

Four New Spiders (Arachnida, Araneae) of the Families Liphistiidae, Ctenizidae, Araneidae and Ctenidae from Vietnam

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Abstract. Four new species of spiders (Arachnida, Araneae) are described from Vietnam: *Abcathela sapana* sp. nov. (Liphistiidae) from Lao Cai Province, northern Vietnam, *Latouchia bachmaensis* sp. nov. (Ctenizidae) and *Argiope vietnamensis* sp. nov. (Araneidae) from Thua Thien Hue Province, central Vietnam and *Ctenus saci* sp. nov. (Ctenidae) from Phu Quoc Island, southern Vietnam. Among these species, *Abcathela sapana* is of great significance, having peculiar ocular arrangement and lacking anterior median eyes.

Key words: Taxonomy, Araneae, Liphistiidae, Ctenizidae, Araneidae, Ctenidae, Vietnam.

Introduction

Between 1994 and 2003, zoological expeditions were repeatedly made in various places of Vietnam by the National Museum of Nature and Science (formerly National Science Museum), Tokyo in collaboration with the Institute of Ecology and Biological Resources (IEBR), Vietnamese Academy of Sciences and Technology, Hanoi. The expeditions were supported by the Grants-in-aid for Scientific Research of the International Research Programs of the Ministry of Education, Science, Sports and Culture, Japan. During these expeditions the present author carried out field researches aimed at studying spider fauna, and several papers were published from the results of studies based on the material obtained (Ono, 1997, 1999, 2000, 2002, 2003, 2004a, b, 2009a).

On the other hand, the author made some arachnological researches mainly in the central and southern parts of Vietnam in 2008 and 2009 under the research project “Biodiversity Inventory in the Western Pacific Region” conducted by the National Museum of Nature and Science, Tokyo (Ono, 2009a).

Spider specimens of various families were col-

lected at both the projects and were prepared for taxonomic studies. This paper reports a part of the results of taxonomic studies of the Vietnamese material with descriptions of four new species of the families Liphistiidae, Ctenizidae, Araneidae and Ctenidae.

Materials and Methods

Specimens used for this study were selected from the whole Vietnamese material preserved in the Arachnid Collection of the Institute of Zoology of the National Museum of Nature and Science, Tokyo, and classified into four species of the families Liphistiidae, Ctenizidae, Araneidae and Ctenidae. The specimens were obtained by hand collecting from forests of mountainous areas in Lao Cai Province, northern Vietnam [primary cultivated area around O Quy Ho Pass (Fig. 1), altitude 1,750 m, near Sa Pa], and Thua Thien Hue Province, central Vietnam [evergreen broad-leaved forests in Bach Ma National Park (Fig. 2), altitude around 1,200 m, and in Tri Sao, down from Bach Ma, altitude 400–500 m], except one specimen from lower place on Phu Quoc Island, southern Vietnam [along a stream at Duong Dong (Fig. 3), altitude about 50 m].



Figs. 1–4. 1, habitat of *Abcathela sapana* Ono, sp. nov. at O Quy Ho Pass, altitude 1,750 m, Lao Cai Province. 2, globular room at the bottom of tubular retreat of *Abcathela sapana*, body length of spider 13.4 mm. 3, habitat of *Latouchia bachmaensis* Ono, sp. nov. at the Bach Ma National Park, altitude around 1,200 m, Thua Thien Hue Province. 4, habitat of *Ctenus saci* Ono, sp. nov. at Duong Dong, altitude about 40 m, Phu Quoc Island, southernmost Vietnam.

The liphistiid and ctenizid spiders were carefully taken out from their tubular retreats in the earth by digging tool, while the araneid and ctenid spiders were caught using butterfly net. All the specimens were preserved in 76% ethanol and examined in Tokyo under a LEICA MZ16 stereomicroscope.

After a careful examination these four species were identified as members of the genera *Abcathela* (Liphistiidae), *Latouchia* (Ctenizidae), *Argiope* (Araneidae) and *Ctenus* (Ctenidae) and were considered to be new to science. These species are described and illustrated in following pages.

The abbreviations of morphological terms used in the present paper are as follows: ALE, anterior lateral eye; AME, anterior median eye;

PLE, posterior lateral eye; PME, posterior median eye. The representation of the spination (formation of spines) of legs follows Ono (1988). Measurements were made with objective and ocular micrometers as well as a digimatic caliper (Mitutoyo CD-S15C) for larger specimens. The terms prosoma and opisthosoma are used as same as carapace and abdomen as usual and are measured without appendages and spinnerets. Coxae and trochanters of legs are omitted at measurement.

