Checklist of the parasites of fishes of the Philippines

FAO
FISHERIES
TECHNICAL
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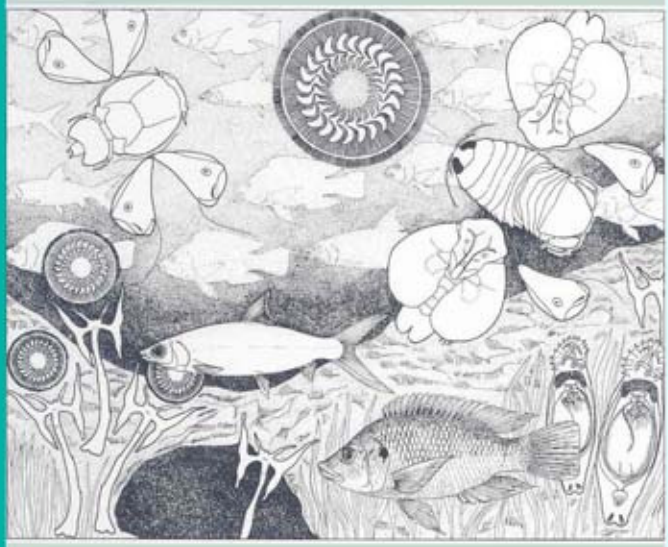
369



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OF THE
ASIAN FISHERIES
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Food
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Organization
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by
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PREPARATION OF THIS CHECKLIST

The need for information on the occurrence of diseases and movement of pathogens of aquatic animals has long been recognized in the Asia-Pacific Region, and has been re-iterated in the reports of numerous workshops held by various donors and regional agencies (e.g., International Development Research Centre Canada (IDRC), Food and Agriculture Organization of the United Nations (FAO), Asian Fisheries Society, Fish Health Section (FHS/AFS), Network of Aquaculture Centres in Asia-Pacific (NACA), Australian Centre for International Agriculture Research (ACIAR), and Asian Development Bank (ADB)) dating back to at least 1978. FAO has been highly active in this area, through its Code of Conduct for the Responsible Movement of Aquatic Organisms, and is currently collaborating with ACIAR and NACA in implementing a comprehensive regional strategy for the Development of Health Certification and Quarantine Guidelines for the Responsible Movement of Live Aquatic Animals in Asia. One of the goals identified within the FAO/NACA/ACIAR strategy is the development of a comprehensive information database on aquatic animal health, with the FAO charged to take the initiative in developing and establishing a prototype computerized information system. This prototype information system, the "Aquatic Animal Pathogen and Quarantine Information System (AAPQIS)," has been developed for Asia with the help of the FHS/AFS where a comprehensive information database is readily available through their fish health bibliography publication series. The information from the Philippines published in this checklist has also been included in the AAPQIS database.

Distribution:

Authors
FAO Fisheries Officers
Regional Fisheries Councils and Commissions
FAO Fish Health Projects
Asia Regional Fish Health Institutions
Fish Health Section of the Asian Fisheries Society

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ABSTRACT

This checklist summarizes information on the parasites of Philippine fishes contained in the world literature dating from the earliest known record (de Blainville 1822) to the end of 1996. Information is presented in the form of parasite-host and host-parasite lists. Included are 201 named species of parasites, distributed among the higher taxa as follows: Apicomplexa - 1, Ciliophora - 16, Mastigophora - 2, Microspora - 1, Myxozoa - 9, Trematoda - 90, Monogenea -22, Cestoda - 6, Nematoda - 20, Acanthocephala - 5, Mollusca - 1, Branchiura - 2, Copepoda - 21 and Isopoda - 5. Also included are many records of parasites not identified to species level. Parasites have been reported from 172 of the more than 2030 species of marine and freshwater fish occurring in Philippine waters, and from another 17 species of freshwater aquarium fish examined in the Philippines but not found in natural waters. The Parasite-Host List is organized on a taxonomic basis and provides information for each parasite species on the environment (fresh water, brackish water, marine), the location (site of infection) in or on its host(s), the species of host(s) infected, the known geographic distribution (by island) in the Philippines, and the published sources for each host and locality record. The Host-Parasite List is organized according to the taxonomy of the hosts, and includes for each host, the English language and local (typically Tagalog) common names, environment (fresh water, brackish water, marine), status in the Philippines (native or exotic), and information on the known Philippine distribution of the parasites. Both lists are accompanied by remarks and footnotes, as warranted, giving specific information on points of systematics, nomenclature, possible misidentifications, introductions, pathogenicity, etc. Citations are included for all references and a supplementary list of references contains other literature on Philippine fish parasites. Parasite and host indices are included. The following new taxonomic combinations are made: *Prosorhynchoides philippinorum* (Velasquez, 1959) n. comb., for *Bucephaloides philippinorum* Velasquez, 1959; *Prosorhynchoides sibi* (Yamaguti, 1940) n. comb., for *Bucephaloides sibi* (Yamaguti, 1940); *Genolinea awa* (Yamaguti, 1965) n. comb., for *Pseudobunocotyla awa* Yamaguti, 1965; and *Procamallanus (Spirocamallanus) philippinensis* (Velasquez, 1980) n. comb., for *Spirocamallanus philippinensis* Velasquez, 1980.

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INTRODUCTION

The study of fish parasites in the Philippines has a long history, dating back at least to the work of de Blainville (1822), who reported on parasitic copepods of marine fishes collected at Manila (see Arthur 1996). However, sustained efforts to study these organisms are more recent, dating from the work of M.A. Tubangui and colleagues at the Bureau of Science in Manila from the late 1920s through the 1940s, and by C.C. Velasquez and her students at the University of the Philippines, Diliman, from the early 1950s to the 1980s, and continued since 1985 by the staff of the Bureau of Fisheries and Aquatic Resources (BFAR) in Quezon City.

The need for a checklist of the parasites of Philippine fishes (and for the entire Southeast Asian Region) was recognized during work conducted by the authors at the BFAR. In particular, the need for readily accessible information on fish parasites, and their host and geographic distributions, as well as on pathogens of other aquatic organisms, was repeatedly emphasized during the various workshops on fish health and quarantine sponsored by the International Development Research Centre (Canada) during the 1980s, and subsequently, at the various Symposia on Diseases in Asian Aquaculture, organized by the Fish Health Section of the Asian Fisheries Society.

This is the first complete listing of the parasites reported from the fishes of the Philippines, or for that matter, of any of the Southeast Asian countries. Several important previous works should be mentioned. These include the summaries of the helminths of Philippine animals by Tubangui (1933b, 1947) and the listings of fish helminths or digeneans given by Velasquez (1974, 1977a, 1986a). Also to be mentioned are the monograph *Digenetic Trematodes of Philippine Fishes* by C.C. Velasquez (1975a), and the book *Parasites and Diseases of Fish Cultured in the Tropics* by Z. Kabata (1985). The former is the only taxonomic monograph dealing with the fish parasites of Southeast Asia, while the latter provides an excellent overview of the diseases and parasites of fishes cultured in the region up to the early 1980s. The fish health literature for Southeast Asia, including the Philippines, was abstracted up to 1990 by members of the Fish Health Section (Arthur 1992).

In compiling this checklist, we have attempted to list only original reports appearing in the literature for each species. A special problem was posed by the many papers of C.C. Velasquez which include summaries of the helminths of Philippine fishes. Four of these papers (Velasquez 1966, 1974, 1977a, 1986a) include tables which are indicated to present new host and/or locality records. However, all four tables contain identical information; and we have thus catalogued only records contained in the first published (Table 1 of Velasquez 1966). Many of the publications of Velasquez also contain, more generalized tables listing the Digenea reported from Philippine fishes (Velasquez 1974, 1977a, 1986a), fish helminths of significance to human health (Velasquez 1966, 1974, 1976a, 1977a, 1980b, 1986a) and of importance to aquaculture (Velasquez 1986a). Velasquez (1966) is based on original information and includes collection localities, while tables contained in subsequent papers apparently draw on information contained in Velasquez (1966), the checklist of Tubangui (1947), and more recent data, both published and unpublished, generally without providing specific localities and/or citation of the sources used. For tables and appendices contained in her review papers published after 1966, we have catalogued only

those records involving new host listings. In the text of these later review papers, Velasquez often repeated verbatim and without citation, information contained in earlier papers, In these instances, we have treated each unreferenced parasite record as a new report.

In preparing his book *Parasites and Diseases of Fish Cultured in the Tropics,* Kabata (1985) used both published and unpublished sources of information. In cataloguing this work, we have included only those listings for which we could find no pre-existing published record.

The **Parasite-Host** List is a taxonomically arranged listing of all parasites reported from Philippine fishes. The higher classification used is as follows: for the Protista and Myxozoa, that of Lorn and Dyková (1992); for the Trematoda, that of Gibson (1996); for the Monogenea, that of Boeger and Kritsky (1993);for the Cestoidea, that of Khalil et al. (1994); for the Nematoda, that of Anderson et al. (1974-1983) and Anderson (1992); for the Acanthocephala, that of Amin (1985, 1987); for the Copepoda and Branchiura, that of Kabata (1979, 1988); for the Isopoda, that of Rafi (1988); and for the Mollusca and Hirudinea, that used by McDonald and Margolis (1995). Readers are also referred to the recent treatments of Beverley-Burton (1984) for the Monogenea, Schmidt (1986) for the Cestoidea and of Arai (1989) for the Acanthocephala.

The **Parasite-Host** List contains information for all parasite species reported from Philippine fishes. For each parasite, the currently recognized **scientific name,** including authors and dates, and any synonyms under which original records appeared are given. This is followed by the **environment** in which the parasite normally completes its life cycle, indicated as fresh water (F), brackish water (B) or marine (M). As the life cycles of Philippine fish parasites are for the most part unknown, this information is drawn primarily from non-Philippine sources or from information on collection locality and/or host biology. The **Location** gives the site of infection where the parasite is normally found in or on the host. Under **Hosts,** the hosts are listed alphabetically by their currently recognized scientific names. In parentheses, following each host name, are given the numbers for the references **(Records)** reporting the parasite from the host in question. The distribution **(Dist.)** provides a summary of the reported distribution of the parasite in the Philippines, and is given alphabetically by island. Unless otherwise indicated by the author(s), fishes examined for parasites which were obtained from local markets are considered to have originated from local waters. Under **Records** are given the numbered individual references containing the parasite records, each followed by the geographic locality(ies) to which they pertain. Under **Remarks** are given comments on various aspects, such as synonymies, pathogenicity, and introductions. More specific notations on individual records are given as **footnotes.**

The **Host-Parasite List** is organized phylogenetically following the classification of fishes given by Eschmeyer (1990), with the genera and species within individual families arranged alphabetically. Information on the scientific and commonnames,status and environment of Philippine fishes was obtained mainly from the species data base of *FishBase 96* (Froese and Pauly 1996). Scientific names not found in *FishBase 96* were verified using Herre (1953) and Eschmeyer et al. (1996). Additional sources consulted for local common names include Herre and Umali (1948), Herre (1953) and Velasquez (1972, 1975a). For each host, the following information is given: the currently recognized **scientific name,**

including species author(s), followed by any synonyms under which original parasite records were made, the *FishBase 96* recognized **English common name,** the **local common name(s)**[1] (given in Tagalog, unless otherwise indicated), and the host's **Status** in the Philippines (native or exotic), and its typical **Environment** (fresh water, brackish water, marine). This is followed by a **listing of the parasites** reported for the host in question, arranged by higher taxon and listed alphabetically. Following each parasite name, the **distribution** is summarized by island. Records which involve possible parasite misidentifications are indicated by a question mark preceding the parasite's name. Finally, where appropriate, **Remarks** and **footnotes** are included to provide information on such topics as host distribution and introductions, possible erroneous records and additional local common names.

Under **References** are listed all the papers containing the records, as well as other works cited in the text. A short **Supplementary References** lists some additional articles dealing with Philippine fisheries parasitology but not containing any original reports. A **Parasite Index** and a **Host Index** complete the volume.

To date, a total of 201 named species of parasites (1 Apicomplexa, 16 Ciliophora, 2 Mastigophora, 1 Microspora, 9 Myxozoa, 90 Trematoda, 22 Monogenea, 6 Cestoda, 20 Nematoda, 5 Acanthocephala, 1 Mollusca, 2 Branchiura, 21 Copepoda and 5 Isopoda) have been reported from Philippine fishes. However, the faunas of only a few, freshwater cultured species, the majority of them exotics such as tilapias and carp, are well known. For the vast majority of native freshwater and marine fishes, the parasite faunas remain poorly known or completely unstudied. Contained in this checklist are records for parasites from a total of 172 fish species and one hybrid form occurring in Philippine natural waters, and from an additional 17 species of exotic aquarium fish examined in the Philippines but not reported to occur in natural waters. As *FishBase 96* (Froese and Pauly 1996) lists a total of 2032 species of fish occurring in the country (1834 marine, 138 fresh water, 60 euryhaline), there remains many years of basic systematic and survey work to be conducted before the parasite fauna of Philippine fishes will be thoroughly documented.

We would like to thank a number of colleagues who kindly provided critical comments on sections of the manuscript, key references, and/or taxonomic advice. These include J. Lorn (Protista), T.E. McDonald (Monogenea, Isopoda), S.L. Lim (Monogenea), D.I. Gibson and R.A. Bray (Digenea), L. Margolis and F. Moravec (Nematoda) and Z. Kabata and G. Boxshall (Crustacea). Answers to questions on host taxonomy and distribution were kindly provided by E. Capuli, R. Froese, D.R. Bellwood and D. Siebert. The assistance of Guy Michaud and the staff of the library at the Maurice Lamontagne Institute in conducting literature searches and obtaining references is gratefully acknowledged. Susan Arthur kindly assisted in compiling the host-parasite list and indices, and in proof reading the manuscript. This work was begun under support: from the International Development Research Centre (Canada) to the Bureau of Fisheries and Aquatic Resources, Quezon City, through the BFAR/IDRC Fish Health Project, and was completed while the senior author was on secondment from the Department of Fisheries and Oceans (Canada) to the Food and Agriculture Organization of the United Nations, Rome. We especially thank Dr. R. P. Subasinghe, FAO, for arranging facilities for the senior author and publication of this volume. We also thank Miss Emanuela D'Antoni for the cover design.

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[1] Where two or more highly similar spellings of a local common name were found for the same host species, we have listed only one of these variations.

PARASITE-HOST LIST

KINGDOM PROTISTA

SUBKINGDOM PROTOZOA

PHYLUM MASTIGOPHORA

CLASS DINOFLAGELLIDA

ORDER BLASTODIN1DA

FAMILY OODIN1DAE

Amyloodinium ocellatum (Brown, 1931) (B,M)

Blown and Hovasse, 1946
Includes: *Amyloodinium-like* protozoans of Lio-Po, Pascual and Santos, 1983

Location: gills, skin
Host *Mugil cephalus*
Dist: Panay
Records: Lio-Po et al. 1983; Baticados and Quinitio 1984; Llobrera 1987
Remarks: *Amyloodinium ocellatum* is a cosmopolitan, frequently encountered pathogen of marine fishes raised in captivity. Baticados and Quinitio (1984) and Llobrera (1987) reported outbreaks of amyloodiniasis and associated mortalities which occurred in adult flathead mullet held at Tigbauan, Iloilo.

