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Digeneans Parasitic in Freshwater Fishes (Osteichthyes) of Japan. XII. A List of the Papers of the Series, a Key to the Families in Japan, a Parasite-Host List, a Host-Parasite List, Addenda, and Errata

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Abstract As a final paper of a series that reviews adult digeneans (Trematoda) parasitic in freshwater fishes (Osteichthyes) of Japan, this paper presents a list of the papers of the series, a key to the families in Japan, a parasite-host list, a host-parasite list, addenda, and errata.
Key words: Digenea, freshwater fishes, Japan, review, key to families, parasite-host list, host-parasite list, addenda, errata.

Introduction

This is the twelfth (final) paper of a series that reviews adult digeneans (Trematoda) parasitic in freshwater fishes (Osteichthyes) of Japan (Shimazu, 2013). This paper deals with a list of the papers of the series, a key to the families in Japan, a parasite-host list, a host-parasite list, addenda, and errata.

The Introduction, Materials, and Methods for the series were described in the first paper (Shimazu, 2013). The purpose of the series was given in the Introduction. While preparing the series, I wrote a brief review of the adult digeneans known then from Japanese freshwater fishes (Shimazu, 2016e).

List of the Papers of the Series

Shimazu, T. 2013. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. I. Aporocotylidae, Bivesiculidae and Haploporidae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 39: 167–184.

Shimazu, T. 2014a. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. II. Gorgoderidae and Orientocreadiidae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 40: 53–78.

Shimazu, T. 2014b. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. III. Azygiidae and Bucephalidae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 40: 167–190.

Shimazu, T. 2015a. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. IV. Derogenidae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 41: 77–103.

Shimazu, T. 2015b. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. V. Didymozoidae and Isoparorchiidae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 41: 201–216.

Shimazu, T. 2016a. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. VI. Lissorchiidae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 42: 1–22.

Shimazu, T. 2016b. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. VII. Allocreadiidae: *Allocreadium*. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 42: 55–79.

Shimazu, T. 2016c. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. VIII. Allocreadiidae, *Crepidostomum*. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 42: 107–122.

Shimazu, T. 2016d. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. IX. Opecoelidae, Opecoelinae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 42: 163–180.

Shimazu, T. 2017a. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. X. Opecoelidae, Plagioporinae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 43: 1–28.

Shimazu, T. 2017b. Digeneans parasitic in freshwater

fishes (Osteichthyes) of Japan. XI. Cryptogonimidae and Heterophyidae. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 43: 101–118.

Shimazu, T. 2017c. Digeneans parasitic in freshwater fishes (Osteichthyes) of Japan. XII. A key to the families in Japan, a parasite-host list, a host-parasite list, addenda, and errata. Bulletin of the National Museum of Nature and Science, Series A (Zoology), 43: 129–143.

Key to the Families in Japan

The known adult digeneans, except Opecoelidae gen. sp. and *Allocreadium* sp., *incertae sedis*, of freshwater fishes in Japan are classified into 15 families in 11 superfamilies (see also a parasite-host list below). The following key is designed to facilitate identification of them to family level but not to show phylogenetic relationships. The serial numbers of the papers that deal with the relevant families are shown in the brackets ([ ]) after the respective family names.

Parasitic in circulatory system (heart and blood vessels); oral and ventral suckers absent ..... Family Aporocotylidae [I]

Parasitic in lymphatic system (lymphatic vessels of connective tissue); oral and ventral suckers present ..... Family Didymozoidae [V]

Parasitic in urinary system (urinary bladder and ureters); oral and ventral sucker present ..... Family Gorgoderidae [II]

Parasitic in digestive system (alimentary canal and its associated organs) 1

1.1. Parasitic in air bladder ..... Family Isoparorchiidae [V]

1.2. Parasitic in alimentary canal and its associated organs other than air bladder 2

2.1. Oral and ventral suckers present 3

2.2. Oral and ventral suckers absent 4

3.1. Tegument spinose 5

3.2. Tegument smooth 6

4.1. Mouth anteroterminal ..... Family Bivesiculidae [I]

4.2. Mouth about midventral ..... Family Bucephalidae [III]

5.1. Genital pore lateral to marginal, at about level of ventral sucker ..... Family Lissorchiidae [VI]

5.2. Genital pore median, in forebody 7

6.1. Genital pore submedian, in forebody ..... Family Opecoelidae [IX, X]

6.2. Genital pore median, in forebody 8

7.1. Testis single, in hindbody ..... Family Haploporidae [I]

7.2. Testes two, in hindbody 9

8.1. Cirrus pouch present ..... Family Allocreadiidae [VII, VIII]

8.2. Cirrus pouch absent 10

9.1. Testes submedian, oblique; ventrogenital sac absent ..... Family Orientocreadiidae [II]

9.2. Testes submedian or lateral, almost symmetrical; ventrogenital sac present 11

10.1. Prostatic sac present; sinus sac absent ..... Family Azygiidae [III]

10.2. Prostatic sac absent; sinus sac present ..... Family Derogenidae [IV]

11.1. Ovary multilobulate; gonotyls present ..... Family Cryptogonimidae [XI]

11.2. Ovary entire; gonotyl absent ..... Family Heterophyidae [XI]

Parasite-Host List

A total of 52 identified and 12 unidentified digenean species in 26 genera in 15 families in 11 superfamilies, and Opecoelidae gen. sp. and *Allocreadium* sp., *incertae sedis*, are known at present from freshwater fishes in Japan (see also a host-parasite list below). The superfamily, family, generic, and species names of the parasites and the species names of the hosts are arranged in alphabetical order. The serial numbers of the papers of the present review are given in the brackets ([ ]) after the names of the parasites. The type hosts are also indicated in the parentheses (( )) after the names of the hosts.

