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REVIEW

A Checklist of the Parasites of Eels (*Anguilla* spp.) (Anguilliformes: Anguillidae) in Japan (1915–2007)

Kazuya NAGASAWA[1)], Tetsuya UMINO[1)] and Kouki MIZUNO[2)]

[1)] *Graduate School of Biosphere Science, Hiroshima University*
1–4–4 Kagamiyama, Higashi-Hiroshima, Hiroshima 739–8528, Japan
[2)] *Ehime Prefectural Uwajima Fishery High School*
1–2–20 Meirin, Uwajima, Ehime 798–0068, Japan

Abstract Information on the protistan and metazoan parasites of three species of eels, the Japanese eel *Anguilla japonica*, the giant mottled eel *A. marmorata* and the European eel *A. anguilla*, in Japan is summarized in the Parasite-Host List and Host-Parasite lists, based on the literature published for 93 years between 1915 and 2007. Both *A. japonica* and *A. marmorata* are native to Japan, whereas *A. anguilla* is an introduced species from Europe. The parasites, including 44 named species and those not identified to species level, are listed by higher taxon as follows: Sarcomastigophora (no named species), Ciliophora (6), Microspora (1), Myxozoa (6), Trematoda (7), Monogenea (7), Cestoda (3), Nematoda (7), Acanthocephala (4), Hirudinida (2), and Copepoda (1). For each taxon of parasite, the following information is given: its currently recognized scientific name, any original combination, synonym(s), or other previous identification used for the parasite occurring in eels; habitat (freshwater, brackish, or marine); site(s) of infection within or on the host; known geographical distribution in Japanese waters; and the published source of each locality record. Of the 44 named species of parasites, 43 are from *A. japonica*, 1 from *A. marmorata*, and 10 from *A. anguilla*. *Gyrodactylus anguillae* (Monogenea) and *Raphidascaris acus* (Nematoda) are the exotic species that were probably introduced on *A. anguilla* from Europe, and it has also been suggested that *G. nipponensis* (Monogenea) was introduced on eels imported from somewhere in the Indo-western Pacific. Of the parasites recorded from *A. japonica*, eight species are marine and/or brackish-water species, of which two (i.e., *Tubulovesicula anguillae, Pseudodactylogyrus kamegaii*) are host-specific and occur as adults. This indicates that *A. japonica* serves as the definitive host for these parasites in marine and/or brackish waters where the host species constatntly remains.
Key words: *Anguilla anguilla*; *Anguilla japonica*; *Anguilla marmorata*; checklist; eels; parasites

INTRODUCTION

Eels of the genus *Anguilla* are commercially important fishes in Japan, where the Japanese eel *A. japonica* Temminck and Schlegel and the giant mottled eel *A. marmorata* Quoy and Gaimard occur naturally (Matsui, 1972; Hatooka, 2002). *Anguilla japonica* is widely distributed in Japan and is one of the most important fishes in freshwater culture and commercial catch. The distribution of *A. marmorata* in Japan is confined to the southern region and its catch small. On the other hands,

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since the late 1960's, as many as 10 species of eels have been imported to Japan from other countries for culture in ponds or stocking in rivers and lakes (Tabeta et al., 1977). Of these species, some fish of the European eel *A. anguilla* (Linnaeus), the American eel *A. rostrata* (Lesueur) and the shortfin eel *A. australis* Richardson, 1841 have been actually recorded from natural waters in Japan (Tabeta et al., 1976, 1977; Zang et al., 1999; Aoyama et al., 2000; Okamura et al., 2001, 2002; Miyai et al., 2004).

In 1915, Dr. S. Ishii published a paper dealing with myxozoans found on *A. japonica*, which is the first report on the parasites of eels in Japan (Ishii, 1915). Since then, due to the importance of eels in aquaculture and fisheries, numerous studies and investigations have been conducted on the eel parasites in the country. In the present checklist, based on the literature published for 93 years between 1915 and 2007, information on the parasites of eels in Japan is compiled in two lists, Parasite-Host List and Host-Parasite List. In total, 44 named species of parasites are listed along with those not identified to species level. The parasites listed herein are from three species of eels (*A. japonica, A. marmorata* and *A. anguilla*). No parasites have been reported from the other eels in Japan.

In the **PARASITE-HOST LIST**, parasites are arranged by higher taxon in the following order: Sarcomastigophora, Ciliophora, Microspora, Myxozoa, Trematoda, Monogenea, Cestoda, Nematoda, Acanthocephala, Hirudinida, and Copepoda. The format is almost the same as in the checklists of Margolis and Arthur (1979) and McDonald and Margolis (1995). Within each higher taxon, genera and species are listed alphabetically. For each taxon of parasite, the following information is provided:

1) The current **scientific name**, including author(s) and date(s), followed by any original combination, recognized synonym(s), or other identification(s) that have been used in establishing records from eels in Japan. No attempt has been made to evaluate the taxonomic validity of the published reports.

2) The **habitat** in which the parasite was acquired and normally completes its life cycle is given as FW for fresh waters, B for brackish waters, and M for marine waters.

3) The **Site(s) of infection** of the parasite in or on its host. If the site was not given in the original record, the likely site was determined from other records and is enclosed in square brackets.

4) The **Distribution** of the parasite is indicated by prefecture (boundaries shown in Fig. 1), in geographical order from northeast to southwest. For marine or brackish-water species, the name of the prefecture nearest the collection site is given.

5) The **Record(s)**. The authors responsible for the records are listed in chronological order. If a parasite has been reported more than once, the references are numbered, but not when there has been only one record of the parasite. Each reference is followed by the locality or localities given in two parts, first the prefecture(s) and then the detailed collection locality or localities from which the parasite was reported. If no locality record was given, the geographical locality is shown by a dash (—). When all records are from the same prefecture, only the detailed collection locality or localities are listed.

6) Under **Remarks**, explanatory comments are given on systematics, nomenclature, useful references, and notes on specific items such as tentative parasite identifications in the original reports.

7) The **References** section includes works directly cited in the Parasite-Host List; the **Supplementary References** are publications dealing with various aspects of parasites of eels in Japan but not containing original parasite records. If only a Japanese title was given by the original author(s), our translation of the title into English is provided in square brackets.