Amyloodinium sp. (B)

Location: gills
Host: *Scatophagus argus*
Dist: Panay
Records: Cruz 1988; Lio-Po and Barry 1988

Oodinidae gen sp. (F)

Includes: *Oodinium* sp. Auctorum
Location: skin
Hosts: *Oreochromis mossambicus* (2,3)
O. mossambicus x *O. niloticus niloticus* (3)
O. niloticus niloticus (1,2,3)
Dist: Luzon
Records: 1. Guerrero and Paycana 1981a, 2. 1981b; 3. Guerrero 1982

Remarks: These reports probably pertain to *Piscinoodinium pillulare* (Schäperclaus, 1954), the only dinoflagellate known to occur on freshwater fish (see Lorn and Dyková 1992). The genus *Oodinium* as presently defined contains only parasites of marine invertebrates.

Unidentified Dinoflagellida

Dinoflagellida gen sp (B)
Location: gills, skin
Host: *Chanos chamos*
Dist: PanayRecord: Anon 1973b

CLASS KINETOPLASTIDEA

ORDER KINETOPLASTIDA

SUBORDER TRYPANOSOMATINA

FAMILY TRYPANOSOMATIDAE

Trypanosoma sp. (F)
Location: blood
Hosts: *Acanthophthalmus semicinctus* (2)
Monopterus albus (2)
unspecified fish (1)
Dist: Luzon (aquarium)
Records: 1. Lumanlan et al. 1990 (-), 2.1992
Remarks: *Trypanosoma* has not yet been shown to occur in fishes from Philippine natural waters, these records involving fish imported for the aquarium trade or for transshipment which were examined in Quezon City.

[2] Full'identification of material listed only as belonging to the genus Cryptobia in the abstract of Regidor et al. (1986) was given in Regidor and Arthur (1986).

SUBORDER BODONINA

FAMILY BODONIDAE

Cryptobia branchialis Nie in Chen, 1955 (F,B)
Location: gills
Hosts: *Chanos chanos* (2,3,4,5)
Oreochromis niloticus niloticus 1,6,7,8)
Dist: Luzon, Mindanao, Palawan, Panay
Records:1. Natividad et al. 1986b (Luzon); 2.Regidor and Arthur 1986 (Luzon), 3. 1990 (-), 4.1992 (Luzon); 5. Regidor et al. 1986 (-)[2];

6.Bondad-Reantaso and Arthur 1989a (-), 7. 1990(Luzon,Mindanao,Palawan,Panay); 8.Lumanlan et al. 1992 (Luzon)

Remarks: Lom and Dyková (1992) note that this species is probably identical with *Cryptobia concava* (Davis, 1947).

Cryptobia sp.(F,B)
Location: gills, skin
Hosts: *Aristichthysnobilis(3)*
Carassins auratus (3)
Chanos chanos (1)
Cirrhinus mrigala (3)
Epalzeorhynchos frenatum (3)
Mylopharyngodon piceus (3)
Pangasius sutchi (3)
Paraeheirodon simulans (3)
Poedlia reticulata (3)
Tanichthys albonubes (3)
unspecified fish (2)
Dist: Luzon
Records: 1. Anoa 1975; 2. Davy and Graham 1979 (-); 3. Lumanlan et al. 1992[3]

Ichthyobodo sp. (F)
Syn: *Costia sp*
Location: gills, skin
Hosts: *Aristichthys nobilis* (2)
Carassius auratus (2)
Cyprinus sp. (2)
Mylopharyngodon piceus (2)
unspecified fish (1)
Dist: Luzon
Records: 1. Lio-Po et al. 1983 (-); 2. Lumanlan et al. 1992[4]

Unidentified Kinetoplastida

Kinetoplastida gen sp. (F)
Location: blood
Host: *Tilapia zillii*
Dist: Luzon
Record: Anon 1975

CLASS DIPLOMONADEA

ORDER DIPLOMONADIDA

FAMILY HEXAMITIDAE

Hexamita sp.(F)
Location: intestine
Hosts: *Leiocassis siamensis*
Xiphophorus maculatus
Dist: Luzon (aquarium)
Record: Lumanlan et al. 1992
Remarks: *Hexamita* has not yet been shown to occur in fishes from Philippine natural waters, these records involving fishes imported from Hongkong and Singapore for the aquarium trade which were examined in Quezon City.

[3] The records of Lumanlan et al. (1992) involve fishes imported for aquaculture and the aquarium fish trade which were examined in Quezon City.

[4] The records of Lumanlan et al. (1992) involve fishes imported for aquaculture and theornamentalfish trade which were examined in Quezon City.

PHYLUM APICOMPLEXA

CLASS SPOROZOA

SUBCLASS COCCIDIA

ORDER EIMERIIDA

FAMILY EIMERIIDAE

Goussia carpelli (Léger and Stankovitch, 1921) (F)
Dyková and Lorn, 1983
Syn: *Eimeria carpelli*
Léger and Stankovitch, 1921
Location: intestine
Host: *Carassius auratus*
Dist: Luzon (aquarium)
Record: Lumanlan et al. 1992
Remarks:This species has not yet been shown to occur in fish from Philippine natural waters, this reportinvolvinggoldfishimportedfrom Hongkong for the ornamental fish trade which were examined in Quezon City.

Unidentified Sporozoa

Sporozoa gen sp. (F)
Location: kidney
Host *Channa striata*
Dist: Philippines
Record: Lilley et al. 1992[5]

[3] This report is found only in the caption to Plate 4, figure e of Lilley et al. (1992).

PHYLUM MICROSPORA

CLASS MICROSPOREA

ORDER MICROSPORIDIA

SUBORDER PANSPOROBLASTINA

FAMILY GLUGEIDAE

Heterosporis anguillarum (Hoshina, 1951) (F)
Lom, Dyková, Korting and Klinger, 1989
Syn.: *Pleistophora anguillarum Hoshina,* 1951
Location: [musculature]
Hosts: *Anguilla bicolor paciflca*
A. celebensis
Dist: Philippines
Record: Boustead 1982
Remarks: This species has been reported to be a pathogen of cultured eels *(Anguilla japonica)* in Japan and Taiwan. Severe infections can result in considerable mortality (see Canning and Lorn 1986).

Unidentified Microsporidia

Microsporidia gen sp. (B,M)
Location: external surface of intestine, musculature
Hosts: *Nemipterus* sp. (3)
Scatophagus argus (1,2)
Selar crumenophthalmus (3)
Siganus sp. (3)
Tylosurus crocodilus crocodilus (3)
Dist: Panay, Visayan islands
Records:1. Lio-Po and Barry 1988 (Panay); 2. Natividad and Gerundo 1988 (Panay); 3. Petersen et al. 1993 (Visayan islands)[6]

[6] Petersen et al. (1993) examined fish bought from fishermen and local markets on the islands of Cebu, Mactan and Leyte; however, the exact origin of individual fish species was not given.

PHYLUM CILIOPHORA

CLASS KINETOPHRAGMINOPHOREA

SUBCLASS HYPOSTOMATA

ORDER CYRTOPHORIDA

FAMILY CHILODONELLIDAE

Chilodonella sp.(F)
Location: skin
Hosts: *Aristichthys nobilis* (3)
Carassius carassius (1)
Channa striata (2)
Epalzeorhynchos frenatum(3)
Mugil sp. (3)
Dist: Luzon
Records: 1. Guerrero and Paycana 1981b; 2. Bondad-Reantaso et al. 1990; 3. Lumanlan et al. 1992[7]

CLASS OLIGOHYMENOPHOREA

SUBCLASS HYMENOSTOMATA

ORDER HYMENOSTOMATIDA

SUBORDER OPHRYOGLENINA

FAMILY ICHTHYOPHTHIRIIDAE

Ichthyophthirius multifiliis Fouquet, 1876 (F)
Location: gills, skin
Hosts: *Aristichthys nobilis* (3)
Botia macracanthus (3)*Carassius auratus* (3)
Cirrhinus mrigala (3)
Cyprinus carpio carpio (3)
Pangasius sutchi(3)
Paracheirodon simulans (3)
Petrochromis orthognathus (3)
Puntius tetrazona (3)
Rasbora kalochroma (3)
Xiphophorus maculatus (3)
Xiphophorus sp. (3)
unspecified fish (1,2)
Dist: Luzon
Records:1. Davy and Graham 1979 (-);2.Lumanlan et al. 1990 (-)[8], 3.1992[9]
Remarks: *Ichthyophthirius multifiliis,* the causative agent of ichthyophthiriasis, "white spot disease," or "ich," is a well known pathogen of freshwater fishes (see Lom and Dyková 1992).
Ichthyophthirius sp. (F)
Location: gills, skin
Hosts: *Anguilla* sp. (4)
Oreochromis mossambicus (2,3)
O. mossambicus x *O. niloticus niloticus* (3)
O. niloticus niloticus (1,2,3)
Dist: Luzon

Records: 1. Guerrero and Paycana 1981a, 2. 1981b; 3. Guerrero 1982; 4. Lio-Po et al. 1983

Remarks:Thesereportsprobablyinvolve *Ichthyophthirius multifiliis,* a cosmopolitan species and the only member of the genus.

Lio-Po et al. (1983) noted that *Ichthyophthirius* caused mortalities of about 20% among fanned eels in Bataan. Velasquez (1986a) listed the host for this record *as Anguilla* sp.

[7] The records of Lumanlan et al. (1992) involve fishes imported for aquaculture and the ornamental fish trade which were examined in Quezon City.

[8] Full identification of material reported only as belonging to the genus *Ichthyophthirius* in the abstract of Lumanlan et al. (1990) is given in Lumanlan et al. (1992).

[9]The records of Lumanlan et al. (1992) involve fishes imported for aquaculture and the ornamental fish trade which were examined in Quezon City.

SUBCLASS PERITRICHIA

ORDER PERITRICHIDA

SUBORDER SESSILINA

FAMILY EPISTYLIDIDAE

Apiosoma sp. (FB)
Location: gills, skin
Hosts: *Aristichthysnobilis(5)*
Carassius auratus (5)
Channa striata (1)
Chanos chanos (3)*Moenkhausia collettii* (5)
Mugil sp. (5)
Oreochromis niloticus niloticus (2,4,5)
Rasbora kalochroma (5)
Dist.: Luzon, Mindanao, Panay

Records: 1. Anoa 1975 (Luzon); 2. Natividad et al. 1986b (Luzon); 3. Regidor and Arthur 1986 (Luzon); 4. Bondad-Reantaso and Arthur 1990 (Luzon, Mindano, Panay); 5. Lumanlan et al. 1992 (Luzon)[10]

Epistylis sp. (F)
Location: skin
Hosts: *Carassius carassius (*4)
Channa striata (5)
Oreochromis mossambicus (2)*O. mossambicus* x *O.niloticus niloticus* (2)*O. niloticus niloticus* (2,3)unspecified fish (1)
Dist.: Luzon
Records: 1. Davy and Graham 1979 (-); 2. Guerrero and Monje 1980; 3. Guerrero and Paycana 1981a, 4.1981b; 5. Bondad-Reantaso et al. 1990

[10] The records of Lumanlan et al. (1992) involve fishes imported for aquaculture and the ornamental fish trade which were examined in Quezon City.

FAMILY SCYPHIDIIDAE

Ambiphyra sp. (B)
Location: skin
Host: *Chanos chanos*Dist.: Philippines
Records: Regidor and Arthur 1986; Regidor et al. 1986

Riboscyphidia sp. (B)
Sya: *Scyphidia* sp. auctorum
Location: gills, skin
Host: *Chanos chanos*
Dist: Luzon, Mindanao, Panay
Records: Anon 1973b (Panay); Regidor and Arthur 1986 (Luzon), 1990 (-), 1992 (Luzon, Mindanao); Regidor et al. 1986 (-)
Remarks: Jankovski (1985) split the genus *Scyphidia* into several independent genera, transferring species occurring on marine and freshwater fishes to the genus *Riboscyphidia* Jankovski, 1985.

SUBORDER MOBILINA

FAMILY TRICHODINIDAE

Trichodina acuta Lom, 1970 (F)
Syn: *Trichodinella acuta* (Lom, 1970)
Location: skin
Hosts: *Ctenopharyngodon idella* (2,3)
Cyprinus carpio carpio (2,3)
unspecified fish (1)
Dist.: Luzon
Records: 1. Davy and Graham 1979 (-); 2. Albaladejo and Arthur 1989; 3. Lumanlan et al. 1992[11]
Remarks: Davy and Graham (1979) mistakenly listed *Trichodina acuta* as a *Trichodinella.*

[11] The reports of Albaladejo and Arthur (1989) and Lumanlan et al. (1992) pertain to common carp and grass carp imported from Indonesia, and Taiwan and Hongkong, respectively, which were stocked on Luzon Island.

Trichodina centrostrigata Basson, Van As and Paperna, 1983 (F)
Location: gills, skin
Host: *Oreochromis niloticus niloticus*
Dist: Luzon, Mindanao
Records: Natividad et al. 1986b (Luzon); Bondad-Reantaso and Arthur 1989a (-), 1989b (Luzon, Mindanao), 1990 (Luzon, Mindanao)
Remarks: This species was introduced into the Philippines from Africa with the importation of tilapias (see Bondad-Reantaso and Arthur 1989b, 1990).

Trtchodina compacta Van As and Basson, Syn: *Trichodina acuta* auctorum 1989 (F)
Location: gills, skin
Hosts: *Oreochromis mossambicus* (1)
O. niloticus niloticus (2,3,4,5)
Tilapia zillii (1)
Dist: Luzon
Records: 1. Duncan 1977; 2. Natividad et al. 1986b; 3. Bondad-Reantaso and Arthur 1989a (-), 4.1989b, 5.1990
Remarks:Arthur (1995) referred all reports of*Trichodina acuta* from Philippine Nile tilapia to *T.compacta,* a species considered to have beenintroduced into the Philippines from Africa along with the importation of tilapias.

Trichodina heterodentata Duncan, 1977 Syn.: *Trichodinella heterodentata* (Duncan, 1977) (F)
Location: gills, skin
Hosts: *Aristichthys nobilis (7,8*
Ctenopharyngodon idella (7,8)
Cyprinus carpio carpio (7,8)
*Oreochromis mossambicus (*1*)*
O. niloticus niloticus (3,4,5,6)
*Tilapia zillii (*1*)*
Trichogaster trichopterus (1)
unspecified fish (2)
Dist: Luzon, Mindanao, Palawan
Records:1. Duncan 1977 (Luzon); 2. Davy and Graham 1979 (-); 3. Natividad et al.1986b (Luzon); 4. Bondad-Reantaso and Arthur1989a (-), 5. 1989b (Luzon, Mindanao, Palawan), 6. 1990 (Luzon, Mindanao, Palawan); 7. Albaladejo and Arthur 1989 (Luzon); 8. Lumanlan et al. 1992 (Luzon)
Remarks: Davy and Graham (1979), in a *lapsus calami,* mistakenly listed this species as belonging to the genus *Trichodinella.*

Bondad-Reantaso and Arthur (1989b, 1990) considered *Trichodina eterodentata* to have been introduced into the Philippines with the importation of tilapias.

