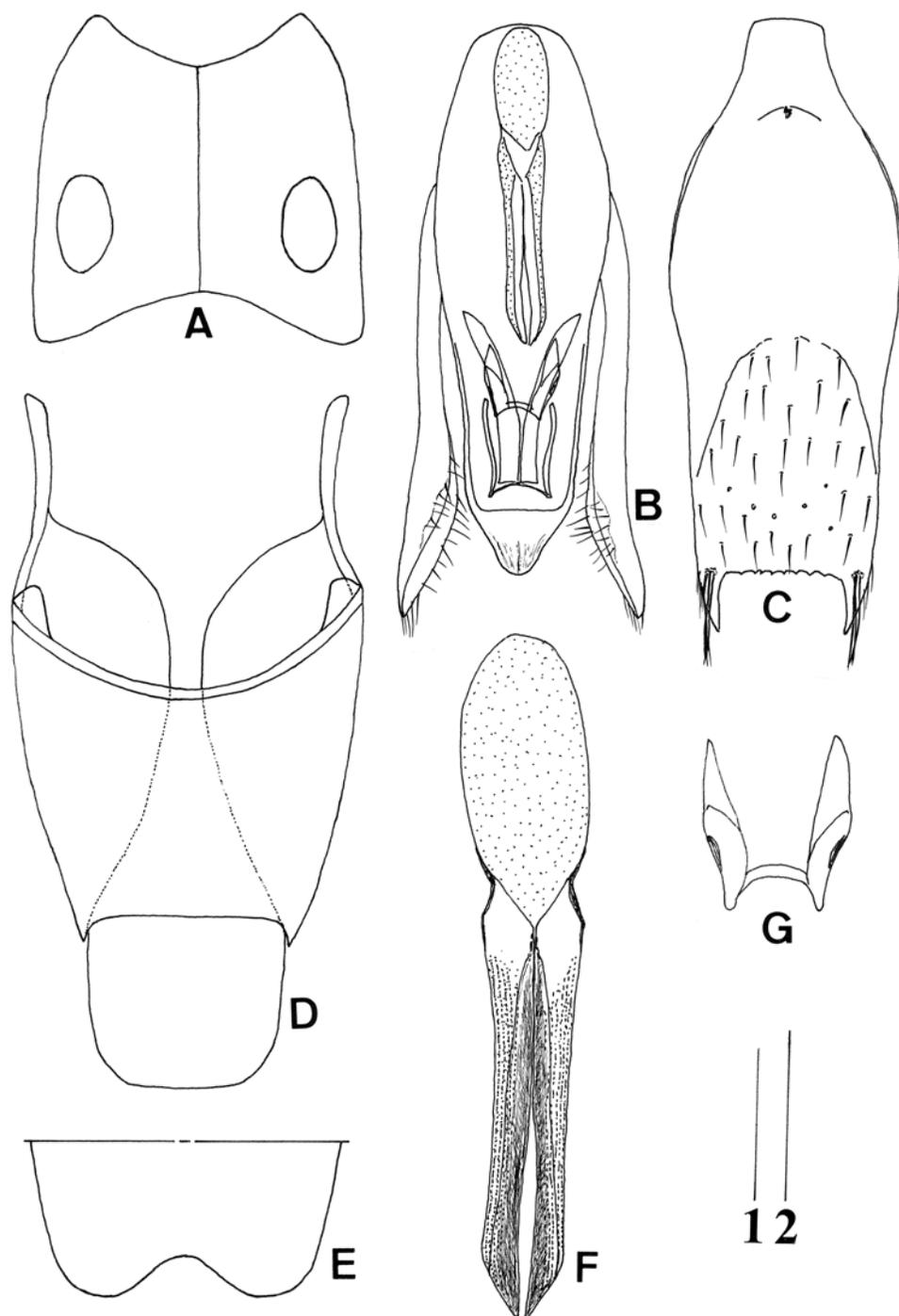


Fig. 119. *Stenus recurvatus* Naomi (Yonaha, Okinawa Is.). A, elytra; B, aedeagus; C, 9th ventrite of male; D, 9th and 10th terga of male; E, apex of 8th ventrite of male; F, endophallic basal tube; G, expulsion hook. Scale 1: 0.3 mm for A; scale 1: 0.2 mm for B–E, 0.1 mm for F, G.

shining, with paraglossae coniform. Head black; pronotum and abdomen dark red to dark brown; elytra reddish brown, each with a yellowish ovoidal macula behind the middle (Fig. 119A); labrum black; antennae reddish brown; legs yellowish brown to reddish brown, with knees more or less infusate. Head concave between eyes, with a pair of indistinct, longitudinal depressions, median longitudinal area between the depressions convex but low; punctures round, very dense, various in size, distinct. Pronotum with surface distinctly uneven, median longitudinal depression moderately deep but indistinct in outline; punctures very dense, rather rough. Elytra with surface uneven; punctures round to elliptical, very dense, coarse. Legs moderately long; tarsi with 4th tarsomere strongly bilobed. Abdomen relatively wide and flat above; punctures round to nearly round, dense, distinct and almost regular in anterior segments, while punctures in posterior segments similar to those in anterior ones but distinctly smaller. Lateroventrites horizontal in position, narrow and punctate on abdomen.

Seventh ventrite posteromedially with a small, bell-shaped flat area; 8th ventrite (Fig. 119E) posteromedially with a wide, V-shaped emargination; 9th tergum (Fig. 119D) with anterolateral flaps small, ventral apophyses thin, short; 9th ventrite (Fig. 119C) very finely serrate posteriorly, with stem subtrapezoidal in shape, apicolateral teeth long, acutely pointed, apicolateral setae short; 10th tergum (Fig. 119D) entire. Aedeagal median lobe (Fig. 119B) obtuse at apicolateral corners, and then strongly narrowed toward the apex which is still wide and rounded. Endophallic median longitudinal bands (Fig. 119B) moderately long; lateral longitudinal bands thin, distinct (Fig. 119B); expulsion hooks (Fig. 119B, G) widely separated but connected by a thin, arched rod, with anterior plate demarcated by an oblique suture from posterior plate; basal tube (Fig. 119B, F) with basal room elongate-ovoidal in shape, submembranous, tube body baculiform, thick, and almost covered regularly with the longitudinal lines of very fine dots. Parameres (Fig. 119B) each thick, weakly recurved apically; apical area very long and large, and furnished with 22 to 23 short, thin setae along the mesial margin.

Female. Unknown.

Biology and ecology. *Stenus recurvatus* is presently distributed in the mountainous region of Okinawa Is.; and one male beetle was only once collected from leaf litter in a natural forest.

Remarks. *Stenus recurvatus* is a species which was only recently discovered from Okinawa (Naomi, 2015). This species is allied to, and also similar in external structure to the members of *S. coronatus* complex (Puthz, 2011b), but it is separable from the latter species by the posterolateral margin of endophallic expulsion hook simply arcuate, without serration (Fig. 119B, G). *S. recurvatus* is also allied to *S. bicolon*, but the 7th abdominal ventrite is posteromedially provided with a small, bell-shaped flat area, and the aedeagal median lobe is narrow and narrowed apically in apical half (Fig. 119B).

Stenus kamezawai Naomi, Nomura & Puthz sp. nov.

(Figs. 120A–H, 135K)

Type material examined. Holotype: ♂ (NSMT-I-C-200323 in NMNST), Mt. Kojin, Nara Pref., 16. viii. 1965, T. Ito leg. Paratype [HONSHU]: 1 ♀ (cP), Mt. Obako, Nara Pref., 23. iii. 2006, T. Lackner leg.

Distribution. Japan (Honshu: Nara Pref.).

Description. Male and female: Macropterous; body 4.0–4.3 mm (fore-body 2.0–2.1 mm) in length, weakly shining, with antennae short. Body black; labrum black; antennae reddish brown to dark reddish brown; legs yellowish brown to reddish brown, with knees infusate. Head con-

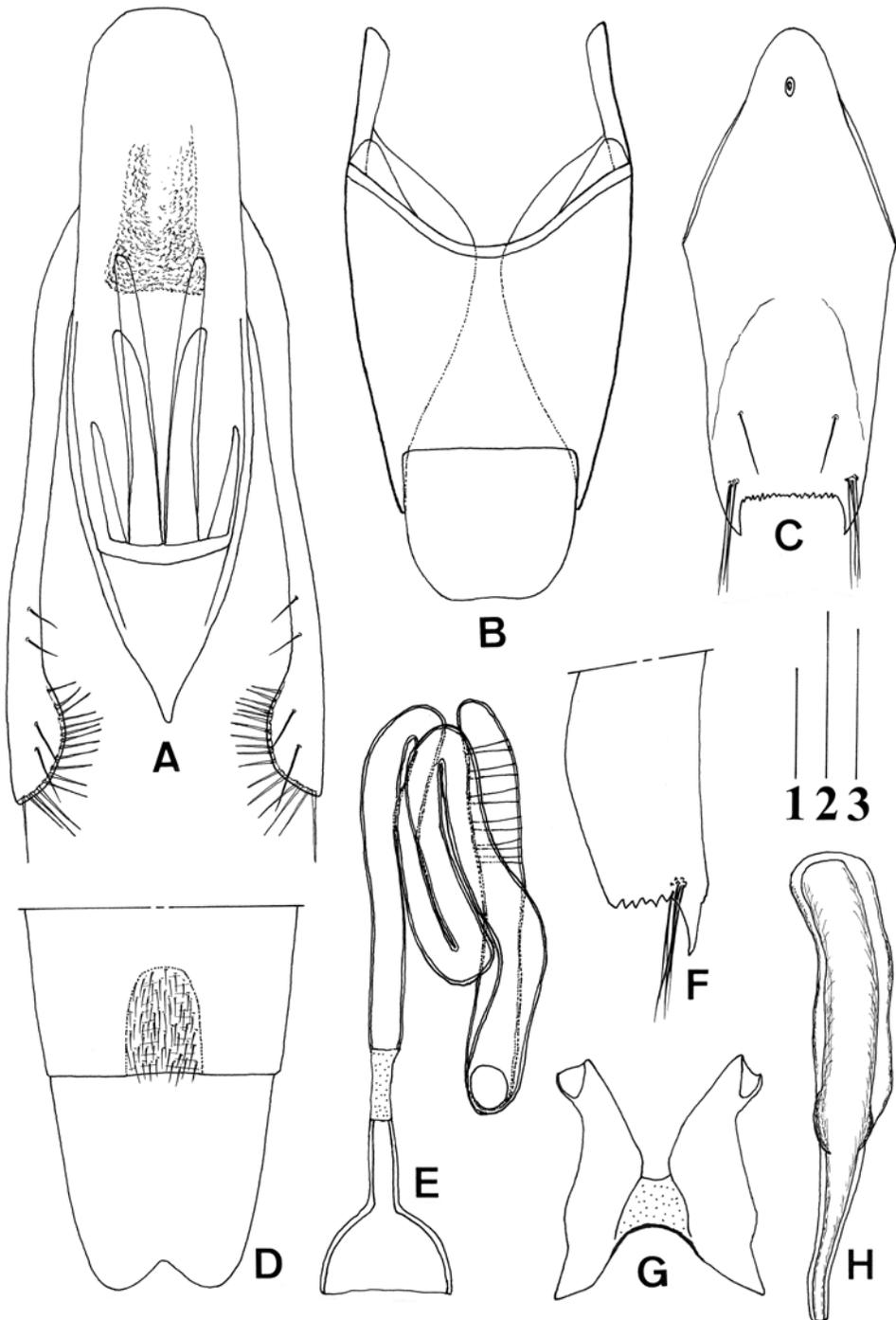


Fig. 120. *Stenus kamezawai* Naomi, Nomura & Puthz sp. nov. (A–D, G, H, Kojin, Nara; E, F, Obako, Nara). A, aedeagus; B, 9th and 10th terga of male; C, 9th ventrite of male; D, 7th to 8th ventrites of male; E, spermatheca; F, gonocoxite; G, endophallic expulsion hook; H, basal tube. Scale 1: 0.1 mm for A; scale 2: 0.2 mm for B, C, 0.1 mm for E–H; scale 3: 0.3 mm for D.

cave dorsally, with a pair of longitudinal depressions, median longitudinal area between the depressions weakly convex; punctures round, dense to very dense, various in size, somewhat umbilicate. Pronotum with surface strongly uneven, with median longitudinal depression indistinct in outline; punctures rugose, strongly coarse. Elytra with surface strongly uneven; punctures subrugose, coarse. Legs with femora thick; tarsi thin, with 4th tarsomere weakly bilobed. Abdomen weakly narrowed posteriorly; punctures round to elliptical, sparse to moderately dense, various in size, and irregular in anterior segments, while punctures in posterior segments sparse, very small and irregular. Lateroventrites missing but tergoventrite sutures existing on abdomen.

Male: Seventh ventrite (Fig. 120D) posteromedially with a shallow, elongate-bell-shaped depression, which is very weakly emarginate posteriorly; 8th ventrite (Fig. 120D) posteromedially with a triangular emargination; 9th tergum (Fig. 120B) with anterolateral flaps wide, ventral apophyses short; 9th ventrite (Fig. 120C) finely serrate posteriorly, with stem rounded anteriorly, apicolateral teeth acutely pointed, apicolateral setae moderately long, and macrosetae paired. Aedeagal median lobe (Fig. 120A) elongate, acutely pointed apically, with apical sclerotized area elongate-subtriangular in shape. Endophallic median longitudinal bands (Fig. 120A) with ventral bands long, dorsal bands moderately long; lateral longitudinal bands short, thin (Fig. 120A); expulsion hooks (Fig. 120G) separated but connected by a submembranous band, each hook angulate laterally at about posterior 1/3, and acutely pointed posteriorly; basal tube (Fig. 120H) with tube body baculiform, thick proximally, with a pair of asymmetrical projections a little behind the middle. Parameres (Fig. 120A) well-developed; stem very weakly sinuous, ventrally with 2 thin setae before apical area; apical area with a flap which is rounded mesially, and furnished ventrally with 2 to 3 thin setae, and also with 15 to 17 moderately thick setae along the mesial margin of flap.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 120F) each serrate posteriorly, with apicolateral tooth thin, acutely pointed, apicolateral setae moderately long. Spermatheca (Fig. 120E) with capsule small; RT-duct short; spermathecal duct moderately long, with 4 turns; basal valve a little shorter than basal sclerotized duct; basal pouch bowl-shaped.

Biology and ecology. *Stenus kamezawai* is presently distributed only in the mountainous regions of Kii Peninsula. No solid information is obtained regarding the habitats of this species.

Remarks. *Stenus kamezawai* is closely allied to *S. mysticus* and *S. mystiformis*, but this species is separable from the latter two species by the endophallic expulsion hook angulate laterally at about posterior 1/3 (Fig. 120G), and the spermatheca not coiled, with 4 distinct turns (Fig. 120E).

Etymology. This species is named in honour of our friend and coleopterist, Mr. Hiromu Kamezawa (Kawagoe).

***Stenus mysticus* Sharp**
(Figs. 121A–H, 135L)

Stenus mysticus Sharp, 1889: 330; Herman, 2001: 2294; Naomi & Puthz, 2013: 140.

Type material. Syntypes: 2 ♂ (NHML), 1 ♂ (FMC), type locality; Nikko (Tochigi).