Superfamily **Allocreadioidea** Looss, 1902 [VII–IX]

Family **Allocreadiidae** Looss, 1902 [VII, VIII]

Allocreadium aburahaya Shimazu, 2003 [VII]
- *Phoxinus steindachneri* (type host)

Allocreadium brevivitellatum Shimazu, 1992 [VII]
- *Rhynchocypris percnurus* (type host)

Allocreadium gotoi (Hasegawa and Ozaki, 1926) Shimazu, 1988 [VII]
- *Gnathopogon elongatus elongatus*
- *Gymnogobius opperiens*
- *Misgurnus anguillicaudatus* (type host)

Allocreadium hasu Ozaki, 1926 [VII]
- *Gnathopogon elongatus elongatus*
- *Nipponocypris temminckii*
- *Opsariichthys uncirostris uncirostris* (type host)
- *Zacco platypus*

Allocreadium japonicum Ozaki, 1926 [VII]
- *Gasterosteus aculeatus leiurus*
- *Nipponocypris temminckii*
- *Phoxinus oxycephalus*
- *Tribolodon brandtii*
- *Zacco platypus* (type host)

Allocreadium shinanoense Shimazu, 2003 [VII]
- *Phoxinus steindachneri* (type host)

Allocreadium sp. of Kataoka and Momma (1934), *incertae sedis* [VII]
- *Plecoglossus altivelis altivelis*

Allocreadium sp. of Shimazu (1988) [VII]
- *Gymnogobius opperiens*

Allocreadium sp. of Shimazu (2005) [VII]
- *Tribolodon hakonensis*

Allocreadium sp. of Shimazu (2008) [VII]
- *Nipponocypris temminckii*

Allocreadium sp. of Shimazu, Urabe, and Grygier (2011) [VII]
- *Tanakia lanceolata*

Allocreadium tamoroko Shimazu and Urabe, 2013 [VII]
- *Gnathopogon elongatus elongatus* (type host)

Allocreadium tosai Shimazu, 1988 [VII]
- *Oncorhynchus mykiss*
- *Rhynchocypris percnurus*
- *Salvelinus leucomaenis leucomaenis*
- *Tribolodon hakonensis* (type host)
- *Tribolodon sachalinensis*

Allocreadium tribolodontis Shimazu and Hashimoto, 1999 [VII]
- *Tribolodon hakonensis*
- *Tribolodon sachalinensis* (type host)

Crepidostomum chaenogobii Yamaguti and Matumura, 1942 [VIII]
- *Cottus amblystomopsis*
- *Cottus hangiongensis*
- *Cottus nozawae*
- *Gymnogobius opperiens*
- "*Chaenogobius annularis urotaenia* Hilgendorf" (type host)

Crepidostomum farionis (Müller, 1780) Lühe, 1909 [VIII]
- *Oncorhynchus masou masou*
- *Oncorhynchus mykiss*
- *Salvelinus fontinalis*
- *Salvelinus leucomaenis leucomaenis*
- *Salvelinus malma malma*

Crepidostomum metoecus (Braun, 1900) Braun, 1900 [VIII]
- *Barbatula toni*
- *Cottus nozawae*
- *Gasterosteus aculeatus*
- *Gymnogobius castaneus*
- *Gymnogobius urotaenia*
- *Oncorchynchus keta*

Oncorchynchus masou masou
Oncorchynchus mykiss
Parahucho perryi
Pungitius pungitius
Pungitius tymensis
Salmo trutta
Salvelinus fontinalis
Salvelinus leucomaenis leucomaenis
Salvelinus malma malma

Family **Opecoelidae** Ozaki, 1925 [IX, X]

Coitocaecum plagiorchis Ozaki, 1926 [IX]
Anguilla japonica
Coreoperca kawamebari
Cottus reinii
"*Gobius similis* Gill"
"[Gori]"
Gymnogobius isaza
Gymnogobius urotaenia
Misgurnus anguillicaudatus
Odontobutis obscura (type host)
Rhinogobius flumineus
"*Rhinogobius* sp."
Rhinogobius sp. BW
"Small GORO"
Tachysurus aurantiacus
Tachysurus nudiceps
Tridentiger brevispinis

Dimerosaccus oncorhynchi (Eguchi, 1931) Shimazu, 1980 [IX]
Cottus nozawae
Cottus pollux
Liobagrus reinii
Odontobutis obscura
Oncorhynchus masou ishikawae (type host)
Oncorhynchus masou masou
Rhinogobius brunneus
Rhinogobius flumineus
Rhinogobius fluviatilis
Rhinogobius nagoyae
"*Rhinogobius* sp."
Rhinogobius sp. CO
Rhinogobius sp. OR
Salvelinus leucomaenis leucomaenis
Salvelinus leucomaenis pluvius
Tridentiger brevispinis

Neoplagioporus ayu (Takahashi, 1928) Shimazu, 1990 [X]
Plecoglossus altivelis altivelis (type host)

Neoplagioporus elongatus (Goto and Ozaki, 1930) Shimazu, 1990 [X]
Biwia zezera
Carassius auratus subsp. 1
Coreoperca kawamebari
Gnathopogon elongatus elongatus
Gymnogobius isaza
Gymnogobius urotaenia
Hemibarbus barbus
Hemibarbus labeo
Odontobutis obscura
Pseudogobio esocinus esocinus
Pseudorasbora parva
Pungtungia herzi
Rhinogobius flumineus
"*Rhinogobius* sp."
Rhinogobius sp. BW
Rhinogobius sp. OR
"*S. variegatus*"
"*Sarcocheilichthys variegatus* (Temm. et Schl.)"
"*Sarcocheilichthys variegatus* (Temminck et Schlegel)" (type host)
Sarcocheilichthys variegatus microoculus
Sarcocheilichthys variegatus variegatus
Squalidus chankaensis biwae
Squalidus japonicus japonicus
Tribolodon hakonensis
Tridentiger brevispinis

Neoplagioporus kajika Urabe and Higa, 2006 [X]
Cottus pollux (type host)
Nipponocypris temminckii
Pseudogobio esocinus esocinus

Neoplagioporus sp. of Shimazu, Urabe, and Grygier (2011) [X]
Odontobutis obscura

Neoplagioporus zacconis (Yamaguti, 1934) Shimazu, 1990 [X]
Liobagrus reinii
Nipponocypris temminckii (type host)
Oncorhynchus masou masou
Opsariichthys uncirostris uncirostris
Pungtungia herzi
Zacco platypus