Trichodina kupermani Arthur and Lom, 1984(F)
Location: gills
Host: *Ctenopharyngodon idella*
Dist: Luzon
Records: Albaladejo and Arthur 1989; Lumanlan et al. 1992
Remarks: *Trichodina kupermani* was reported from young grass carp originating from Taiwan and Hongkong which were examined in Quezon City. As fish from Taiwan were later stocked into Caliraya Lake, Laguna Province, this species is probably established in Philippine waters.

Shulman (1984) considered T *kupermani* a synonym of *T. mutabilis* Kazubski and Migala, 1968, however, we follow Albaladejo and Arthur (1989) in regarding it as distinct

Trichodina mutabilis Kazubski and Migala, 1968 (F)
Location: gills
Host: *Cyprinus carpio carpio*
Dist: Luzon
Records: Albaladejo and Arthur 1989; Lumanlan et al. 1992
Remarks: This species was reported from juvenile common carp imported from Indonesia which were examined at Quezon City. These fish were subsequently stocked in experimental rice paddies at Central Luzon State

University, Muñoz, Nueva Ecija

Trichodina nigra Lom, 1961 (F)
Location: gills, skin
Hosts: *Aristichthys nobilis* (1,2)
Ctenopharyngodon idella (1,2)
Cyprinus carpio carpio (1,2)
Dist: Luzon
Records: 1. Albaladejo and Arthur 1989; 2. Lumanlan et al. 1992
Remarks: This parasite was found on juvenile Chinese carps imported from Hongkong, Taiwan and Indonesia and examined at Quezon City. As these fish were stocked into both aquaculture ponds and natural waters, it is probable that *Trichodina nigra* is now established in the Philippines.

Trichodina nobillis Chen, 1963 (F)
Location: gills, skin
Hosts: *Aristichthys nobilis (*1,2)
Ctenopharyngodon idella (1,2)
Cyprinus carpio carpio (1,2)
Dist: Luzon
Records: 1. Albaladejo and Arthur 1989; 2. Lumanlan et al. 1992
Remarks: *Trichodina nobillis* was found on juvenile Chinese carps imported from Hongkong, Taiwan and Indonesia and examined at Quezon City. As these fish were stocked into both aquaculture ponds and natural waters, it is probable that this ciliate is now established in the Philippines.

Trichodina reticulata Hirschmann and Partsch, 1955 (F)
Location: gills, skin
Host: *Carassius auratus*
Dist: Luzon (aquarium)
Records: Albaladejo and Arthur 1989; Lumanlan et al. 1992
Remarks: This parasite was reported from goldfish imported from Hongkong, Singapore and Thailand for the aquarium fish trade. It has not yet been shown to occur in Philippine natural waters.

Trichodina siluri Lom, 1970 (F)
Location: skin
Host *Oreochmmis niloticus niloticus*
Dist: Luzon
Record: Bondad-Reantaso and Arthur 1989b[12]

[12] This report involves a tentative parasite identification.

Trichodina velasquezae
Bondad-Reantaso and Arthur, 1989 (B)
Location: gills, skin
Host *Oreochromis niloticus niloticus*
Dist: Panay
Records: Bondad-Reantaso and Arthur 1989a, (-), 1989b, 1990

Trichodina sp. (F,B)
Location: gills, skin
Hosts: *Aristichths nobilis* (28)
Carassius auratus (25,28)
C. carassius (6,7,8)
Channa striata (26)
Chanos chanos (1,2,13,14,15,16)
Cyprinus carpio carpio (2)
Cyprinus sp. (28)
Epalzeorhynchos frenatum (28)
Mugil sp.(28)
Oreochromis mossambicus (2,4)
O. mossambicus x *O. niloticus niloticus* (4)
O. niloticus niloticus (4,5,6,8,10,11,12,23,24,28,29)
Pangasius sutchi (28)
Paracheirodon simulans (28)
Rasbora kalochroma (28)
Scatophagus argus (21,22)
Siganus guttatus (19)
Tanichthys albonubes (28)
Tilapia zillii(2)
Trichogaster pectoralis (6,8)
tilapia (4,7,9)
top minnow (1)
unspecified fish (3,17,18,19,20,27)
Dist: Luzon, Mindanao, Palawan, Panay
Records: 1. Anon 1973b (Panay), 2. 1975 (Luzon); 3. Davy and Graham 1979 (-); 4. Guerrero and Monje 1980 (Luzon); 5. Guerrero and Paycana 1981a (Luzon), 6. 1981b (Luzon), 7. 1982 (Luzon); 8. Guerrero 1982 (Luzon); 9. Quines and Paycana 1983 (Luzon); 10. Lio-Po et al. 1983 (-); 11. Natividad et al. 1986a (Luzon)[13], 12.

1986b (Luzon); 13. Regidor and Arthur 1986 (Luzon), 14. 1990 (-), 15. 1992 (Luzon, Mindanao, Palawan); 16. Regidor et al. 1986 (-); 17. Natividad 1986 (Luzon)[14], 18. 1988 (Luzon); 19. Llobrera 1987 (Luzon, Panay); 20. Palisoc 1988 (Luzon)[15]; 21. Cruz 1988 (Panay); 22. Lio-Po and Barry 1988 (Panay); 23. Bondad-Reantaso and Arthur 1989b (Panay), 24. 1990 (Panay); 25. Albaladejo and Arthur 1989 (Luzon)[16]; 26. Bondad-Reantaso et al. 1990 (Luzon); 27. Lumanlan et al. 1990 (-)[17], 28. 1992 (Luzon); 29. Yambot and Lopez 1997 (Luzon)

Remarks: Lio-Po et al. (1983) noted that *Trichodina* was responsible for high mortalities of Nile tilapia fry.

[13] Material repotted only as *Trichodina* in the abstract of Natividad et al. (1986a) was noted by Natividad et al. (1986b) to include *T. acuta* (subsequently referred to *T. compacta* by Arthur (1995)), *T. centrostrigata, T. heterodentata,* and *Trichodina* sp.

[14] Natividad (1986,1988) examined fishes (*Channa striata, Clariasbatrachus, Puntius javanicus* and *Trichogaster pectoralis)* from various localities around Laguna Lake, Luzon Island, but did not indicate which host species were infected with *Trichodina.*

[15] Palisoc (1988) noted that *Trichodina* was among the parasites found on tilapia, milkfish, dalag and carp in Laguna Lake but did not indicate on which hosts individual parasite taxa were found.

[16] The report of Albaladejq and Arthur (1989) pertains to goldfish imported from Hongkong for the ornamental fish trade.

[17] The reports of of Lumanlan et al. (1990, 1992) involve species imported for aquaculture and the aquarium fish trade which were examined in Quezon City.

Trichodinella carpi Duncan 1977 (F)
Location: gills
Hosts: *Cyprinus carpio carpio* (1,3)
unspecified fish (2)
Dist: Luzon
Records:1. Duncan 1977; 2. Davy and Graham 1979 (-); 3. Natividad 1987 (-)
Remarks: As noted by Lom and Haldar (1977), this species is probably a synonym of *Trichodinellaepizootica* (Raabe, 1950).

Lumanlan et al. (1992) considered *T. carpi* to have been introduced into the Philippines along with common carp.

Trichodinella epizootica (Raabe, 1950) Srámek-Husek, 1953 (F)
Location: gills
Hosts: *Aristichthys nobilis* (1,2)
Carassius auratus (1,2)
Ctenopharyngodon idella (1,2)
Cyprinus carpio carpio (1,2)
Dist.: Luzon
Records:1. Albaladejo and Arthur 1989; 2. Lumanlan et al. 1992
Remarks: This parasite was found on juvenile Chinese carps imported from Hongkong, Taiwan, Thailand and Indonesia and from goldfish originating from Hongkong which were examined at Quezon City. As the Chinese carps were stocked into both aquaculture ponds and natural waters, it is probable that *Trichodinella epizootica,* if not already present, is now established in the country.

Trichodinella sp. (F)
Location: gills
Hosts: *Chanos chanos*
Cyprinus carpio carpio
Oreochromis mossambicus
Tilapia zillii
Dist.: Luzon
Record: Anon. 1975
Remarks: The report of *Trichodinella* from *Chanos chanos* is probably a misidentification; material reported only as *Trichodinella* by Regidor et al. (1986) and as Trichodinidae by Regidor and Arthur (1986) is referred to *Tripartiella* sp.

Tripartiella spatula Van As and Basson, 1986 (F,B)
Syn: *Tripartiella clavodonta Basson* and Van As, 1987
Location: gills
Host: *Oreochromis niloticus niloticus*
Dist: Luzon, Panay
Records: Bondad-Reantaso and Arthur 1989a (-), 1989b, 1990
Remarks: The synonymy follows Arthur (1995). *Tripartiella spatula* was erroneously listed as a junior synonym of *T. clavodonta* by Bondad-Reantaso and Arthur (1989b).

This species was introduced into the

Philippines with the importation of tilapias (see Bondad-Reantaso and Arthur 1989b, 1990).

Tripartiella tilapiae (Duncan, 1977) Bondad-Reantaso and Arthur, 1989 (F,B)
Syn: *Trichodinella tilapiae* Duncan, 1977
Location: gills
Hosts: *Aristichthys nobilis* (5,6)
Ctenopharyngodon idella (5,6)
Oreochromis niloticus niloticus (2,3,4)
*Tilapia zillii (*l)
Dist: Luzon, Panay
Records: 1. Duncan 1977 (Luzon); 2. Bondad-Reantaso and Arthur 1989a (-), 3. 1989b (Panay), 4. 1990 (Panay); 5. Albaladejo and Arthur 1989 (Luzon); 6. Lumanlan et al. 1992 (Luzon)
Remarks: The reports of Albaladejo and Arthur (1989) and Lumanlan et al. (1992) pertain to juvenile Chinese carps imported from Hongkong and Taiwan which were examined at Quezon City. These fish were subsequently stocked into aquaculture ponds and natural waters on Luzon Island.

Lumanlan et al. (1992) considered *Tripartiella tilapiae* to have been introduced into the Philippines along with imported tilapias.

Tripartiella sp. (F, B)
Includes: *Trichodinella* sp. of Regidor, Diestro and Arthur, 1986 Trichodinidae gen sp. of Regidor and Arthur, 1986
Location: gills, skin
Host: *Chanos chanos*
Dist.: Luzon
Records: Regidor et al. 1986 (-); Regidor and Arthur 1986,1990 (-), 1992

Trichodinidae gen sp. (B.M)
Location: gills, skin
Hosts: *Lates calcarifer* (2)
Oreochromis niloticus niloticus (1)
Dist.: Luzon
Records: 1. Natividad et al. 1986b; 2. ADB/NACA 1991 (-)

PHYLUM MYXOZOA[18]

CLASS MYXOSPOREA

ORDER BIVALVULIDA

SUBORDER PLATYSPORINA

FAMILY MYXOBOLIDAE

Henneguya sp. (F)
Location: fins
Hosts: *Clarias batrachus* (1)
unspecified fish (2)
Dist: Luzon
Records: 1. Anon. 1975; 2. Davy and Graham 1979 (-)

[18] Recent phylogenetic analyses conducted by Siddall et al. (1995) using ultrastructural characteristics of developmental stages and analysis of rDNA have indicated that the myxozoans are actually highly derived parasitic cnidarians. We retain the Phylum Myxozoa pending additional systematic studies supporting this conclusion and integrating the classifications of these two phyla.

Myxobolus artus Akhmerov, 1960 (F)
Location: mesenteries, musculature
Hosts: *Ctenopharyngodon idella*
Cyprinus carpio carpio
Dist: Luzon
Record: Lumanlan et al. 1992
Remarks: Recorded in common carp and grass carp imported for aquaculture which were examined in Quezon City, this pathogen is now probably established in Philippine natural waters.

Myxobolus ellipsoides Thélohan, 1892 (F)
Location: gills
Host *Hypophthalmichthys molitrix*
Dist: Luzon
Record: Lumanlan et al. 1992
Remarks: The sole report of this species from the Philippines involves silver carp imported from Taiwan for use in aquaculture which were examined in Quezon City. It may now be established in natural waters.

Myxobolus hoi Kudo, 1920 (F)
Location: gills, musculature
Host: *Cyprinus carpio carpio*

Dist: Luzon
Record: Lumanlan et al. 1992
Remarks: *Myxobolus koi* was found in common carp imported from Indonesia for culture in the Philippines and may now be established in the country.

Myxobolus pavlovskii (Akhmerov, 1954) (F)
Shulman and Shtein in Bykhovsky, 1962
Location: gills
Hosts: *Carassius auratus*
Cyprinus carpio carpio
Hypothalmichthys molitrix
Dist: Luzon
Records: Lumanlan et al. 1992
Remarks: *Myxobolus pavlovskii* was found in common carp and silver carp imported from Indonesia and Taiwan, respectively, for culture in the Philippines, and in goldfish imported from Hongkong for the ornamental fish trade. This pathogen is probably now. established in natural waters.

Myxobolus sp. (F)
Syn.: *Myxosoma* sp
Location: gills, mesenteries, skin
Hosts: *Carassius auratus (4)*
Clarias batrachus (1)
Mylopharyngodon piceus (4)
unspecified fish (2,3)
Dist: Luzon
Records: 1. Anon. 1975; 2. Davy and Graham 1979 (-); 3. Lumanlan et al. 1990 (-)[19], 4.1992

Thelohanellus nikolskii Akhmerov, 1955 (F)
Location: fins
Host *Cyprinus carpio carpio*
Dist: Luzon
Record: Lumanlan et al. 1992
Remarks: This myxosporean was found in common carp imported from Indonesia for culture in the Philippines and may now have become established in natural waters. Heavy infections can cause fin amputation (see Lom and Dyková 1992).
Shulman (1966) considered this species a synonym of *T. dogieli* Akhmerov, 1955. We follow Lom and Dyková (1992) in regarding it as distinct

SUBORDER VARIISPORINA

FAMILY MYXIDIIDAE

Coccomyxa hoffmani Cheung and Nigrelli, 1990 (M)
Location: cartilage of gill filaments and arches
Host: *Plotosus lineatus*
Dist: Philippines
Record: Cheung and Nigrelli 1990
Remarks: This species was described from coral catfish originating from the Philippines which were examined at the New York Aquarium.

Myxidium sp. (F)
Location: gall bladder
Hosts: *Aristichthys nobilis*
Ctenopharyngodon idella
Pantodon buchholzi
Dist: Luzon
Record: Lumanlan et al. 1992[20]

FAMILY CERATOMYXIDAE

Ceratomyxa sp. (M)
Location: gall bladder
Host: *Chanos chanos*
Dist: Luzon
Records: Regidor and Arthur 1990 (-), 1992

Leptotheca sp. (M)
Location: kidney
Host: *Chanos chanos* Dist: Luzon
Records: Regidor and Arthur 1986, 1990 (-), 1992; Regidor et al. 1986 (-)

[19] Records contained in the abstract and paper of Lumanlan et al. (1990, 1992) involve fishes imported for aquaculture and the aquarium fish trade which were examined in in Quezon City.