Other material examined. [HOKKAIDO]: 1 ♀, Ishikari, 6. viii. 1962, K. Mizusawa leg.; 1 ♂, Washippu River, Ashoro-machi, 10. vii. 2002, K. Haga leg.; 1 ♀, Ashoro-machi, 15. vii. 1999, K. Haga leg. [HONSHU]: 2 ♂, Yachi, Mt. Hakkoda, Aomori Pref., 6. viii. 1964, K. Sakai leg.; 1 ♂, Mt. Ohkura, Yamato-cho, Miyagi Pref., 29. xi. 2009, T. Ozaki leg.; 1 ♂, Mt. Asahi, Yamagata

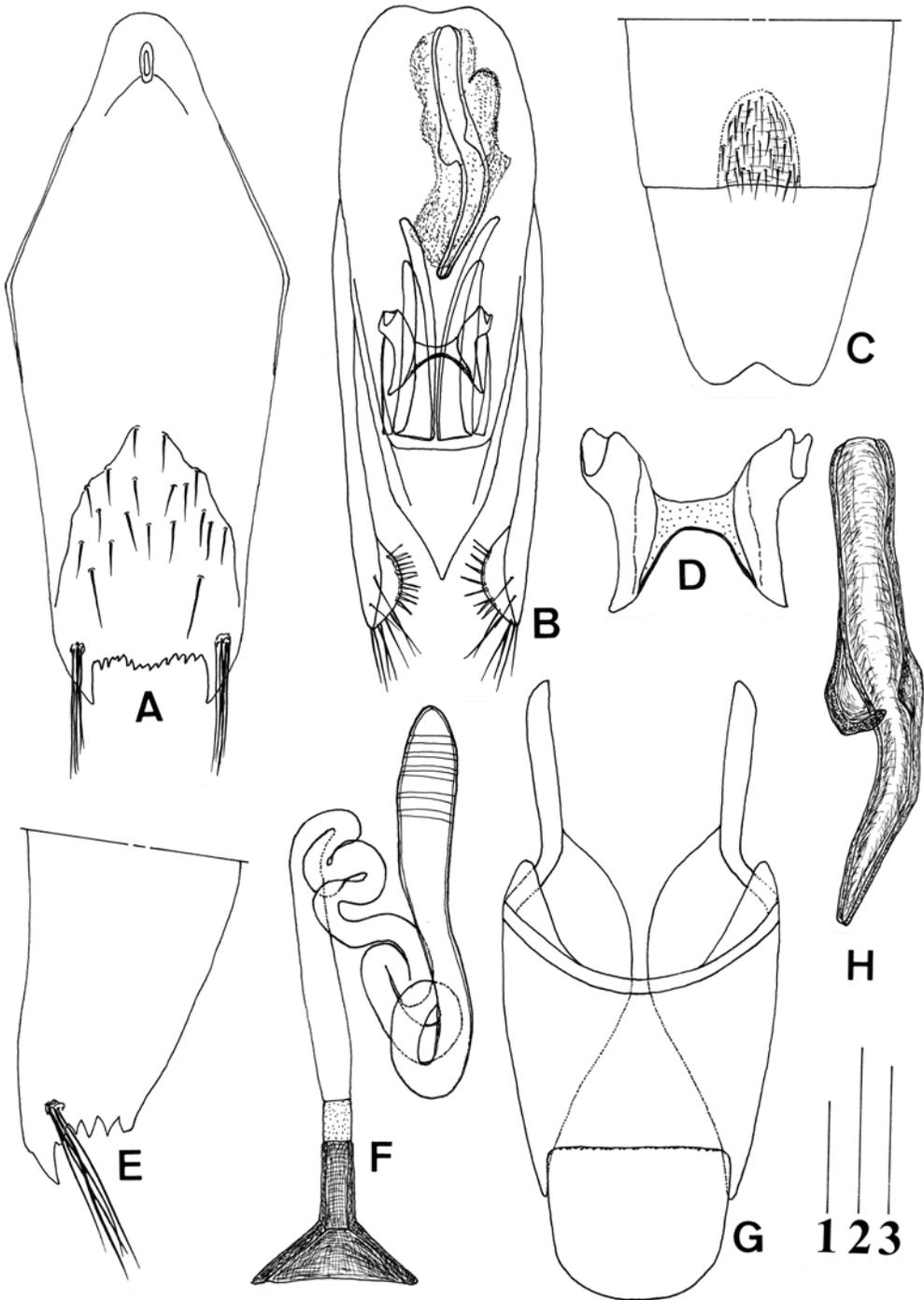


Fig. 121. *Stenus mysticus* Sharp (A, B, D, G, H, Teruha, Gunma; C, Abe, Shizuoka; E, Ashoro, Hokkaido; F, Karuizawa, Nagano). A, 9th ventrite of male; B, aedeagus; C, 7th to 8th ventrites of male; D, endophallic expulsion hook; E, apex of gonocoxite; F, spermatheca; G, 9th and 10th terga of male; H, basal tube. Scale 1: 0.1 mm for A; scale 2: 0.2 mm for B, G, 0.1 mm for D–F, H; scale 3: 0.3 mm for C.

Pref., 9. viii. 1969, Y. Kimura leg.; 1 ♂, Yunohara-machi, Showa-mura, Fukushima Pref., 9. vi. 2013, K. Haga leg.; 1 ♂, Onabe, Iwase, Fukushima Pref., 14. viii. 1950, K. Nagayama leg.; 1 ♂, Futamata River, Tenei-mura, Fukushima Pref., 4. vi. 2005, K. Haga leg.; 1 ♂ (cP), Kurigahara, Japan, 4. viii.-6. viii. 1881, G. Lewis (1910-320); 1 ♂1 ♀, Tanbara Highland, Gunma Pref., 15. ix. 2004, M. Yasaka leg.; 1 ♂, Teruha Valley, Minakami-cho, Gunma Pref., 2. viii. 2009, S. Tsuyuki leg.; 1 ♀, Senjyo-gahara, Oku-nikko, Tochigi Pref., 26. vi. 2009, S. Tsuyuki leg.; 1 ♂1 ♀, Ogawadani, Nippara, Okutama-machi, Tokyo Metropolis, 24. iii. 2007, H. Kamezawa leg.; 1 ♀, Daibosatsu Pass, Yamanashi Pref., 20. v. 1961, K. Mizusawa leg.; 1 ♀, Gozaishi Spa, Yamanashi Pref., 5. vi. 1991, K. Hosoda leg.; 1 ♂, Abe Pass, Shizuoka Pref., 11. xi. 2007, Y. Tahira leg.; 1 ♂, Koike, Ohno, Fukui Pref., 4. vi. 1983, H. Sasaji leg.; 1 ♀, Karuizawa, Nagano Pref., Japan, iv.-08; 1 ♂, Kitanomata-Rindo, Kamioka, Gifu Pref., 23. vii. 2000, Y. Takai leg.; 1 ♂, Uradani, Shitara-cho, Aichi Pref., 10. iv. 1994, H. Yoshitomi leg.

Distribution. Japan (Hokkaido, Honshu).

Redescription. Male and female: Macropterous; body 3.9–4.3 mm (fore body 2.0–2.1 mm) in length, weakly shining, with antennae short. Body black; labrum black; antennae reddish brown to dark reddish brown; legs reddish brown, with knees more or less infusate. Head moderately concave dorsally, with a pair of longitudinal grooves, median longitudinal area between the grooves weakly convex; punctures round, dense to very dense, somewhat umbilicate. Pronotum with surface strongly uneven, with a median longitudinal depression running in posterior 2/3 of pronotum and moderately deep at the central part; punctures very dense, strongly coarse. Elytra with surface strongly uneven; punctures very dense, subrugose, coarse. Legs with femora thick; tarsi thin, with 4th tarsomere weakly bilobed. Abdomen weakly narrowed posteriorly; 9th tergum posteriorly with a highly obsolete cleaning comb (Fig. 121G); punctures round to elliptical, moderately dense to dense, various in size, and irregular in anterior segments, while punctures in posterior segments elliptical, sparse to moderately dense, and very small to small. Lateroventrites missing, but tergoventrite sutures existing on abdomen.

Male: Seventh ventrite (Fig. 121C) posteromedially with a bell-shaped, shallow depression, which is very weakly emarginate posteriorly; 8th ventrite (Fig. 121C) posteromedially with a triangular emargination; 9th tergum (Fig. 121G) with anterolateral flaps wide, ventral apophyses long; 9th ventrite (Fig. 121A) irregularly serrate posteriorly, with stem rounded anteriorly, apicolateral teeth acutely pointed, apicolateral setae moderately long, and macrosetae paired. Aedeagal median lobe (Fig. 121B) subovoidal basally, acutely pointed apically, with apical sclerotized area almost pentagonal in shape. Endophallic median longitudinal bands (Fig. 121B) with ventral bands long, each narrowed apically, dorsal bands wider and shorter than ventral bands; expulsion hooks (Fig. 121B, D) widely separated but connected by a submembranous band, each hook pointed posteriorly; basal tube (Fig. 121B) with tube body baculiform, curved left near the middle where a pair of asymmetrical projections are found ventrally, the right projection larger than left one (Fig. 121H). Parameres (Fig. 121B) slender, very weakly incurved; apical area relatively short, mesially with a dorsal flap, and furnished apically with 6 to 7 moderately long, thin setae, ventrally with 2 to 3 thin setae, and also with 9 to 12 setae along the mesial margin of dorsal flap.

Female: Eighth ventrite angulate posteromedially; gonocoxites (Fig. 121E) each distinctly serrate posteriorly, with apicolateral tooth acutely pointed, apicolateral setae moderately long. Spermatheca (Fig. 121F) with capsule very small; RT-duct short, thick; spermathecal duct moderately long and loosely coiled; basal valve short; basal sclerotized duct about 2 times as long as basal valve; basal pouch sclerotized, conical in shape.

Biology and ecology. *Stenus mysticus* is widely distributed in the mountainous regions of

Hokkaido and Honshu, but it is not necessarily a common species. The beetles seem to inhabit leaf litter in natural forests. However, it was observed that the beetles hibernated under the bark of a dead beech tree at Abe Pass, Shizuoka; and they are also collected from the dead standing trees at Nippara, Tokyo (per. com. with Kamezawa). These observations (in addition to the collecting records described above) may suggest that this and related species (i.e., *S. kamezawai*, *S. mystiformis* and *S. omogoensis*) inhabit dead (standing and fallen) trees (e.g., under barks).

Remarks. *Stenus mysticus* is closely allied to *S. mystiformis*, but this species is separable from the latter by the aedeagal median lobe with apical sclerotized area pentagonal in shape, and angulate laterally near the middle (Fig. 121B), the endophallic expulsion hook with anterior part thicker, and more weakly curved laterally (Fig. 121D), and the basal tube thicker, with ventral projections near the middle (Fig. 121H).

Stenus mystiformis Naomi, Nomura & Puthz sp. nov.
(Figs. 122A–H, 136A)

Type material examined. Holotype: ♂ (NSMT-I-C-200324 in NMNST), Minokoshi, Mt. Tsurugi, Tokushima Pref., 6. iv. 1968, M. Yoshida leg. Paratypes: 1 ♀ (cN), same data as holotype; 1 ♂ (cN), Mt. Odami, Ehime Pref., 10. iv. 1992, E. Yamamoto leg.; 1 ♂ (cN), Shiiba-goe, Fudono, Shiiba, Miyazaki Pref., 25. vii. 2015, T. Watanabe leg.; 1 ♂ (cN), Mt. Ohira, Kuma-gun, Kumamoto Pref., 30. xii. 1981, I. Ohtsuka leg.

Distribution. Japan (Shikoku, Kyushu).

Description. Male and female: Macropterous / brachypterous; body 4.2–4.5 mm (fore body 1.9–2.1 mm) in length, weakly shining, with antennae short. Head and abdomen black; pronotum and elytra dark reddish brown (nearly black); labrum black; antennae reddish brown to dark reddish brown; legs reddish brown, with knees more or less infuscate. Head shallowly concave dorsally, with a pair of longitudinal depressions; punctures round, very dense and somewhat umbilicate on head, but the central or narrow median longitudinal area impunctate. Pronotum with surface strongly uneven, median longitudinal depression moderately deep but indistinct in outline; punctures very dense, strongly coarse. Elytra with surface strongly uneven; punctures very dense, subrugose, coarse. Legs with tarsi thin, 4th tarsomere weakly bilobed. Abdomen weakly narrowed posteriorly; punctures round to elliptical, moderately dense to dense, various in size and irregular in anterior segments, while punctures in posterior segments sparse, very small. Lateroventrites missing, but tergoventrite sutures existing on abdomen.

Male: Seventh ventrite (Fig. 122G) posteromedially with a shallow, elongate-bell-shaped depression, which is very weakly emarginate posteriorly; 8th ventrite (Fig. 122G) posteromedially with a triangular emargination; 9th tergum (Fig. 122D) with anterolateral flaps relatively wide, ventral apophyses long; 9th ventrite (Fig. 122A) distinctly serrate posteriorly, with stem rounded anteriorly, apicolateral teeth acutely pointed, apicolateral setae moderately long, and macrosetae paired. Aedeagal median lobe (Fig. 122B) elongate, pointed apically, with apical sclerotized area almost triangular in shape. Endophallic median longitudinal bands (Fig. 122B) with ventral bands long, dorsal bands wider and shorter than ventral bands; expulsion hooks (Fig. 122B, H) separated but connected by a submembranous band, each hook pointed posteriorly; basal tube (Fig. 122B) with basal room small, subovoidal, tube body long, baculiform, and sometimes weakly curved left apically (Fig. 122E). Parameres (Fig. 122B) with stem very weakly sinuous, ventrally with 2 thin setae a little before apical area; apical area mesially with a flap, and furnished ventrally with 2 thin setae, and with 15 to 18 moderately thick setae along the mesial

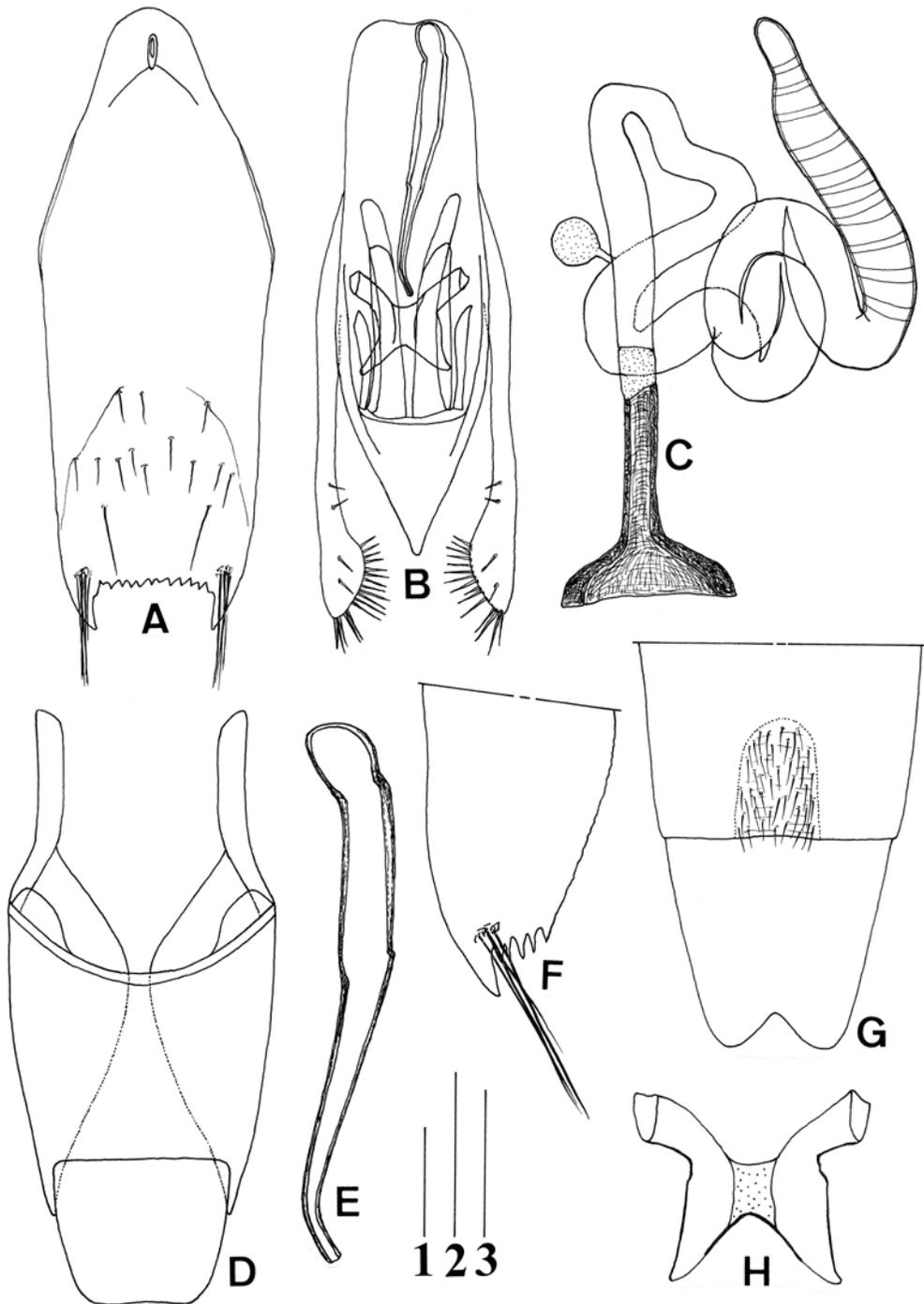


Fig. 122. *Stenus mystiformis* Naomi, Nomura & Puthz sp. nov. (A–F, H, Tsurugi, Tokushima; G, Odami, Ehime) A, 9th ventrite of male; B, aedeagus; C, spermatheca; D, 9th and 10th terga of male; E, endophallic basal tube; F, apex of gonocoxite; G, 7th to 8th ventrites of male; H, expulsion hook. Scale 1: 0.2 mm for A; scale 2: 0.2 mm for B, D, 0.1 mm for C, E, F, H; scale 3: 0.3 mm for G.

margin of flap.