In the **HOST-PARASITE LIST**, hosts are listed alphabetically. In each higher taxon, parasites

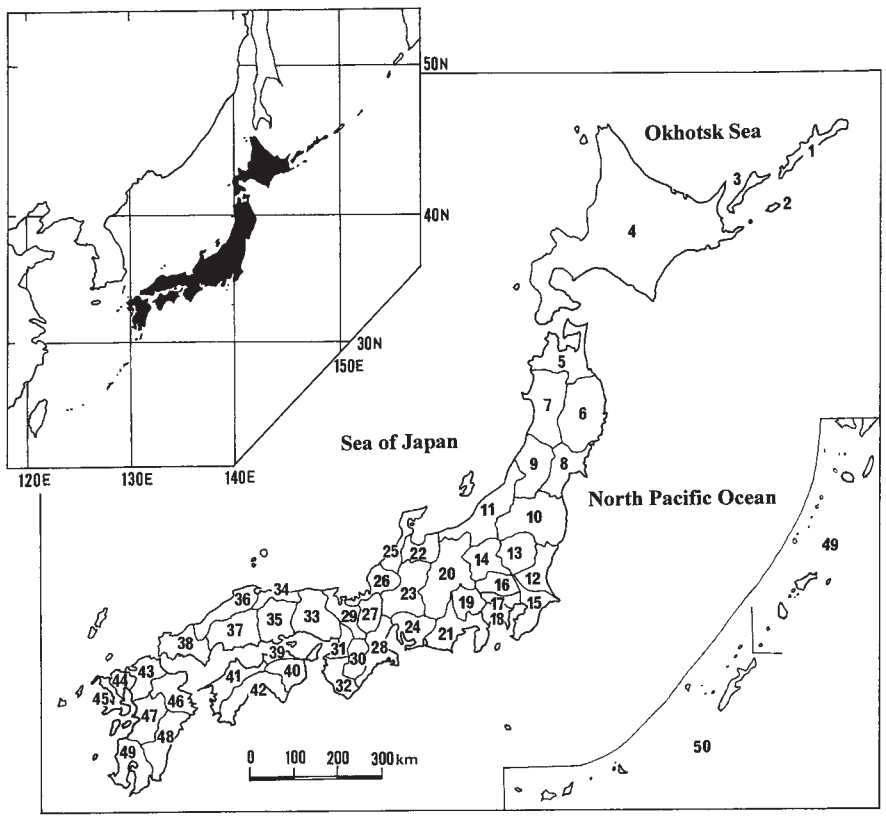

Fig. 1. Map of Japan showing the prefectural boundaries. The following prefectural names are arranged in alphabetical order: Aichi-24; Akita-7; Aomori-5; Chiba-15; Ehime-41; Etorofu Island-1; Fukui-26; Fukuoka-43; Fukushima-10; Gifu-23; Gunma-14; Hiroshima-37; Hokkaido-4; Hyogo-33; Ibaraki-12; Ishikawa-25; Iwate-6; Kagawa-39; Kagoshima-49; Kanagawa-18; Kochi-42; Kumamoto-47; Kunashiri Island-3; Kyoto-29; Mie-28; Miyagi-8; Miyazaki-48; Nagano-20; Nagasaki-45; Nara-30; Niigata-11; Oita-46; Okayama-35; Okinawa-50; Osaka-31; Saga-44; Saitama-16; Shiga-27; Shikotan Island-2; Shimane-36; Shizuoka-21; Tochigi-13; Tokushima-40; Tokyo-17; Tottori-34; Toyama-22; Wakayama-32; Yamagata-9; Yamaguchi-38; and Yamanashi-19.

are also listed in alphabetical order, and after the name of each parasite, its geographical distribution is given in parenthesis.

This checklist is the sixth in the following series of published synopses of the parasites of commercially important fishes and shellfishes in Japan: Nagasawa et al. (1987) for the parasites of salmonids; Nagasawa et al. (1989) for the parasites of freshwater fishes in Hokkaido; Nagasawa (1993a) for the parasites of squids and cuttlefishes; Nagasawa (1993b) for the parasites of gadids; and Nagasawa et al. (2007a) for the parasites of ayu (*Plecoglossus altivelis altivelis*).

PARASITE-HOST LIST

SARCOMASTIGOPHORA

Cryptobia sp. (FW)

Hosts: *Anguilla anguilla*

Anguilla japonica
Sites of infection: skin, fins
Distribution: unknown
Record: Niwa 1979 (—)

Ichthyobodo sp. (FW)
Includes: *Costia* sp. (erroneously as "*Chostia*") of Niwa, 1979
Hosts: *Anguilla anguilla*
Anguilla japonica
Sites of infection: skin, fins
Distribution: unknown
Record: Niwa 1979 (—)

Trypanosoma sp. (FW)
Host: *Anguilla japonica*
Site of infection: blood
Distribution: Shizuoka
Records: 1. Hoshina and Sano 1957 (Yoshida); 2. Egusa 1967 (Yoshida)

CILIOPHORA

Ambiphrya sp. (FW)
Host: *Anguilla japonica*
Sites of infection: gills, skin
Distribution: unknown
Record: Egusa 1978 (—)

Apiosoma sp. (FW)
Includes: *Glossatella* sp. of Nishio et al., 1970; Egusa, 1970; Hatai and Egusa, 1973; Niwa, 1979
Hosts: *Anguilla anguilla* (3, 5)
Anguilla japonica (1, 2, 4)
Site of infection: gills
Distribution: Shizuoka
Records: 1. Nishio et al. 1970 (Yoshida); 2. Egusa 1970 (Yoshida); 3. Hatai and Egusa 1973 (Yaizu, Yoshida); 4. Egusa 1978 (—); 5. Niwa 1979 (—)

Capriniata piscium (Buetschli, 1889) Jankowski, 1973 (FW)
Previous identification: *Trichophrya piscium* of Egusa, 1978
Includes: *Trichophrya* sp. of Egusa and Ahmed, 1970; Nishio et al., 1970; Egusa, 1970, 1971
Hosts: *Anguilla anguilla* (1, 2, 4, 5)
Anguilla japonica (1, 3, 4)
Site of infection: gills
Distribution: Shizuoka

Records: 1. Egusa and Ahmed 1970 (Yaizu); 2. Nishio et al. 1970 (Yoshida); 3. Egusa 1970 (Yoshida); 4. Egusa 1971 (—); 5. Egusa 1978 (—)

Remarks: Matsui (1972: 577–578, figs. 27.44, 27.45) reported the occurrence of two ciliates, "*Sayphidia or Sayphydia* sp." and "*Sudonia* sp." on the gills of *A. japonica*, as well as *Capriniata piscium* (as *Trichophrya* sp.). His identification of the first two species, is definitely not correct.