Opecoelidae gen. sp. of Shimazu (1990) [X]
Oncorhynchus keta
Opecoelus ukigori Shimazu, 1988 [IX]
Gymnogobius opperiens (type host)
Gymnogobius urotaenia
Urorchis acheilognathi Yamaguti, 1934 [X]
Acheilognathus cyanostigma
Acheilognathus rhombeus
Acheilognathus tabira tabira
Gnathopogon caerulescens
Oncorhynchus masou subsp.
Phoxinus steindachneri
Pseudorasbora parva
Sarcocheilichthys variegatus microoculus
Tanakia lanceolata (type host)
Tanakia limbata
Urorchis goro Ozaki, 1927 [X]
Barbatula toni
Cottus pollux
Cottus reinii
Gnathopogon elongatus elongatus
Gymnogobius urotaenia
Lefua echigonia
Rhinogobius flumineus
Rhinogobius kurodai
Rhinogobius sp. OR
Tridentiger brevispinis (type host)
"*Tridentiger obscurus* (Temminck & Schlegel)"
Urorchis imba Ishii, 1935 [X]
Pseudorasbora parva (type host)
Urorchis sp. of Shimazu (1990) [X]
Gnathopogon caerulescens
Odontobutis obscura
Tanakia limbata

Superfamily **Azygioidea** Lühe, 1909 [III]
Family **Azygiidae** Lühe, 1909 [III]
Azygia gotoi (Ariake, 1922) Shimazu, 1979 [III]
Anguilla japonica (type host)
Azygia perryii Fujita, 1918 [III]
Parahucho perryi (type host)
Salvelinus leucomaenis leucomaenis
Azygia rhinogobii Shimazu, 2007 [III]
Gymnogobius urotaenia
Tribolodon hakonensis
Tridentiger brevispinis
Rhinogobius sp. OR (type host)

Superfamily **Bivesiculoidea** Yamaguti, 1934 [I]
Family **Bivesiculidae** Yamaguti, 1934 [I]
Bivesicula sp. of Shimazu (1994) [I]
Monopterus albus

Superfamily **Bucephaloidea** Poche, 1907 [III]
Family **Bucephalidae** Poche, 1907 [III]
Parabucephalopsis parasiluri Wang, 1985 [III]
Silurus biwaensis
Silurus lithophilus
Prosorhynchoides ozakii (Nagaty, 1937) Margolis and Author, 1979 [III]
Silurus asotus
Silurus biwaensis
Silurus lithophilus

Superfamily **Gorgoderoidea** Looss, 1899 [II]
Family **Gorgoderidae** Looss, 1899 [II]
Phyllodistomum biringo Shimazu, 2005 [II]
Gymnogobius breunigii (type host)
Silurus asotus
Phyllodistomum carassii Long and Wai, 1958 [II]
Carassius auratus grandoculis
Phyllodistomum mogurndae Yamaguti, 1934 [II]
Gymnogobius urotaenia
Odontobutis obscura (type host)
Rhinogobius sp. OR
Tachysurus nudiceps
Phyllodistomum parasiluri Yamaguti, 1934 [II]
Silurus asotus (type host)
Silurus lithophilus
Tachysurus nudiceps
Pseudophyllodistomum macrobrachicola (Yamaguti, 1934) Cribb, 1987 [II]
Anguilla japonica
Cottus reinii
Gymnogobius urotaenia
"[Kajika]"
Odontobutis obscura (type host)
Silurus asotus
Tachysurus nudiceps

Superfamily **Haploporoidea** Nicoll, 1914 [I]

Family **Haploporidae** Nicoll, 1914 [I]
Carassotrema koreanum Park, 1938 [I]
Carassius auratus langsdorfii
Carassius carassius
Cyprinus carpio
Tribolodon hakonensis

Superfamily **Hemiuroidea** Looss, 1899 [IV, V]
Family **Derogenidae** Nicoll, 1910 [IV]
Allogenarchopsis problematica (Faust, 1924) Urabe and Shimazu, 2013 [IV]
Acheilognathus rhombeus
Rhodeus ocellatus ocellatus
Tanakia lanceolata (type host)
Tanakia limbata
Genarchopsis anguillae Yamaguti, 1938 [IV]
Anguilla japonica (type host)
Gymnogobius urotaenia
Genarchopsis chubuensis Shimazu, 2015 [IV]
Anguilla japonica
Cottus pollux
"*Gobius similis* Gill"
Gymnogonius castaneus
Gymnogobius urotaenia (type host)
Micropterus salmoides
Odontobutis obscura
Rhinogobius flumineus
Rhinogobius kurodai
Rhinogobius sp. OM
Rhinogobius sp. OR
Silurus asotus
Tridentiger brevispinis
Genarchopsis fellicola Shimazu, 1995 [IV]
Gymnogobius urotaenia (type host)
Rhinogobius kurodai
Rhinogobius sp. OR
Silurus asotus
Tridentiger brevispinis
Genarchopsis gigi Yamaguti, 1939 [IV]
Anguilla japonica
Cottus reinii
Gymnogobius isaza
Opsariichthys uncirostris uncirostris
Rhinogobius sp. BW
Tachysurus nudiceps (type host)
Tridentiger brevispinis
Genarchopsis goppo Ozaki, 1925 [IV]
Coreoperca kawamebari
"[Gori]"
*Gymnogobius petschiliensis**
Odontobutis obscura (type host)
*Rhinogobius flumineus**
*Rhinogobius giurinus**
*Rhinogobius nagoyae**
Silurus asotus
*Tridentiger brevispinis**
Genarchopsis sp. 1 of Shimazu (1995) [IV]
Tridentiger brevispinis
Genarchopsis sp. 2 of Shimazu (1995) [IV]
Acanthogobius flavimanus
Family **Didymozoidae** Monticelli, 1888 [V]
Paraphilopinna sp. of Shimazu (2006) [V]
Misgurnus anguillicaudatus
Philopinna higai Yamaguti, 1936 [V]
Sarcocheilichthys biwaensis
"*Sarcocheilichthys variegatus* (Temm. et Schleg.)" (type host)
Sarcocheilichthys variegatus microoculus
Sarcocheilichthys variegatus variegatus
Philopinna kawamutsu Shimazu, Urabe, and Grygier, 2011 [V]
Nipponocypris temminckii (type host)
Family **Isoparorchiidae** Travassos, 1922 [V]
Isoparorchis eurytremus (Kobayashi, 1915) Travassos, 1922 [V]
Silurus asotus (type host)
Silurus biwaensis
"*Pseudobagrus aurantiacus*" (type host)