Female: Eighth ventrite obtusely angulate posteromedially; gonocoxites (Fig. 122F) each distinctly serrate posteriorly, with apicolateral tooth acutely pointed, apicolateral setae long. Spermatheca (Fig. 122C) with capsule small, narrow; RT-duct long, thick; spermathecal duct moderately long, loosely coiled; basal valve short; basal sclerotized duct long; basal pouch sclerotized.

Biology and ecology. *Stenus mystiformis* is presently distributed in the mountainous regions of Shikoku and eastern part of Kyushu. No solid information is obtained regarding the habitats of this species.

Remarks. *Stenus mystiformis* is allied to *S. mysticus*, but this species is separable from the latter by the aedeagal median lobe with apical sclerotized area subtriangular in shape, and almost straight at lateral margin (Fig. 122B), the endophallic expulsion hook with anterior part thinner, and more strongly curved laterally (Fig. 122H), and the basal tube thinner, without ventral projections (Fig. 122E). Only 3 male specimens were examined in this study, but the endophallic basal tubes show variations. For example, the tube body is weakly curved left apically (Fig. 122E) in the specimen from Minokoshi, but it is not curved apically in the specimen from Odami, while in the specimen from Shiiba, the tube body has a little wider apical part, with a narrow and short tube at the apicalmost part. These 3 specimens, however, basically show the same condition regarding other important taxonomic characters (e.g., shape of aedeagal median lobe, structure of endophallic expulsion hook); and thus the variations are here considered to be infraspecific ones.

Etymology. The specific epithet of this new species is derived from the combination of a Latin stem “*mysti-*” (*mysticus*) which means “mystic” or “relating to the mysteries” + a Latin participle “*-formis*” which means “-formed”. This is because the new species has a similar habitus of *S. mysticus* Sharp.

***Stenus omogoensis* Naomi & Watanabe**
(Fig. 123A–G)

Stenus omogoensis Naomi & Watanabe, 2015: 96.

Type material examined. Holotype: ♂ (TUAA), Omogo-kei, Ehime Pref., 20. iv. 1963, S. Tachikawa leg. Paratype: 1 ♀ (TUAA), same data as holotype.

Other material examined. 1 ♀ (TUAA), Omogo Valley, Ehime Pref., 20. iv. 1963, S. Tachikawa leg.; 1 ♀ (cN), Mt. Ishizuchi, Ehime Pref., 1. ix. 1991, I. Okamoto leg.

Distribution. Japan (Shikoku: Ehime Pref.).

Redescription. Male and female: Macropterous; body 3.9–4.0 mm (fore body 2.1–2.2 mm) in length, elongate, weakly shining. Body black; antennae and legs yellowish brown to reddish brown. Head with a pair of shallow, longitudinal depressions; punctures dense, distinct, and various in shape and size. Pronotum with surface slightly uneven, median longitudinal depression shallow, very indistinct in outline; punctures round, very dense, various in size, rough. Elytra with punctures very dense, rough, partly rugose. Legs with femora relatively thick; tarsi with 4th tarsomere short, weakly bilobed. Abdomen narrowed posteriorly; punctures round to elliptical, moderately dense, various in size, and distinct in anterior segments, while punctures in posterior segments ovoidal, sparse to relatively dense, and small. Lateroventrites missing, but tergoventrite sutures existing on abdomen.

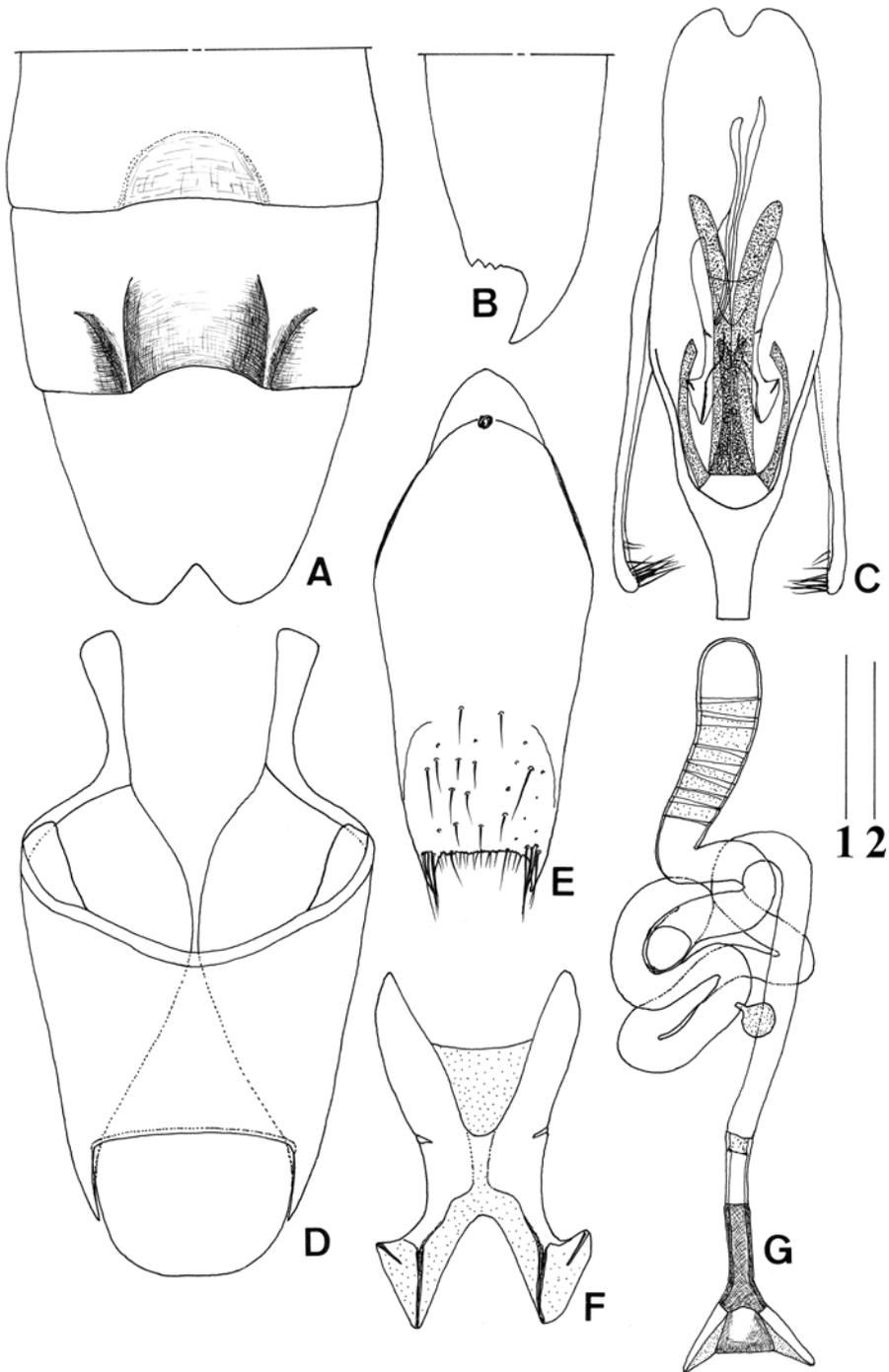


Fig. 123. *Stenus omogoensis* Naomi & Watanabe (Omogo, Ehime). A, 6th to 8th ventrites of male; B, apex of gonocoxite; C, aedeagus; D, 9th and 10th terga of male; E, 9th ventrite of male; F, endophallic expulsion hook; G, spermatheca. Scale 1: 0.3 mm for A; scale 2: 0.1 mm for B, F, G; scale 3: 0.2 mm for C–E.

Male: Fifth ventrite posteromedially with a small, semicircular flat area, which is very shallowly emarginate; 6th ventrite (Fig. 123A) with a semicircular depression, which is moderately emarginate posteriorly; 7th ventrite (Fig. 123A) posteromedially with a large, deep depression, which is open anteriorly, emarginate posteriorly, and also strongly ridged laterally; 8th ventrite (Fig. 123A) posteromedially with a V-shaped emargination; 9th tergum (Fig. 123D) with apicolateral flaps angulate apically, ventral apophyses moderately thick and long; 9th ventrite (Fig. 123E) very finely or hardly serrate posteriorly, with stem obtusely pointed anteriorly, apicolateral teeth acutely pointed, apicolateral setae short, and macrosetae short; 10th tergum (Fig. 123D) entire. Aedeagal median lobe (Fig. 123C) weakly bi-sinuate behind the middle, distinctly truncate apically, with apical sclerotized area long, narrowed toward the truncate apex. Endophallic median longitudinal bands (Fig. 123C) with ventral bands very long, dorsal bands short, thin; lateral longitudinal bands (Fig. 123C) thin, incurved; expulsion hooks (Fig. 123C) fused to form a nearly X-shaped sclerite, with anterior plate partially demarcated by a short lateral incision from posterior plate which is hatchet-shaped (Fig. 123F); basal tube (Fig. 123C) thin, tube body rod-like but with a low flap at the right middle part. Parameres (Fig. 123C) relatively short, each not reaching posteriorly the apex of median lobe, weakly incurved apically, and rounded at the apicalmost part; stem relatively thick basally; apical area short, not swollen mesially, and furnished mesially with 10 to 11 almost dense setae.

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 123B) each weakly serrate posteriorly, with apicolateral tooth large, acutely pointed. Spermatheca (Fig. 123G) with capsule thick, rounded apically; RT-duct thick; spermathecal duct moderately coiled, moderately long and thick; basal valve very short; basal sclerotized duct simple; basal pouch conical.

Biology and ecology. *S. omogoensis* is a very rare *Stenus* species, which was discovered only recently (Naomi & Watanabe, 2015). It is presently distributed only in the mountainous region of western part of Shikoku. No solid information is obtained regarding the habitats of this species.

Remarks. *Stenus omogoensis* is allied to *S. mysticus* and its related species newly described above, but this species is easily separable from the latter 3 species by the aedeagal median lobe distinctly truncate apically (Fig. 123C).

Species group of *S. sharpi* Bernhauer & Schubert

S. sharpi group (tentative species group name) consists of 1 species in Japan. Diagnostic characters are as follows: Labium with paraglossae elongate-oval (Fig. 2bA–D); legs with 4th tarsomere strongly bilobed; lateroventrites dorsomesial or horizontal in position, very thin; 9th tergum of male posteriorly with an obsolete cleaning comb (Fig. 124A); 9th ventrite of male with apicolateral teeth pointed (Fig. 124B); aedeagal median lobe wide, with wide lateral rims (Fig. 124C); endophallic expulsion hooks separated (Fig. 124E); basal tube very slender, long (Fig. 124C); gonocoxite with apicolateral tooth pointed (Fig. 124H); spermatheca with duct very long, coiled (Fig. 124D).

Stenus sharpi Bernhauer & Schubert (Figs. 124A–H, 136B–D)

Stenus sharpi Bernhauer & Schubert, 1911: 185 (as replacement name of *S. palpalis* Sharp); Herman, 2001: 2388; Puthz, 2008a: 173; Naomi & Puthz, 2013: 140.

Stenus palpalis Sharp, 1889: 329. (A homonym of *S. palpalis* Erichson, 1840.)

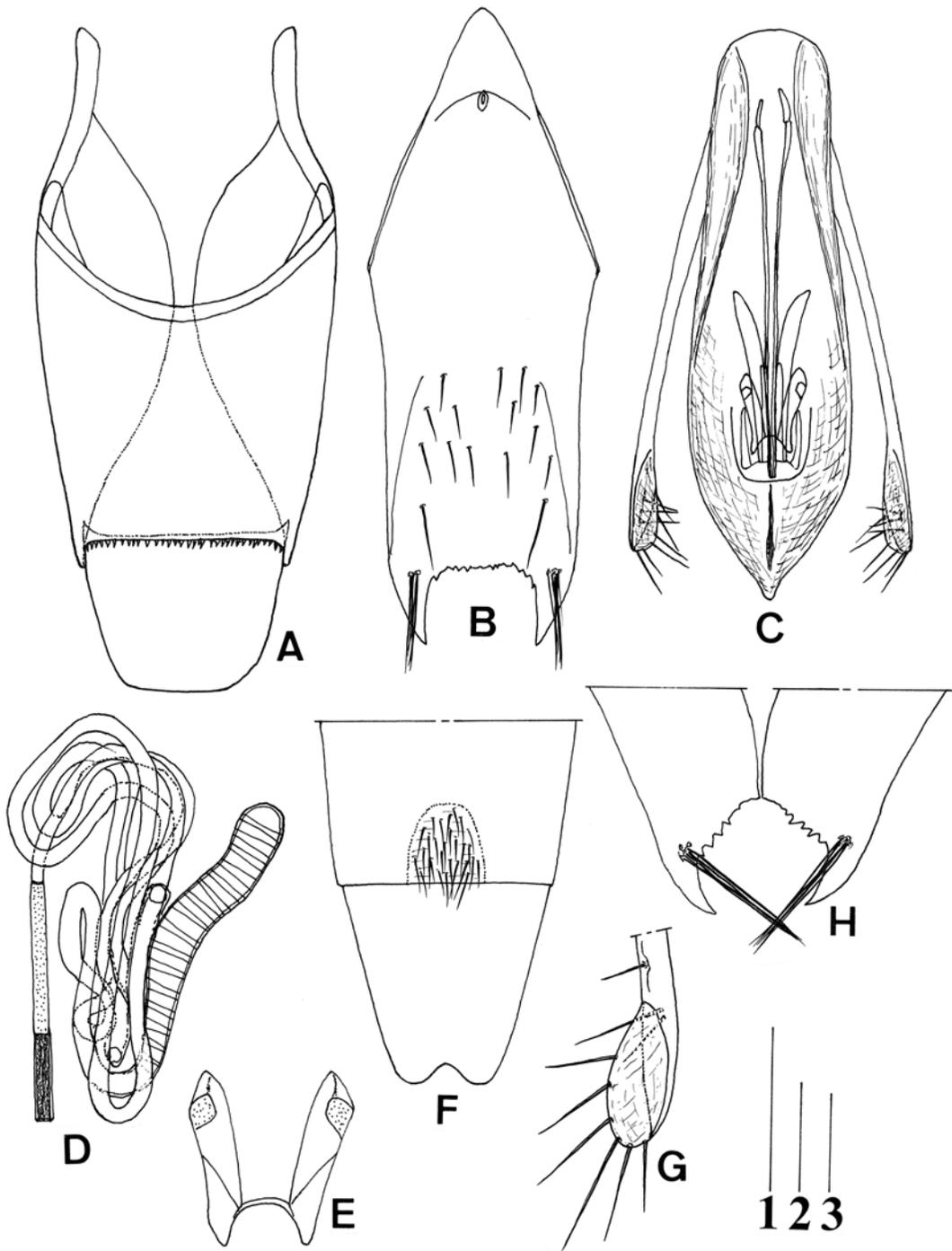


Fig. 124. *Stenus sharpi* Bernhauer & Schubert (A, B, F, Nishihotaka-guchi, Gifu; C, E, Daibosatsu, Yamanashi; D, H, Moto-kiyosumi, Chiba; G, Shiroya, Miyazaki). A, 9th and 10th terga of male; B, 9th ventrite of male; C, aedeagus; D, spermatheca; E, endophallic expulsion hook; F, 7th to 8th ventrites of male; G, apex of aedeagal paramere; H, apices of gonocoxites. Scale 1: 0.2 mm for A–C, H, 0.1 mm for E, G; scale 2: 0.1 mm for D; scale 3: 0.3 mm for F.