Carchesium polypinum Linnaeus, 1758 (FW)

Host: *Anguilla japonica*

Site of infection: skin

Distribution: Tokushima

Record: Naruto Station, Fish. Exp. St. Tokushima Pref. 1966 (—)

Chilodonella sp. (FW)

Hosts: *Anguilla anguilla* (2)
Anguilla japonica (1, 2)

Sites of infection: gills, skin

Distribution: unknown

Records: 1. Egusa 1978 (—); 2. Niwa 1979 (—)

Ichthyophthirius multifiliis Fouquet, 1876 (FW)

Hosts: *Anguilla anguilla* (1, 3, 4, 5, 6, 7, 8, 9)
Anguilla japonica (1, 2, 6, 7, 8, 9)

Sites of infection: skin, fins, gills, buccal cavity

Distribution: Shizuoka

Records 1. Egusa et al. 1970 (Yaizu); 2. Nishio et al. 1970 (Yoshida); 3. Egusa 1971 (—); 4. Oka 1973a (near Lake Hamana); 5. Oka 1973b (—); 6. Egusa 1978 (—); 7. Egusa 1979 (—); 8. Niwa 1979 (—); 9. Egusa 1983 (—)

Trichodina acuta Lom, 1961 (FW)

Host: *Anguilla japonica*

Site of infection: gills

Distribution: Mie

Record: Imai et al. 1991 (Tsu)

Trichodina jadranica Haider, 1964 (FW)

Host: *Anguilla japonica*

Site of infection: gills

Distribution: Mie

Record: Imai et al. 1991 (Tsu)

Remarks: This trichodinid was reported from the gills of *A. japonica* cultured in freshwater ponds in central Japan (Imai et al., 1991). However, it was later found on marine fishes (Japanese flounder *Paralichthys olivaceus* and stone flounder *Kareius bicoloratus*) in China (Xu et al., 2001), suggesting that *T. jadranica* is a euryhaline species.

Trichodina japonica Imai, Miyazaki and Nomura, 1991 (FW)

Host: *Anguilla japonica*

Site of infection: gills

Distribution: Mie

Record: Imai et al. 1991 (Tsu)

Remarks: This trichodinid was described from the gills of *A. japonica* cultured in freshwater ponds in central Japan (Imai et al., 1991). However, it also occurs on marine fishes (Japanese seaperch *Lateolabrax japonicus* and red seabream *Chrysophyrys major*) and a brackish-water fish (barramundi *Lates calcarifer*) in China and India, respectively (Xu et al., 1999, 2001; Mitra and Bandyopadhyay 2005), indicating that *T. japonica* is a euryhaline species, like *T. jadranica* (see above).

Trichodina sp. (FW)

Hosts: *Anguilla anguilla* (3, 6, 7, 8)

Anguilla japonica (1, 2, 3, 4, 5, 6, 8)

Sites of infection: gills

Distribution: Shizuoka

Records: 1. Egusa 1967 (Yoshida); 2. Egusa 1968 (Yoshida); 3. Nishio et al. 1970 (Yoshida); 4. Egusa 1970 (Yoshida); 5. Egusa et al. 1971 (Yoshida); 6. Egusa 1971 (—); 7. Hatai and Egusa 1973 (Yaizu, Yoshida); 8. Niwa 1979 (—)

MICROSPORA

Heterosporis anguillarum (Hoshina, 1951) Lom, Dyková, Körting and Klinger, 1989 (FW)

Original combination: *Plistophora anguillarum* Hoshima, 1951

Includes: *Plistophora* sp. of Niwa, 1979

Hosts: *Anguilla anguilla* (6)

Anguilla japonica (1, 2, 3, 4, 5, 6, 7, 8, 9)

Site of infection: musculature

Distribution: Hokkaido, Kanagawa, Shizuoka, Aichi, Kagoshima

Records: 1. Hoshina 1951a (Kangawa: near Odawara; Shizuoka: Yoshida); 2. Hoshima 1972 (Kanagawa:—; Shizuoka:—; Aichi:—); 3. Awakura 1974 (Hokkaido: Shikabe); 4. Hashimoto and Takinami 1976 (Shizuoka: Hamanko Branch of Shzuoka Pref. Fish. Exp. St.); 5. Hashimoto et al. 1976 (Shizuoka: Hamanko Branch of Shzuoka Pref. Fish. Exp. St.); 6. Niwa 1979 (Shizuoka:—; Aichi:—; Kagoshima:—); 7. Kano and Fukui 1982 (—); 8. Kano et al. 1982 (—); 9. Buchmann et al. 1992 (Shizuoka:—)

Remarks: The present species was transferred from the genus *Pleistophora to Hetrosporis* by Lom et al. (1989). Although Awakura (1974) found this parasite in Hokkaido, the infected fish had been transported from Shizuoka. The species is known to infect *A. japonica* in Taiwan (T'sui and Wang, 1988; T'sui et al., 1988; Tsai et al., 2002) and Korea (Suh and Chun, 1988; Joh et al., 2007) as well. Hoshima (1972) reported the presence of this parasite in young *A. japonica* imported from Taiwan to Japan.

Unidentified Microspora (FW)
Host: *Anguilla japonica*
Site of infection: gills
Distribution: Shizuoka
Record: Egusa 1967 (Yoshida)

Myxozoa

Myxidium giardi Cépède, 1906 (FW)
Synonyms: *Myxidium anguillae* Ishii, 1915; *Myxidium enchelypterygii* Hoshina, 1952
Includes: *Myxidium* sp. of Ishii, 1916; Iwata, 1972
Hosts: *Anguilla anguilla* (5)
Anguilla japonica (1, 2, 3, 4, 6)
Sites of infection: skin, fins, gills
Distribution: Tokyo, Shizuoka, Miyazaki
Records 1. Ishii 1915a (Shizuoka: Numazu); 2. Ishii 1916b (Tokyo:—); 3. Hoshina 1952 (Shizuoka: Yoshida Fish-Cultural Laboratory); 4. Iwata 1972 (Miyazaki: Hosoda River); 5. Hine 1980 (—); 6. Oka and Egusa 1989 (Shizuoka: Hamamatsu)
Remarks: Although Hoshina (1952) reported that the spores of *Myxidium enchelypterygii* were clearly differentiated from those of *M. anguillae* by thier size and shape, Hine (1980) regarded both taxa as identical, which was supported by Oka and Egusa (1989). Hine (1980: table 1) listed a record of *M. giardi* found in the gall bladder and musculature of the American eel *Anguilla rostrata* from Japan, but this record is not herein included because no references were found to support it.

Myxidium lentiforme Fujita, 1929 (FW)
Synonym: *Myxidium fusiforme* Fujita, 1927
Host: *Anguilla japonica*
Site of infection: kidney
Distribution: Shiga
Record: Fujita 1927 (Lake Biwa)
Remarks: This parasite had been originally described by Fujita (1927) as *M. fusiforme*, but it was later renamed as *Myxidium lentiforme* by Fujita (1929: 249–250) because the former had been preoccupied.

Myxidium matsuii Fujita, 1929 (FW)
Host: *Anguilla japonica*
Site of infection: skin
Distribution: Kanagawa, Shizuoka, Aichi
Records: 1. Fujita 1929 (Shizuoka: near Lake Hamana; Aichi: Toyohashi); 2. Hoshina 1952 (Kanagawa: Odawara); 3. Egusa 1978 (—); 4. Hine 1980 (—)

Myxidium uchiyamae Fujita, 1927 (FW)

Host: *Anguilla japonica*

Site of infection: kidney

Distribution: Shiga

Record: Fujita 1927 (Lake Biwa)

Myxidium sp. (FW)

Hosts: *Anguilla anguilla* (3, 4, 6)

Anguilla japonica (1, 2, 5, 6)

Sites of infection: gills, kidney, liver

Distribution: Shizuoka

Records: 1. Egusa 1967 (Yoshida); 2. Egusa 1970 (Yoshida); 3. Oka 1973a (near Lake Hamana); 4. Oka 1973b (—); 5. Ushiyama and Misaki 1977 (Hamamatsu); 6. Niwa 1979 (—)

Remarks: There is no information on the morphology and identification of this myxozoan. Niwa (1979) reported that the spores of *Mixidium* sp. are more commonly found in the kidney of *A. anguilla* than *A. japonica*.