Superfamily **Monorchioidea** Odhner, 1911 [VI]
Family **Lissorchiidae** Magath, 1917 [VI]
Asymphylodora innominata (Faust, 1924) Shimazu, Urabe, and Grygier, 2011 [VI]
"[Bote]"
"[Gori]"
Gymnogobius isaza
Hemibarbus barbus
Odontobutis obscura (type host)
Opsariichthys uncirostris uncirostris
Phoxinus steindachneri
Tribolodon hakonensis
"[Ukikamatsuka?]"

Asymphylodora japonica Yamaguti, 1938 [VI]
Cyprinus carpio (type host)
Asymphylodora sp. of Shimazu, Urabe, and Grygier (2011) [VI]
Tridentiger brevispinis
Asymphylotrema monostyloides (Ito, 1960) Shimazu, 2016 [VI]
Cobitis biwae (type host)
Palaeorchis diplorchis (Yamaguti, 1936) Szidat, 1943 [VI]
Anguilla japonica
Biwia zezera
Hemibarbus barbus
Pseudogobio esocinus esocinus (type host)

Superfamily **Opisthorchioidea** Looss, 1899 [XI]
Family **Cryptogonimidae** Ward, 1917 [XI]
Exorchis oviformis Kobayashi, 1915 [XI]
Silurus asotus (type host)
Family **Heterophyidae** Leiper, 1909 [XI]
Pseudexorchis major (Hasegawa, 1935) Yamaguti, 1938 [XI]
Silurus asotus (type host)
Silurus biwaensis

Superfamily **Plagiorchioidea** Lühe, 1901 [II]
Family **Orientocreadiidae** Yamaguti, 1958 [II]
Orientocreadium chaenogobii Shimazu, 1990 [II]
Gymnogobius castaneus (type host)
Gymnogobius urotaenia
Orientocreadium pseudobagri Yamaguti, 1934 [II]
Silurus lithophilus
Tachysurus nudiceps (type host)

Superfamily **Schistosomatoidea** Stiles and Hassall, 1898 [I]
Family **Aporocotylidae** Odhner, 1912 [I]
Sanguinicola hasegawai Shimazu, 2013 [I]
Barbatula toni (type host)
Sanguinicola ugui Shimazu, 2007 [I]
Tribolodon hakonensis (type host)
Sanguinicola sp. of Shimazu (1999) [I]
Acheilognathus tabira tabira

* The parasite found in these hosts from Shikoku Region has not yet been identified definitively (see also a host-parasite list below).

Host-Parasite List

The family, generic, and species names of the host freshwater fishes in Japan (see also the parasite-host list above) are arranged in alphabetical order. Some host fishes are unidentified to species or vague about species. Each species name is accompanied with its authorship and date and its Japanese common name in the brackets ([ ]). The serial numbers of the papers of the present review are given in the brackets ([ ]) after the species names of the parasites.

Family **Amblycipitidae**
Liobagrus reinii Hilgendorf, 1878 [Akaza]
Dimerosaccus oncorhynchi [IX]
Neoplagioporus zacconis [X]
Family **Anguillidae**
Anguilla japonica Temminck and Schlegel, 1846 [Nihon-unagi]
Azygia gotoi [III]
Coitocaecum plagiorchis [IX]
Genarchopsis anguillae [IV]
Genarchopsis chubuensis [IV]
Genarchopsis gigi [IV]
Palaeorchis diplorchis [VI]
Pseudophyllodistomum macrobrachicola [II]
Family **Bagridae**
"*Pseudobagrus aurantiacus*"† [Gigi]
Isoparorchis eurytremus [V]
Tachysurus aurantiacus (Temminck and Schlegel, 1846) [Ariake-gibachi]
Coitocaecum plagiorchis [IX]
Tachysurus nudiceps (Sauvage, 1883) [Gigi]
Coitocaecum plagiorchis [IX]
Genarchopsis gigi [IV]
Orientocreadium pseudobagri [II]
Phyllodistomum mogurndae [II]
Phyllodistomum parasiluri [II]
Pseudophyllodistomum macrobrachicola [II]
Family **Centrarchidae**
Micropterus salmoides (Lacepède, 1802) [Ōkuchi-basu]
Genarchopsis chubuensis [IV]
Family **Cobitidae**
Cobitis biwae Jordan and Snyder, 1901 [Shima-