Type material examined. Syntype of *S. palpalis*: ♂ (NHML), type locality: Ichiuchi, Lewis [examined by Puthz in 1968].

Other material examined. [HONSHU]: 1 ♀, Towada, Aomori Pref., 4. viii. 1987, S. Nomura leg.; 1 ♀, Urabandai, Fukushima Pref., 9. vii. 1985, S. Nomura leg.; 2 ♀, Yumoto, Oku-Nikko, Tochigi Pref., 29. vi. 1982, S. Naomi leg.; 2 ♂, same locality, 10. vii. 1994, S. Naomi leg.; 1 ♂ 1 ♀, Chuzenji, Nikko, Tochigi Pref., 24. vii. 1985, S. Nomura leg.; 3 ♂ 1 ♀, Nikkozawa-Kinunuma, Kuriyama-mura, Tochigi Pref., 3. ix. 1991, S. Naomi leg.; 1 ♀, Kawaho, Tochigi Pref., 4. vi. 1980, K. Kawada leg.; 1 ♂, Numappara, Mt. Nasu, Tochigi Pref., 4. vi. 1994, S. Naomi leg.; 2 ♂ 5 ♀, Kaminikkawa Pass, Mt. Daibosatsu, Yamanashi Pref., 15-18. vii. 1982, S. Naomi leg.; 1 ♀, same locality, 9. vi. 1979, M. Tao leg.; 1 ♂, Mt. Daibosatsu, Yamanashi Pref., 22-23. vi. 1985, M. Sato leg.; 3 ♂ 3 ♀, Hirogawara, Mt. Shirane, Yamanashi Pref., 9-13. vi. 1982, S. Naomi leg.; 1 ♂, Sasagamine, Mt. Myoko, Niigata Pref., 14-15. vi. 1980, S. Naomi; 2 ♂ 4 ♀, Nishihotaka-guchi, Gifu Pref., 11. vi. 1980, S. Naomi leg.; 1 ♀, Hirayu, Gifu Pref., 22. vii. 1946, K. Ohbayashi leg.; 1 ♀, Ohdaigahara, Nara Pref., 29. v. 1985, S. Nomura leg.; 1 ♂, Mt. Sanjyo, Tenkawa-mura, Nara Pref., 28. vi. 1988, S. Nomura leg. [SHIKOKU]: 1 ♂ 6 ♀, Mt. Tsurugi, Tokushima Pref., 15-17. x. 1980, S. Naomi leg.; 1 ♀, Mt. Takashiro, Tokushima Pref., 17. vii. 1988, M. Sakai leg.; 1 ♀, Omogo Valley, Ehime Pref., 15. vi. 1981, S. Naomi leg.; 1 ♀, same locality, 9. x. 1990, S. Nomura leg.; 1 ♀, Mt. Ishizuchi, Ehime Pref., 16. vi. 1981, S. Naomi leg. [KYUSHU]: 1 ♀, Mt. Kurodake, Kuju, Ohita Pref., 3. ix. 1982, S. Nomura leg.; 1 ♂, Makinoto Pass, Ohita Pref., 10. viii. 1979, S. Naomi leg.; 1 ♀, Mt. Kuju, Ohita Pref., 23. ix. 1980, H. Maki-hara leg.; 1 ♀, Shimoda, Amakusa Is., Kumamoto Pref., 7. vii. 1997, H. Ohishi leg.; 1 ♂ 1 ♀, Mt. Shiroiwa, Miyazaki Pref., 6. viii. 1978, S. Imasaka leg.; 1 ♀, Aya-minami, Miyazaki Pref., 9. v. 1985, S. Nomura leg.; 1 ♀, Miike Pond, Mt. Kirishima, Kagoshima Pref., 18. v. 1983, Y. Sawada leg.

Distribution. Japan (Honshu, Shikoku, Kyushu); Korea, China, Russia.

Redescription. Male and female: Brachypterous; body 5.0–6.5 mm (fore body 2.5–3.1 mm) in length, strongly shining, with antennae long, thin. Head and abdomen black; pronotum and elytra dark red (nearly black); labrum black; antennae and legs clear reddish brown. Head relatively short, vertex wide, concave, with paired longitudinal grooves, median longitudinal area between the grooves wide, moderately convex; punctures round, moderately dense to dense, various in size, and somewhat umbilicate on head, but punctures often sparse and small on median convex area. Pronotum with surface strongly uneven, median longitudinal depression very indistinct in outline; punctures very dense, coarse. Elytra with surface strongly uneven, punctures dense, strongly coarse. Legs moderately long; tarsi with 4th tarsomere strongly bilobed. Abdomen subparallel-sided; 9th tergum posteriorly with a cleaning comb composed of very short, relatively sparse setae (Fig. 124A); punctures round, moderately dense, and various in size in anterior segments, while punctures in posterior segments very small and sparse. Lateroventrites dorsomesial or horizontal in position, very thin on abdomen.

Male: Seventh ventrite (Fig. 124F) posteromedially with a bell-shaped, flat area; 8th ventrite (Fig. 124F) posteromedially with a small emargination; 9th tergum (Fig. 124A) with apicolateral flaps relatively small, ventral apophyses relatively short, posterolateral projections very short; 9th ventrite (Fig. 124B) finely serrate posteriorly, with stem triangular, pointed anteriorly, apicolateral teeth large, acutely pointed, apicolateral setae relatively short, macrosetae paired; 10th tergum (Fig. 124A) entire. Aedeagal median lobe (Fig. 124C) wide, widest apicolaterally, with lateral rims very wide, sclerotized, apicomedian projection short, and apical sclerotized area with a median longitudinal keel. Endophallic median longitudinal bands (Fig. 124C) with ventral

bands short, thin, dorsal bands moderately long and wide; lateral longitudinal bands (Fig. 124C) short, thin; explosion hooks (Fig. 124C, E) separated but connected by a thin, curved rod, with anterior plate demarcated by oblique line from posterior plate; basal tube (Fig. 124C) with basal room short, composed of two short shafts, tube body very long, slender, subulate. Parameres (Fig. 124C) thin, slender; apical area moderately long, with a ventral flap, and furnished with 5 or 6 setae along the mesial margin of ventral flap, dorsally with 3 or 4 setae, and sometimes also with 1 or 2 setae at the mesial side of stem just before the apical area (Fig. 124G).

Female: Eighth ventrite rounded posteriorly; gonocoxites (Fig. 124H) each irregularly serrate posteriorly, with apicolateral tooth long, acutely pointed, apicolateral setae moderately long. Spermatheca (Fig. 124D) with capsule very small, rounded apically; RT-duct thick, long; spermathecal duct thin, very long, moderately coiled; basal submenbranous duct (valve?) long, about 2 times as long as basal sclerotized duct.

Biology and ecology. *S. sharpi* is a common *Stenus* species in Japan. It is widely distributed in the plains and mountainous regions. The beetles inhabit leaf litter in natural forests; they also live in the relatively dry grass or bamboo litter heaped around the margins of forests.

Remarks. *Stenus sharpi* is the sister species of *S. davidsharpi* Puthz, 2008a from Taiwan. This species is separable from the latter by the vertex of head covered with smaller, less dense punctures, the elytra with punctures on less rugose, the 8th ventrite of male posteromedially with a smaller emargination (Fig. 124F), and the aedeagal paramere thinner, with its apical area furnished only with 8 to 10 setae (Fig. 124C). As in *S. davidsharpi* (Puthz, 2008a, fig. 64), *S. sharpi* has a ventral flap at the apical area of aedeagal paramere (Fig. 124G). The flap basically lies almost dorso-ventrally; in other words it turns toward the mesio-ventral direction. Thus, it may be overlooked when the aedeagus is observed from ventral aspect (e.g., Fig. 124C).

Since *S. sharpi* has a cleaning comb (comprising "very short and relatively sparse setae") in the 9th tergum (Fig. 124A) although it is brachypterous, we shortly here discuss the matter on it. *S. sharpi* is widely distributed in Japan from Honshu, Shikoku and Kyushu, but among the local populations, no morphological variation is basically found regarding the structure of aedeagus (including endophallus) as well as external structure of body. This is striking, when comparing it with many brachypterous species of *S. cephalotes* group and of *S. asyura* group, because the species of latter two groups had highly speciated in various regions of Japan in many cases, so that they each have a relatively or highly limited distributional range (e.g., Naomi, 2006b).

The fact that no significant morphological diversification had occurred among the isolated local populations of *S. sharpi* may suggest a relatively short evolutionary span of *S. sharpi*-species lineage. Furthermore, it seems also that only relatively short evolutionary times have passed after *S. sharpi* had become brachypterous so that it loses its flight function. This may be a reason why *S. sharpi* has (or retains) the cleaning comb in the 9th tergum although it is brachypterous. An obsolete (or non-functional) condition of setae comprising the comb in *S. sharpi* may support the afore-mentioned hypothesis on the retention of a cleaning comb in the brachypterous species.

Etymology. This species was named in honour of Dr. David Sharp who is an eminent coleopterist and morphologist in England.

Species group of *S. gestroi* Fauvel

S. gestroi group consists of 1 species in Japan; see Puthz (2011b) regarding a characterization of this group. Diagnostic characters are as follows: Head with vertex deeply concave (Fig. 136E); eyes very large; legs with 4th tarsomere strongly bilobed; elytron mostly with a yellow-

ish-orange spot; lateroventrites very narrow, and existing only at the basal parts of 3rd to 6th segments; 9th ventrite of male with apicolateral teeth pointed (Fig. 125D); aedeagal median lobe mostly furnished laterally with sparse, short setae (Fig. 125B; Puthz, 2011b, fig. 17); parameral stem mostly furnished mesially with several, short setae (Fig. 125B); endophallus often with a small triangular or arrow-headed expulsion hook (Fig. 125B; Puthz, 2011b, fig. 13); gonocoxite with apicolateral tooth acutely pointed (Fig. 125G); spermatheca composed of distal duct (C-shaped) and proximal duct (loosely coiled, more or less thin) (Fig. 7B, 125C; Puthz, 2011b, figs. 8, 9).

Stenus gestroi Fauvel

(Figs. 2aE, F, 125A–H, 136E–J)

Stenus gestroi Fauvel, 1895: 212; Herman, 2001: 2200; Naomi & Puthz, 2013: 140; Puthz, 2011: 566b; Puthz, 2013: 1369.

Stenus takara Nakane, 1963a: 21.

Type material examined. Lectotype: ♂ (IRSNB), type locality: Carin Cheba, Myanmar [designated by Puthz in 1969: 36].

Other material examined. [KYUSHU]: 1 ♂, Uchinoura-cho, Kagoshima Pref., 4. v. 1997, K. Haga leg. [NANSEI ISLS.]: 1 ♂, Shiratani Valley, Yaku Is., Kagoshima Pref., 20. vii. 1975, Y. Mori leg.; 4 ♂3 ♀, Nakanoshima Is., Tokara, Kagoshima Pref., 28. iv. 1987, S. Nomura leg.; 1 ♂, same locality, 2. v. 1987, S. Nomura leg.; 1 ♂, same locality, 10. viii. 1975, H. Makihara leg.; 1 ♀, Takara Is., Tokara, 22. vi. 1973, H. Makihara leg.; 1 ♂4 ♀, Naze City, Amami Is., Kagoshima Pref., 25. iii. 1978, S. Naomi leg.; 4 ♀, Hatsuno, Amami Is., Kagoshima Pref., 27. iii. 1978, S. Naomi leg.; 1 ♂, Yamatohama, Amami Is., Kagoshima Pref., 24. iii. 1978, S. Naomi leg.; 1 ♀, Amami Is., Kagoshima Pref., 19. iv. 1974, H. Makihara leg.; 1 ♀, Koniya, Amami Is., Kagoshima Pref., 12. vii. 1978, M. Kaneda leg.; 1 ♀, Sumiyo-son, Amami Is., Kagoshima Pref., 13-19. iii. 2001, K. Takahashi leg.; 1 ♂, Mt. Yuwan, Amami Is., Kagoshima Pref., 8. v. 1987, S. Nomura leg.; 1 ♀, Materia fall, Amami Is., Kagoshima Pref., 8. v. 1987, S. Nomura leg.; 2 ♂1 ♀, Awa, Motobu Peninsula, Okonawa Is., Okinawa Pref., 13. iii. 1978, S. Naomi leg.; 1 ♂1 ♀, Oku, Kunigami-son, Okinawa Is., Okinawa Pref., 14. iii. 1978, S. Nomura leg.

Distribution. Japan (Kyushu; Yaku Is., Tokara-Naka Is., Tokara-Takara Is., Amami Is., Okinawa Is.); Taiwan, China, India, Nepal, Oriental region.