Myxobolus dermatobius (Ishii, 1915) Landsberg and Lom, 1991 (FW)

Original combination: *Lentospora dermatobia* Ishii, 1915

Previous identification: *Myxosoma* (*Lentospora*) *dermatobia* (Ishii, 1915)

Host: *Anguilla japonica*

Site of infection: skin

Distribution: Tochigi, Shizuoka

Records: 1. Ishii 1915b (Shizuoka: Numazu); 2. Hoshina 1952 (Tochigi: Lake Chuzenji)

Remarks: The present species, initially described as *Lentospora dermatobia* by Ishii (1915b), was transferred to the genus *Myxobolus* by Landsberg and Lom (1991).

Myxobolus fujitai (Fujita, 1929) Eiras, Molnár and Lu, 2005 (FW)

Synonym: *Lentospora anguillae* Fujita, 1929

Host: *Anguilla japonica*

Site of infection: skin

Distribution: Ibaraki

Record: Fujita 1929 (Lake Hinuma)

Remarks: The present species was been initially described as *Lentospora anguillae* by Fujita (1929) but it was later renamed as *Myxobolus anguilli* by Landsberg and Lom (1991). However, because of the preoccupation of the latter name, Eiras et al. (2005) proposed a new name, *Mybobolus fujitai*, for it.

Unidentified Myxozoa (FW)

Host: *Anguilla japonica*

Site of infection: gills

Distribution: Shizuoka, Gifu

Records: 1. Nishio et al. 1970 (Shizuoka: Yoshida); 2. Nishio et al. 1971 (Shizuoka: Yoshida); 3.

Anonymous 2002 (Gifu: a tributary of the Kiso River)

Trematoda

Azygia gotoi (Ariake, 1922) Shimazu, 1979 (FW)

Original combination: *Azygia anguillae* Ozaki, 1924

Includes: A*zygia gotoi*-like trematodes of Shimazu, 1979

Host: *Anguilla japonica*

Site of infection: stomach

Distribution: Aomori, Ibaraki, Tokyo, Nagano, Shiga

Records: 1. Ozaki 1924 (Tokyo:—); 2. Yamaguti 1934a (Ibaraki: Lake Kasumiga-ura [as "Kasumiga-ura"]); 3. Shimazu 1979 (Aomori: Lake Hira-numa; Nagano: Lake Kizaki, Lake Suwa; Shiga: Lake Biwa)

Remarks: The taxonomy and life history of this trematode was reported in details by Shimazu (1979). Information on the species is available from Shimazu (1999a, 2003).

Centrocestus formosanus (Nishigori, 1924) Price, 1932 (metacercaria) (FW)

Host: *Anguilla japonica*

Habitat: gills

Distribution: Kagoshima

Records: 1. Yanohara and Kagei 1983 (Tanegashima Island); 2. Kagei and Yanohara 1995 (Tanegashima Island)

Genarchopsis goppo Ozaki, 1925 (FW)

Synonym: *Genarchopsis anguillae* Yamaguti, 1938

Host: *Anguilla japonica*

Site of infection: intestine

Distribution: Ibaraki, Shiga

Records: 1. Yamaguti 1938 (Ibaraki: Tsuchiura [as Tutiura]); 2. Shimazu 1995 (Ibaraki: Tsuchiura; Shiga: Lake Biwa)

Remarks: Moravec et al. (2003) regarded *Genarchopsis anguillae* as a junior synonym of *G. goppo*. Shimazu and Urabe (2005) later made a similar suggestion. Information on the species is available from Shimazu (1999a, 2003).

Hemiuridae gen. sp. (FW?)

Host: *Anguilla japonica*

Site of infection: stomach

Distribution: Tokyo

Record: Ozaki 1924 (—)

Remarks: When *Azygia gotoi* (as *A. anguillae*) was described, Ozaki (1924: 426) reported that another trematode beloging to the family Hemiuridae was in the stomach of *A. japonica*. No description of this trematode is yet available.

Lasiotocus sp. (B or FW)
Host: *Anguilla japonica*
Site of infection: intestine
Distribution: Aomori
Record: Shimazu 2005 (Lake Ogawara)

Lecithochrium musculus (Looss, 1907) Nasir and Diaz, 1971 (M)
Synonym: *Sterrhurus musculus* Looss, 1907
Host: *Anguilla japonica*
Site of infection: stomach
Distribution: Mie, unspecified prefecture facing the Seto Inland Sea
Record: Yamaguti 1934a (Mie: Ise Bay; unspecified prefecture: Seto Inland Sea [as Inland Sea])
Remarks: The identification of this trematode by Yamaguti (1934) needs confirmation (Gibson and Bray, 1986: 83–90).

Metagonimus spp. (metacercaria) (FW)
Host: *Anguilla japonica*
Site of infection: fins
Distribution: Shizuoka
Record: Ito and Mochizuki 1968 (Tenryu River)

Phyllodistomum anguilae Long and Wai, 1958 (FW)
Host: *Anguilla japonica*
Sites of infection: urinary bladder, intestine
Distribution: Aomori, Ibaraki
Record: Shimazu 2005 (Aomori: Lake Ogawara; Ibaraki: Tsuchiura)

Proctotrematoides pisodontophidis Yamaguti, 1938 (M)
Host: *Anguilla japonica*
Site of infection: intestine
Distribution: Chiba
Record: Hoshina 1951b (Urayasu)

Tubulovesicula anguillae Yamaguti, 1934 (M)
Host: *Anguilla japonica*
Site of infection: stomach
Distribution: Miyagi
Record: Yamaguti 1934a (Matsushima Bay [as Matusima Bay])

MONOGENEA

Gyrodactylus anguillae Ergens, 1960 (FW)
Host: *Anguilla anguilla*

Sites of infection: skin, gills
Distribution: Shizuoka
Record: Ogawa and Egusa 1980 (Maisaka)
Remarks: Ogawa and Egusa (1980) suggested that this species was introduced into Japan from France on *A. anguilla*. Hayward et al. (2001) showed the current worldwide distribution of the species. Ogawa and Egusa (1978) redescribed it based on the specimens from England.