dojō]
Asymphylotrema monostyloides [VI]
Misgurnus anguillicaudatus (Cantor, 1842) [Dojō]
Allocreadium gotoi [VII]
Coitocaecum plagiorchis [IX]
Paraphilopinna sp. of Shimazu (2006) [V]
Family **Cottidae**
Cottus amblystomopsis Schmidt, 1904 [Ezo-hana-kajika]
Crepidostomum chaenogobii [VIII]
Cottus hangiongensis Mori, 1930 [Kankyō-kajika]
Crepidostomum chaenogobii [VIII]
Cottus nozawae Snyder, 1911 [Hana-kajika]
Crepidostomum chaenogobii [VIII]
Crepidostomum metoecus [VIII]
Dimerosaccus oncorhynchi [IX]
Cottus pollux Günther, 1873 [Kajika]
Dimerosaccus oncorhynchi [IX]
Genarchopsis chubuensis [IV]
Neoplagioporus kajika [X]
Urorchis goro [X]
Cottus reinii Hilgendorf, 1879 [Utsusemi-kajika]
Coitocaecum plagiorchis [IX]
Genarchopsis gigi [IV]
Pseudophyllodistomum macrobrachicola [II]
Urorchis goro [X]
"[Kajika]"† [Utsusemi-kajika (?)]
Pseudophyllodistomum macrobrachicola [II]
Family **Cyprinidae**
Acheilognathus cyanostigma Jordan and Fowler, 1903 [Ichimonji-tanago]
Urorchis acheilognathi [X]
Acheilognathus rhombeus (Temminck and Schlegel, 1846) [Kanehira]
Allogenarchopsis problematica [IV]
Urorchis acheilognathi [X]
Acheilognathus tabira tabira Jordan and Thompson, 1914 [Shirohire-tabira]
Sanguinicola sp. of Shimazu (1999) [I]
Urorchis acheilognathi [X]
Biwia zezera (Ishikawa, 1895) [Zezera]
Neoplagioporus elongatus [X]
Palaeorchis diplorchis [VI]
"[Bote]"† [Tanago-rui]
Asymphylodora innominata [VI]
Carassius auratus grandoculis Temminck and Schlegel, 1846 [Nigoro-buna]
Phyllodistomum carassii [II]
Carassius auratus langsdorfii Temminck and Schlegel, 1846 [Gin-buna]
Carassotrema koreanum [I]
Carassius auratus subsp. 1 [Naga-buna]
Neoplagioporus elongatus [X]
Carassius carassius (Linnaeus, 1758)† [Funa]
Carassotrema koreanum [I]
Cyprinus carpio Linnaeus, 1758 [Koi]
Asymphylodora japonica [VI]
Carassotrema koreanum [I]
Gnathopogon caerulescens (Sauvage, 1883) [Hon-moroko]
Urorchis acheilognathi [X]
Urorchis sp. of Shimazu (1990) [X]
Gnathopogon elongatus elongatus (Temminck and Schlegel, 1846) [Ta-moroko]
Allocreadium gotoi [VII]
Allocreadium hasu [VII]
Allocreadium tamoroko [VII]
Neoplagioporus elongatus [X]
Urorchis goro [X]
Hemibarbus barbus (Temminck and Schlegel, 1846) [Nigoi]
Asymphylodora innominata [VI]
Neoplagioporus elongatus [X]
Palaeorchis diplorchis [VI]
Hemibarbus labeo (Pallas, 1776) [Kōrai-nigoi]
Neoplagioporus elongatus [X]
Nipponocypris temminckii (Temminck and Schlegel, 1846) [Kawa-mutsu]
Allocreadium hasu [VII]
Allocreadium japonicum [VII]
Allocreadium sp. of Shimazu (2008) [VII]
Neoplagioporus kajika [X]
Neoplagioporus zacconis [X]
Philopinna kawamutsu [V]
Opsariichthys uncirostris uncirostris (Temminck and Schlegel, 1846) [Hasu]
Allocreadium hasu [VII]
Asymphylodora innominata [VI]
Genarchopsis gigi [IV]
Neoplagioporus zacconis [X]
Phoxinus steindachneri Sauvage, 1883 [Abura-

haya]
Allocreadium aburahaya [VII]
Allocreadium shinanoense [VII]
Asymphylodora innominata [VI]
Urorchis acheilognathi [X]
Phoxinus oxycephalus (Sauvage and Dabry de Thiersant, 1874) [Taka-haya]
Allocreadium japonicum [VII]
Pseudogobio esocinus esocinus (Temminck and Schlegel, 1846) [Kamatsuka]
Neoplagioporus elongatus [X]
Neoplagioporus kajika [X]
Palaeorchis diplorchis [VI]
Pseudorasbora parva (Temminck and Schlegel, 1846) [Motsugo]
Neoplagioporus elongatus [X]
Urorchis acheilognathi [X]
Urorchis imba Ishii, 1935 [X]
Pungtungia herzi Herzenstein, 1892 [Mugitsuku]
Neoplagioporus elongatus [X]
Neoplagioporus zacconis [X]
Rhodeus ocellatus ocellatus (Kner, 1866) [Tairiku-bara-tanago]
Allogenarchopsis problematica [IV]
Rhynchocypris percnurus (Pallas, 1814) [Yachi-ugui]
Allocreadium brevivitellatum [VII]
Allocreadium tosai [VII]
Sarcocheilichthys biwaensis Hosoya, 1982 [Abura-higai]
Philopinna higai [V]
"*S. variegatus*"† [Higai]
Neoplagioporus elongatus [X]
"*Sarcocheilichthys variegatus* (Temm. et Schl.)"† [Higai]
Neoplagioporus elongatus [X]
"*Sarcocheilichthys variegatus* (Temm. et Schleg.)"† [Higai]
Philopinna higai [V]
"*Sarcocheilichthys variegatus* (Temminck et Schlegel)"† [Higai]
Neoplagioporus elongatus [X]
Sarcocheilichthys variegatus microoculus Mori, 1927 [Biwa-higai]
Neoplagioporus elongatus [X]
Philopinna higai [V]
Urorchis acheilognathi [X]
Sarcocheilichthys variegatus variegatus (Temminck and Schlegel, 1846) [Kawa-higai]
Neoplagioporus elongatus [X]
Philopinna higai [V]
Squalidus chankaensis biwae (Jordan and Snyder, 1900) [Sugo-moroko]
Neoplagioporus elongatus [X]
Squalidus japonicus japonicus Sauvage, 1883 [Deme-moroko]
Neoplagioporus elongatus [X]
Tanakia lanceolata (Temminck and Schlegel, 1846) [Yari-tanago]
Allocreadium sp. of Shimazu, Urabe, and Grygier (2011) [VII]
Allogenarchopsis problematica [IV]
Urorchis acheilognathi [X]
Tanakia limbata (Temminck and Schlegel, 1846) [Aburabote]
Allogenarchopsis problematica [IV]
Urorchis acheilognathi [X]
Urorchis sp. of Shimazu (1990) [X]
Tribolodon brandtii (Dybowski, 1872) [Maruta]
Allocreadium japonicum [VII]
Tribolodon hakonensis (Günther, 1877) [Ugui]
Allocreadium tosai [VII]
Allocreadium tribolodontis [VII]
Allocreadium sp. of Shimazu (2005) [VII]
Asymphylodora innominata [VI]
Azygia rhinogobii [III]
Carassotrema koreanum [I]
Neoplagioporus elongatus [X]
Sanguinicola ugui [I]
Tribolodon sachalinensis (Nikolskii, 1889) [Ezo-ugui]
Allocreadium tosai [VII]
Allocreadium tribolodontis [VII]
"[Ukikamatsuka?]"† [Zunaga-nigoi (?)])
Asymphylodora innominata [VI]
Zacco platypus (Temminck and Schlegel, 1846) [Oikawa]
Allocreadium hasu [VII]
Allocreadium japonicum [VII]
Neoplagioporus zacconis [X]
Family **Gasterosteidae**
Gasterosteus aculeatus leiurus Cuvier in Cuvier