Redescription. Male and female: Macropterous; body 5.0–6.0 mm (fore body 2.5–3.1 mm) in length, matt or weakly shining, with antennae moderately long; paraglossae ovoidal (Fig. 2aE, F). Head and abdomen black; pronotum and elytra dark red (nearly black), each elytron with a yellowish-orange, almost round macula behind the middle, but sometimes indistinct (Fig. 136E) or immaculate; labrum dark red; antennae and legs reddish brown. Head relatively short, with eyes large, strongly prominent laterally; vertex deeply concave, with paired longitudinal grooves, median area between the grooves wide, moderately convex; punctures round, dense, small and almost regular on head, but punctures very sparse and small on the median convex area. Pronotum with surface strongly uneven, median longitudinal depression indistinct in outline; punctures very dense, strongly coarse. Elytra with surface uneven, punctures very dense, coarse. Legs long, thin; tarsi thin, 4th tarsomere distinctly bilobed but each lobe short. Abdomen subparallel-sided; punctures sparse to moderately dense, small, and somewhat irregular throughout; 9th tergum (Fig. 125E, H) with posterolateral projections short; 10th tergum (Fig. 125E, H) weakly emargin-

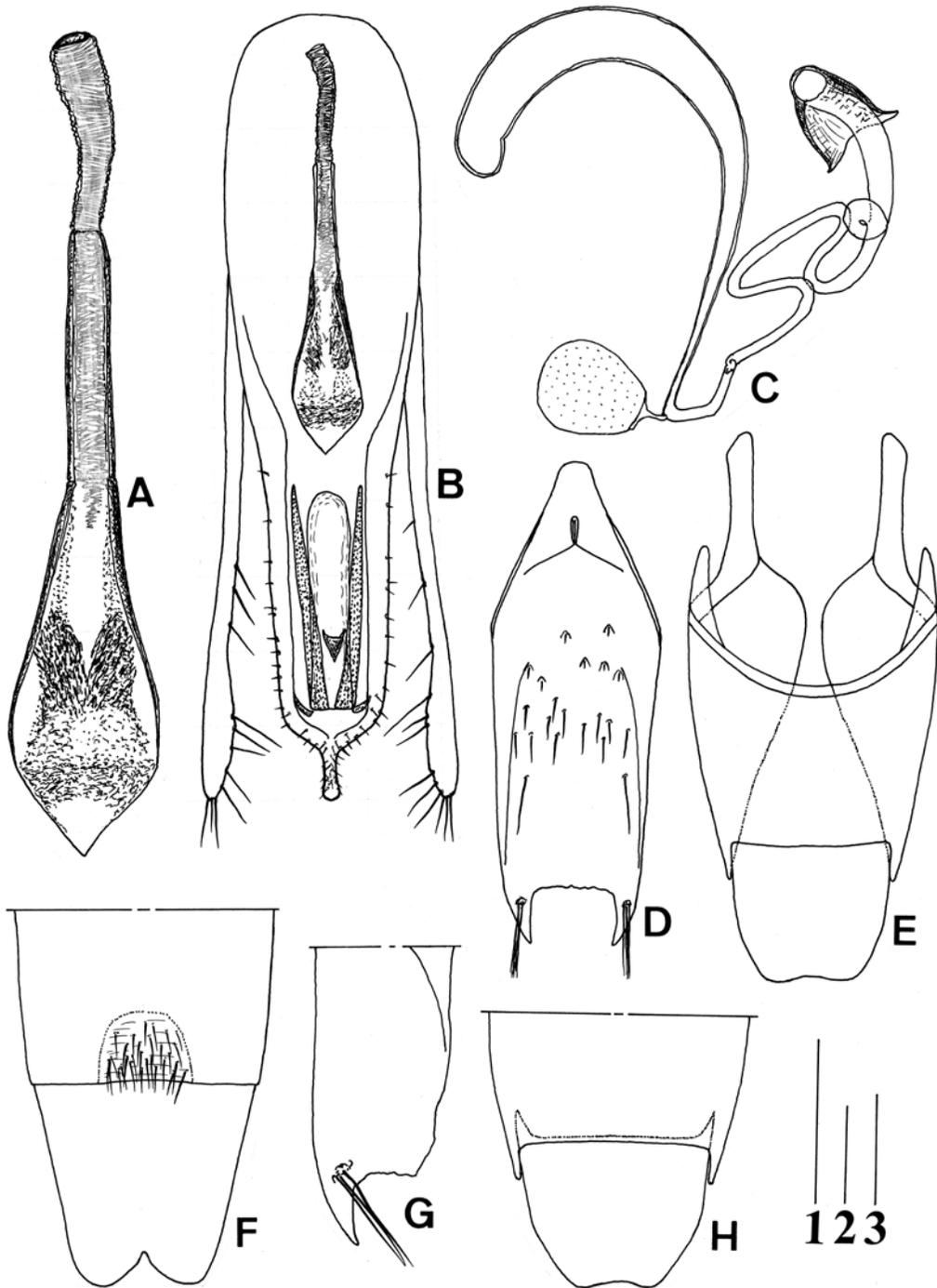


Fig. 125. *Stenus gestroi* Fauvel (Tokara-Naka Is., Kagoshima). A, endophallic basal tube; B, aedeagus; C, spermatheca; D, 9th ventrite of male; E, 9th and 10th terga of male; F, 7th to 8th ventrites of male; G, gonocoxite; H, 9th and 10th terga of female. Scale 1: 0.1 mm for A, C, 0.2 mm for B, G; scale 2: 0.3 mm for F; scale 3: 0.2 mm for D, E, H.

ate posteriorly. Lateroventrites very narrow, existing only at the bases of 3rd to 6th segments, each lateroventrite gradually narrowed posteriorly.

Male: Seventh ventrite (Fig. 125F) posteromedially with a bell-shaped, flat area, which is very shallowly emarginate; 8th ventrite (Fig. 125F) posteromedially with a wide, moderately deep emargination; 9th tergum (Fig. 125E) with apicolateral flaps long, ventral apophyses moderately long; 9th ventrite (Fig. 125D) hardly serrate posteriorly, with stem trapezoidal in shape, apicolateral teeth long, acutely pointed, apicolateral setae short, and macrosetae relatively long. Aedeagal median lobe (Fig. 125B) elongate-ovoidal basally, almost parallel-sided and also furnished laterally with sparse, very short setae in posterior 1/2, with a long apicomedian projection which is globose at the apicalmost part. Endophallic median longitudinal bands (Fig. 125B) with ventral bands fused to form a wide, non-dotted band, dorsal bands thin; lateral longitudinal bands (Fig. 125B) very short; expulsion hooks (Fig. 125B) atrophied into a very small, arrow-headed sclerite; basal tube (Fig. 125B) with basal duct (room?) submembranous, finely, obliquely striped, tube body composed of the proximal rod and distal spatulate plate which is pointed apically (Fig. 125A). Parameres (Fig. 125B) long, slender; stem mesially with 2 to 3 short setae; apical area long, weakly swollen mesially, furnished mesially with 8 to 9 short to moderately long setae.

Female: Eighth ventrite obtusely pointed posteromedially; gonocoxites (Fig. 125G) each with apicolateral tooth long, acutely pointed, apicolateral setae relatively short. Spermatheca (Fig. 125C) unique in having a *guttalis*-form (Fig. 7B) without striped RT-duct; distal duct C-shaped, thick apically, and distinctly demarcated from proximal duct by the bent of acute angle, where the opening of spermathecal gland is located; proximal duct thin (but relatively thick basally), basically not coiled; basal pouch bell-shaped, sclerotized; spermathecal gland large, almost ovoidal in shape.

Biology and ecology. *S. gestroi* seems to be a relatively common *Stenus* species in Nansei Isls.; and it is distributed in the plains and mountainous regions there. The beetles inhabit glass litter heaped at the grasslands near natural forests; and they also inhabit leaf litter in natural forests.

Remarks. *Stenus gestroi* is closely allied to *S. lacertosus* Benick, 1917 from Indonesia and Malaysia, but this species is separable from the latter by the elytra more densely punctate and the endophallic expulsion hook arrow-headed (Puthz, 2011b: 568). In *S. gestroi*, the endophallic basal tube has a basal duct which is finely, obliquely striped (Fig. 125A). When considering its relative position in the basal tube, the striped basal tube in *S. gestroi* may be homologous with the basal room of basal tube (Fig. 5).

Etymology. This species was named in honour of Dr. Raffaello Gestro, who is an eminent entomologist in Italia.

Species group of *S. guttalis* Fauvel

S. guttalis group consists of 1 species in Japan; see Puthz (2011b) regarding a characterization of this group, and see also Puthz (2013) regarding a review of this group. Diagnostic characters are as follows: Similar in habitus to the species of *S. gestroi* group (Fig. 136F); head with vertex deeply concave; eyes very large; paraglossae oval; elytron with or without a yellowish-orange spot; legs with 4th tarsomere strongly bilobed; metatibia of male with a preapical spur (Puthz, 2011b); lateroventrites narrow, or both lateroventrites and tergoventrite sutures missing on abdomen; aedeagal endophallus with a moderately large expulsion hook (Fig. 126H); sperma-

theca composed of distal duct (C-shaped) and proximal duct (loosely coiled, more or less thin) (Fig. 126A).

Stenus guttalis Fauvel
(Figs. 2aG, 126A–H, 136K–L)

Stenus guttalis Fauvel, 1895: 212; Herman, 2001: 2207; Naomi & Puthz, 2013: 140; Puthz, 2013: 1376.

Stenus guttalis ishigakiensis Naomi, 1988e: 39; Naomi & Puthz, 1994a: 218 (as synonym of *S. guttalis*).

Type material examined. Lectotype: ♂ (IRSNB), type locality: Carin Cheba, Myanmar [examined and designated by Puthz in 1969: 21].

Other material examined. [NANSEI ISLS.]: 1 ♀, Fukuyama, Hirara City, Miyako Is., Okinawa Pref., 21. vii. 2012, T. Nakata leg.; 1 ♀, Ishigaki Is., Okinawa Pref., 15. iv. 1997, K. Takahashi leg.; 1 ♂, Sonai, Iriomote Is., Okinawa Pref., 8. iii. 1976, S. Morita leg.

Distribution. Japan (Nansei Is.: Miyako Is., Ishigaki Is., Iriomote Is.); Taiwan, China, Oriental region.

Redescription. Male and female: Macropterous; body 5.4–6.5 mm (fore body 2.5–2.9 mm) in length, matt or weakly shining, with antennae long, thin; paraglossae ovoidal (Fig. 2aG). Body dark red (nearly black) to black; elytra each with a yellowish-orange, round macula, but sometimes immaculate; labrum dark red; antennae and legs yellowish brown to reddish brown, knees more or less infuscate. Head relatively short, with eyes large, strongly prominent laterally; vertex deeply concave, with paired longitudinal grooves, median area between the grooves weakly convex; punctures round, dense small. Pronotum with surface strongly uneven, median longitudinal depression indistinct in outline; punctures very dense, strongly coarse. Elytra with surface uneven; punctures very dense, strongly coarse. Legs moderately long, thin; tarsi with 4th tarsomere deeply bilobed. Abdomen weakly narrowed posteriorly; punctures basically round to elliptical, moderately dense, small and distinct in anterior segments, while punctures in posterior segments elliptical, very small and regular. Both lateroventrites and tergoventrite sutures almost missing on abdomen.

Male: Seventh ventrite (Fig. 126E) posteromedially with an elongate-bell-shaped, flat area, which is very shallowly emarginate; 8th ventrite (Fig. 126E) posteromedially with a wide, moderately deep emargination; 9th tergum (Fig. 126B) with anterolateral flaps long, ventral apophyses pointed, and posterolateral projections long; 9th ventrite (Fig. 126G) elongate, finely serrate posteriorly, with stem triangular, submembranous, apicolateral teeth short, pointed, apicolateral setae short, and macrosetae long; 10th tergum (Fig. 126B) uniformly rounded posteriorly. Aedeagal median lobe (Fig. 126D) nearly violin-shaped, with apicomedian projection short, acutely pointed, lateral rim very wide. Endophallic median longitudinal bands (Fig. 126D) with ventral bands partially fused to form a non-dotted band, which is strongly sclerotized laterally, dorsal bands diverging anteriorly; expulsion hook (Fig. 126D, H) relatively large, with the owl-shaped, posteromedian projection; basal tube (Fig. 126C, D) with basal room small, subglobose, tube body baculiform, stout, gradually thickening apically. Parameres (Fig. 126D) long, slender, weakly sinuous; apical area very long, moderately swollen mesially, and furnished with 12 to 13 setae of various length along the ventromesial margin.

Female: Eighth ventrite obtusely angulate posteromedially; gonocoxites (Fig. 126F) each

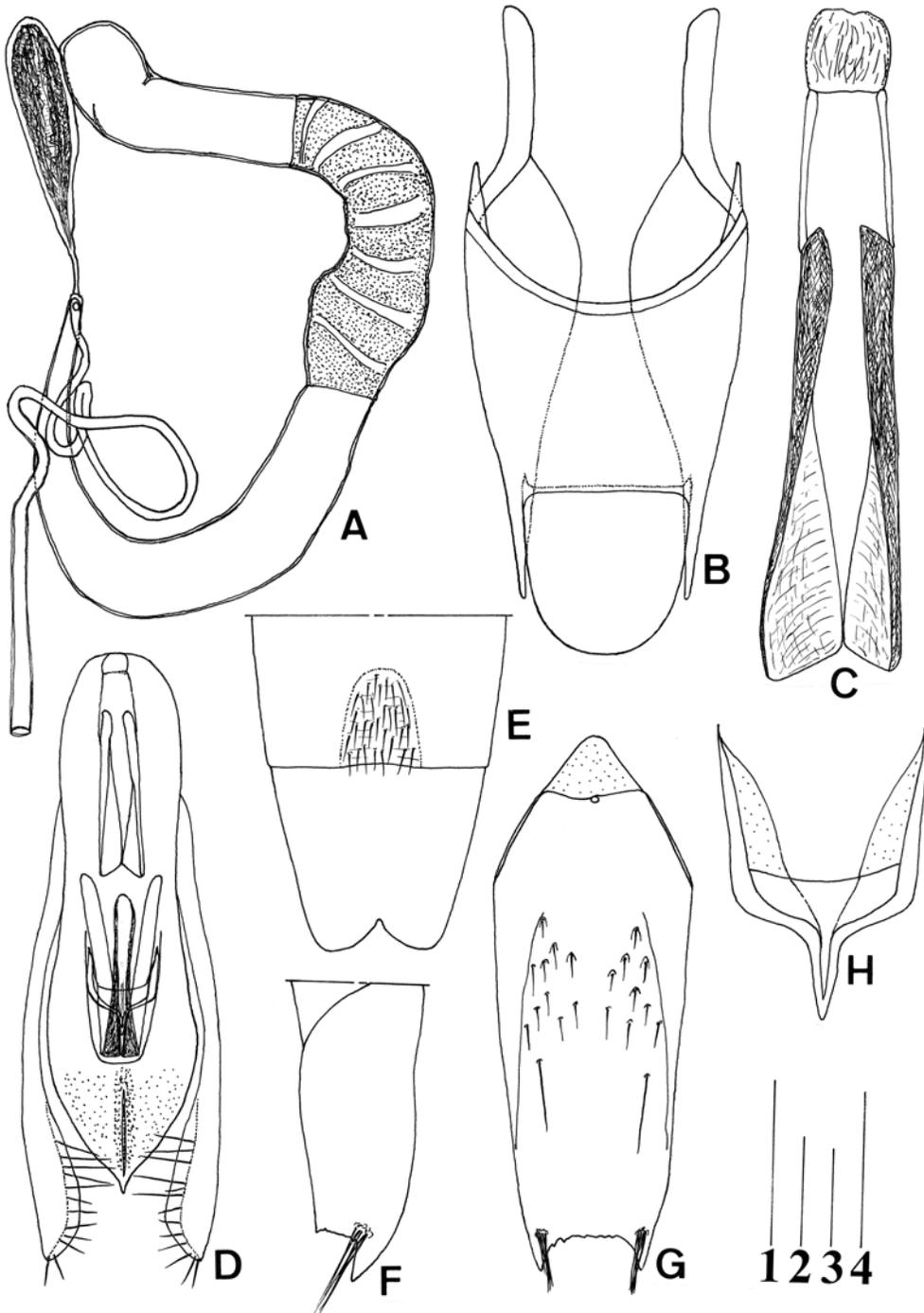


Fig. 126. *Stenus guttalis* Fauvel (A, F, Ishigaki Is., Okinawa; B–E, G, H, Sonai, Iriomote Is.). A, spermatheca; B, 9th and 10th terga of male; C, endophallic basal tube; D, aedeagus; E, 7th to 8th ventrites of male; F, gonocoxite; G, 9th ventrite of male; H, expulsion hook. Scale 1: 0.1 mm for A, C, H; scale 2: 0.2 mm for B, D, G; scale 3: 0.3 mm for E; scale 4: 0.2 mm for F.

with apicolateral tooth acutely pointed, apicolateral setae short. Spermatheca (Fig. 126A) with C-shaped distal duct very large, with capsule long, rounded apically, and RT-duct rather thick; proximal duct very thin, very loosely, irregularly coiled; spermathecal gland large, nearly elongate-elliptical in shape, with its opening located just at the base of distal duct.