FAMILY CHLOROMYXIDAE

Chloromyxum ellipticum Lee and Nie, 1965 (F)
Location: gall bladder
Host: *Ctenopharyngodon idella*
Dist.: Luzon
Record: Lumanlan et al. 1992
Remarks: The only record of this species

from the Philippines involves grass carp imported from Hongkong for aquaculture which were examined in Quezon City.

Chloromyxum sp. (F)
Location: gall bladder
Hosts: *Botia macracanthus*
Leiocassis siamensis
Dist.: Luzon (aquarium)
Record: Lumanlan et al. 1992[21]

ORDER MULTIVALVULIDA

FAMILY PENTACAPSULIDAE

Pentacapsula muscularis Cheung, Nigrelli and (M) Ruggieri, 1983
Location: musculature
Host: *Chaetodon collare*
Dist.: Philippines
Record: Cheung et al. 1983
Remarks: This myxosporean was described from redtail butterflyfish originating from the Philippines which were held in captivity at the New York Aquarium.

[20] This record involves fishes imported for aquaculture and the aquarium fish trade which were examined in Quezon City.

[21] Lumanlan et al. (1992) reported Cloromyxum spp. from clown loach and barred Siamese catfish imported from Hongkong and Singapore, respectively, for the ornamental fish trade.

FAMILY SEPTEMCAPSULIDAE

Septemcapsula yasunagai Hsieh and Chen, 1984 (M)
Location: brain, endolymph of utriculus
Host: *Plotosus lineatus*
Dist.: Philippines
Record: Cheung and Nigrelli 1990
Remarks: Cheung and Nigrelli (1990) referred to their material as *Septemcapsula yasunagai* var. *plotosi.* Coral catfish originating from Philippine waters which were held at the New York Aquarium exhibited whirling behaviour and associated mortalities which were attributed to infection by this myxosporean.

KINGDOM ANIMALIA

SUBKINGDOM EUMETAZOA

PHYLUM PLATYHELMINTHES

CLASS TREMATODA

SUBCLASS DIGENEA

ORDER STRIGEIDA

SUPERFAMILY CLINOSTOMOIDEA

FAMILY CLINOSTOMIDAE

Clinostomoides brieni Dollfus, 1950 metacercaria (F)
Syn: *Clinostomum ophicephali* Tubangui and Masiluñgan, 1944
Location: gill cavity, gills, gall bladderperiocular tissues, branchiostegal musculature, pericardium
Hosts: *Channa striata* (1,3)
Clarias batrachus (2,3)
C. macrocephalus (4)
Dist: Luzon
Records: 1. Tubangui and Masiluñgan 1944; 2. Velasquez 1960, 3. 1988; 4. Hanviriyapant 1977
Remarks:The synonymy follows Velasquez (1975a).

Clinostomum complanatum (Rudolphi, 1814) Braun, 1899 metacercaria (F)
Syn.: *Clinostomum dalagi* Tubangui, 1933
Location: periocular tissues, gill cavity, branchiostegal musculature, pericardium
Host: *Channa striata*
Dist: Luzon
Records: Tubangui 1933b; Velasquez 1988
Remarks: The synonymy follows Velasquez (1975a).

Clinostomum philippimnsis Velasquez, 1960 metacercaria (F)
Location: branchiostegal musculature, periocular tissues, pericardium, gill cavity, tissues under pectoral fins
Host: *Channa striata*
Dist: Luzon, Mindanao
Records: Velasquez 1960 (Luzon), 1966 (Luzon),1975a (Luzon, Mindanao), 1988 (Luzon)

Remarks: Velasquez (1960) reported that she was able to experimentally infect fish-eating birds (herons and bittern) by feeding metacercariae of *Clinostomum philippimnsis* obtained from snakehead.

Velasquez (1986a) included this species among those helminths transmissable to man.

Clinostomum sp. Metacercaria (F)
Location: periocular tissues
Hosts *Channa striata* (2)
unspecified fish (1)
Dist: Luzon
Records:1. DavyandGraham 1979(-);2. Quines and Paycana 1983 (Luzon)

Euclinostomum multicaecum Tubangui and Masiluñgan, 1935 metacercaria (F)
Location: musculature
Host: *Channa striata*
Dist: Luzon
Records: Tubangui and Masiluñgan 1935;Velasquez 1960
Remarks:A redescription of the metacercaria was provided by Velasquez (1960).

Unidentified Clinostomidae

Clinostomidae gen. sp. (F)
Location: eyes, opercular and pericardialcavities, musculature
Hosts: *Anabas testudineus*
Channa striata
Clarias macrocephalus
Cyprinus carpio carpio
Dist.: Philippines
Records: Velasquez 1974, 1976b, 1977a, 1986a

SUPERFAMBLY DIPLOSTOMOIDEA

FAMILY DIPLOSTOMATIDAE

SUBFAMILY CRASSIPHIALINAE

Posthodiplostomum grayi (Verma, 1936) Dubois, 1938 metacercaria (F)
Syn.: *Neodiplostomum larai* Refuerzo andGarcia, 1937
Location: [body cavity]
Hosts: *Arius manillensis*
Channa striata
Chanos chanos
Clarias batrachus
Glossogobius giuris
Terapon plumbeus
Dist.: Philippines
Record: Vazquez-Colet 1943a
Remarks: The synonymy follows Dubois (1970).

Posthodiplostomum sp. Metacercaria (F)
Location: scales
Host: *Channa striata*
Dist.: Philippines
Record: Velasquez 1976b, 1977a

SUBFAMILY DIPLOSTOMINAE

Diplostomulum sp. Metacercaria (F)
Location: brain, intestine, musculature
Host: *Channa striata*
Dist: Luzon
Records: Lopez 1986, 1988
Remarks: *Diplostomulum* is a larval genus-group for metacercariae belonging to the Diplostominae whose generic affinities are unknown.

Neodiplostomum sp. Metacercaria (F)
Location: scales, skin
Hosts: *Arius manillensis* (1)
Channa striata (1,2,3)
Clarias batrachus (1)
Terapon plumbeus (1)
Dist.: Luzon
Records: 1. Vazquez-Colet and Africa 1939; 2. Velasquez 1986a (-), 3. 1988

FAMILY STRIGEIDAE

Unidentified Strigeidae

Strigeidae gen. sp. Metacercaria (F)
Location: musculature
Host: unspecified fish
Dist: Mindanao
Record: Velasquez 1986b[22]

[22] Velasquez (1986b) noted that *Puntius amarus, P. binotatus, P. disa, P. manalak* and *Spratellicypris palata* were the species of fish parasitized but in this preliminary abstract, she did not indicate which parasite taxa occur in individual host species.

SUPERFAMILY GYMNOPHALLOIDEA

FAMILY BUCEPHALIDAE

Alcicornis cirrudiscoides Velasquez, 1959 (M)
Location: intestine
Host: *Caranx* sp
Dist.: Luzon
Record: Velasquez 1959

Bucephalusfragilis Velasquez, 1959 (M)
Location: intestine
Host: *Megalaspis cordyla*
Dist: Luzon
Record: Velasquez 1959

Bucephalus leognathi Velasquez, 1959 (M)
Location: intestine
Host: *Leiognathus* sp.
Dist.: Luzon
Record: Velasquez 1959

Bucephalus paraheterotentaculatus Velasquez, 1959 (M)
Location: stomach, intestine
Host: *Seriolina nigrofasciata*
Dist.: Luzon
Record: Velasquez 1959
Remarks: Velasquez (1966, Table 1) in an apparent *lapsus calami,* listed *Bucephalus heterotentaculatus* as being described from *Seriola nigrofasciata* (syn. of *Seriolina nigrofasciata)* from the Philippines. As her Table 1 summarized new taxa established by Dr. Velasquez, this listing must pertain to *B. paraheterotentaculatus* and not to *B. heterotentaculatus* Bravo Hollis and Solgandares-Bernal, 1956, a species which has never been reported from the Philippines.

Bucephalus various Manter, 1940 (M)
Syn: *Bucephalus pseudovaricus* Velasquez, 1959
Location: intestine
Host: *Caranx* sp.
Dist.: Luzon
Record: Velasquez 1959
Remarks: The synonymy follows Velasquez (1975a).
Velasquez (1959) also reported this species from the gills, however; this finding was probably the result of stomach eversion during host capture.

Prosorhynchoides philippinorum (Velasquez, 1959) n. comb. (M)
Syn.: *Bucephaloides philippinorum* Velasquez, 1959
Location: stomach
Host: *Sphyraena langsar*
Dist: Luzon
Record: Velasquez 1959
Remarks: Srivastava and Chauhan (1973)synonymized the genus *Bucephaloides*Hopkins, 1954 with *Prosorhynchoides* Dollfus,1929.The finding of this species on the gills wasprobably the result of stomach eversion duringhost capture.

Prosorhynchoides sibi (Yamaguti, 1940) n. comb. (M)
Syn.: *Bucephaloides sibi* (Yamaguti, 1940)
Location: intestine
Host: *Euthynnus affinis*
Dist: Palawan
Record: Fischthal and Kuntz 1964d

Prosorhynchus crucibulum (Rudolphi, 1819) Odhner, 1905 metacercaria (M)
Location: gills, musculature
Host: *Acanthopagrus berda*
Dist.: Luzon
Records: Velasquez 1959, 1966
Remarks: Specimens reported from the musculature and gills of *Sparus berda* (syn. of *Acanthopagrus berda)* by Velasquez (1959) were immature and thus most probably metacercariae.

Prosorhynchus crucibulum (Rudolphi, 1819) Odhner, 1905 (M)
Syn: *Prosorhynchus triangularis* Tubanguiand Masiluñgan, 1944
Location: intestine
Host: *Glossogobius giuris*
Dist.: Luzon
Record: Tubangui and Masiluñgan 1944
Remarks: The description of *Prosorhynchus triangularis* by

Tubangui and Masiluñgan (1944) was based on a single specimen from the intestine of a freshwater fish, *Glossogobius guirus.* Velasquez (1975a) notes that she did not encounter *P. crucibulum* in over 1000 fish examined from the Manila area. The synonymy follows Velasquez (1975a).

Prosorhynchus longus Velasquez, 1959 (M)
Location: stomach
Host: *Psettodes erumei*
Dist: Luzon
Record: Velasquez 1959

Prosorhynchus luzonicus Velasquez, 1959(M)
Location: intestine
Host: *Lates calcarifer*
Dist.: Luzon
Record: Velasquez 1959

Prosorhynchus mcintoshi (Velasquez, 1959) Yamaguti, 1971 metacercaria (M)
Syn: *Neidhartia mcintoshi* Velasquez, 1959
Location: musculature
Host: *Epinephelus bleekeri*
Dist.: Luzon
Record: Velasquez 1959
Remarks: The synonymy follows Velasquez (1975a).

Prosorhynchus mcintoshi (Velasquez, 1959) Yamaguti, 1971 (M)
Syn: *Neidhartia mcintoshi* Velasquez, 1959
Location: stomach, intestine
Host: *Epinephelus bleeker*
Dist.: Luzon
Record: Velasquez 1959

Prosorhynchus pacificus Manter, 1940 (M)
Location: [intestine]
Host: *Epinephelus malabaricus*
Dist.: Philippines
Record: Leong and Wong 1990
Remarks: Leong and Wong (1990) reported this species from juvenile grouper imported from the Philippines for culture in Malaysia.

Prosorhynchus paracrucibulus Velasquez, 1959 metacercaria (M)
Location: scales
Host: *Ambassis buruensis*
Dist.: Luzon
Record: Velasquez 1959
Remarks: As the specimens upon which the description of this species was based were found on the scales and noted to be immature, we regard them as metacercariae.

Rhipidocotyle eggletoni Velasquez, 1959 metacercaria (M)
Location: musculature
Hosts: *Gazza minuta Sillago sihama*
Dist.: Luzon
Record: Velasquez 1959
Remarks:As the specimens upon which the description of this species was based were found in the musculature and were immature,we regard them as metacercariae.

Rhipidocotyle laruei Velasquez, 1959 (M)
Location: stomach, intestine
Host: *Psettodes erumei*
Dist.: Luzon
Record: Velasquez 1959

FAMILY FELLODISTOMIDAE

Monodhelmis torpedinis Dollfus, 1937 (M)
Syn.: *Monodhelmis philippinensis* Velasquez, 1961
Location: intestine
Host: *Netuma thalassina*
Dist.: Luzon
Record: Velasquez 1961a
Remarks: The synonymy follows Cribb and Bray (1994).

SUPERFAMILY HEMIUROIDEA

FAMILY AZYGITOAE

Azygia pristipomai Tubangai, 1928 (B,M)
Location: intestine
Hosts: *Glossogobius giuris* (2,5)
Pomadasys argenteus (1)
Terapon jarbua (4)
T. plumbeus (3,5)
Dist.: Luzon

Records: 1. Tubangui 1928; 2. Tubangui and Masiluñgan 1944; 3. Velasquez 1966, 4. 1974 (-), 5. 1988

FAMILY BUNOCOTYLIDAE

SUBFAMILY APHANURINAE

Aphanurus stossichi (Monticelli, 1891) Looss, 1907 (M)
Location: intestine
Host: *Herklotsichthys dispilonotus*
Dist.: Palawan
Record: Fischthal and Kuntz 1964c

SUBFAMILY OPISTHADENINAE

Genolinea awa (Yamaguti, 1965) n. comb.(M)
Syn.: *Pseudobunocotyla awa* Yamaguti, 1965
Location: intestine
Host: *Chanos chanos*
Dist.: Mindanao
Records: Regidor and Arthur 1990 (-), 1992
Remarks: Gibson and Bray (1979) list *Pseudobunocotyla* Yamaguti, 1965 as a synonym of *Genolinea* Manter, 1925.

FAMILY DICTYSARCIDAE

Elongoparorchis pneumatis Rao, 1961 (M)
Syn.: *Pelorohelmins palawanensis* Fischthal and Kuntz, 1964
Location: swim bladder[23]
Hosts: *Gazza minuta* (1)
Netuma thalassina (2,3)
Dist.: Palawan
Records:1. Fischthaland Kuntz 1964d; 2.Velasquez 1974 (-)[24], 3. 1975a
Remarks: Gibson and Bray (1979) synonymized *Pelorohelmins* Fischthal and Kuntz, 1964 with *Elongoparorchis* Rao, 1961. This decision was upheld by Jones and Khalil (1984), who proposed the above synonymy.

FAMILY DIDYMOZOIDAE

Didymozoon bravohollisae Velasquez, 1970 (M)
Location: base of gill arches
Host: *Sphyraena* sp.
Dist.: Luzon
Record: Velasquez 1970
Remarks: The listing of this parasite from *Sphyraena langsar by* Velasquez (1977a) is due to an error, several lines of her table having been omitted (compare Velasquez 1974 with 1977a).