Gyrodactylus egusai Ogawa and Hioki, 1986 (FW)
Host: *Anguilla japonica*
Site of infection: skin
Distribution: Shizuoka
Record: Ogawa and Hikoki (Yoshida)

Gyrodactylus joi Ogawa and Hioki, 1986 (FW)
Host: *Anguilla japonica*
Site of infection: skin
Distribution: Shizuoka
Record: Ogawa and Hikoki (Yoshida)

Gyrodactylus nipponensis Ogawa and Egusa, 1978 (FW or B)
Host: *Anguilla japonica*
Site of infection: gills
Distribution: Chiba, Shizuoka, Tokushima, Miyazaki
Records: 1. Ogawa and Egusa 1978 (Shizuoka:—; Tokushima:—); 2. Ogawa and Egusa 1980 (Chiba:—; Shizuoka:—; Tokushima:—; Miyazaki:—); 3. Hayward et al. 2001 (Chiba: Minato River, Shizuoka: Lake Hamana)
Remarks: Hayward et al. (2001: 422) suggested that this monogenean was introduced into Japan on eels imported from somewhere in the Indo-western Pacific.

Gyrodactylus sp. (FW)
Host: *Anguilla japonica*
Site of infection: gills
Distribution: Shizuoka
Record: Ushiyama and Misaki 1977 (Hamamatsu)
Remarks: There is no information on the morphology and taxonomy of this gyrodactylid. Identification needs to be confirmed in comparison with the four species of *Gyrodactylus* reported from eels in Japan.

Pseudodactylogyrus anguillae (Yin and Sproston, 1948) Gusev, 1965 (FW)
Synonym: *Pseudodactylogyrus microrchis* Ogawa and Egusa, 1976
Hosts: *Anguilla anguilla* (1, 2, 3, 5, 6)
Anguilla japonica (2)
Anguilla sp. (4)

Site of infection: gills
Distribution: Chiba, Shizuoka, Aichi, Tokushima, Kagoshima
Records: 1. Ogawa and Egusa 1976 (Chiba:—; Shizuoka:—); 2. Ogawa et al. 1985 (Chiba:—; Aichi:—; Tokushima:—); 3. Iwashita et al. 2002 (Shizuoka: Maisaka); 4. Hayward 2004 (Aichi:—; Kagoshima: Yaku Island); 5. Yoshikawa 2005 (Shizuoka: Hamanako Branch of Shizuoka Pref. Fish. Exp. St.); 6. Umeda et al. 2006 (Kagoshima: Ibusuki Branch of Kagoshima Pref. Fish. Center);
Remarks: Ogawa et al. (1985) synonimised *P. microrchis* as a junior synonym of *P. anguillae*.

Pseudodactylogyrus bini (Kikuchi, 1929) Gusev, 1965 (FW)
Original combination: *Dactylogyrus bini* Kikuchi, 1929
Hosts: *Anguilla anguilla* (2, 4)
Anguilla japonica (1, 5)
Anguilla sp. (3)
Site of infection: gills
Distribution: Chiba, Shizuoka, Aichi, Kagoshima
Records: 1. Kikuchi 1929 (—); 2. Ogawa and Egusa 1976 (Chiba:—; Shizuoka:—); 3. Hayward 2004 (Aichi:—; Kagoshima: Yaku Island); 4. Umeda et al. 2006 (Kagoshima: Ibusuki Branch of Kagoshima Pref. Fish. Center); 5. Sato and Tanaka 2007 (Shizuoka: near Lake Hamana)

Pseudodactylogyrus kamegaii Iwashita, Hirata and Ogawa, 2002 (B)
Host: *Anguilla japonica*
Site of infection: gills
Distribution: Chiba
Record: Iwashita et al. 2002 (Minato River)
Remarks: This species was found on eels collected in brackish waters (Iwashita et al., 2002).

Pseudodactylogyrus spp. (FW)
Includes: *Dactylogyrus* sp. of Kikuchi, 1929; Egusa and Ahmed, 1970; Egusa, 1970, 1971; Oka, 1973a; Hatai and Egusa, 1973; Ushiyama and Misaki, 1977
Pseudodactylogyrus bini or *P. anguillae* of Tanaka and Sato, 2007; Sato and Tanaka, 2007
"*Pseudodactylogyrus* sp. ang. 4" of Hayward, 2004
Hosts: *Anguilla anguilla* (2, 4, 5, 6, 8, 10)
Anguilla japonica (1, 3, 7, 8, 11, 12)
Anguilla sp. (9)
Site of infection: gills
Distribution: Shizuoka, Kagoshima
Records: 1. Kikuchi 1929 (—); 2. Egusa and Ahmed 1970 (Shizuoka: Yaizu); 3. Egusa 1970 (Shizuoka: Yoshida); 4. Egusa 1971 (—); 5. Oka 1973a (Shizuoka: near Lake Hamana); 6. Hatai and Egusa 1973 (Shizuoka: Yaizu, Yoshida); 7. Ushiyama and Misaki 1977 (Shizuoka: Hamamatsu); 8. Niwa 1979 (—); 9. Hayward 2004 (Kagoshima: Yaku Island); 10. Yoshikawa et al. 2006 (Shizuoka: Hamana Branch of Shizuoka Pref. Fish. Exp. St.); 11. Tanaka and Sato 2007 (Shizuoka: near Lake Hamana); 12. Sato and Tanaka 2007 (Shizuoka: near Lake Hanama)

Unidentified Monogenea (FW)
Includes: *Gyrodactylus* sp. or *Dactylogyrus* sp. of Nishio et al., 1970
"Monogenetic trematodes" of Shimazu, 1979
Hosts: *Anguilla anguilla* (1)
Anguilla japonica (1, 2)
Site of infection: gills
Distribution: Nagano, Shizuoka
Records: 1. Nishio et al. 1970 (Shizuoka: Yoshida); 2. Shimazu 1979 (Nagano: Lake Kizaki)

Cestoda

Bothriocephalus claviceps (Goeze, 1782) Rudolphi, 1810 (FW)
Hosts: *Anguilla japonica* (?)(2)
Anguilla maromorata (1, 2)
Site of infection: intestine
Distribution: Shiga, Kagoshima
Records: 1. Luo et al. 2002 (Kagoshima: Yaku Island [as Yako Island]); 2. Scholz et al. 2004 (Shiga: Lake Biwa; Kagoshima: Yaku Island)
Remarks: Identification of the eel from Lake Biwa examined by Scholz et al. (2004) was uncertain: these authors tentatively identified the fish as *A. japonica* but it may be identified as *A. anguilla*. If the eel was actually the latter species, the cestode may have been introduced into the lake by the import of *A. anguilla* from overseas (Scholz et al., 2004).

Bothriocephalus japonicus Yamaguti, 1934 (FW)
Host: *Anguilla japonica*
Site of infection: intestine
Distribution: Ibaraki, Nagano, Gifu, Shiga
Records: 1. Yamaguti 1934b (Ibaraki: Lake Kasumiga-ura [as "Kasumiga-ura"]); 2. Anonymous 2002 (Gifu: a tributary of the Kiso River); 3. Scholz et al. 2004 (Ibaraki: Kasumiga-ura, Nagano: Lake Suwa, Shiga: Lake Biwa)
Remarks: Information on this cestode is available from Shimazu (1997). The scientific name was misspelled "*japonicum*" in Anonymous (2002).