Biology and Ecology. No solid information is obtained about the habitats of this species in Japan, but one female beetle was collected by car-net trap in Ishigaki Is.

Remarks. *Stenus guttalis* is very similar to *S. subguttalis* Puthz, 1969 in external structure and coloration, but this species is separable from the latter by the elytral macula smaller (Fig. 136L) when present, and the aedeagal median lobe almost violin-shaped, much wider apicolaterally, and with its lateral rim much wider (Fig. 126D).

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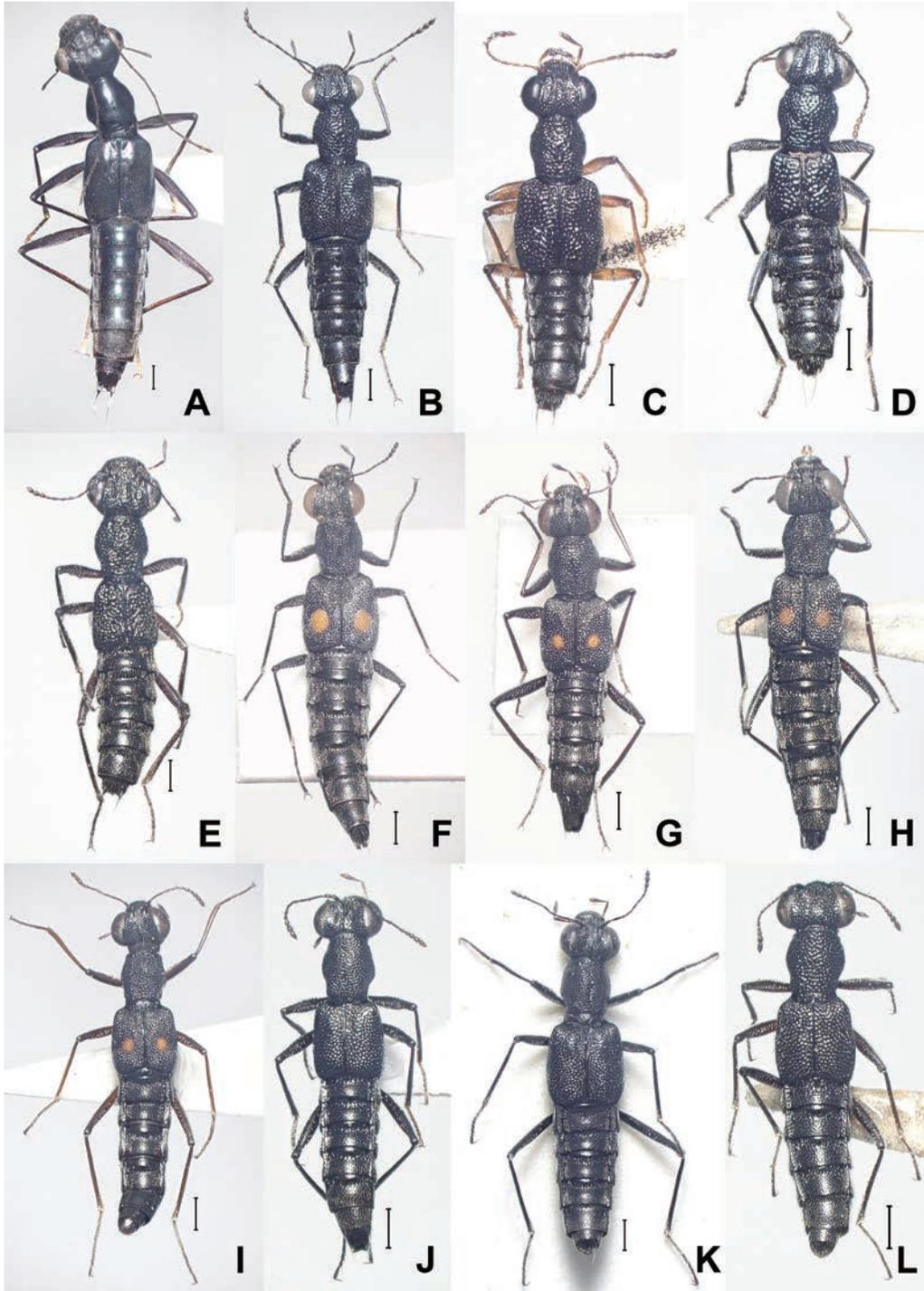


Fig. 127. A, *Dianous moritai* Naomi (Sumiyo, Amami Is.); B, *D. yoshidai* Naomi (Kanpira, Iriomote Is.); C, *D. amamiensis* Sawada (Naze, Amami Is.); D, *D. japonicus* Sawada (Kifune, Kyoto); E, *D. shibatai* Sawada (Ryogami, Saitama); F, *Stenus comma* LeConte (Piribetsu, Hokkaido); G, *S. tenuipes* Sharp (Yunotani, Niigata); H, *S. biguttatus* (Linnaeus) (Hakken, Hokkaido); I, *S. alienus* Sharp (Takao, Tokyo); J, *S. anthracinus* Sharp (Okutama, Tokyo); K, *S. kobensis* Cameron (Renge, Niigata); L, *S. macies* Sharp (Ochiai, Tokushima).

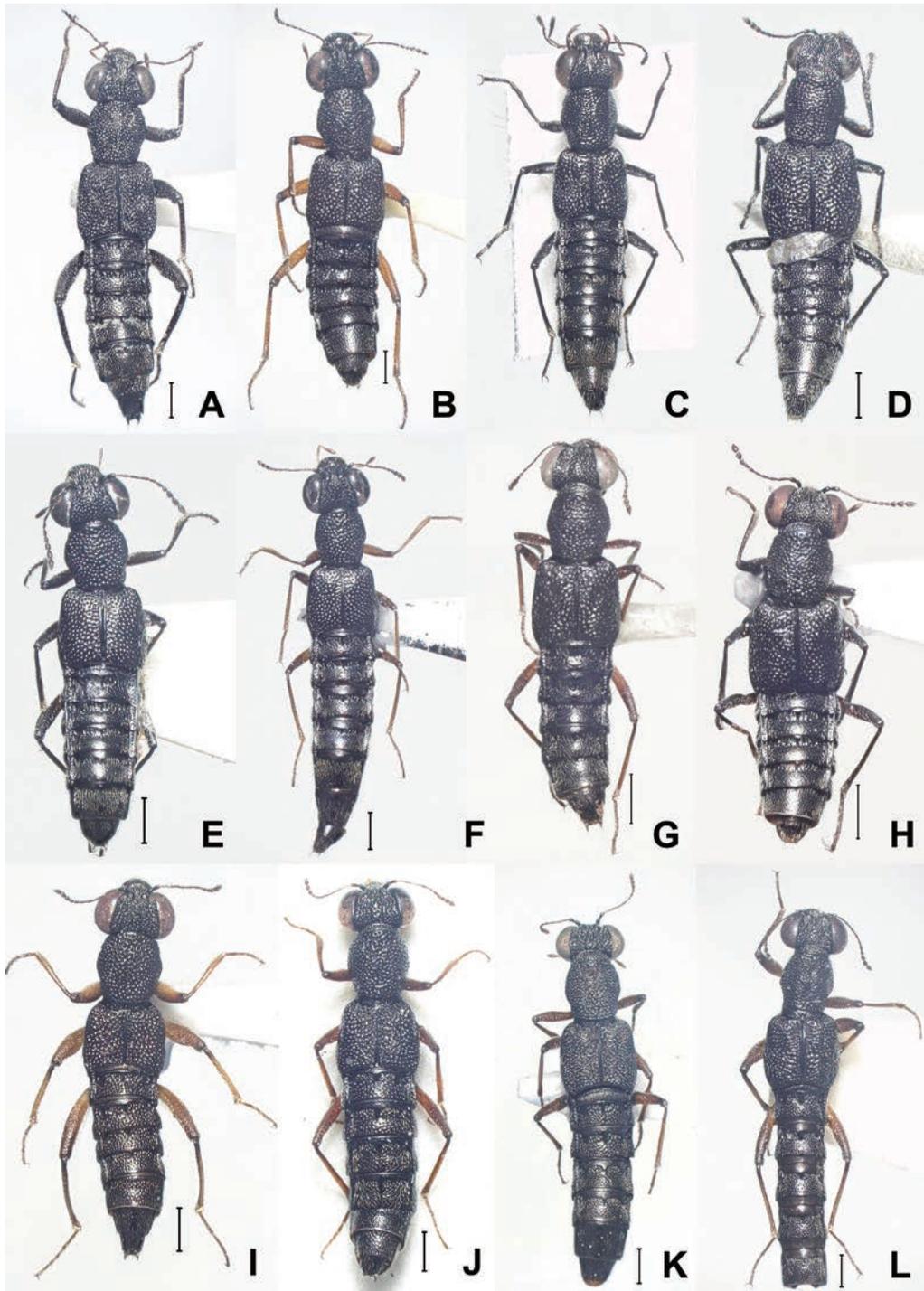


Fig. 128. A, *Stenus juno* Paykull (Memanbetsu, Hokkaido); B, *S. indagator* Eppelsheim (Memanbetsu, Hokkaido); C, *S. yamato* Naomi (Irihirose, Niigata); D, *S. lewisius* Sharp (Kawasaki, Kanagawa); E, *S. katoi* Naomi & Ito (Shibeche, Hokkaido); F, *S. sauteri* Bernhauer (Kitami, Hokkaido); G, *S. nishikawai* Naomi (Ohnuma, Hokkaido); H, *S. amurensis* Eppelsheim (Ebetsu, Hokkaido); I, *S. distans* Sharp (Hakui, Ishikawa); J, *S. determinus* Puthz (Kiyosumi, Chiba); K, *S. calliceps* Bernhauer (Tokara-Takara Is., Kagoshima); L, *S. formosanus* Benick (Sonai, Yonaguni Is.).

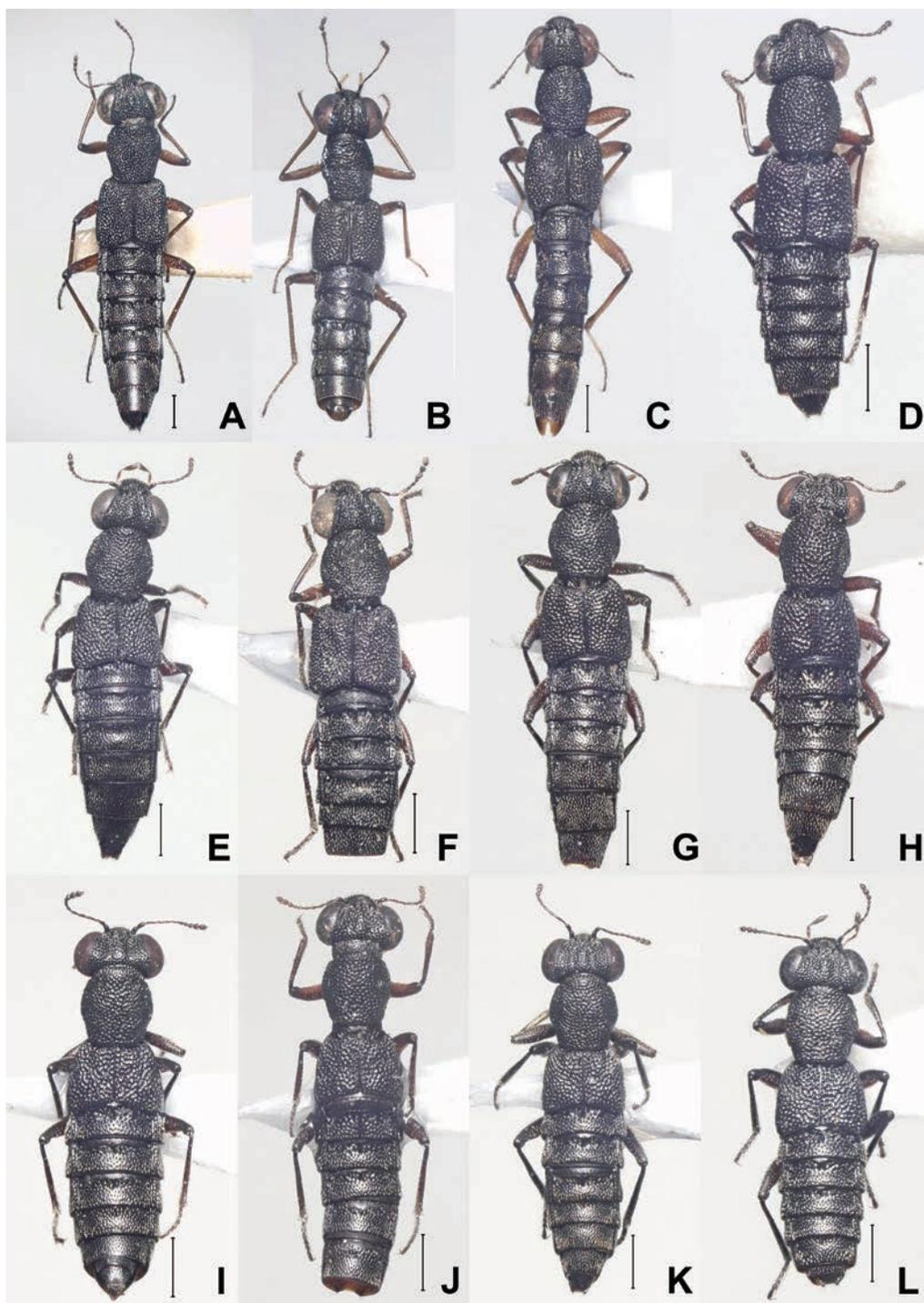


Fig. 129. A, *Stenus clavicornis* (Scopoli) (Kamishunbetsu, Hokkaido); B, *S. takedai* Naomi (Shonan, Chiba); C, *S. laborator* Sharp (Shimousa, Chiba); D, *S. japonicus* Sharp (Kushiro, Hokkaido); E, *S. mammops* Casey (Daisetsu, Hokkaido); F, *S. hammondi* Puthz (Ebetsu, Hokkaido); G, *S. expugnator* Ryvkin (Kisarazu, Chiba); H, *S. giushin* Naomi (Unzen, Nagasaki); I, *S. zaishin* Naomi (Tsurugi, Tokushima); J, *S. kirin* Naomi & Ito (Oku-koya); K, *S. ohbayashii* Naomi (Odami, Ehime); L, *S. lanceolatus* Naomi (Toyooka, Hyogo).