Torticaecum nipponicum Yamaguti, 1942 (M)
Location: intestine, musculature
Hosts: *Eleotris fusca* (1)
Sillago sihama (2)
?*Terapon jarbua* (2)
Dist.: Luzon, Palawan
Records: 1. Fischthal and Kuntz 1964d (Palawan); 2. Velasquez 1975a (Luzon)
Remarks: In her monograph on the Digenea of Philippine fishes, Velasquez (1975a) listed *Torticaecum nipponicum* from "bagaong," the tagalog common name given for *Terapon jarbua* in her host-parasite list; however, she did not list this parasite under this host species. Although not clearly indicated, her listing of this parasite from *Eleotris fusca* is considered to pertain only to the record Fischthal and Kuntz (1964d) from Palawan Island.

Torticaecum nipponicum is a larval name.

[23] Fischthal and Kuntz (1964d) gave the site of infection as the intestine; however, as noted by Yamaguti (1971), members of the genus *Elongoparorchis* are typically parasitesof the swim bladders of marine catfishes (family Ariidae).

[24] The listing of this species from *Arius thalassinus* (syn. Of *Netuma thalassina)* by Velasquez (1974) was apparently based on specimens recorded by her (Velasquez 1975a) as being from Coron, Palawan Island.

Unidentified Didymozoidae

Didymozoidae gen. sp. (M)
Location: intestine, musculature
Hosts: *Euthynnus affinis* (1)
?*Puntius binotatus* (I)[25]
Synaptura sorsogonensis (2)
?*'Terapon jarbua* (2)
Dist: Luzon, Palawan, Visayan islands

Records: 1. Fischthal and Kuntz 1964d (Palawan); 2. Velasquez 1975a (Luzon, Visayan islands)

Remarks: In her monograph on the Digenea of Philippine fishes, Velasquez (1975a) listed "Immature Didymozoid A" from "bagaong", the tagalog common name given for *Terapon jarbua* in her host-parasite list However, she did not list this parasite under this host species. Although not clearly indicated, her listings of didymozoid larvae in *Euthynnus yaito* (syn. of *E. affinis)* and *Puntius binotatus* are considered to pertain only to the report by Fischthal and Kuntz (1964d) from Palawan Island.

[25] As *Puntius binotatus* is a freshwater cyprinid, this report may involve a host misidentification

FAMILY HEMIURIDAE

SUBFAMILY DINURINAE

Erilepturus hamati (Yamagati, 1934) Manter 1947 (M)

Syn.: *Lecithochirium neopaciflcus* Velasquez, 1962

Lecithocladium neopaciflcum (Velasquez, 1962)

Location: stomach

Hosts: *Epinephelus malabaricus* (2)

Lates calcarifer (1)

Dist.: Luzon

Records: 1. Velasquez 1962; 2. Leong and Wong 1990 (-)

Remarks: The synonymy follows Bray et al. (1993a), who provide a detailed review and redescription of this species.

Leong and Wong (1990) reported *Lecithochirium neopaciflcus* from grouper imported into Malaysia from the Philippines.

Velasquez (1974, 1977a) listed this species as *Lecithocladium neopacificum.*

Erilepturus lemeriensis (Tubangui and Masiluñgan, 1935) Manter, 1947 (M)

Syn.: *Ectenurus lemeriensis* Tubangui and Masiluñgan, 1935

Location: stomach, intestine

Hosts: ?*Glossogobius giuris* (2)[26]

Scomberoides lysan (3,4)

Scomberoides sp. (1)

Dist.: Luzon

Records: 1. Tubangui and Masiluñgan 1935, 2. 1944; 3. Velasquez 1962, 4. 1966

Remarks: Bray etal.(1993a)notedthat *Erilepturus lemeriensis* is possibly a synonym of *E. hamati.*

[26] Velasquez (1962) suggested that the report of this species from *Glossogobius giuris* by Tubangui and Masiluñgan (1944) may have involved a host misidentification

SUBFAMILY ELYTOPHALLINAE

Lecithocladium angustiovum Yamaguti, 1953 (M)

Location: stomach, intestine

Hosts: *Atule mate* (3)

Rastrelliger kanagurta (1,2)

Dist.: Luzon, Palawan, Visayan islands

Records:1. Velasquez 1962 (Luzon, Visayan islands), 2. 1966 (Luzon, Visayan islands); 3.Fischthal and Kuntz 1964c (Palawan)

Remarks:GibsonandBray(1986)listed *Lecithocladium angustiovum* of Fischthal and Kuntz,1964 as a probable synonym of *L.megalaspis* Yamaguti, 1953.

Lecithocladium apolecti Velasquez, 1962 (M)

Location: stomach

Host: *Parastromateus niger*

Dist.: Luzon

Record: Velasquez 1962

Lecithocladium chingi Manter and Pritchard, 1960 (M)

Location: stomach

Hosts: *Naso hexacanthus*

N. vlamingii

Dist: Mactan

Record: Machida and Uchida 1990

Lecithocladium megalaspis Yamaguti, 1953 (M)

Location: stomach, intestine

Host: *Megalaspis cordyla*

Dist.: Luzon

Records: Velasquez 1962, 1966

SUBFAMILY HEMIURINAE

Hemiurus sigani Fischthal and Kuntz, 1964 (M)
Location: intestine
Hosts: *Siganus argenteus* (2)
S. guttatus (2)
S. spinus (1)
Dist: Palawan
Records:1. Fischthal and Kuntz 1964c; 2. Velasquez 1974 (-)

SUBFAMILY LECITHOCHIRIINAE

Lecithochirium magnaporum Manter, 1940 (M)
Location: intestine
Host: *Euthynnus qffinis*
Dist.: Palawan
Record: Fischthal and Kuntz 1964c

Lecithochirium sp. (M)
Location: stomach
Host: *Lates calcarifer*
Dist: Philippines
Record: ADB/NACA 1991

SUBFAMILY PLERURINAE

Plerurus digitatus (Looss, 1899) Looss, 1907(M)
Syn: *Paraplerurus sauridae* Fischthal and Kuntz, 1963
Location: intestine
Host:*Trichiurus lepturus*
Dist.: Palawan
Record: Fischthal and Kuntz 1964c
Remarks: Velasquez (1975a) listed *Paraplerurus sauridae* as a junior synonym of *Plerurus longicaudatus* (Yamaguti, 1953); however, Bray (1990) considered both these names to be synonyms of *Plerurus digitatus.*

FAMILY LECITHASTERIDAE

SUBFAMILY HYSTEROLECITHINAE

Hysterolecitha acanthuri Annereaux, 1947(M)
Location: stomach?
Host: *Acanthurus triostegus*
Dist.: Samar
Record: Annereaux 1947

SUBFAMILY LECITHASTERINAE

Lecithophyllum cheilionis (Fischthal and Kuntz, 1964) Yamaguti, 1971 (M)
Syn.: *Brachadena cheilionis* Fischthal and Kuntz, 1964
Location: intestine
Host: *Cheilio inermis*
Dist: Palawan
Record: Fischthal and Kuntz 1964c
Remarks:AlthoughOverstreet(1973) synonymized the genus *Brachadena* Linton, 1910 with *Aponurus* Looss, 1907, Velasquez (1975a) considered it to be valid.

FAMILY PROSOGONOTREMATIDAE

SUBFAMILY PROSOGONOTREMINAE

Prosogonotrema bilabiatum Perez Vigueras, 1940 (M)
Syn.: Prosogonotrema carangi Velasquez, 1961
Location: stomach
Hosts: *Caranx* sp. (1)
Naso hexacanthus (2)
Dist: Luzon, Mactan
Records: 1. Velasquez 1961a (Luzon); 2. Machida and Uchida 1990 (Mactan)

SUBFAMILY PROSORCHIINAE

Prosorchiopsis aluterae Yamaguti, 1970 (M)
Location: stomach
Host: *Naso vlamingii*
Dist: Mactan
Record: Machida and Uchida 1990

SUPERFAMILY TRANSVERSOTREMATOIDEA

FAMILY TRANSVERSOTREMATIDAE

Transversotrema haasi Witenberg, 1944 (M)
Location: beneath scales
Hosts: *Oxycheilinus diagrammus* (1,2)
?Scarus festivus (I)[27]
Dist.: Cebu, Mindoro
Records: 1. Velasquez 1974,2. 1977a
Remarks: A detailed redescription of this species is provided by Cribb et al. (1992).

[27] The report of this helminth from *Scarus lunula* (Snyder) (syn. Of *S. festivus)* by Velasquez (1974) may involve a misidentification of *S. chameleon* Randall and Choat, a species much more frequently encountered in the Philippines (D.R. Bellwood, James Cook University, Townsville, pers. comm.).

Transversotrema patialense (Soparkar, 1924) Cruz and Sathananthan, 1960 (B)
Syn.: *Transversotrema laruei* Velasquez, 1958
Location: beneath scales
Hosts: *Anodontostoma chacunda* (2)
Chanos chanos (5,6,9,10,11,12)
hates calcarifer (1,2)
Megalops cyprinoides (2)
Mugil sp. (2)
Oreochromis mossambicus (2,5,6)
O. niloticus niloticus (5,6,7,8,14,15)
Poecilia latipinna (2)
Rhynchorhamphus georgii (2)
Scatophagus argus (2)
Tilapia sp. (3,4)
Terapon plumbeus (2)
tilapia (13)
Dist.: Luzon, Palawan, Panay
Records:1. Velasquez 1958 (Luzon), 2. 1961b(Luzon), 3. 1986a (Luzon), 4. 1988 (Luzon); 5. Lopez1986(Luzon), 6.1988(Luzon);7.Natividad et al.1986a (Luzon)[28], 8.1986b (Luzon); 9. Regidor et al. 1986 (-); 10. Regidor and Arthur 1986 (Luzon), 11. 1990 (-), 12. 1992 (Luzon); 13. Palisoc 1988 (Luzon); 14. Bondad-Reantaso and Arthur (1989a (-), 15. 1990 (Palawan, Panay)
Remarks: The synonymy is provided by Cribb et al. (1992), who reviewed the family Transversotrematidae.

Velasquez (1958), initially believing this parasite to be a progenetic metacercaria, listed the site of infection as the muscles and intestine. In a study of the life cycle (Velasquez 1961b), she was able to infect *Mollenesia latipinna* (syn. of *Poecilia latipinna)* experimentally.

Transversotrema patialense has been reported to cause problems in tilapia culture on Luzon Island. Velasquez (1986a, 1988) reported that a "whirling syndrome" was associated with infections in tilapia raised in ponds at Pililia, while Palisoc (1988) noted high mortality in pond-reared fish at Cardona.

[28] Material reported only as belonging to the genus *Transversotrema* in the abstracts of Natividad et al. (1986a) and Regidor et al. (1986) was later recorded as *T. laruei* in their papers (Natividad et al. 1986b, Regidor and Arthur 1986).

ORDER ECHINOSTOMIDA

SUPERFAMILY ECHINOSTOMATOIDEA

FAMILY ATRACTOTREMATIDAE

Isorchis parvus Durio and Manter, 1969 (M)
Location: pyloric caeca
Host: *Chanos chanos*
Dist.: Luzon
Records: Regidor and Arthur 1990 (-), 1992

FAMILY ECHINOSTOMATIDAE

Echinochasmus novalichesensis Tubangui, 1932 metacercaria (F)
Location: not given
Hosts: *Glossogobius giuris*
Ophieleotris aporos
Terapon plumbeus
Dist: Luzon
Record: Vazquez-Colet and Africa 1939
Remarks: In their individual host-parasite tables, Vazquez-Colet and Africa (1939) listed this species only as *Echinochasmus* sp.

FAMILY WARETREMATIDAE

Carassotrema philippinense Machida, 1996 (M)
Location: intestine
Host: *Mugil cephalus*
Dist: Mactan, Palawan
Record: Machida 1996

Megasolena acanthuri Machida and Uchida, 1991 (M)
Location: intestine
Host: *Acanthurus lineatus*
Dist: Philippines
Record: Machida and Uchida 1991

Waretrema piscicola Srivastava, 1939

(M)
Location: intestine
Host: *Scatophagus argus*
Dist: Luzon
Records: Velasquez 1961a, 1966

SUPERFAMILY NOTOCOTYLOIDEA

FAMILY ANGIODICTYIDAE

Hexangium leptosomum Machida and Uchida, 1990 (M)
Location: intestine
Host: *Naso unicornis*
Dist: Palawan
Record: Machida and Uchida 1990

Hexangium sigani Goto and Ozaki, 1929(M)
Syn.: *Hexangium qffinum* Tubangui and Masiluñgan, 1944
Hexangium secundum Annereaux, 1947
Location: intestine, stomach
Hosts: *Caesio cuning* (5)
Neoniphon sammara (5)
Siganus argenteus (3,4)
S. canaliculatus (6)
S. fuscescens (5)
S. guttatus (2,5)
S. javus (1)
S. spinus (6)
Siganus sp. (5)
Stolephorus commerson (6)
Dist.: Luzon, Palawan, Samar
Records: 1. Tubangui and Masiluñgan 1944 (Luzon); 2. Annereaux 1947 (Samar); 3. Velasquez 1961a (Luzon), 4. 1966 (Luzon), 5. 1974 (-); 6. Fischthal and Kuntz 1964a (Palawan)

SUPERFAMILY PARAMPHISTOMOIDEA

FAMILY PARAMPHISTOMIDAE

Cleptodiscus bulbosus Hanson, 1955 (M)
Location: intestine
Host: *Naso vlamingii*
Dist.: Mactan
Record: Machida and Uchida 1990

ORDER PLAGIORCHIIDA

SUPERFAMILY ALLOCREADIOIDEA

FAMILY ALLOCREADIIDAE

Orientocreadium batrachoides Tubangui, 1931 metacercaria (F)
Location: musculature
Hosts: *Clarias macrocephalus*
Oreochromis mossambicus
Dist.: Luzon (experimental)
Record: Sirikantayakul 1985
Remarks: The life cycle of *Orientocreadium batrachoides* in the Philippines was elucidated experimentally by Sirikantayakul (1985), who demonstrated that the snail *Lymnaea viridis* served as both the first intermediate and the primary second intermediate host. A few metacercariae were also recovered from tilapia and catfish fry, and other aquatic organisms experimentally exposed to newly emerged cercariae.

Orientocreadium batrachoides Tubangui, 1931 (F)
Location: intestine
Hosts: C/arias batrachus (1,2)
C. macrocephalus (3,4,6,7)
Glossogobius giuris (2)
unspecified fish (5)
Dist.: Luzon
Records: 1. Tubangui 1931a; 2. Tubangui and Masiluñgan 1944; 3. Velasquez 1975a; 4. Hanviriyapant 1977; 5. Davy and Graham 1979 (-); 6. Trovela 1979; 7. Sirikantayakul 1985
Remarks: Velasquez (1975a) redescribed this species based on specimens from *Clarias macrocephalus.*

Sirikantayakul (1985) also established experimental infections in *C. macrocephalus.*

Kabata (1985) listed many additional fish species as host to this parasite in the Philippines; however, this resulted from a misinterpretation of Velasquez (1975a), who summarized hosts reported throughout the parasite's world-wide distribution.