Type specimens of the new species are for the moment preserved in the Collection of the Department of Zoology, National Museum of Nature and Science, Tokyo (NSMT), in the joint ownership between the Department of Zoology, National Museum of Nature and Science, and the

Institute of Ecology and Biological Resources,
Vietnamese Academy of Sciences and Technology,
Hanoi.

Descriptions of New Species

Family Liphistiidae

Genus *Abcathela* Ono, 2000

Abcathela sapana sp. nov.

(Figs. 2, 5, 6, 11–16)

Diagnosis. This new species resembles *Ab-*

cathela abca (Ono, 1999) from Yenbai, northern Vietnam, and *Abcathela yunnanensis* (Song et Haupt, 1984) and *Abcathela wosanensis* (Wang et Jiao, 1995), comb. nov., both from Yunnan Province, China, and stands closer to the Chinese species than to the Vietnamese species. Their female genitalia are similar in shape, but the lateral and median bursae of the new species are same in size and set on much longer stems (Fig. 16). This new species is also easily distinguishable from all other congeners in having only six eyes (Fig. 13). The direct eyes are absent.



Figs. 5–8. Opening part of the retreats. 5, 6, *Abcathela sapana* Ono, sp. nov., trap door 13 mm wide. 7, 8, *Lathochia bachmaensis* Ono, sp. nov., trap door 30 mm wide.

Type specimens. Holotype: female from O Quy Ho Pass, altitude 1,750 m, near Sa Pa, Lao Cai Province, northern Vietnam, 17-V-2003, H. Ono leg. (NSMT-Ar 8520). Paratypes: three females and three juveniles (non type), same data as for the holotype (NSMT-Ar 8521–8523); one female, same locality, 17-V-2002 (NSMT-Ar 8530).

Description. Female (holotype; male unknown): Measurement: body length 13.38 mm; prosoma length 5.57 mm, width 4.51 mm; opisthosoma length 7.35 mm, width 6.30 mm; lengths of palp and legs [total length (femur+patella+tibia+metatarsus+tarsus)]: palp 10.41 (3.67+2.00+2.10+—+2.63), leg I 11.76 mm (3.78+2.05+2.10+2.15+1.47), II 11.36 mm (3.57+2.05+2.10+2.20+1.44), III 11.62 mm (3.26+2.00+2.05+2.63+1.68), IV 17.06 mm (5.25+2.73+2.78+4.20+2.10).

Prosoma (Figs. 11–12): longer than wide (length/width 1.23), with a deep median furrow

and distinct cervical grooves and radial furrows. Head high, eyes compactly set on the ocular tubercle (Fig. 13), ALE>PLE>PME in size (almost 4:3:2 in ratio), AME absent, PME-PME>PME-PLE (2:1), clypeus as same as ALE-ALE and PME-PME. Sternum narrow, much longer than wide (length/width 1.40).

Chelicerae robust and with 11 or 13 strong teeth variable in size, palp furnished with a strong claw. Legs furnished with strong hairs and spines, upper claws of legs have two teeth. Leg formula: IV–I–III–II.

Opisthosoma: oval, with sclerotized plates (Figs. 11, 14), slightly longer than wide (length/width 1.17). Posterior median spinnerets reduced and completely fused, with a pair of strong hairs on the top.

Female genitalia (Figs. 15–16): genital field unremarkable with several spines (Fig. 15). Two pairs of spermathecae present and close to each other, lateral and median bursae same in size and



9



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Figs. 9, 10. 9, *Latouchia bachmaensis* Ono, sp. nov., one of the paratypes, female (NSMT-Ar 8529), dorsal view, body length 27.4 mm. 10, *Argiope vietnamensis* Ono, sp. nov., holotype, female (NSMT-Ar 8531), dorsal view, body length 22.5 mm.

set on long stems (Fig. 16).