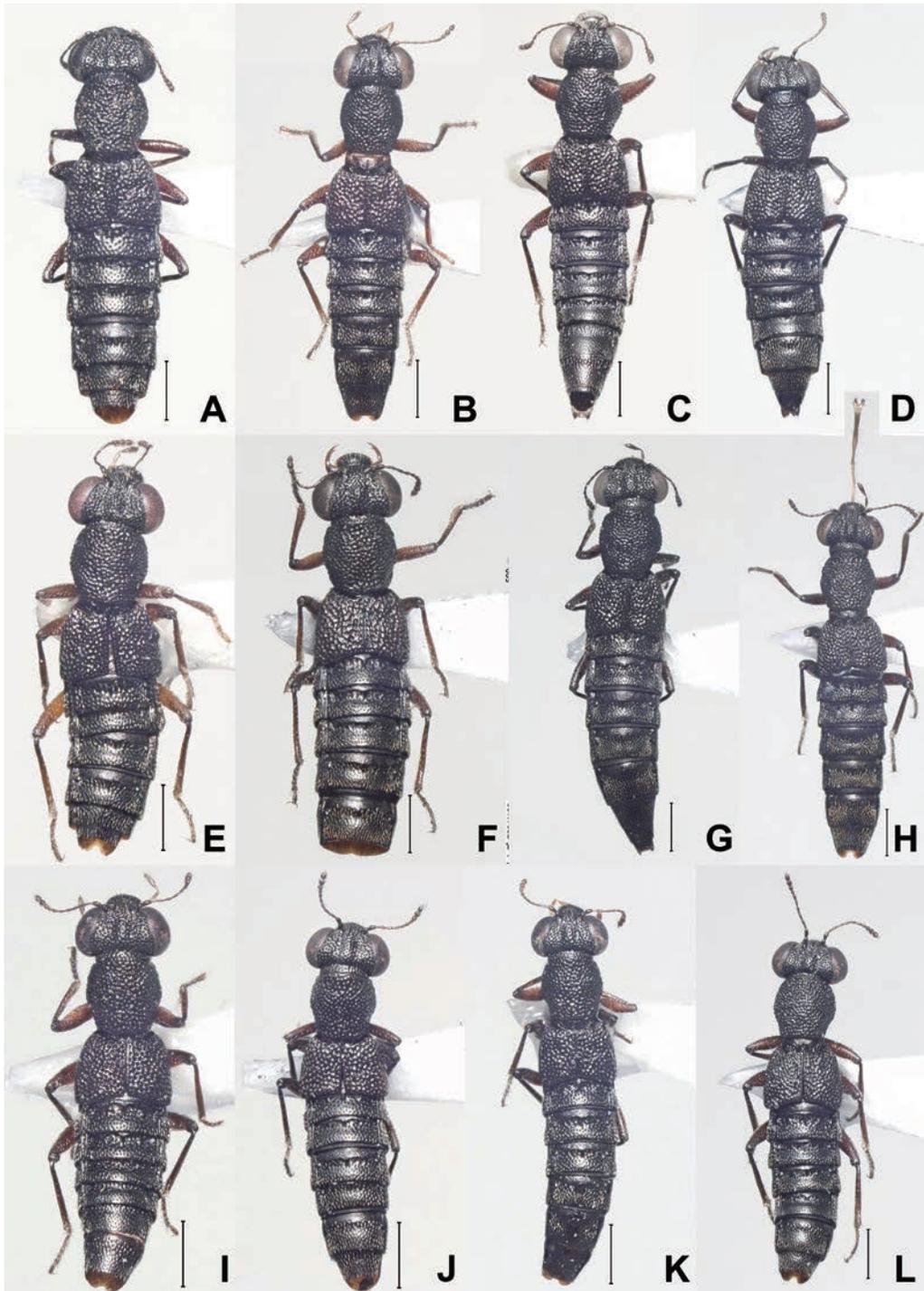


Fig. 130. A, *Stenus ochiba* Naomi & Puthz (Nakatsuya, Hiroshima); B, *S. satushin* Naomi (Takatsuna, Ehime); C, *S. nipponomontanus* Naomi (Kasuga, Nara); D, *S. wasamatanus* Puthz (Wasamata, Nara); E, *S. corrugatus* Naomi & Shimada (Saigo, Oki Isls.); F, *S. hagai* Naomi (Irihiro, Niigata); G, *S. curvaticellus* Naomi (Ohno, Fukui); H, *S. intumescens* Naomi, Nomura & Puthz sp. nov. (Ina, Nagano); I, *S. displicatus* Naomi, Nomura & Puthz sp. nov. (Ise, Mie); J, *S. toukin* Naomi & Puthz (Omonoki, Aichi); K, *S. ubusuna* Naomi & Ito (Daigo, Kyoto); L, *S. kokie* Naomi (Daihi, Kyoto).

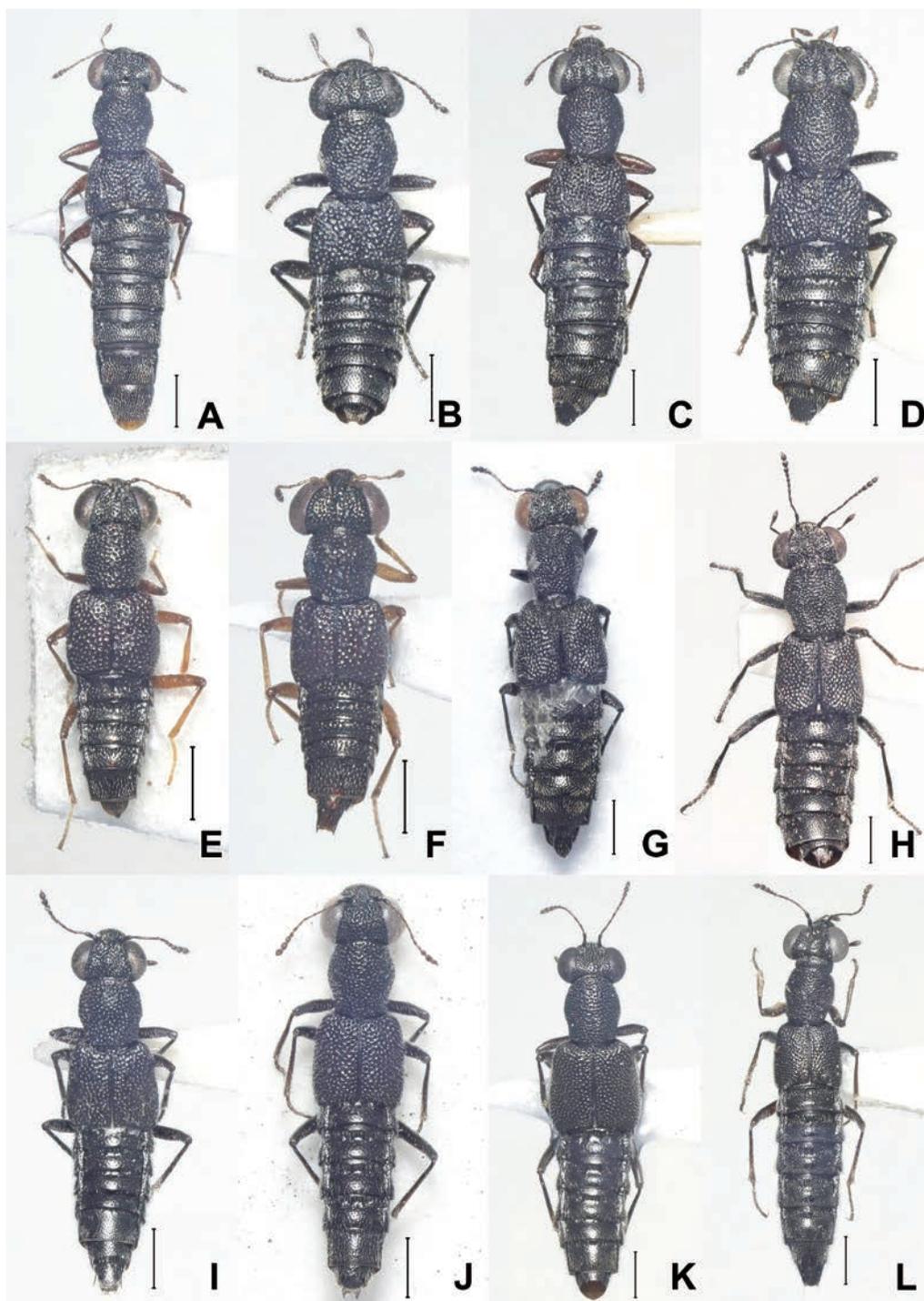


Fig. 131. A, *Stenus serratimarginatus* Naomi (Kiyosumi, Chiba); B, *S. zimmermanni* Puthz (Ryogami, Saitama); C, *S. yasutoshi* Naomi (Akazawa, Yamanashi); D, *S. houomontis* Naomi & Ito (Houo, Yamanashi); E, *S. sexualis* Sharp (Shobara, Hiroshima); F, *S. riukiensis* Puthz (Hatsuno, Amami Is.); G, *S. ruralis* Erichson (Ilek, Kazakhstan); H, *S. boops* Ljungh (Tanno, Hokkaido); I, *S. melanarius* Stephens (Kisarazu, Chiba); J, *S. raddei* Ryvkin (Amur, Russia); K, *S. shogun* Puthz (Oze, Gunma); L, *S. puberulus* Sharp (Amagoi, Tokushima).

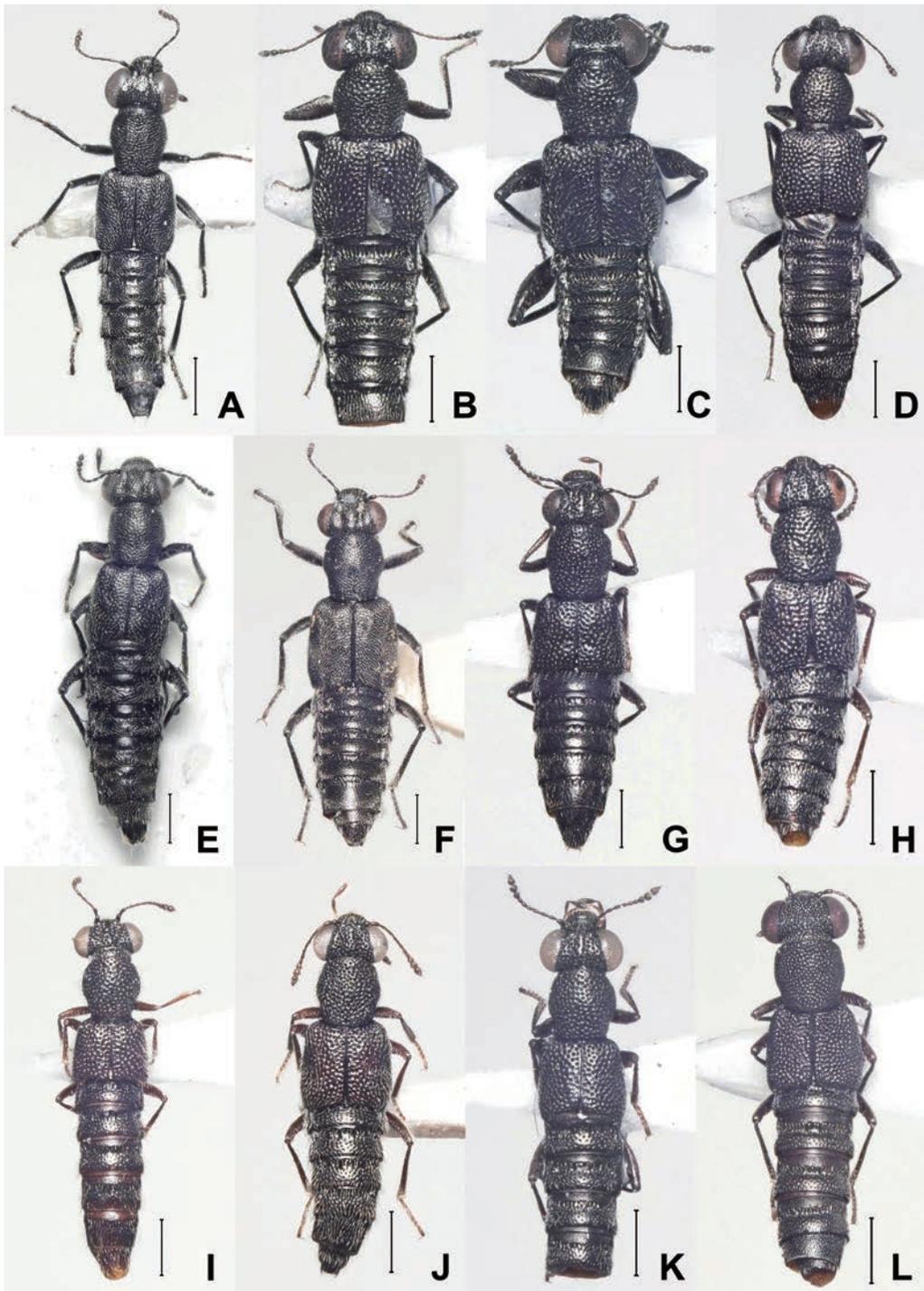


Fig. 132. A, *Stenus aboblitus* Naomi & Nomura (Tazawa, Akita); B, *S. nomurai* Naomi (Kariba, Hokkaido); C, *S. varicosus* Naomi, Nomura & Puthz sp. nov. (Onzui, Hyogo); D, *S. mikado* Hromádka (Suruga, Shizuoka); E, *S. pedefactus* Ryvkin (Monbetsu, Hokkaido); F, *S. miyama* Naomi (Yuzawa, Niigata); G, *S. immarginatus* Mäklin (Daisetsu, Hokkaido); H, *S. tomitaorum* Naomi (Kamishunbetsu, Hokkaido); I, *S. hirtiventris* Sharp (Tomiyaichi, Aomori); J, *S. pilosiventris* Bernhauer (Matsuyama, Ehime); K, *S. fnalis* Ryvkin (Shibetsu, Hokkaido); L, *S. strobilus* Ryvkin (Ebetsu, Hokkaido).

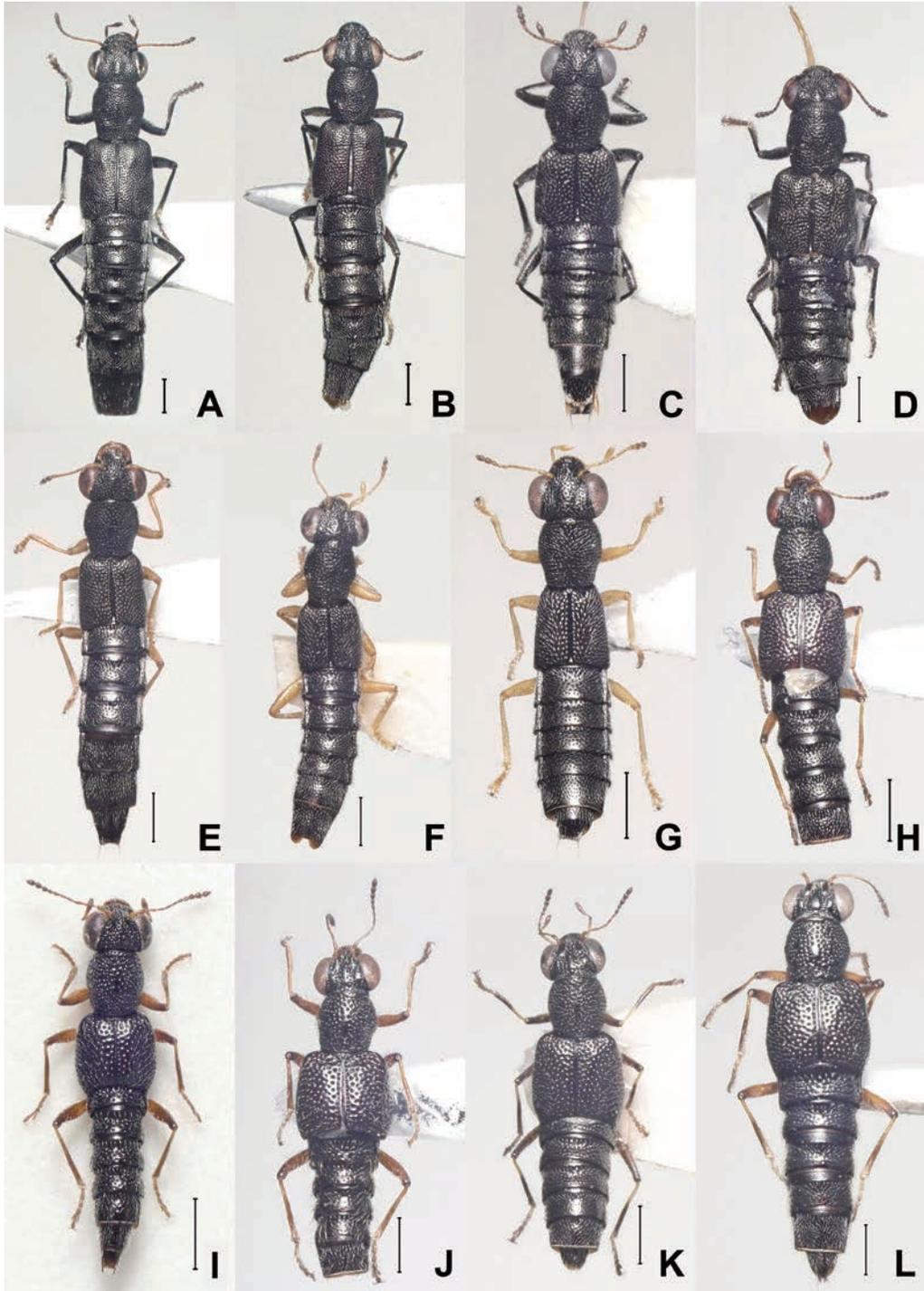


Fig. 133. A, *Stenus pubescens fraternus* Casey (Abashiri, Hokkaido); B, *S. aestivus* Naomi (Kushiro, Hokkaido); C, *S. bifoveolatus* Gyllenhal (Shibetsu, Hokkaido); D, *S. latitarsis* Sharp (Kaneoya, Chiba); E, *S. depressus* Puthz (Tadami, Fukushima); F, *S. ancyleus* Naomi, Nomura & Puthz sp. nov. (Asama, Nagano); G, *S. benefactor* Ryvkin (Fujinomiya, Shizuoka); H, *S. concinnus* Sharp (Wajima, Ishikawa); I, *S. oliverbetzi* Naomi, Nomura & Puthz sp. nov. (Sakura, Chiba); J, *S. hirtellus* Sharp (Tapah, Malaysia); K, *S. oblitus* Sharp (Yaita, Tochigi); L, *S. piliferus* Motschulsky (Sonai, Iriomote).