FAMILY OPECOELIDAE

SUBFAMILY OPECOELINAE

Opegaster minima (Tubangui, 1928) Yamaguti, 1934 (F)
Syn.: *Opecoelus minimus* Tubangui, 1928
Opecoelus sp. of Lopez, 1979
Location: intestine
Hosts: *Arius manillensis* (3)
Channa striata (3)
Clarias batrachus (3,5,6)
Glossogobius biocellatus (1)
G. giuris (1,3,4,5,6)
Pomadasys argenteus (1,2)
Terapon plumbeus (3)
Dist: Luzon
Records: 1. Tubangui 1928; 2. Tubangui and Francisco 1930[29]; 3. Tubangui and Masiluñgan 1944; 4. Lopez 1979[30], 5. 1986,6. 1988[31]
Remarks: Lopez (1979) recorded *Opecoelus* sp. from throughout the host's digestive tract, but noted that the intestine is the normal site of infection.

[29] The record of Tubangui and Francisco (1930) involved fish heldin an aquarium in Manila.

[30] Helminths identified as *Opecoelus* sp. by Lopez (1979) were subsequently assigned to *Opegaster minima* by Lopez (1986, 1988).

[31] The report of Lopez (1988) for *Glossogobius giuris* is given only in her abstract

Paropecoelus palawanensis (Fischthal and Kuntz, 1964) Pritchard, 1966 (M)
Syn.: *Opecoelus palawanensis* Fischthal and Kuntz, 1964
Location: intestine
Hosts: *Parupeneus barberinus*
P. indicus
Dist.: Palawan
Record: Fischthal and Kuntz 1964b

Pseudopecoeloides carangis (Yamaguti, 1938) Yamaguti, 1940 (M)
Location: intestine
Host: *Sphyraena jello*
Dist: Palawan
Record: Fischthal and Kuntz 1964b

SUBFAMILY PLAGIOPORINAE

Hamacreadium lethrini Yamaguti, 1934 (M)
Location: intestine
Hosts: *Lethrinus erythropterus*
Lutjanus gibbus
Dist.: Palawan
Record: Fischthal and Kuntz 1964b

Helicometra nasae Nagaty and Abdel Aal, 1962 (M)
Syn.: *Stenopera rectisaccus* Fischthal and Kuntz, 1964
Location: intestine
Host: *Sargocentron violaceum.*
Dist.: Palawan
Record: Fischthal and Kuntz 1964b
Remarks: The synonymy follows Sekerak and Arai (1974), who also noted that *H. nasae* is possibly a synonym of *H. equilata* (Manter, 1933).

Macvicaria longisaccus (Fischthal and Kuntz, 1964) Bray, 1985 (M)
Syn.: *Plagioporus (Plagioporus) longisaccus* Fischthal and Kuntz, 1964
Location: intestine
Host: *Choerodon anchorago*
Dist.: Palawan
Record: Fischthal and Kuntz 1964b
Remarks: The synonymy follows Bray (1985).

Propycnadenoides philippinensis Fischthal and Kuntz, 1964 (M)
Location: intestine
Host: *Gymnocranius griseus*
Dist.: Palawan
Record: Fischthal and Kuntz 1964a

SUPERFAMILY GYLIAUCHENOIDEA

FAMILY GYLIAUCHENIDAE

Gyliauchen papillatus (Goto and Matsudaira, 1918) Goto, 1919 (M)
Location: intestine
Hosts: *Anodontostoma chacunda* (1)
Siganus fuscescens (2)
Dist: Palawan
Records: 1. Fischthal and Kuntz 1964a; 2. Velasquez 1974 (-)

SUPERFAMILY LEPOCREADIOIDEA

FAMILY ACANTHOCOLPIDAE

Stephanostomum casum (Linton, 1910) McFarlane, 1934 (M)
Location: intestine
Host: *Lutjanus bohar*
Dist: Palawan
Record: Fischthal and Kuntz 1964a

FAMILY LEPOCREADIIDAE

Aephnidiogenes barbarus Nicoll, 1915 (M)
Location: intestine
Host: *Pomadasys argenteus*
Dist.: Palawan
Record: Fischthal and Kuntz 1964c

Preptetos caballeroi Pritchard, 1960 (M)
Location: intestine
Host: *Naso vlamingii*
Dist: Mactan
Record: Machida and Uchida 1990
Remarks: Bray et al. (1993b) considered this species a synonym of *Preptetos xesuri* (Yamaguti, 1940); however, Bray and Cribb (1996) have recently substantiated its validity.

SUPERFAMILY OPISTHORCHIOIDEA

FAMILY CRYPTOGONIMIDAE

Neochasmus microvatus (Tubangui, 1928) Tubangui and Masiluñgan 1944 metacercaria (F)
Location: not given
Host: unspecified fish
Dist: Philippines
Record: Lopez 1979
Remarks: This report is based on the unpublished findings of Dr. C.C. Velasquez.

Neochasmus microvatus (Tubangui, 1928) Tubangui and Masiluñgan 1944 (F)
Syn.: *Metadena microvata* Tubangui, 1928
Location: intestine
Hosts: *Glossogobius biocellatus* (1)
G. giuris (1,3,4,5,6,7,8)
Pomadasys argenteus (1,2)
Dist.: Luzon
Records: 1. Tubangui 1928; 2. Tubangui and Francisco 1930; 3. Tubangui and Masiluñgan 1944; 4. Velasquez 1961c, 5. 1966; 6. Lopez 1979, 7. 1986, 8. 1988[32]
Remarks: Tubangui and Francisco (1930) in an apparent *lapsus calami,* erroneously gave the species name of this digenean as *Metadena ovata.*

Although specimens have also been recovered from the buccal cavity, esophagus and stomach, the intestine is the normal site of infection.

[32] The record of Lopez (1988) appears only in her abstract.

Paracryptogonimus acanthostomus (M) Yamaguti, 1934
Location: intestine
Host: *Lutjanus* sp.
Dist: Luzon
Records: Velasquez 1961c, 1966

Paracryptogonimus apharei (Yamaguti, 1942) Velasquez, 1961(M)
Syn.: *Metadena apharei* (Yamaguti, 1942)
Location: intestine
Host: *Lutjanus sp.*
Dist.: Luzon
Records: Velasquez 1961c, 1966

Paracryptogonimus manilensis Velasquez, 1961 (M)
Location: intestine
Hosts: *Lutjanus fulviflamma* (2)
L. vitta (1)
Parachaetodon ocellatus (1)]
Dist.: Luzon, Palawan
Records: 1. Velasquez 1961c (Luzon); 2. Fischthal and Kuntz, 1964a (Palawan)

Paracryptogonimus orientalis Fischthal and Kuntz, 1964 (M)
Location: intestine
Host: *Lutjanus fulviflamma*
Dist: Palawan
Record: Fischthal and Kuntz 1964a

Pseudallacanthochasmus grandispinus Velasquez, 1961 (M)
Location: intestine
Host: *Lutjanus* sp.
Dist: Luzon
Record: Velasquez 1961c

Pseudometadena celebesensis Yamaguti, 1952 (M)
Location: stomach, caeca, intestine
Host: *Lates calcarifer*
Dist: Luzon
Records: Velasquez 1961c, 1966

Pseudometadena sp. (M)
Location: intestine
Host: *Lates calcarifer*
Dist: Philippines
Record: ABD/NACA 1991

FAMILY HETEROPHYIDAE

Ascocotyle sp. Metacercaria (F)
Location: gills
Host: *Trichogaster lalia*
Dist.: Luzon (aquarium)
Records: Lumanlan et al. 1990[33], 1992
Remarks: This genus has not been recorded from Philippine natural waters, the record of Lumanlan et al. (1992) involving a dwarf gourami imported from Singapore for the ornamental fish trade which was examined in Quezon City.

[33] In the preliminary abstract of Lumanlan et al. (1990), the host species was not given.

Centrocestus caninus Leiper, 1913 metacercaria (F,B)
Syn.: *Stamnosoma formosanum* Nishigori, 1924
Location: gills
Hosts: *Anabas testudineus* (1)
Channa striata (1)
Glossogobius giuris (1)
Hyporhamphus dussumieri (2)
Terapon plumbeus (1,2)
Dist.: Luzon
Records:1. Vazquez-Colet and Africa 1939[34], 2.1940
Remarks: Velasquez (1986a) noted that intestinal infection inmanhas beenrecorded from Manila.

[34] In the host-parasite tables of Vazquez-Colet and Africa (1939) this parasite is listed only as *Stamnosoma* sp

Centrocestus sp. Metacercaria F &/or B)
Syn.: *Stamnosoma* sp.
Location: not given
Hosts: *Ambassis buruensis*
Atherina balabacensis
Dist: Luzon
Record: Vaquez-Colet and Africa 1938

Cercarioides sp. Metacercaria F &/or B)
Syn.: *Microlistrum* sp.
Location: [musculature]
Host: *Ambassis buruensis*
Dist.: Luzon
Record: Vazquez-Colet and Africa 1938
Remarks:ThesynonymyfollowsVelasquez(1975a).

Galactosomum anguillarum (Tubangui, 1933) Tubangui and Africa, 1938 *species inquirenda* metacercaria? (M)
Syn.: *Haplorchis anguillarum* Tubangui, 1933
Location: intestine
Host: *Anguilla marmorata*
Dist.: Leyte
Record: Tubangui 1933b
Remarks: This species was redescribed from the original specimens by Tubangui and Africa (1938) who transferred it to the genus *Galactosomum.* Yamaguti (1958) listed it as belonging to the genus *Tubanguia* Srivastava, 1935. However, Pearson (1973) noted that the single type specimen of *G. anguillarum,* the only species in the genus *Tubanguia,* had been destroyed, and as a result, the position of the genus could not be decided. He thus listed G. *anguillarum* (Tubangui, 1933) as *species indeterminata.* We follow Velasquez (1975a) in considering it a *species inquirenda.*

It seems probable that this report involves a metacercaria occurring on the host's viscera which was accidently liberated from its cyst during dissection.

Haplorchis pumilio (Looss, 1896) Looss, 1899 metacercaria (F,B)
Syn.: *Haplorchis taihokui* (Nishigori, 1924)
Location: musculature
Hosts: *Ambassis buruensis* (1)
Channa striata (1)
Gerres fllamentosus (1)
Glossogobius guirus (1)
Puntius binotatus (2)
Siganus javus (1)
Terapon plumbeus (1)
Dist: Luzon, Mindanao
Records:1. Vazquez-Colet and Africa 1939(Luzon); 2. Velasquez 1973a (Mindanao)
Remarks: The first valid report of *Haplorchis pumilio* (as *H. taihokui)* from the Philippines is that of Vazquez-Colet and Africa (1939)[35]. The reports of this species (as *Monorchotrema taihokui)* by Garcia (1936) and Africa et al. (1937) are referred to *H. yokogawai* (Katsuta, 1932), following Africa (1937, 1938a, 1938b) and Refuerzo (1940).

Haplorchis pumilio is of potential zoonotic importance in the Philippines (see Velasquez 1982a).

[35] Vazquez-Colet and Africa (1939) listed this species as *Haplorchis taihokui* in their tables 1-14, but summarized these records under *H. pumilio* in their table 15.

Haplorchis taichui (Nishigori, 1924) Chen, 1936 metacercaria (F,B)
Location: musculature
Hosts: *Ambassis buruensis* (2)
Arius manillensis (2)
Channa striata (1,3,4)
Puntius binotatus (3)
Spratellicypris palata (3)
Dist.: Luzon, Mindanao
Records: 1. Vazquez-Colet and Africa 1939 (Luzon); 2.Velasquez 1966 (Luzon), 3. 1973a (Luzon, Mindanao), 4. 1973b (Luzon)
Remarks: Velasquez (1982a, 1986a), summarizes the host and geographical distribution of this zoonotically important species.

Haplorchis yokogawai (Katsuta, 1932) Chen, 1936 metacercaria (F,B)
Syn.: *Monorchotrema yokogawai* Katsuta, 1932 *Monorchotrema taikohui* auctorum
Location: musculature
Hosts: *Ambassis buruensis* (5)
Arius manillensis (1,2,3,4,5,6,7)
Channa striata (1,6)
Chanos chanos (9,10)
Clarias batrachus (2,3,4,5,6)
Gerres kapas (6)
Liza subviridis (5)
Rhynchorhamphus georgii (5)
Siganus javus (8)
Terapon plumbeus (6)
Dist: Luzon
Records: 1. Garcia 1936 (-); 2. Africa 1937 (-), 3. 1938a (-); 4. Africa et al. 1937; 5. Vazquez-Colet and Africa 1938[36], 6. 1939, 7. 1940; 8. Tubangui 1947; 9. Velasquez 1979, 10. 1984
Remarks: In the Philippines, *Haplorchis yokogawai* has been associated with human infections involving myocardial complications and heart failure due to blockage of coronary vessels caused by the parasite's eggs entering the circulatory system via the intestinal mucosa (see Africa 1937, 1938a; Refuerzo 1940). Human infections occur via ingestion of metacercariae in raw or inadequately cooked fish. Piscivorous birds, and dogs and cats serve as natural definitive hosts. Velasquez (1982a, 1986a), summarizes the host and geographical distribution of this zoonotically important species.

The reports of *Monorchotrema taikohui* by Garcia (1936) and Africa et al. (1937) are referred to *H. yokogawai* following Africa (1937, 1938a, b) and Refuerzo (1940).

[36] The host identification for Mugil sp. given by Vazquez-Colet and Africa (1938) was later (Vazquez-Colet and Africa 1940) corrected to M. dussumieri (syn. of Liza subviridis).

Heterophyopsis expectans (Africa and Garcia, 1935) Tubangui and Africa, 1938 metacercaria (B)

Syn.: *Heterophyes expectans* Africa and Garcia, 1935
Location: musculature
Hosts: *Ambassis buruensis* (2,3,4)
Atherina balabacensis (2)
Chanos chanos (6,7)
Gerres fllamentosus (3)
G. kapas (3)
Liza subviridis (2)
Pelates quadrilineatus (3,5)
Rhynchorhamphus georgii (2,3)
Siganus javus (3)
Terapon puta (4)
mullet (1)
Dist.: Luzon, Mindanao
Records: 1. Africa and Garcia 1937 (-); 2. Vazquez-Colet and Africa 1938 (Luzon)[37], 3. 1939 (Luzon); 4. Velasquez 1966 (Luzon, Mindanao), 5. 1973a (Mindanao); 6. Regidor and Arthur 1990 (-), 7. 1992 (Luzon)

[37] The host identification for Mugil sp. given by Vazquez-Colet and Africa (1938) was later (Vazquez-Colet and Africa 1940) corrected to M. dussumieri (syn. of Liza subviridis).