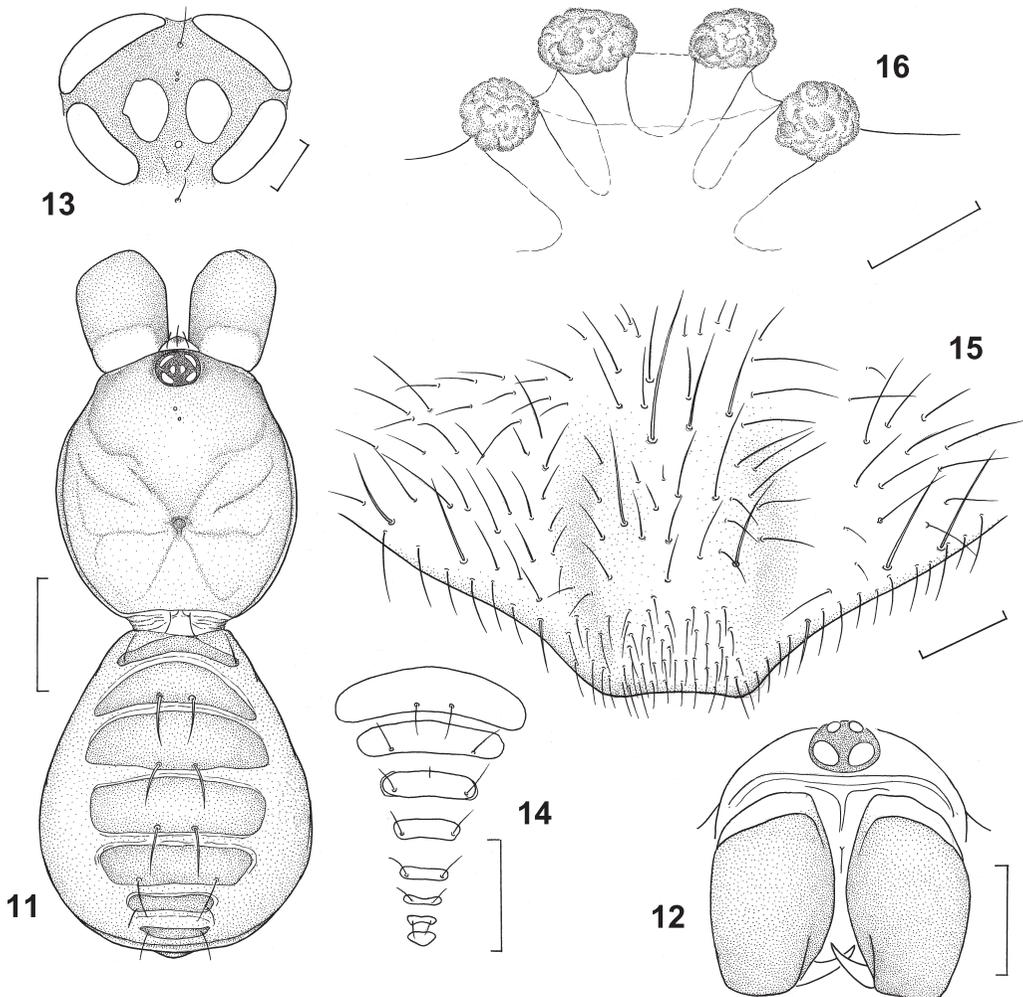
Coloration and markings (Fig. 11): carapace yellowish brown, with darker head and black ocular tubercle, chelicerae brown with dark reddish brown fangs, maxillae, labium and sternum yellowish brown, palps and legs uniformly yellowish brown. Opisthosoma light beige dorsally, with light brown dorsal plates, ventral side lighter with dark yellow ventral plate and spinnerets.

Variation. The body length of the paratypes ranges between 11.55 and 12.08 mm.

Distribution. Northern Vietnam (at present known only from the type locality).

Etymology. The specific name of this new spider is derived from the name of the city near the type locality.

Remarks. The retreats of this spider were made in the earth, which was kept moist, and the trap doors were easily breakable with a few silk linings (Figs. 5–6). The retreat's tubes were 10–15 cm long with a globular room at the end of each tube (Fig. 4).



Figs. 11–16. *Abcathela sapana* Ono, sp. nov., holotype, female (NSMT-Ar 8520). 11, pro- and opisthosoma, dorsal view. 12, prosoma, frontal view. 13, eyes, dorsal view. 14, sclerotized plates on opisthosoma, posterior view. 15, genital field, ventral view. 16, female genitalia, dorsal view. Scale bars: 2.5 mm for Fig. 11, 2 mm for Fig. 12, 0.5 mm for Fig. 15, and 0.25 mm for Figs. 13 and 16.

Family **Ctenizidae**Genus *Latouchia* Pocock, 1901*Latouchia bachmaensis* sp. nov.

(Figs. 7–9, 17–23)

Diagnosis. In the genus *Latouchia* established by Pocock (1901) about 20 species are known all from eastern Asia. Of these, *Latouchia cunicularia* (Simon, 1886) described from southern Vietnam was the only known species from Vietnam. This new species seems to be closer to the species distributed from Japan to Taiwan and eastern edge of China (Song, Zhu & Chen, 1999; Haupt & Shimojana, 2001; Ono, 2001, 2009b), for instance *Latouchia formosensis* Kayashima, 1943, from Taiwan. However, these central Vietnamese new species can be distinguishable from the Taiwanese species by the larger size, different arrangement of eyes and the shape of female genitalia.

Type specimens. Holotype: female from Bach Ma National Park, altitude around 1,200 m, Thua Thien Hue Province, central Vietnam, 7–11–VI–2002, H. Ono leg. (NSMT-Ar 8524). Paratypes: five females, same data as for the holotype (NSMT-Ar 8525–8529).