and Valenciennes, 1829 [Hariyo]
Allocreadium japonicum [VII]
Gasterosteus aculeatus Linnaeus, 1758 [Itoyo]
Crepidostomum metoecus [VIII]
Pungitius pungitius (Linnaeus, 1758) [Ibara-tomiyo]
Crepidostomum metoecus [VIII]
Pungitius tymensis (Nikolskii, 1889) [Ezo-tomiyo]
Crepidostomum metoecus [VIII]
Family **Gobiidae**
Acanthogobius flavimanus (Temminck and Schlegel, 1845) [Ma-haze]
Genarchopsis sp. 2 of Shimazu (1995) [IV]
"*Chaenogobius annularis urotaenia* Hilgendorf"† [Ukigori]
Crepidostomum chaenogobii [VIII]
"*Gobius similis* Gill"† [Yoshinobori]
Coitocaecum plagiorchis [IX]
Genarchopsis chubuensis [IV]
Gymnogobius breunigii (Steindachner, 1879) [Biringo]
Phyllodistomum biringo [II]
Gymnogobius castaneus (O'Shaughnessy, 1875) [Juzukake-haze]
Crepidostomum metoecus [VIII]
Genarchopsis chubuensis [IV]
Orientocreadium chaenogobii [II]
Gymnogobius isaza (Tanaka, 1916) [Isaza]
Asymphylodora innominata [VI]
Coitocaecum plagiorchis [IX]
Genarchopsis gigi [IV]
Neoplagioporus elongatus [X]
Gymnogobius opperiens Stevenson, 2002 [Shima-ukigori]
Allocreadium gotoi [VII]
Allocreadium sp. of Shimazu (1988) [VII]
Crepidostomum chaenogobii [VIII]
Opecoelus ukigori [IX]
Gymnogobius petschiliensis (Rendahl, 1924) [Sumi-ukigori]
Genarchopsis goppo§ [IV]
Gymnogobius urotaenia (Hilgendorf, 1879) [Ukigori]
Azygia rhinogobii [III]
Coitocaecum plagiorchis [IX]
Crepidostomum metoecus [VIII]
Genarchopsis anguillae [IV]
Genarchopsis chubuensis [IV]
Genarchopsis fellicola [IV]
Neoplagioporus elongatus [X]
Opecoelus ukigori [IX]
Orientocreadium chaenogobii [II]
Phyllodistomum mogurndae [II]
Pseudophyllodistomum macrobrachicola [II]
Urorchis goro [X]
Rhinogobius brunneus (Temminck and Schlegel, 1845) [Kuro-yoshinobori]
Dimerosaccus oncorhynchi [IX]
Rhinogobius flumineus (Mizuno, 1960) [Kawa-yoshinobori]
Coitocaecum plagiorchis [IX]
Dimerosaccus oncorhynchi [IX]
Neoplagioporus elongatus [X]
Genarchopsis chubuensis [IV]
Genarchopsis goppo§ [IV]
Urorchis goro [X]
Rhinogobius fluviatilis Tanaka, 1925 [Ō-yoshinobori]
Dimerosaccus oncorhynchi [IX]
Rhinogobius giurinus (Rutter, 1897) [Gokuraku-haze]
Genarchopsis goppo§ [IV]
Rhinogobius kurodai (Tanaka, 1908) [Kuroda-haze]
Genarchopsis chubuensis [IV]
Genarchopsis fellicola [IV]
Urorchis goro [X]
Rhinogobius nagoyae Jordan and Seale, 1906 [Shima-yoshinobori]
Genarchopsis goppo§ [IV]
Dimerosaccus oncorhynchi [IX]
"*Rhinogobius* sp."† [Yoshinobori]
Coitocaecum plagiorchis [IX]
Dimerosaccus oncorhynchi [IX]
Neoplagioporus elongatus [X]
Rhinogobius sp. BW* [Biwa-yoshinobori]
Coitocaecum plagiorchis [IX]
Genarchopsis gigi [IV]
Neoplagioporus elongatus [X]
Rhinogobius sp. CO* [Ruri-yoshinobori]
Dimerosaccus oncorhynchi [IX]