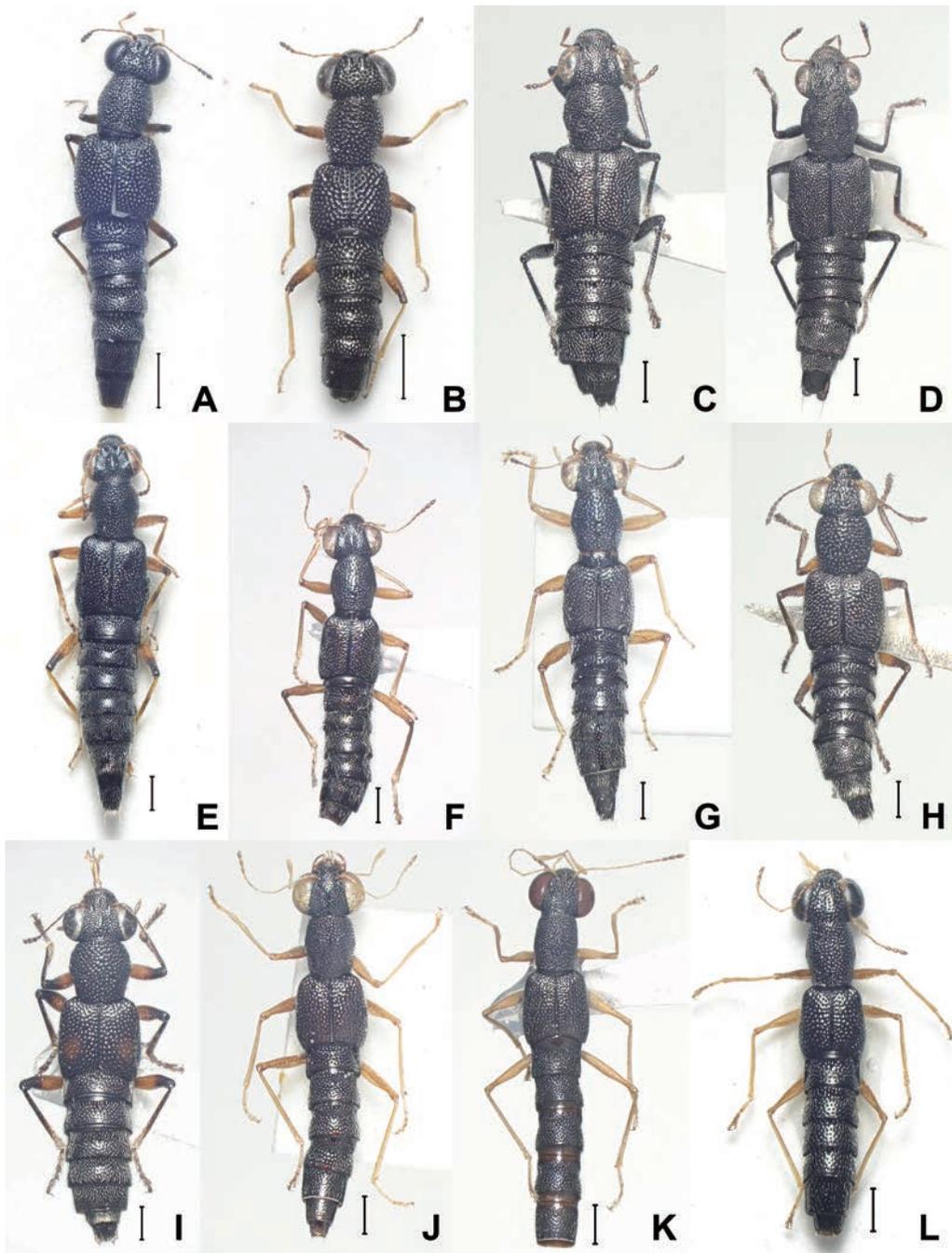


Fig. 134. A, *Stenus confertus* Sharp (Zhuji, China); B, *S. dissimilis* Sharp (Sato, Mikura Is.); C, *S. bohemicus* Machulka (Towadako, Aomori); D, *S. aquilonalis* Naomi & Puthz (Okukinu, Tochigi); E, *S. mercator* Sharp (Kushiro, Hokkaido); F, *S. sedatus* Sharp (Saitu, Aomori); G, *S. weisei* Bernhauer (Daijyu, Hokkaido); H, *S. cicindeloides* (Schaller) (Wake, Okayama); I, *S. kiesewetteri* Rosenhauer (Chitose, Hokkaido); J, *S. velox* Sharp (Sanhoku, Kanagawa); K, *S. hanami* Hromádka (Ohuchi, Kochi); L, *S. plagiocephalus* Benick (Aira, Iriomote Is.).

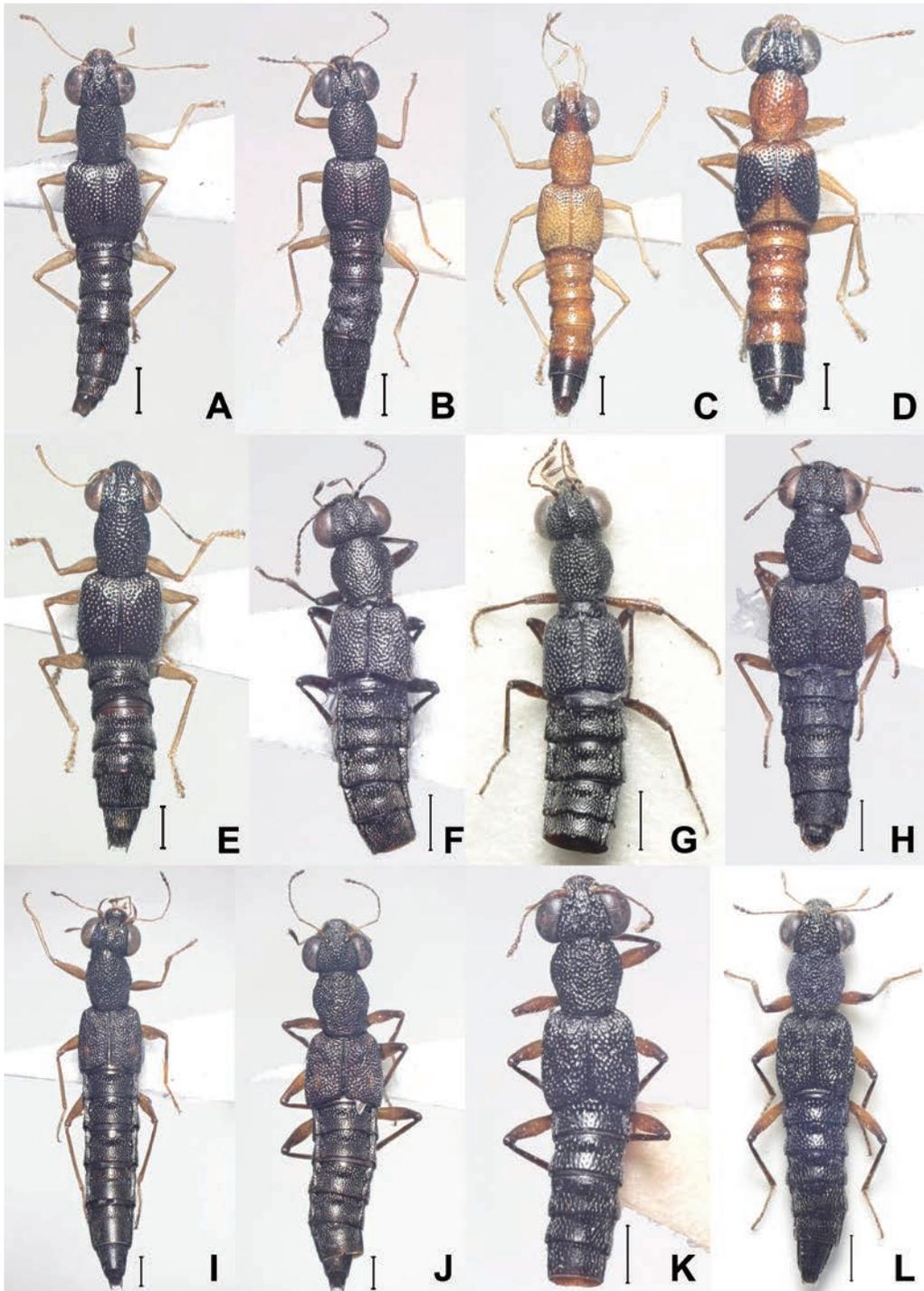


Fig. 135. A, *Stenus oshimaensis* Naomi (Yona, Okinawa Is.); B, *S. spurius* Benick (Ohtomi, Iriomote); C, *S. flavidulus* Sharp (Ketsuka, Saitama); D, *S. flavidulus paederinus* Champion (Nakano, Iriomote Is.); E, *S. currax* Sharp (Umaji, Kochi); F, *S. veselovae* Ryvkin (Yotei, Hokkaido); G, *S. sibiricus* Sahlberg (Kitayatsu, Nagano); H, *S. rugipennis* Sharp (Tete, Toku Is.); I, *S. bicolon* Sharp (Yamakita, Kanagawa); J, *S. coronatus zipanguensis* Puthz (Nishihotaka-guchi, Gifu); K, *S. kamezawai* Naomi, Nomura & Puthz sp. nov. (Kojin, Nara); L, *S. mysticus* Sharp (Nippara, Tokyo).

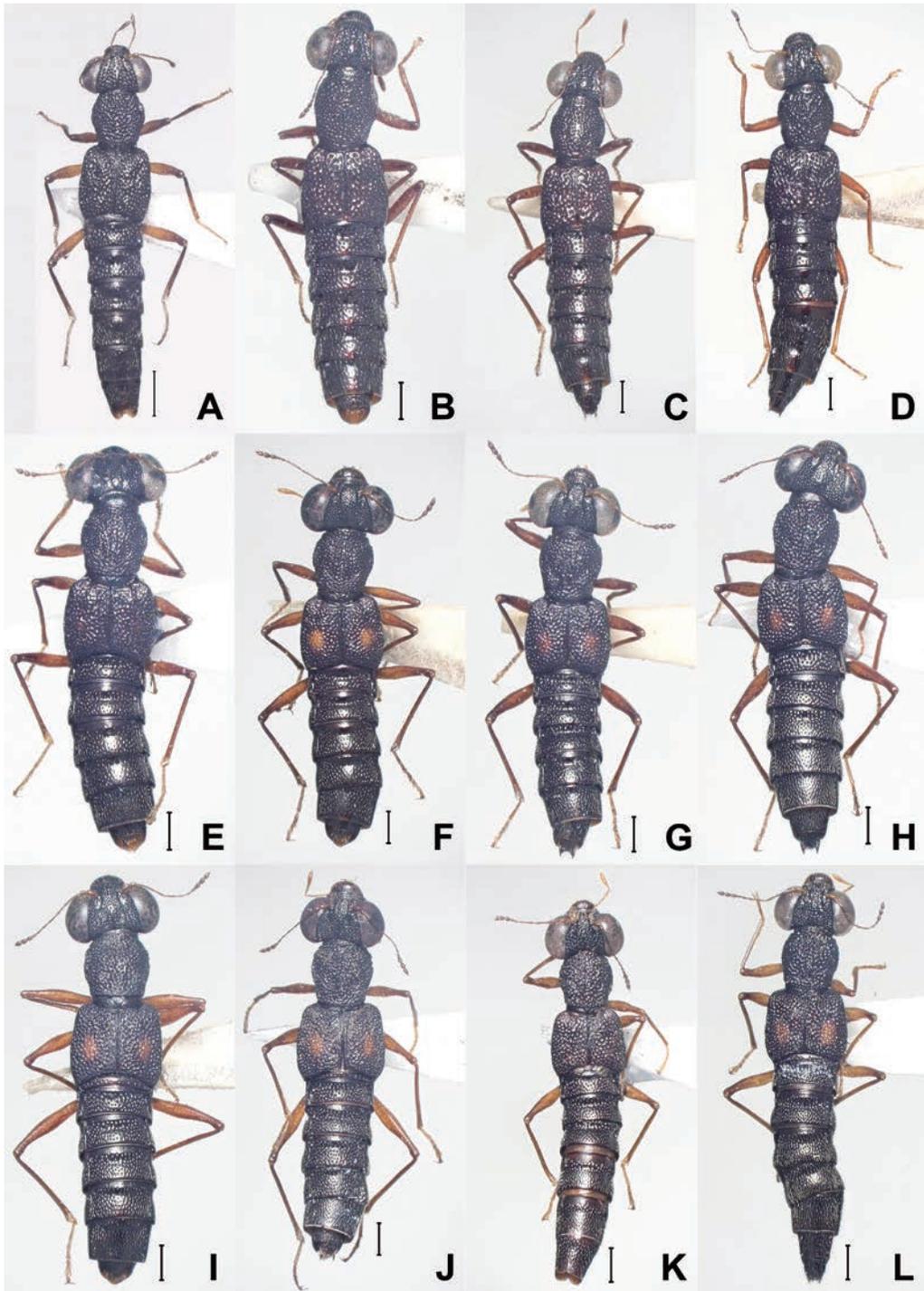


Fig. 136. A, *Stenus mystiformis* Naomi, Nomura & Putz sp. nov. (Odami, Ehime); B–D, *S. sharpi* Bernhauer & Schubert (B, Towada, Aomori; C, Daibosatsu, Yamanashi; D, Shimoda, Amakusa); E–J, *S. gestroi* Fauvel (E, Tokara-Naka Is., Kagoshima; F, Hatsuno, Amami Is.; G, Awa, Okinawa Is.; H, Piluchi, Taiwan; I, Nanshan-chi, Taiwan; J, Lushan, Taiwan); K–L, *S. guttalis* Fauvel (K, Sonai, Iriomote Is.; L, Theun-Hinboun, Laos).