Description. Female (holotype; male unknown). Measurement: body length 28.9 mm; prosoma length 12.6 mm, width 10.5 mm; opisthosoma length 16.2 mm, width 10.6 mm; lengths of palp and legs [total length (femur+patella+tibia+metatarsus+tarsus)]: palp 23.8 (8.6+4.8+5.2+—+5.2), leg I 27.9 mm (8.7+5.6+5.6+5.0+3.0), II 24.1 mm (7.9+5.1+4.6+4.3+2.2), III 23.2 mm (7.1+5.5+3.1+4.0+3.5), IV 31.3 mm (8.8+5.8+6.2+6.2+4.3).

Prosoma (Figs. 9, 17): longer than wide (length/width 1.20), with a deep median furrow and distinct cervical grooves and radial furrows. Eyes compactly set on the ocular tubercle (Fig. 18), ALE>PLE>AME>PME in size (9:8:5:4 in ratio), AME-AME=AME-ALE, PME-PME>PME-PLE (6:1), clypeus very narrow, median ocular area wider than long (length/width 0.6), wider behind than in front (anterior width/posterior width 0.6). Labium rounded, almost as long

as wide, sternum longer than wide (length/width 1.3), with a large sigillum at the middle (Fig. 19).

Chelicera has eight promarginal and six large, retromarginal teeth and a strong fang (Fig. 20). Legs I and II and palps furnished with short and strong spines on pro- and retrolateral sides of tibiae, metatarsi and tarsi. Upper claws of legs furnished with one or two teeth at the base, palpal claw present. Leg formula: IV–I–II–III.

Opisthosoma (Figs. 9, 17): oval, without sclerotized dorsal plate, longer than wide (length/width 1.53). Two pairs of spinnerets present (Fig. 22), median ones small, lateral ones thick and short, with three segments and some long spigots (Fig. 23).

Female genitalia with a pair of globular spermathecae set on wide stems (Fig. 21)

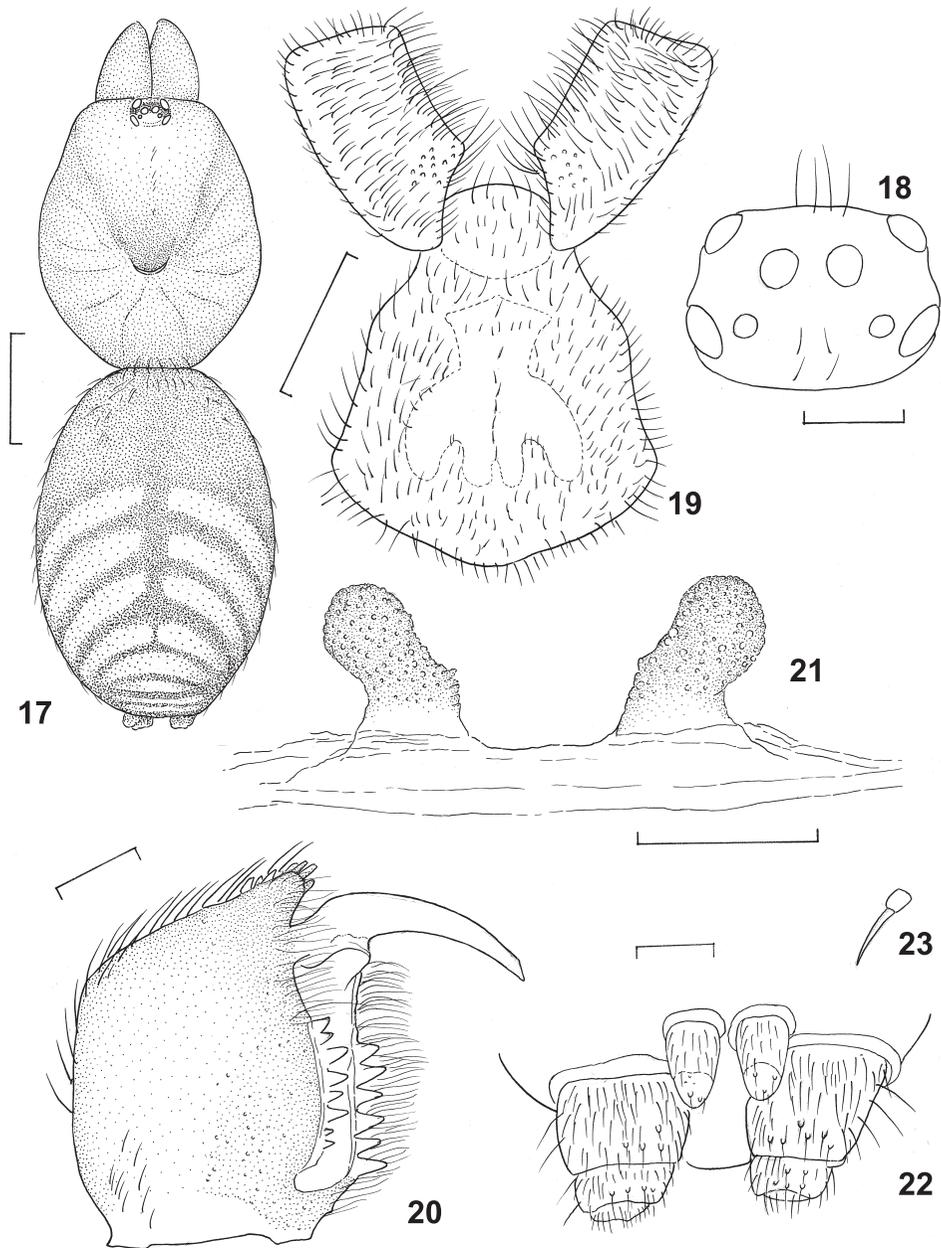
Coloration and markings (Figs. 9, 17): carapace chestnut brown, with darker ocular area, chelicerae dark reddish brown, maxillae and labium brown, sternum yellowish brown, palps and legs I and II dark yellowish brown, legs III and IV much lighter and orange yellow. Opisthosoma blackish grey dorsally, with some pairs of white bands posteriorly, ventral side dark grey, without any markings, spinnerets light yellowish brown. In nature the body is much darker.