Rhinogobius sp. OM* [Ōmi-yoshinobori]
Genarchopsis chubuensis [IV]
Rhinogobius sp. OR* [Tō-yoshinobori]
Azygia rhinogobii [III]
Dimerosaccus oncorhynchi [IX]
Genarchopsis chubuensis [IV]
Genarchopsis fellicola [IV]
Neoplagioporus elongatus [X]
Phyllodistomum mogurndae [II]
Urorchis goro [X]
"Small GORO"† [Isaza (?)]
Coitocaecum plagiorchis [IX]
Tridentiger brevispinis Katsuyama, Arai, and Nakamura, 1972 [Numa-chichibu]
Asymphylodora sp. of Shimazu, Urabe, and Grygier (2011) [VI]
Azygia rhinogobii [III]
Coitocaecum plagiorchis [IX]
Dimerosaccus oncorhynchi [IX]
Genarchopsis chubuensis [IV]
Genarchopsis fellicola [IV]
Genarchopsis gigi [IV]
Genarchopsis goppo§ [IV]
Genarchopsis sp. 1 of Shimazu (1995) [IV]
Neoplagioporus elongatus [X]
Urorchis goro [X]
"*Tridentiger obscurus* (Temminck & Schlegel)"† [Chichibu]
Urorchis goro [X]
Family **Nemacheilidae**
Barbatula toni (Dybowski, 1869) [Fuku-dojō]
Crepidostomum metoecus [VIII]
Sanguinicola hasegawai [I]
Urorchis goro [X]
Lefua echigonia Jordan and Richardson, 1907 [Hotoke-dojō]
Urorchis goro [X]
Family **Odontobutidae**
"[Gori]" [Donko]
Asymphylodora innominata [VI]
Coitocaecum plagiorchis [IX]
Genarchopsis goppo [IV]
Odontobutis obscura (Temminck and Schlegel, 1845) [Donko]
Asymphylodora innominata [VI]
Coitocaecum plagiorchis [IX]
Dimerosaccus oncorhynchi [X]
Genarchopsis chubuensis [IV]
Genarchopsis goppo [IV]
Neoplagioporus elongatus [X]
Neoplagioporus sp. of Shimazu, Urabe, and Grygier (2011) [X]
Phyllodistomum mogurndae [II]
Pseudophyllodistomum macrobrachicola [II]
Urorchis sp. of Shimazu (1990) [X]
Family **Percichthyidae**
Coreoperca kawamebari (Temminck and Schlegel, 1843) [Oyanirami]
Coitocaecum plagiorchis [IX]
Genarchopsis goppo [IV]
Neoplagioporus elongatus [X]
Family **Plecoglossidae**
Plecoglossus altivelis altivelis (Temminck and Schlegel, 1846) [Ayu]
Allocreadium sp. of Kataoka and Momma (1934), *incertae sedis* [VII]
Neoplagioporus ayu [X]
Family **Salmonidae**
Oncorhynchus keta (Walbaum, 1792) [Sake]
Crepidostomum metoecus [VIII]
Opecoelidae gen. sp. of Shimazu (1990) [X]
Oncorhynchus masou ishikawae Jordan and McGregor in Jordan and Hubbs, 1925 [Amago]
Dimerosaccus oncorhynchi [IX]
Oncorhynchus masou masou (Brevoort, 1856) [Yamame]
Crepidostomum farionis [VIII]
Crepidostomum metoecus [VIII]
Dimerosaccus oncorhynchi [IX]
Neoplagioporus zacconis [X]
Oncorhynchus mykiss (Walbaum, 1792) [Niji-masu]
Allocreadium tosai [VII]
Crepidostomum farionis [VIII]
Crepidostomum metoecus [VIII]
Oncorhynchus masou subsp. [Kizaki-masu]
Urorchis acheilognathi [X]
Parahucho perryi (Brevoort, 1856) [Itou]
Azygia perryii [III]
Crepidostomum metoecus [VIII]

Salmo trutta Linnaeus, 1758 [Burauntorauto]
Crepidostomum metoecus [VIII]
Salvelinus fontinalis (Mitchill, 1814) [Kawamasu]
Crepidostomum farionis [VIII]
Crepidostomum metoecus [VIII]
Salvelinus leucomaenis leucomaenis (Pallas, 1814) [Ezo-iwana]
Allocreadium tosai [VII]
Azygia perryii [III]
Crepidostomum farionis [VIII]
Crepidostomum metoecus [VIII]
Dimerosaccus oncorhynchi [IX]
Salvelinus leucomaenis pluvius (Hilgendorf, 1876) [Nikkō-iwana]
Dimerosaccus oncorhynchi [IX]
Salvelinus malma malma (Walbaum, 1792) [Oshorokoma]
Crepidostomum farionis [VIII]
Crepidostomum metoecus [VIII]
Family **Siluridae**
Silurus asotus Linnaeus, 1758 [Namazu]
Exorchis oviformis [XI]
Genarchopsis chubuensis [IV]
Genarchopsis fellicola [IV]
Genarchopsis goppo [IV]
Isoparorchis eurytremus [V]
Phyllodistomum biringo [II]
Phyllodistomum parasiluri [II]
Prosorhynchoides ozakii [III]
Pseudexorchis major [XI]
Pseudophyllodistomum macrobrachicola [II]
Silurus biwaensis (Tomoda, 1961) [Biwako-ōnamazu]
Isoparorchis eurytremus [V]
Parabucephalopsis parasiluri [III]
Prosorhynchoides ozakii [III]
Pseudexorchis major [XI]
Silurus lithophilus (Tomoda, 1961) [Iwatokonamazu]
Orientocreadium pseudobagri [II]
Parabucephalopsis parasiluri [III]
Phyllodistomum parasiluri [II]
Prosorhynchoides ozakii [III]
Family **Synbranchidae**
Monopterus albus (Zuiew, 1793) [Taunagi]
Bivesicula sp. of Shimazu (1994) [I]

* BW, CO, OM, and OR indicate four types, or unidentified species, of *Rhinogobius*.

† The exact species names of these fishes are vague at present.

§ This parasite from Shikoku Region has not yet been identified definitively (see also the parasite-host list above).

Addenda

II (Shimazu, 2014a). *Phyllodistomum* sp.

Urabe *et al.* (2015) found cercariae of *Phyllodistomum* sp. in *Nodularia douglasiae* (Bivalvia, Unionidae) and immature worms of this species in *Cyprinus carpio* from the Yodo River, Osaka Prefecture. They made a morphological and molecular study of the species, but they failed to identify it definitively to species level.

IV (Shimazu, 2015a). *Genarchopsis*: a new cystophorous cercaria

A new cystophorous cercaria was found in *Semisulcospira libertina* collected by Akifumi Ohtaka in an irrigation canal in Nozaki, Ishikawa, Hirosaki City, Aomori Prefecture, on 16 July 2015. This cercaria is morphologically similar to *Cercaria longicerca* Ito, 1953 but molecularly different from it (Misako Urabe, 2015, personal communication).