Phagicola sp. Metacercaria (F &/or B)
Syn: *Parascocotyle* sp
Location: not given
Host: *Ambassis buruensis*
Dist: Luzon
Record: Vazquez-Colet and Africa 1938

Procerovum calderoni (Africa and Garcia, 1935) Price, 1940 metacercaria (B)
Syn.: *Haplorchis calderoni*(Africa and Garcia, 1935)
Monorchotrema calderoni Africa and Garcia, 1935
Procerovum varium of Velasquez, 1973a
Location: musculature, base of fins
Hosts: *Acentrogobius janthinopterus* (2,3)
Ambassis buruensis (1,2)
Anabas testudineus (2,3,4,5)
Atherina balabacensis (1,3)
Butts amboinensis (5)
Channa striata (2,4)
Chanos chanos (5)
Eleutheronema tetradactylum (2)
Gerres filamentosus (2)
Glossogobius giuris (2)
Liza subviridis (1,5)
Oxyurichthys microlepis (5)
Pelates quadrilineatus (2,5)
Platycephalus indicus(4,5)
Poecilia latipinna (4,5,6)
Rhynchorhamphus georgii (1,2,5)
Scatophagus argus (4,5,7)
Siganus javus (2)
Dist.: Luzon, Mindanao
Records: 1. Vazquez-Colet and Africa 1938 (Luzon)[38], 2. 1939 (Luzon), 3. 1940 (-); 4. Velasquez 1966 (Luzon), 5. 1973a (Luzon, Mindanao), 6. 1973c (Luzon); 7. Galvez 1979 (Luzon)
Remarks: Pearson and Ow-Yang (1982) listed *Procerovum varium* of Velasquez (1973a) as a synonym of *P. calderoni.* These authors also considered it likely that the metacercariae illustrated in figures 3 and 6 of Velasquez (1973c) were not *P. calderoni.*
Africa(1938b)notedthatthisspecies infects dogs, cats and man in the Philippines.

[38] The host identification for Mugil sp. given by Vazquez-Colet and Africa (1938) was later (Vazquez-Colet and Africa 1940) corrected to M. dussumieri (syn. of Liza subviridis*).*

Procerovum varium Onji and Nishio 1916 metacercaria (B)
Syn.: *Haplorchis sisoni* Africa, 1938
Procerovum sisoni (Africa, 1938)
Location: musculature, fins
Hosts: *Anabas testudineus* (4)
Poecilia latipinna (4)
Terapon plumbeus (1,2,3)
Dist.: Luzon
Records: 1. Africa 1938b (-); 2. Vazquez-Colet and Africa 1939, 3. 1940; 4. Velasquez 1966
Remarks: Pearson and Ow-Yang (1982) referred *Procerovum varium* of Velasquez, 1973a to *P. calderoni.* The records of Velasquez (1966) of *P. sisoni* from two of the same hosts and from the same locality may thus also involve a misidentification *of P. calderoni.*

Procerovum sp. (F)
Location: not given
Host: *Puntius manalak*
Dist.: Mindanao
Record: Velasquez 1966

Pygidiopsis genata Looss, 1907 metacercaria(B)
Location: [musculature]
Host: *Liza subviridis*
Dist.: Luzon
Record: Vazquez-Colet and Africa 1938[39]
Remarks: Velasquez (1986a) included this species among those parasites transmissible to man.

[39]The host identification for Mugil sp. given by Vazquez-Colet and Africa.(1938) was later (Vazquez-Colet and Africa 1940) corrected to M dussumieri (syn. of Liza subviridis).

Pygidiopsis marivillai Rufuerzo and Garcia, 1937 metacercaria (B)
Location: [musculature]
Host: *Liza subviridis*
Dist.: Luzon
Record: Vazquez-Colet and Africa 1938[40]
Remarks: Velasquez (1986a) included this species among those

[40] The host identification for Mugil sp. given by Vazquez-Colet and Africa (1938) was later (Vazquez-Colet and Africa 1940) corrected to M, dussumieri (syn. of Liza subviridis).

Scaphanocephalus adamsi Tubangui, 1933 metacercaria (M)
Location: fins, under scales
Host: *Bodianus mesothorax*
Dist.: Luzon (aquarium)
Record: Tubangui 1933b
Remarks: This species was described from a fish which died in an aquarium at the Fish and Game Administration in Manila.

Stellantchasmus falcatus Onji and Nishio, 1915 metacercaria (B)
Syn. *Diorchitrema pseudocirrata* Witenberg, 1929
Stellantchasmus amplicaecalis Yokogawa in Katsuta, 1932
Location: musculature, body cavity
Hosts: *Anabas testudineus* (2)
Liza subviridis (1,3)
Dist: Luzon
Records: 1. Vazquez-Colet and Africa 1938[41], 2. 1939, 3. 1940
Remarks: Velasquez (1974, 1977a, 1980b) listed these records under *Stellantchasmus amplicaecalis. .* She (Velasquez 1980b) noted that this species is of zoonotic importance, human infections having been reported from Luzon.

The synonymy follows Pearson (1964) who noted that the status of *S. falcatus* in the Philippines was questionable.

[41] The host identification for *Mugil* sp. given by Vazquez-Colet nd Africa (1938) was later (Vazquez-Colet and Africa 1940) orrected to *M. dussumieri* (syn. of *Liza subviridis).*

Stictodora guerreroi Garcia and Refuerzo, 1936 metacercaria (F,B)
Location: fins, musculature, body cavity, heart
Hosts: *Ambassis buruensis* (1,2,3)
Atherina balabacensis (1,3)
Liza subviridis (1)
Ophieleotris aporos (4)
Rhynchorhamphus georgii (1,2,3)
Dist: Luzon
Records: 1. Vazquez-Colet and Africa 1938[42], 2.1939, 3. 1940; 4. Velasquez 1966
Remarks: Velasquez (1986a) included his species among those parasites transmissible to man.

[42] The host identification for *Mugil* sp. given by Vazquez-Colet nd Africa (1938) was later (Vazquez-Colet and Africa 1940) orrected to *M. dussumieri* (syn. of *Liza subviridis).*

Stictodora manilensis Africa and Garcia, 1935 metacercaria (F,B)
Location: body cavity, fins, musculature
Hosts: *Ambassis buruensis* (1,2,3,5)
Arius manillensis (4)
Atherina balabacensis (1,3)
Gerres filamentosus (2,3)
Liza subviridis (1,3)
Pelates quadrilineatus (2)
Terapon jarbua (3)
T. plumbeus (2)
Dist: Luzon
Records: 1. Vazquez-Colet and Africa

1938[43], 2. 1939[44], 3. 1940; 4. Velasquez 1966, 5. 1973a
Remarks: Velasquez (1986a) included this species among those parasites transmissible to man.

[43] The host identification for Mugil sp. given by Vazquez-Colet and Africa (1938) was later (Vazquez-Colet and Africa 1940) corrected to M. dussumieri (syn. of Liza subviridis).

[44] The record of this species from Terapon plumbeus is given only in Table 3 of Vazquez-Colet and Africa (1939).

Stictodora palmifera Vazquez-Colet, 1943 metacercaria (B?)
Location: not given
Host: *Sillago maculata*
Dist: Philippines
Record: Vazquez-Colet 1943 c
Remarks: The validity of this species requires reassessment. Velasquez (1975a) considered it a *nomen nudum.*

Stictodora tanayensis Velasquez, 1973
Metacercaria (F)
Location: musculature
Host: *Ophieleotris aporos*
Dist.: Luzon
Record: Velasquez 1973a

.Unidentified Heterophyidae

Heterophyidae gen. sp. Metacercaria (F)
Location: musculature
Host: unspecified fish
Dist.: Mindanao
Record: Velasquez 1986b[45]

[45] Velasquez (1986b) noted that Puntius amarus, P. binotatus, P. disa, P. manalak and Spratellicypris palata were the species of fishes parasitized; but in this preliminary abstract, she did not indicate which parasite taxa occur in individual host species.

SUPERFAMILY PLAGIORCHIOIDEA

FAMILY GORGODERIDAE

Phyllodistomum sp. (F)
Location: [ureters, urinary bladder]
Host: *Clarias batrachus*
Dist.: Luzon
Records: Lopez 1986, 1988
Remarks: Lopez (1986, 1988) recorded this parasite as occurring in the host's gonads, intestine and stomach; however, members of the genus *Phyllodistomum* are parasites of the ureters and urinary bladder.

FAMILY MACRODEROIDIDAE

Gauhatiana batrachii (Dayal and Gupta, 1954) Gupta, 1955 (F)
Location: stomach, intestine
Host: *Clarias batrachus*
Dist: Luzon
Record: Lopez 1988
Remarks: Lopez (1988) suggested that this digenean has been introduced from Thailand along with its host.

FAMILY MICROPHALLIDAE

Carneophallus brevicaeca (Africa and Garcia, 1935) Velasquez, 1975 (F)
Location: intestine
Hosts: *Glossogobius giuris* (1)
unspecified fish (2)
Dist: Luzon
Records: 1. Velasquez 1975b; 2. Davy and Graham 1979 (-)
Remarks: Davy and Graham (1979) in a *lapsus calami,* listed this species as *"Carneophallus breceae."*

This digenean is of zoonotic importance in the Philippines, human infections being acquired via consumption of metacercariae in freshwater shrimp *(Macrobrachium* sp.) (see Velasquez 1975b, 1980b, 1988).

SUPERFAMILY ZOOGONOIDEA

FAMILY MONORCHIIDAE

Hurleytrematoides malabonensis Velasquez, 1961 (M)
Location: intestine
Host: *Parachaetodon ocellatus*
Dist.: Luzon
Record: Velasquez 1961a

FAMILY ZOOGONIDAE

Deretrema (Luxitrema) philippinensis Beverley-Burton and Early, 1982 (M)
Syn.: *Deretrema* sp. of Burn, 1980
Location: gall bladder
Host: *Anomalops katoptron*
Dist.: Mactan
Records: Burn 1980; Beverley-Burton

and Early 1982
Remarks: Bray (1987) created the subgenus *Luxitrema,* with *Deretrema (Luxitrema) philippinensis* as type-species.

The records of Burn (1980) and Beverley-Burton and Early (1982) involve fish of Philippine origin which were kept in public aquaria in the United States.

Digenea of Unknown Systematic Position

Cercaria dorsocauda Tubangui, 1928 metacercaria (M)
Location: not given
Host: *Pomadasys argenteus*
Dist.: Philippines
Record: Tubangui and Francisco 1930 (experimental)

Unidentified Digenea

Digenea gen. sp. Metacercaria (F,B)
Location: body cavity, fins, gills, musculature,skin
Hosts: *Carassius auratus* (9)
Chanos chanos (2,4,5,6,7)
Epalzeorhynchos bicolor (9)
E. frenatum (9)
Oreochromis niloticus niloticus (3,8)
unspecified fish (1)
Dist.: Luzon, Panay
Records: 1. Africa 1938a (-); 2. Anon 1973b (Panay); 3. Natividad et al. 1986b (Luzon); 4. Regidor and Arthur 1986 (Luzon), 5. 1990 (-), 6. 1992 (Luzon); 7. Regidor et al. 1986 (-); 8. Bondad-Reantaso and Arthur 1990 (Luzon); 9. Lumanlan et al. 1992 (Luzon)[46]

[46] The records of Lumanlan et al. (1992) involve imported aquarium fishes which were examined in Quezon City.

Digenea gen sp. (F,M)
Location: stomach, pyloric caeca, intestine
Hosts: *Channa striata (2,3)*
Chanos chanos (5,6)
Clarias batrachus (2,3)
C. macrocephalus (1)
Glossogobius giuris (4)
Monopterus albus (8)
Oreochromis niloticus niloticus (7)
Pantodon buchholzi (8)
Dist: Luzon, Mindanao
Records: 1. Anon 1975 (Luzon); 2. Guerrero and Paycana 1981b (Luzon); 3. Guerrero 1982 (Luzon); 4. Vallejo 1988 (Luzon); 5. Regidor and Arthur 1990 (-), 6. 1992 (Mindanao); 7. Bondad-Reantaso and Arthur 1990 (Luzon); 8. Lumanlan et al. 1992 (Luzon)[47]

[47] The records of Lumanlan et al. (1992) involve imported fishes which were examined in Quezon City.

CLASS MONOGENEA

SUBCLASS POLYONCHOINEA

ORDER CAPSALIDEA

FAMILY CAPSALIDAE

Allometabenedeniella orbicularis (Gupta and Khanna, 1975) Hussey, 1986 (M)
Syn.: *Allometabenedeniella plataxi* Velasquez, 1982
Location: gills
Host: *Platax orbicularis*
Dist: Luzon
Record: Velasquez 1982b
Remarks: The synonymy follows Hussey (1986).

Bendenia malaboni Velasquez, 1982 (M)
Location: gills
Host: *Epinephelus undulosus*
Dist.: Luzon
Record: Velasquez 1982b

Caballerocotyla philippina Velasquez, 1982 (M)
Location:
Host *Platax orbicularis*
Dist.: Luzon
Record: Velasquez 1982b

Encotyllabe caballeroi Velasquez, 1977 (M)
Location: gills
Host: *Lethrinus nebulosus*
Dist.: Mindoro
Record: Velasquez 1977b
Remarks: Williams and Beverley-Burton (1989) redescribed the adults of this

species from Heron Island, Australia, while Whittington and Kearn (1992) described the egg, oncomiracidium and juvenile from specimens tentatively identified as *E. caballeroi* from the same locality.

Williams and Beverley-Burton (1989) note that members of the genus *Encotyllabe* attach to the papillae of the host's pharynx, lower pharyngeal plate or gill arches, rather than to the gill filaments

Neobenedenia manilae Velasquez, 1982 (M)
Location: gills
Host: *Platax orbicularis*
Dist.: Luzon
Record: Velasquez 1982b

Tristomella pricei (Hidalgo Escalente, 1959) Price, 1960 (M)
Location: gills
Host: *Sphyraena* sp.
Dist.: Visayan islands
Record: Velasquez 1982b
Remarks: Velasquez (1982b) notes that the host may have been misidentified; other reports of this species have involved members of the genus *Makaira.*

The generic position of this species is unsettled. Yamaguti (1963a) considered the genus *Tristomella* Guiart, 1938 a synonym of *Capsala* Bosc, 1811, a decision followed by Egorova (1989); however, Pozdnyakov (1990), in his synopsis of scombrid parasites, retains *Tristomella.*

ORDER DACTYLOGYRIDEA

SUBORDER DACTYLOGYRINEA

FAMILY DACTYLOGYRIDAE

SUBFAMILY ANCYLODISCOIDINAE

Silurodiscoides sp. (F)
Location: gills
Host: *Pangasius sutchi*
Dist.: Luzon (aquarium)
Record: Lumanlan et al. 1992
Remarks: The genus *Silurodiscoides* has not yet been recorded from Philippine natural waters, this report involving an aquarium fish imported from Hongkong which was examined in Quezon City.

Unidentified Ancylodiscoidinae

Ancylodiscoidinae gen. sp. (F)
Location: gills
Host: *Leiocassis siamensis*
Dist: Luzon (aquarium)
Record: Lumanlan et al. 1992[48]

[48] This report involves an aquarium fish imported from Singapore which was examined in Quezon City.

SUBFAMILY AYROCEPHALINAE

Ancyrocephalus manilensis Tubangui, 1931(M)
Location: gills
Hosts: *Anyperodon leucogrammicus*
Lutjanus sp.
Siganus virgatus
Dist: Luzon (aquarium)
Record: Tubangui 1931b[49]
Remarks: The host fishes were taken from the aquarium of the Bureau of Science, Manila.

[49] Tubangui (1931b) originally listed this parasite as occurring on *Lutianus lioglossus;* however, this host identification was later (Tubangui 1947) amended to *Lutjanus* sp.