Variation. The body length of the paratypes ranges between 23.1 and 32.6 mm. Coloration of carapace and legs is variable from yellowish brown to blackish brown. The white markings on opisthosoma dorsum of some specimens are indistinct.

Distribution. Central Vietnam (at present known only from the type locality).

Etymology. The specific name of this new spider is derived from the name of the National Park, the type locality.

Remarks. The spider was found only in a few places in the park. However, in a case more than 200 trap doors were counted in a small area (2×5 m) at the bank along a track. The trap doors (Figs. 7–8) of the spiders collected were measured: 28×27 mm at the minimum, and 35×28 mm at the maximum.



Figs. 17–23. *Latouchia bachmaensis* Ono, sp. nov., holotype, female (NSMT-Ar 8524), except Fig. 20, a paratype (NSMT-Ar 8525). 17, pro- and opisthosomata, dorsal view. 18, eyes, dorsal view. 19, maxillae, labium and sternum, ventral view. 20, chelicera, inner view. 21, female genitalia, dorsal view. 22, spinnerets, ventral view. 23, image of a spigot on the posterior spinneret. Scale bars: 5 mm for Figs. 17 and 19, 2 mm for Fig. 20, and 1 mm for Figs. 18 and 21.

Family **Araneidae**Genus *Argiope* Audouin, 1826*Argiope vietnamensis* sp. nov.

(Figs. 10, 24–27)

Diagnosis. This new species is peculiar in the genus *Argiope* in Asian and Western Pacific Region and characteristic with combination of the following general characters: 1) trapezoidal shape of opisthosoma with a pair of anterior humps, 2) no distinct dark colored band on opisthosoma dorsum (Fig. 10), 3) venter of opisthosoma black with striking white lines and three pairs of spots (Fig. 24). In genital morphology, *Argiope minuta* Karsch, 1879 distributed widely from Japan to southeastern China and *Argiope katherina* Levi, 1983 known from northern Australia quite resemble this new species, but the depressions of epigynum of the new species are smaller than those of the two known species and rim and septum are also different-shaped (cf. Figs. 26–27 of the present paper and Figs. 205–207 and 211–213 in Levi, 1983, p. 301).

Type specimen. Holotype: female from Tri Sao, altitude 400–500 m, near Bach Ma National Park, Thua Thien Hue Province, central Vietnam, 9–VI–2002, H. Ono leg. (NSMT-Ar 8531). Paratypes: two immature females, same locality as for the holotype, 7–V–2003 (NSMT-Ar 8532).

Description. Female (holotype; male unknown). Measurement: Body length 22.5 mm; prosoma length 8.2 mm, width 7.5 mm; opisthosoma length 13.4 mm, width 11.0 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 44.4 mm (12.9+4.0+10.1+13.8+3.6), II 43.9 mm (13.1+4.0+10.3+13.3+3.2), III 27.3 mm (9.3+3.1+5.6+7.0+2.3), IV 41.8 mm (14.1+4.3+8.4+12.4+2.6).