VII (Shimazu, 2016b). *Allocreadium gotoi*: molecular identification of the cercaria and new locality records

1) Misako Urabe successfully sequenced the cytochrome *c* oxidase subunit I gene of the mitochondrial DNA (COI mtDNA) of adults of *A. gotoi* found in the intestine of *Misgurnus anguillicaudatus* on 28 August 2015 and cercariae found in *Pisidium cinereum nikkoense* on 1 November 2016 both from the small river at Midori, Iiyama City, Nagano Prefecture (see Shimazu, 2016b). Partial COI sequences (889 bp) determined were identical between the adult and the cercaria. Consequently, the cercaria is definitively identified as *A. gotoi*, which supports

Shimazu's (2002, 2016b) morphological identification of the cercaria. She also sequenced the large subunit region of the ribosomal RNA gene (28S rDNA) of adults, and the entire sequence (1274 bp) of the 28S was determined. The GenBank accession numbers of the sequences of the adult deposited by her are: COI sequence, LC215273; and 28S sequence, LC215274.

2) Adults were found in the intestine of *M. anguillicaudatus* collected by Akifumi Ohtaka from an irrigation canal at Nozaki, Ishikawa, Hirosaki City, Aomori Prefecture, on 16 August 2016 (MPM Coll. No. 21297); and fished in the Ishikari River at Ishikari City (obtained by Mitsuhiko Asakawa at a local fish market), Hokkaido, on 5 October 2016 (MPM Coll. No. 21298).

VIII (Shimazu, 2016c). *Crepidostomum*: life cycle

Moravec (2004) found a progenetic metacercaria of *C. farionis* in the body cavity of an unidentified caddis-fly larva (Trichoptera) from the trout brook Vydří potok in the Šumava Mountains, present Czech Republic, in 1962. Accordingly, it may well be that progenetic metacercariae may occur as well in *C. metoecus*.

IX (Shimazu, 2016d). *Dimerosaccus oncorhynchi*: molecular studies

Bray *et al.* (2016) and Fayton and Andres (2016) also have recently demonstrated that *D. oncorhynchi* belongs to the subfamily Opecoelinae in their molecular studies.

X (Shimazu, 2017a). *Neoplagioporus elongatus*: life cycle

Yano and Urabe (2017) studied the life cycle of *N. elongatus* in the Uji River, Kyoto Prefecture (see also Shimazu, 2017a).

Errata

I (Shimazu, 2013)

p. 176, left column, between line 14 and line 15 from bottom. Insert "Genus *Bivesicula* Yamaguti, 1934."

p. 178, right column, between line 4 and line 5 from top. Insert "Genus *Carassotrema* Park, 1938."

p. 178, right column, line 11 from top. Delete "(?)."

p. 178, right column, line 13 from top. Read "*auratus langsdorfii* Temminck and Schlegel, 1846" for "sp."

p. 178, right column, line 20 from top. Read "Asahikita" for "Kamikita-kita."

p. 178, right column, lines 4–5 from bottom. Delete "(Temminck and Schlegel, 1846) [sic, now *Carassius* sp.]."

p. 181, left column, line 14 from top. Read "*auratus langsdorfii*" for "sp."

p. 181, right column, line 6 from top. Read "[Cercaria D]" for "Cercaria D."

p. 181, right column, line 8 from top. Read "Kumamoto" for "Kumamato."

II (Shimazu, 2014a)

p. 53, right column, lines 2–3 from bottom; p. 54, left column, line 5 from bottom; p. 62, right column, line 23 from top; and p. 64, right column, line 4 from top. Read "Asahikita" for "Kamikita-kita."

p. 57, right column, line 10 from top; and p. 59, left column, line 15 from top. Insert "OR" after "sp."

p. 70, right column, line 13 from top. Read "1875" for "1880."

p. 76, left column, line 21 from top. Read "Mizumoto" for "Mizuno."

IV (Shimazu, 2015a)

p. 77, right column, line 2 from bottom. Read "*Cercaria cystophora* C" for "[*Cercaria cystophora* C]."

p. 85, right column, line 18 from top. Insert "of" after "was."

V (Shimazu, 2015b)

p. 209, left column, line 21 from bottom; and p. 214, left column, line 14 from top. Read "[Cercaria XIV, or U]" for "Cercaria XIV, or [U]."

VI (Shimazu, 2016a)

p. 1, right column, line 8 from bottom; and p. 6, left column, lines 15 and 36 from top. Read "[Cercaria H]" for "Cercaria H."

p. 1, right column, line 7 from bottom; and p. 6, left column, lines 19–20 and 37 from top. Read "[Cercaria VIII, or Shin]" for "Cercaria VIII, or [Shin]."

p. 1, right column, line 6 from bottom; and p. 6, left column, lines 9–10 from bottom. Read "[Cercariaeum A]" for "Cercariaeum A."

p. 2, left column, line 1 from top; and p. 6, left column, line 13 from bottom. Read "[Cercaria T]" for "Cercaria T."

p. 8, right column, line 20 from bottom. Read "[Metacercaria IV]" for "Metacercaria IV."

p. 8, right column, line 19 from bottom; and p. 11, right column, line 2 from bottom. Read "[Cercaria A]" for "Cercaria A."

p. 8, right column, line 18 from bottom; and p. 12, left column, line 3 from top. Read "[Cercaria B]" for "Cercaria B."

p. 17, left column, line 15 from top. Read "1943" for "1942."

VII (Shimazu, 2016b)

p. 59, right column, line 5 from bottom; and p. 60, left column, lines 17–18 from top. Read "Koumi" for "Komi."

p. 62, right column, line 22 from bottom. Insert "subunit" between "oxidase" and "I."

p. 64, right column, line 3 from top. Read "Cuvier in Cuvier and Valenciennes, 1829" for "Linnaeus, 1758."

p. 64, right column, line 10 from top. Insert "(Cyprinidae)" between "1872)" and "(Shimazu."

p. 68, right column, between line 5 and line 6 from top. Insert "*Life cycle*. Not known."

p. 72, left column, line 2 from bottom; and p. 72, right column, line 4–5 from top. Read "Asahikita" for "Kamikita-kita."

IX (Shimazu, 2016d)

p. 164, left column, line 1 from bottom; p. 166, right column, line 9 from bottom; and p. 168, right column, line 10 from bottom. Read "[Gori]" for "Gori."

p. 173, right column, lines 5–6 from top. Read "on dorsal side of" for "around dorsal."

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