Bothriocephalus sp. (FW)
Host: *Anguilla japonica*
Site of infection: intestine
Distribution: Nagano
Record: Shimazu 1979 (Lake Kizaki)
Remarks: There is no morphological and taxonomic information on this cestode (Shimazu, 1979: 230, footnote).

Nybelinia anguillicola Yamaguti, 1952 (larva) (M)
Previous identification: *Nybelinia* sp. of Yamaguti, 1934

Host: *Anguilla japonica*
Site of infection: encysted in submucosa of intestine
Distribution: Mie
Records: 1. Yamaguti 1934b (Kuki); 2. Yamaguti 1952 (Kuki)

Unidentified Cestoda (FW)
Host: *Anguilla japonica*
Site of infection: intestine
Distribution: Shizuoka
Record: Ushiyama and Misaki 1977 (Hamamatsu)
Remarks: There is no information on the morphology and identification of this cestode: it was frequently found from June to September in cultured *A. japonica* (Ushiyama and Misaki, 1977).

NEMATODA

Anguillicola globiceps Yamaguti, 1935 (FW)
Hosts: *Anguilla japonica* (1, 2, 3, 4, 5, 7)
Anguilla sp. (*A. japonica* ?)(6)
Site of infection: swimbladder
Distribution: Aomori, Nagano, Chiba, Shizuoka, Aichi, Okayama
Records: 1. Yamaguti 1935b (Shizuoka: Lake Hamana); 2. Suyehiro 1957 (Okayama:—); 3. Egusa 1978 (Shizuoka:—; Aichi:—); 4. Egusa 1979 (—); 5. Shimazu 1979 (Aomori: Lake Hira-numa, Nagano: Lake Kizaki); 6. Moravec and Taraschewski 1988 (—); 7. Hirose et al. 1998 (Chiba: Tone River)
Remarks: The biology of this nematode was reviewed by Nagasawa et al. (1994) and Shimazu (1998). A brief review on *Anguillicola* is available in Salati (1987). Although Egusa et al. (1969) reported *A. globiceps* from Japanese eels cultured in Shizuoka, Hirose et al. (1976: 27, footnote) reported that Egusa et al.'s worms were not *A. globiceps* but *A. crassus*. The latter authors also mentioned that the morphology of the worms collected at an eel farm in Mishima, Shizuoka was similar to that of *A. globiceps*.

Anguillicoloides crassus (Kuwahara, Niimi and Itagaki, 1974) Moravec and Taraschewski, 1988 (FW)
Original combination: *Anguillicola crassa* Kuwahara, Niimi and Itagaki, 1974
Previous identification: *Anguillicola globiceps* of Egusa et al. 1969
Includes: *Anguillicola japonica* of Matsui, 1972
Anguillicola sp. of Egusa and Ahmed, 1970; Ushiyama and Misaki, 1977
"Swimbladder nematodes" of Egusa, 1970
Hosts: *Anguilla anguilla* (1, 2, 5, 9, 10)
Anguilla japonica (1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17)
Site of infection: swimbladder
Distribution: Chiba, Shizuoka, Gifu, Aichi, Mie, Okayama, Tokushima, Oita, Miyazaki, Okinawa
Records: 1. Egusa et al. 1969 (Shizuoka: Yoshida); 2. Egusa and Ahmed 1970 (Shizuoka: Yaizu); 3. Egusa 1970 (Shizuoka: Yoshida); 4. Matsui 1972 (—); 5. Kuwahara et al. 1974 (Shizuoka: Hamamatsu); 6. Hirose et al. 1976 (Shizuoka:—; Aichi:—); 7. Ushiyama and Misaki 1977

(Shizuoka: Hamamatsu); 8. Egusa 1978 (Chiba: eel farm, Lake Inba-numa, Tone River; Shizuoka: eel farm, Lake Hamana; Aichi: eel farm; Mie: eel farm; Okayama: Kojima Bay; Tokushima: eel farm; Oita: eel farm; Miyazaki: Oyodo River; Miyazaki: eel farm; Okinawa: eel farm); 9. Egusa 1979 (—); 10. Niwa 1979 (—); 11. Moravec and Taraschewski 1988 (Shizuoka [as "Shizuka"]:—); 12. Inui et al. 1998 (Shizuoka:—); 13. Hirose et al. 1998 (Aichi: Mikawa); 14. Ushikoshi et al. 1999 (—); 15. Inui et al. 1999 (Shizuoka:—); 16. Anonymous 2002 (Gifu: a tributary of the Kiso River); 17. Moravec et al. 2005 (Aichi: Isshiki)

Remarks: The biology of this nematode was reviewed by Nagasawa et al. (1994) and Moravec (2006). Information on the species is also available from Shimazu (1998). A brief note on the nematode is also published by Salati (1987). Although Matsui (1972: 571) stated infection of "*Anguillicola japonica*" in the "gall bladder" of *Anguilla japonica*, the worm is identifiable as *A. crassus*, based on a picture (fig. 27.36) shown by him (see Nagasawa et al., 1994: 128). The records reported by Inui et al. (1998, 1999) were based on the species from *A. japonica* imported from Taiwan to Japan. Information on the life cycle of the nematode in Japan is available in Hirose et al. (1976) and Moravec et al. (2005).

Cucullanus filiformis Yamaguti, 1935 (M)

Host: *Anguilla japonica*

Site of infection: intestine

Distribution: Mie

Record: Yamaguti 1941 (Hamajima)

Remarks: This nematode was originally reported from conger eels *Conger myriaster* in Japan (Yamaguti, 1935).

Gnathosoma spinigerum Owen, 1836 (larva) (FW)

Host: *Anguilla japonica*

Site of infection: musculature

Distribution: unspecified prefecture in Kyushu

Records: 1. Kikuchi 1956 (—); 2. Miyazaki 1963 (unspecified prefecture in Kyushu:—)

Heliconema longissimum (Ortlepp, 1923) (B)

Synonym: *Heliconema anguillae* Yamaguti, 1935

Host: *Anguilla japonica*

Site of infection: stomach

Distribution: unknown

Records: 1. Yamaguti 1935b (—); 2. Matsui 1972 (—)

Remarks: Matsui (1972: fig. 27.33) showed pictures of the stomach of *A. japonica* heavily infected by this nematode. Information on the nematode is available from Shimazu (1998). Moravec et al. (2007) recently redescribed the species from *Pisodonophis boro* (Ophichthidae) in Thailand.

Heliconema sp. (?)

Host: *Anguilla japonica*

Site of infection: digestive tract

Distribution: Okayama
Record: Suyehiro 1957
Remarks: The morphology of this nematode is different from that of *H. longissimum* (as *H. anguillae*) (Suyehiro, 1957).