Prosoma (Fig. 10): carapace densely haired, flat with a median furrow, longer than wide (length/width 1.09). Eyes: anterior eye row straight, posterior eye row procurved in dorsal view, small in size, AME=PME=PLE>ALE (5:5:5:3 in ratio), AME-AME<AME-ALE

(1:2), PME-PME<PME-PLE (1:2), clypeus narrow, as same as the diameter of AME or AME-AME much, median ocular area longer than wide (length/width 1.12), wider behind than in front (anterior width/posterior width 0.79). Labium wider than long (length/width 0.70), sternum scutiform, slightly longer than wide (length/width 1.02), furnished with four pairs of tubercles on lateral margin, and two pairs of swelling laterally (Fig. 25).

Chelicera furnished with four teeth on promargin and three teeth on retromargin of fang furrow and with a short fang. Legs furnished with strong spines on femora, patella, tibiae and metatarsi. Upper claws of legs have some long teeth.

Opisthosoma (Fig. 10): long pentagonal, with a pair of small, anterior lateral humps. Anterior spinnerets are conic and short, posterior spinnerets paddle-shaped, larger than the anterior ones, colulus distinct.

Female genitalia (Figs. 26–27): epigynum wider than long in ventral view, angular in lateral view, with wide rim, narrow septum and round depressions.

Coloration and markings (Fig. 10): carapace yellowish brown, chelicera, maxillae and labium light yellowish brown, sternum dull whitish yellow. Opisthosoma dorsum white anteriorly, light yellow at the middle and brown posteriorly, venter strikingly marked with black and white bands and spots. In nature, carapace is silver white and the opisthosoma dorsum is white with black markings and lacking yellow bands.

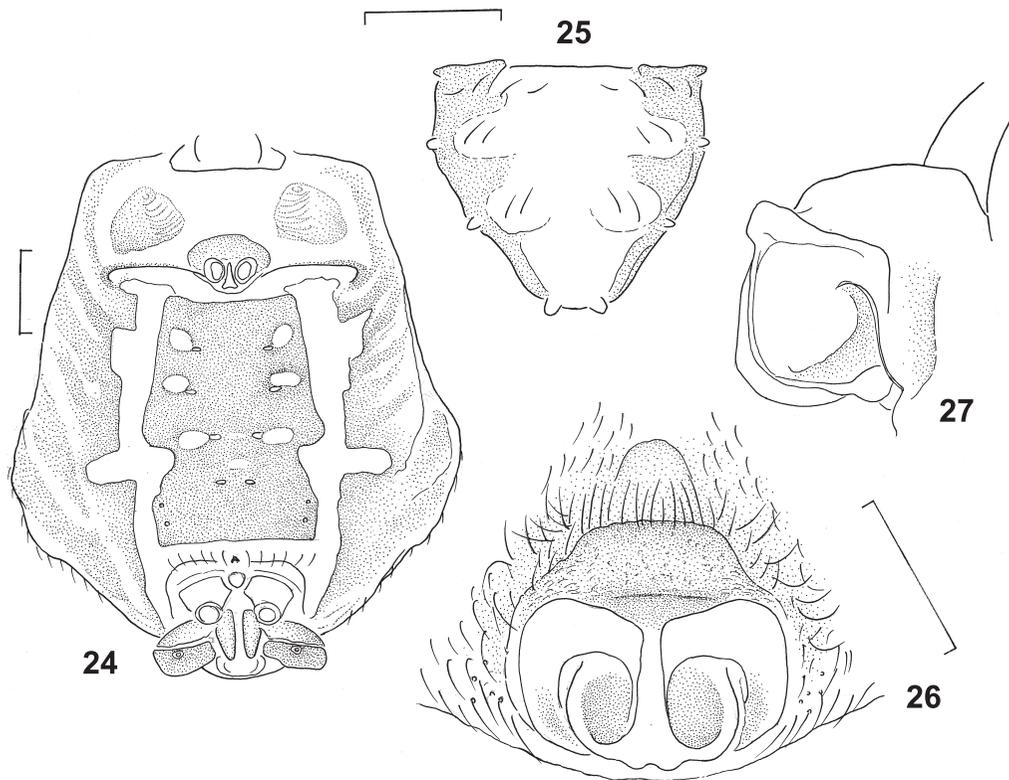
Distribution. Central Vietnam (at present known only from the type locality).

Etymology. The specific name of the new spider is derived from the name of the country.

Family **Ctenidae**Genus *Ctenus* Walckenaer, 1805*Ctenus saci* sp. nov.

(Figs. 28–33)

Diagnosis. *Ctenus* is a large genus including 240 species in the world, which accounts more



Figs. 24–27. *Argiope vietnamensis* Ono, sp. nov., holotype, female (NSMT-Ar 8531). 24, opisthosoma, ventral view. 25, sternum, ventral view. 26, epigynum, ventral view. 27, epigynum, lateral view. Scale bars: 2 mm for Figs. 24–25 and 1 mm for Figs. 26–27.