Philometroides anguillae (Ishii, 1916) Rasheed, 1963 (FW)
Original combination: *Filaria anguillae* Ishii, 1916
Host: *Anguilla japonica*
Site of infection: orbit
Distribution: Tokyo, Aichi
Records: 1. Ishii 1916a (Tokyo: Fukagawa-Fuyuki; Aichi: Toyohashi); 2. Ishii 1931 (Tokyo: Fukagawa-Fuyuki; Aichi: Toyohashi)
Remarks: Yamaguti (1935) suggested that the species described by Ishii (1916a) as "*Filaria anguillae*" should be placed in the genus *Philometra*. Later Rasheed (1963) transferred it to the genus *Philomeroides*. Matsui (1972: 584) mistakenly reported the species as "*Philometra parasiluri*." Information on the species is available from Shimazu (1998) and Moravec (2006: 425–427).

Raphidascaris acus (Bloch, 1779) Railliet and Henry, 1915 (FW)
Host: *Anguilla japonica*
Site of infection: intestine
Distribution: Shiga
Record: Grygier and Urabe 2003 (Lake Biwa)
Remarks: This nematode is not a parasite of Japanese fishes. It has been suggested that the nematode was introduced into Japan by the import of *A. anguilla* from overseas (Grygier and Urabe, 2003).

ACANTHOCEPHALA

Acanthocephalus gotoi Van Cleave, 1925 (FW)
Host: *Anguilla japonica*
Site of infection: intestine
Distribution: Tokyo, Aichi
Records: 1. Van Cleave 1925 (Tokyo: fish market); 2. Yamaguti 1935a (various localities in Japan); 3. Fukui and Morisita 1936 (Aichi:—)
Remarks: Information on this acanthocephalan is available from Shimazu (1999b).

Echinorhynchus cotti Yamaguti, 1935 (FW)
Host: *Anguilla japonica*
Site of infection: [intestine]
Distribution: Shiga
Record: Amin et al. 2007 (Lake Biwa)
Remarks: Information on this acanthocephalan is available from Shimazu (1999b).

Longicollum alemniscus (Harada, 1935) Fuki and Morisita, 1937 (immature worm) (M)
Host: *Anguilla japonica*
Site of infection: [intestine]
Distribution: Aichi
Record: Fukui and Morisita 1937 (—)
Remarks: Information on this species is available in Fukui and Morisita (1938) as well. Petrochenko (1956) considered this species as a junior synonym of *Longicollum pagrosomi* but his suggestion has not been supported by Yamaguti (1963), Golvan (1969) and Amin (1985). The species is thus herein treated as a valid species.

Pseudorhadinorhynchus samegaiensis Nakajima and Egusa, 1975 (FW)
Host: *Anguilla japonica*
Site of infection: [intestine]
Distribution: Shiga
Record: Amin et al. 2007 (Lake Biwa)
Remarks: Information on this acanthocephalan is available from Shimazu (1999b).

Hirudinida

Batracobdella smaragdina (Oka, 1910) (FW)
Host: *Anguilla japonica*
Habitat: skin
Distribution: Aichi, Kagoshima
Record: Ogawa et al. 1985 (Aichi: Isshiki; Kagoshima:—)

Hemiclepsis marginata (O. F. Müller, 1774) (FW and B)
Host: *Anguilla japonica*
Site of infection: skin
Distribution: Aichi
Record: Nagasawa and Miyakawa 2006 (river near Akabane Port)
Remarks: Although this species usually occurs in fresh waters (Burreson, 2006), Nagasawa and Miyakawa (2006) found the specimens on elvers caught in brackish waters.

Copepoda

Lernaea cyprinacea Linnaeus, 1758 (FW)
Original combination: *Lernaea* (*Lernaeocera*) *elegans* Leigh-Sharpe, 1925
Previous identification: *Lernaea elegans* Leigh-Sharpe, 1925
Includes: *Lernaea* sp. of Niwa, 1979
Hosts: *Anguilla anguilla* (10)
Anguilla japonica (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
Sites of infection: buccal cavity, nostril, orbit, fins
Distribution: Chiba, Shizuoka, Aichi, Mie, Okayama, Hyogo, Shimane, Miyazaki

Records: 1. Leigh-Sharpe 1925 (Aichi: Kitajima near Toyohashi); 2. Matsui and Kumada 1928 (Shizuoka: on the coast of Lake Hamana; Aichi: near Toyohashi, Hekikai County); 3. Nakai and Kokai 1931 (Chiba:—); 4. Yamaguti 1939 (Shizuoka [as "Sizuoka"]:—); 5. Kasahara 1957 (—); 6. Kasahara 1958 (Shizuoka:—; Aichi: Toyohashi; Mie:—); 7. Kasahara 1959 (—); 8. Kasahara 1962 (Shizuoka:—; Aichi:—; Mie:—; Okayama:—; Hyogo:—; Shimane:—; Miyazaki:—); 9. Tsutsumi 1978 (—); 10. Niwa 1979 (—)

Remarks: Information on this copepod as a parasite of *A. japonica* is available from Matsui (1972). The bibliography of the copepod in Japan was published by Nagasawa et al. (2007b).

HOST-PARASITE LIST

Anguilla anguilla (Linnaeus, 1758) European eel, "yōroppa-unagi" (in Japanese)

Sarcomastigophora

Cryptobia sp. (—)

Ichthyobodo sp. (—)

Ciliophora

Apiosoma sp. (Shizuoka)

Capriniata piscium (Shizuoka)

Chilodonella sp. (—)

Ichthyophthirius multifiliis (Shizuoka)

Trichodina sp. (Shizuoka)

Microspora

Heterosporis anguillarum (Shizuoka, Aichi, Kagoshima)

Myxozoa

Myxidium giardi (—)

Myxidium sp. (Shizuoka)

Monogenea

Gyrodactylus anguillae (Shizuoka)

Pseudodactylogyrus anguillae (Chiba, Shizuoka, Aichi, Tokushima)

Pseudodactylogyrus bini (Chiba, Shizuoka, Tokushima)

Pseudodactylogyrus spp. (Shizuoka)

Unidentified Monogenea (Shizuoka)

Nematoda

Anguillicoloides crassus (Shizuoka)

Copepoda

Lernaea cyprinacea (—)

Remarks: The parasites listed herein are all from cultured *A. anguilla*. There is no record of parasites from this host occurring in natural waters of Japan.