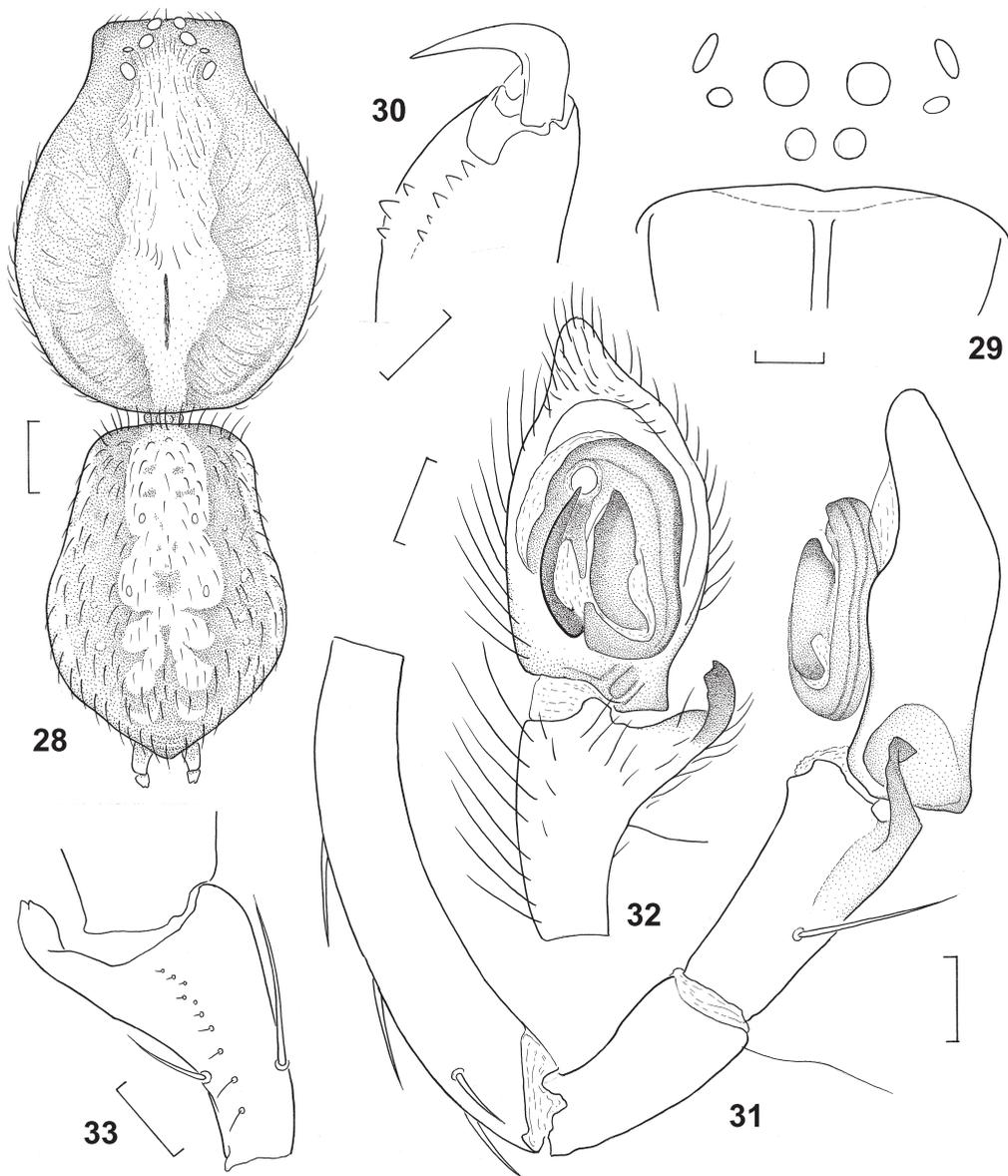
than half the number of species of the whole family Ctenidae (ca. 450 species). The genus is, however, not abundant in Asia and only about 40 species are hitherto known. Of these, *Ctenus flavidus* Hogg, 1922 is the only known species from Vietnam (type locality: Mt. Langbian in Lam Dong Province), but the holotype was an immature female and not comparable with the male of this new species. Besides, this new species seems very different from that in the shape of labium, in eye arrangement as well as in the coloration and markings of the body. *Ctenus ramosus* Thorell, 1887, and *Ctenus robustus* Thorell, 1897, both described from Myanmar seem to be related to this new species in the structure of male palpal organ, but the new species can be distinguished from these by the shape of both median apophysis and retrolateral tibial apophysis. The retrolateral tibial apophysis

of *Ctenus saci* is peculiarly simple and the median apophysis is much larger than those of the species from Myanmar.