Anguilla japonica Temminck and Schlegel, 1847 Japanese eel, "unagi" (in Japanese)

Sarcomastigophora

Cryptobia sp. (—)

Ichthyobodo sp. (—)

Trypanosoma sp. (Shizuoka)

Ciliophora
Ambiphrya sp. (—)
Apiosoma sp. (Shizuoka)
Capriniata piscium (Shizuoka)
Carchesium polypinum (Tokushima)
Chilodonella sp. (—)
Ichthyophthirius multifiliis (Shizuoka)
Trichodina acuta (Mie)
Trichodina jadranica (Mie)
Trichodina japonica (Mie)
Trichodina sp. (Shizuoka)
Microspora
Heterosporis anguillarum (Hokkaido, Kanagawa, Shizuoka, Aichi, Kagoshima)
Unidentified Microspora (Shizuoka)
Myxozoa
Myxidium giardi (Tokyo, Shizuoka, Miyazaki)
Myxidium lentiforme (Shiga)
Myxidium matsuii (Kanagawa, Shizuoka, Aichi)
Myxidium uchiyamae (Shiga)
Myxidium sp. (Shizuoka)
Myxobolus dermatobius (Tokyo, Shizuoka)
Myxobolus fujitai (Ibaraki)
Unidentified Myxozoa (Shizuoka, Gifu)
Trematoda
Azygia gotoi (Aomori, Ibaraki, Tokyo, Nagano, Shiga)
Centrocestus formosanus (Kagoshima)
Genarchopsis goppo (Ibaraki, Shiga)
Hemiuridae gen. sp. (Tokyo)
Lasiotocus sp. (Aomori)
Lecithochrium musculus (Mie, unspecified prefecture facing the Seto Inland Sea)
Metagonimus spp. (Shizuoka)
Phyllodistomum anguilae (Aomori, Ibaraki)
Proctotrematoides pisodontophidis (Chiba)
Tubulovesicula anguillae (Miyagi)
Monogenea
Gyrodactylus egusai (Shizuoka)
Gyrodactylus joi (Shizuoka)
Gyrodactylus nipponensis (Chiba, Shizuoka, Tokushima, Miyazaki)
Gyrodactylus sp. (Shizuoka)
Pseudodactylogyrus anguillae (Chiba, Aichi, Tokushima)
Pseudodactylogyrus bini (Shizuoka)
Pseudodactylogyrus kamegaii (Chiba)
Pseudodactylogyrus spp. (Shizuoka)

Unidentified Monogenea (Shizuoka, Nagano)
Cestoda
Bothriocephalus claviceps (Shiga)
Bothriocephalus japonicus (Ibaraki, Nagano, Gifu, Shiga)
Bothriocephalus sp. (Nagano)
Nybelinia anguillicola (Mie)
Unidentified Cestoda (Shizuoka)
Nematoda
Anguillicola globiceps (Aomori, Nagano, Chiba, Shizuoka, Aichi, Okayama)
Anguillicoloides crassus (Chiba, Shizuoka, Gifu, Aichi, Mie, Okayama, Tokushima, Oita, Miyazaki, Okinawa)
Cucullanus filiformis (Mie)
Gnathosoma spinigerum (unspecified prefecture in Kyushu)
Heliconema longissimum (—)
Heliconema sp. (Okayama)
Philometroides anguillae (Tokyo, Achi)
Raphidascaris acus (Shiga)
Acanthocephala
Acanthocephalus gotoi (various localities including Tokyo and Aichi)
Echinorhynchus cotti (Shiga)
Longicollum alemniscus (Aichi)
Pseudorhadinorhynchus samegaiensis (Shiga)
Hirudinida
Batracobdella smaragdina (Aichi, Kagoshima)
Hemiclepsis marginata (Aichi)
Copepoda
Lernaea cyprinacea (Chiba, Shizuoka, Aichi, Mie, Okayama, Hyogo, Shimane, Miyazaki)

Remarks: The above list shows that 42 named species of parasites have been recorded from *A. japonica*. Based on their habitat, these species are categorized into two groups: 34 freshwater (FW) parasites, and 8 marine (M) and/or brackish-water (B) parasites (see the Parasite-Host List). The following six species in the latter group occur as adults: *Lecithochrium musculus, Proctotrematoides pisodontophidis, Tubulovesicula anguillae, Pseudodactylogyrus kamegaii, Cucullanus filiformis*, and *Heliconema longissimum*. This clearly supports the current knowledge on the ecology of *A. japonica* (Tsukamoto et al., 1998; Tsukamoto and Arai, 2001; Arai et al., 2003a, 2003b): the species commonly occurs in marine coastal waters as "sea eels" and "estuarine eels" as well as in freshwater waters as "river eels." Of the six species of parasites of marine and/or brakish-water origin, two species, *Tubulovesicula anguillae* and *Pseudodactylogyrus kamegaii*, are host-specific. It is thus apparent that *A. japonica* serves as the definitive host for the two parasites in marine and/or brackish waters, where the eel constantly remains.

Anguilla marmorata Quoy and Gaimard, 1824 Giant mottled eel, "ō-unagi" (in Japanese)
Cestoda
Bothriocephalus claviceps (Kagoshima)

Anguilla sp.

Monogenea

Pseudodactylogyrus anguillae (Kagoshima)

Pseudodactylogyrus bini (Aichi, Kagoshima)

Pseudodactylogyrus sp. (Kagoshima)

Nematoda

Anguillicola globiceps (—)

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日本産ウナギ類の寄生虫目録（1915～2007年）

長澤　和也[1)]・海野　徹也[1)]・水野　晃秀[2)]

[1)] 広島大学大学院生物圏科学研究科　739-8528 東広島市鏡山1-4-4
[2)] 愛媛県立宇和島水産高等学校　798-0068 宇和島市明倫町1-2-20

要　旨　1915～2007年の93年間に出版された文献に基づき，日本産ウナギ属魚類３種（ウナギ *Anguilla japonica*，オオウナギ *Anguilla marmorata*，ヨーロッパウナギ *Anguilla anguilla*）の寄生虫に関する情報を２つのリスト（寄生虫－宿主リスト，宿主－寄生虫リスト）に整理して目録を作成した。ウナギとオオウナギは在来種であり，ヨーロッパウナギは国外からの移入種である。本目録には，44種の寄生虫（繊毛虫類６種，微胞子虫類１種，ミクソゾア類６種，吸虫類７種，単生類７種，条虫類３種，線虫類７種，鉤頭動物４種，ヒル類２種，カイアシ類１種）に加えて，学名がまだ決定していない寄生虫の情報が含まれる。寄生虫－宿主リストでは，各寄生虫は高位分類群ごとに配列され，最新の学名，シノニム，寄生部位，地理的分布および報告者の情報が示されている。上記44種のうち，ウナギから43種，オオウナギから１種，ヨーロッパウナギから10種の寄生虫が報告されている。単生類の *Gyrodactylus anguillae* と線虫類の *Raphidascaris acus* はヨーロッパウナギとともにヨーロッパから，また *Gyrodactylus nipponensis* もインド・西太平洋地域から持ち込まれたと推察されている。ウナギから報告された寄生虫のうち，８種は海産または汽水産で，２種（*Tubulovesicula anguillae*，*Pseudodactylogyrus kamegaii*）の成虫がウナギに特異的に寄生しているため，海洋と汽水域において，ウナギはそれら寄生虫の固有宿主の役割を果たしていると言える。

キーワード：ウナギ；オオウナギ；ヨーロッパウナギ；寄生虫；目録；*Anguilla anguilla*；*Anguilla japonica*；*Anguilla marmorata*