Type specimen. Holotype: male from Duong Dong, altitude about 40 m, Phu Quoc Island, southern Vietnam, 19–III–2008, H. Ono leg. (NSMT-Ar 8533).

Description. Male (holotype; female unknown). Measurement: body length 10.45 mm; prosoma length 5.57 mm, width 4.73 mm; opisthosoma length 5.04 mm, width 3.46 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 16.59 mm (4.20+2.20+4.20+4.41+1.58), II 15.64 mm (4.20+2.20+3.57+4.20+1.47), III 13.53 mm (3.71+1.89+2.89+3.78+1.26), IV 19.74 mm (4.99+2.05+4.62+6.36+1.72).

Prosoma (Fig. 28): carapace longer than wide (length/width 1.18), furnished with fine hairs,



Figs. 28–33. *Ctenus saci* Ono, sp. nov., holotype, male (NSMT-Ar 8533). 28, pro- and opisthosomata, dorsal view. 29, head, frontal view. 30, chelicera, ventral view. 31, palp, retrolateral view. 32, palpal tibia and tarsus, ventral view. 33, palpal tibia, dorsal view. Scale bars: 1 mm for Fig. 28, and 0.5 mm for Figs. 29–33.

median furrow present and very long, radial lines indistinct. Eyes in typical arrangement for Ctenidae (Figs. 28–29), $PME > PLE = AME > ALE$ (8:6:6:4 in ratio), $AME - AME < AME - ALE$ (3:5), $PME - PME < PME - PLE$ (5:9), median ocular area wider than long (length/width 0.82), wider behind than in front (anterior width/

posterior width 0.72), clypeus extremely short, almost as same as $AME - AME$. Chelicera (Fig. 30) with three teeth on promargin of fang furrow, five on retromargin, maxilla much longer than labium, labium longer than wide (length/width 1.11), sternum much longer than wide (length/width 1.25).

Legs: very slender, with some long teeth on tarsal claws, claw tuft developed; spination: femora dorsally 0–1–1–1 (I–III) or 1–1–1–1 (IV), prolaterally 0–0–1–1 (I) or 0–1–1–2 (II–IV), retrolaterally 0–1–2–1 (I), 0–1–1–2 (II–III) or 0–0–1–2 (IV); patella I–IV dorsally none, pro- and retrolaterally each 1; tibiae pro- and retrolaterally each 1 (I–II) or each 1–1 (III–IV), ventrally 2–2–2–2ap (the last 2 spines apically) (I–II) or 2–2–2ap (III–IV); metatarsi prolaterally 1–1–2ap (I–IV), retrolaterally 1–1–2ap (I–III) or 1–1–1–2ap (IV), ventrally 2–2–1ap (I–IV). Leg formula: IV–I–II–III.

Male palp (Figs. 31–33): femur simple, the longest segment, with strong dorsal spines; patella short, without spine; tibia longer than patella, furnished with two spines and long strong hairs, a developed retrolateral apophysis present (Figs. 31–33). Cymbium marginated proximally, with sclerotized ventral process, retrolateral furrow remarkable, about one-third the length of cymbium (Fig. 31), palpal organ compactly set, with a large median apophysis, embolic division thick and short, tip of embolus on a small membranous process (Fig. 32).

Opisthosoma (Fig. 28): longer than wide (length/width 1.46), the shape resembles those of coelotids or lycosids. Anterior and posterior spinnerets two-segmented, cylindrate and short, colulus present.

Coloration and markings (Fig. 28): carapace dark brown, with light brown longitudinal median band with black median furrow and some radial lines, chelicerae light reddish brown, maxillae, labium and sternum yellowish brown, palps and legs brown. Opisthosoma greenish gray dorsally, lighter at the middle, without indistinct marking, darker ventrally, spinnerets light yellowish brown.

Distribution. Southern Vietnam (at the present known only from the type locality).

Etymology. This species is dedicated to Mr. Pham Dinh Sac, an excellent researcher of Arachnology in Vietnam.

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ベトナム産ハラフシグモ科、トタテグモ科、コガネグモ科
およびシボグモ科のクモ類の4新種

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ベトナム産のクモ類(クモ綱, クモ目)の4新種を記載し, それぞれの特徴及び類縁関係について記した。 *Abcathela sapana* sp. nov. (ハラフシグモ科, 北部Lao Cai省産), *Latouchia bachmaensis* sp. nov. (トタテグモ科, 中部Thua Thien Hue省産), *Argiope vietnamensis* sp. nov. (コガネグモ科, 中部Thua Thien Hue省産), *Ctenus saci* sp. nov. (シボグモ科, 南部Phu Quoc島産)。そのうち *Abcathela sapana* はハラフシグモ科としては特異な眼の配列をもち, 前中眼を欠くこととくに興味深い。