Cichlidogyrus longicornis Paperna and Thurson, 1969 *sensu stricto* (F)
Syn.: *Cichlidogyrus longicomis longicomis* Paperna and Thurston, 1969
Location: gills
Host: *Oreochromis niloticus niloticus*
Dist: Luzon, Mindanao
Records: Natividad et al.1986b (Luzon); Bondad-Reantaso and Arthur 1989a (-), 1990 (Luzon, Mindanao)
Remarks: Douëllou (1993) elevated *Cichlidogyrus longicomis gravivaginus* Paperna and Thurston, 1969 to specific status and regarded the only other subspecies, C. *longicornus minus* Dossou, 1982, as conspecific with C. *l. longicomis.*

This species was introduced with the importation of tilapias (see Bondad-Reantaso and Arthur 1990).

Cichlidogyrus sclerosus Paperna and Thurston, 1969 (F)
Location: gills
Hosts: *Oreochromis mossambicus* (1)
O. niloticus niloticus (3,4,5,7,8)
Tilapia sp. (6)
unspecified fish (2)
Dist.: Luzon, Mindanao
Records: 1. Duncan 1973 (Luzon); 2. Davy and Graham 1979 (-); 3. Lopez 1986 (Luzon), 4. 1988 (Luzon); 5. Natividad et al. 1986b (Luzon); 6. Velasquez 1986a (Luzon); 7. Bondad-Reantaso and Arthur 1989a (-), 8. 1990 (Luzon, Mindanao)
Remarks: This species was introduced with the importation of tilapias (see Bondad-Reantaso and Arthur 1990).
Although Kabata (1985) indicated that *Cichlidogyrus sclerosus* has been reported to cause severe damage to the gills of tilapia in the Philippines, we have found no published evidence supporting this conclusion.

Cichlidogyrus tiberianus Paperna, 1960 (F)
Location: gills
Host: *Oreochromis niloticus niloticus*
Dist: Luzon, Mindanao
Records: Natividad et al. 1986b (Luzon); Bondad-Reantaso and Arthur 1989a (-), 1990 (Luzon, Mindanao)
Remarks: This species was introduced with the importation of tilapias (see Bondad-Reantaso and Arthur 1990).

Cichlidogyrus tilapiae Paperna, 1960 (F)
Location: gills
Host: *Oreochromis niloticus niloticus*
Dist.: Luzon, Mindanao
Records: Natividad et al. 1986b (Luzon); Bondad-Reantaso and Arthur 1989a (-), 1990 (Luzon, Mindanao)
Remarks: This species was introduced with the importation of tilapias (see Bondad-Reantaso and Arthur 1990).

Cichlidogyrus sp. (F)
Location: gills
Hosts: *Oreochromis niloticus niloticus* (3,4,5,6,7,8)
tilapia (2)
unspecified fish (1)
Dist.: Luzon
Records: 1. Davy and Graham 1979 (-); 2. Guerrero 1981 (-); 3. Hopkins and Cruz 1982; 4. Quines and Paycana 1982a, 5. 1983; 6. Natividad et al. 1986a[50]; 7. Lumanlan et al. 1992[51]; 8. Yambot and Lopez 1997

[50] Material reported only as *Cichlidogyrus* in the abstract of Natividad et al (1986a) was noted by Natividad et al. (1986b) to contain C. lo*ngicornis, C. sclerosus, C. tiberianus* and *C. tilapiae*.

[51] The record of Lumanlan et al. (1992) involves Nile tilapia imported from Thailand for aquaculture purposes.

Enterogyrus cichlidarum Paperna, 1963 (F)
Location: stomach
Host *Oreochromis niloticus niloticus*
Dist: Luzon
Records:Bondad-Reantaso and Arthur 1989a (-), 1990
Remarks:This species was introduced into the Philippines with the importation of tilapias (see Bondad-Reantaso and Arthur 1990).

Heteronchocleidus sp. (F)
Location: gills
Host *Trichogaster lalia*
Dist: Luzon (aquarium)
Record: Lumanlan et al. 1992
Remarks: This genus has not yet been shown to occur in Philippine natural waters, the above report involving an aquarium fish imported from Singapore which was examined in Quezon City.

Tetrancistrum lutiani Tubangui, 1931 (M)
Location: gills
Host: *Lutjanus sp.*
Dist: Luzon (aquarium)
Record: Tubangui 1931b[52]
Remarks: The host was obtained from a marine aquarium at the Bureau of Science, Manila.

[52] Tubangui (1931b) originally gave the host name as *Lutianus lioglossus* but subsequently (Tubangui 1947) corrected the identification to *Lutjanus* sp.

Unidentified Ancyrocephalinae

Ancyrocephalinae gen sp. (F)
Includes: *Actinocleidus* sp. Auctorum
Ancyrocephalidae gen sp.
Location: gills, buccal cavity
Hosts: *Clarias batrachus* (2,3)
C. macrocephalus (1)
Puntius tetrazona (4)
Dist: Luzon
Records: 1. Hanviriyapant 1977; 2. Lopez 1986, 3. 1988; 4. Lumanlan et al. 1992[53]
Remarks: According to Beverley-Burton (1986), the genus *Actinocleidus* occurs only on North American centrarchid fishes.

[53] The report of Lumanlan et al. (1992) involves an aquarium fish imported from Hongkong which was examined in Quezon City.

SUBFAMILY DACTYLOGYRINAE

Dactylogyrus sp. (F)
Location: gills
Hosts: *Aristichthys nobilis* (16)
Carassius auratus (16)
C. *carassius* (7,9)
Carassius sp. (4)
Clarias batrachus (9)
C. macrocephalus (13)
Cyprinus carpio carpio (1,2,4,6,10,11, 12,16)
Cyprinus sp. (16)
Epalzeorhynchos frenatum (16)
Mugil sp. (16)
Oreochromis mossambicus (5)
O. mossambicus x *O. niloticus niloticus*(5)
O. niloticus niloticus (4,5,7,8,11)
catfish (2)
unspecified fish (3,14,15)
Dist.: Luzon
Records: 1. Anon. 1975; 2. Velasquez 1977a (Luzon); 3. Davy and Graham 1979 (-); 4. Guerrero and Battad 1980; 5. Guerrero and Monje 1980; 6. Guerrero 1981 (-), 7. 1982; 8. Guerrero and Paycana 1981a, 9. 1981b; 10. Hopkins and Cruz 1982[54]; 11. Quines and Paycana 1982a, 12. 1983; 13. Kabata 1985 (-); 14. Palisoc 1988[55]; 15. Lumanlan et al. 1990 (-)[56], 16. 1992
Remarks: Velasquez (1977a) reported that *Dactylogyrus* was responsible for 20% mortalities of catfish raised at a farm in Pansol, Laguna.

Reports of *Dactylogyrus* species on *Clarias* spp. are likely misidentifications, as these monogeneans do not occur on members of this genus in Southeast Asia (S.L.H. Lim, Universiti Malaya, Kuala Lumpur, pers. comm.). Similarly, reports of this genus on the gills of tilapias probably involve *Cichlidogyrus* spp.

[54] The report of Hopkins and Cruz (1982) involves a tentative parasite identification.

[55] Palisoc (1988), in his study on disease problems at Laguna Lake, noted that *Dactylogyrus* was among the parasites found on tilapia, milkfish, dalag and carp; however, he did not indicate on which hosts individual parasite taxa were found.

[56] The reports of Lumanlan et al. (1990, 1992) involve fishes imported for aquaculture and the aquarium trade which were examined in Quezon City.

FAMILY DIPLECTANIDAE

Diplectanum sp. (M)
Location: gills
Host: *Lates calcarifer*
Dist: Philippines
Record: ADB/NACA 1991

Pseudorhabdosynochus epinepheli (Yamaguti, 1938) Kritsky and Beverley-Burton,1986 (M)
Location: [gills]
Host: *Epinephelus malabaricus*
Dist: Philippines
Record: Leong and Wong 1990
Remarks:Leong and Wong (1990) reported this species from juvenile grouper imported from the Philippines to Malaysia.They noted that high infections may lead to disease outbreaks in grouper cage culture.

The taxonomy of *Pseudorhabdosynochus epinepheli* was reviewed in detail by Kritsky and Beverley-Burton (1986).

ORDER GYRODACTYLIDEA

FAMILY GYRODACTYLIDAE

Gyrodactylus niloticus Cone, Arthur and Bondad-Reantaso, 1995 (F)
Syn: *Gyrodactylus sp.* of Natividad, Bondad-Reantaso and Arthur, 1986 (partim)
Location: skin
Host: *Oreochromis niloticus niloticus*
Dist: Luzon
Records: Natividad et al. 1986b; Cone et al. 1995
Remarks: Cone et al. (1995) considered this species likely to be of African origin, and imported with the introduction of Nile tilapia.

Gyrodactylus plotosi Mayes and Brooks, 1977 (M)
Location: skin
Host *Plotosus lineatus*
Dist: Philippines
Record: Mayes and Brooks 1977
Remarks: This species was described from fish ofPhilippine origin which were examined in the United States.

Gyrodactylus shariffi Cone, Arthur and Bondad-Reantaso, 1995 (B)
Syn.: *Gyrodactylus* sp. of Natividad, Bondad-Reantaso and Arthur, 1986 (partim), and of Bondad-Reantaso and Arthur, 1990 (partim)
Location: skin
Host: *Oreochromis niloticus niloticus*
Dist: Panay
Records: Natividad et al. 1986b; Bondad-Reantaso and Arthur 1990; Cone et al. 1995
Remarks: Cone et al. (1995) believed that Nile tilapia cultured in brackishwater ponds acquired infections of *Gyrodactylus shariffi* from wild marine fishes, most likely mullets.

Gyrodactylus sp. (F,B)
Location: gills, skin
Hosts: *Carassius auratus* (11)
C. carassius (6,7)
Carassius sp. (3)
Channa striata (1)
Clarias batrachus (1)
C. macrocephalus (1)
Cyprinus carpio carpio (1,3,5)
Oreochromis niloticus niloticus (3,4,8,9,10)
unspecified fish (2)
Dist.: Luzon, Panay
Records: 1. Anon. 1975 (Luzon); 2. Davy and Graham 1979 (-); 3. Guerrero and Battad 1980 (Luzon); 4. Guerrero and Monje 1980 (Luzon); 5. Guerrero 1981 (-), 6. 1982 (Luzon); 7. Guerrero and Paycana 1981b (Luzon); 8. Natividad et al. 1986a (Luzon), 9. 1986b (Luzon, Panay)[57]; 10. Bondad-Reantaso and Arthur 1990 (Luzon, Panay); 11. Lumanlan et al. 1992 (Luzon)[58]

[57] Some of the specimens reported as *Gyrodactylus* sp. by Natividad et al. (1986b) and Bondad-Reantaso and Arthur (1990) were subsequently described as *G. niloticus* and *G. shariffi* by Cone et al. (1995).

[58] The report of Lumanlan et al. (1992) involves imported goldfish examined in Quezon City.

SUBCLASS OLIGONCHOINEA

ORDER MAZOCRAEIDEA

SUBORDER GASTEROCOTYLINEA

FAMILY GASTEROCOTYLIDAE

Eyelavera typica Unnithan, 1968 (M)
Location: gills
Hosts: *Rastrelliger brachysoma*
R. faughni
R. kanagurta
Dist: Luzon
Record: Rohde 1989
Remarks: Rohde (1989) examined specimens of this monogenean from *R. brachysoma* and *R. kanagurta* collected from various Philippine localities, but did not indicate which collections contained infected hosts. The specimen from *R. faughni* was collected at Manila.

SUBORDER MAZOCRAEOIDEA

FAMILY MAZOCRAEIDAE

Kuhnia scombercolias Nasir and Fuentes Zambrano, 1983 (M)
Location: gills
Host: *Rastelliger brachysoma*

Dist.: Negros
Record: Rohde 1989

Kuhnia sprostonae Price, 1961 (M)
Location: gills
Host *Rastelliger brachysoma*
Dist: Negros
Record: Rohde 1989

Pseudoanthocotyle pavlovskyi Bykhovsky and Nagibina, 1954 (M)
Syn.: *Indomazocraes jagannath* Tripathi, 1959
Location: gills
Host: *Rastrelliger faughni*
Dist: Cebu, Luzon, Palawan
Record: Rohde 1989
Remarks: The synonymy follows Mamaev (1982).

SUBORDER MICROCOTYLINEA

FAMILY MICROCOTYLIDAE

Aspinatrium virgatarum (Tubangui, 1931) Yamaguti, 1963 (M)
Syn.: *Microcotyle virgatarum* Tubangui, 1931
Location: gills
Host: *Siganus virgatus*
Dist: Luzon (aquarium)
Record: Tubangui 1931b
Remarks:The host fish was taken from the aquarium of the Bureau of Science, Manila.

Unidentified Monogenea

Monogenea gen. spp. (F,B)
Location: gills, skin
Hosts: *Chanos chanos* (1,2)
Clarias batrachus (3,5)
Cyprinus carpio carpio (5)
Oreochromis mossambicus (3)
Scatophagus argus (8)
Tilapia zillii (3)
catfish (4)
grouper (9)
unspecified fish (6,7)
Dist.: Luzon, Panay
Records: 1. Anon 1973a (Panay), 2. 1973b (Panay), 3. 1975 (Luzon); 4. Velasquez 1977a (Luzon); 5. Kabata 1985 (-); 6. Natividad 1986 (Luzon)[59], 7. 1988 (Luzon)[60]; 8. Lio-Po and Barry 1988 (Panay)[61]; 9. ADB/NACA 1991 (-)

[59] Natividad (1986,1988) examined fishes *(Channa striata, Clarias batrachus, Puntius javanicus* and *Trichogaster pectoralis)* from various localities around Laguna Lake, Luzon Island, but did not indicate which host species were infected with Monogenea.

[60] The report of Natividad (1988) appears only in the abstract

[61] The material of Lio-Po and Barry (1988) was reported as "...perhaps a monogenean trematode..." and was listed as such in their Table XIV.I.

CLASS CESTODA

SUBCLASS CESTOIDEA

SUPERORDER EUCESTODA

ORDER CARYOPHYLLIDEA

FAMILY LYTOCESTIDAE

Boviena serialis (Bovien, 1926) Fuhrmann, 1931(F)
Location: intestine
Host *Clarias batrachus*
Dist: Luzon
Records: Velasquez 1978; Lopez 1986, 1988
Remarks:Lopez (1988) believed that this cestode was introduced along with importations of walking catfish.

Lytocestus birmanicus Lynsdale, 1956 (F)
Location: alimentary canal
Host: *Clarias batrachus*
Dist: Philippines
Record: Velasquez 1978

Lytocestus sp. (F)
Location: [intestine]
Host unspecified fish
Dist.: Philippines
Record: Davy and Graham 1979

Unidentified Caryophyllidea

Caryophyllidea gen sp. (F)
Location: not given
Host: *Clarias batrachus*
Dist: Philippines
Record: Velasquez 1982c

ORDER PROTEOCEPHALIDEA

FAMILY PROTEOCEPHALIDAE

Gangesia sp. (F)
Location: intestine
Host: *Clarias macrocephalus*
Dist: Luzon
Record: Hanviriyapant 1977

Proteocephalus sp. (F)
Includes: Proteocephalid larvae of Lopez 1979, 1986
Location: intestine
Hosts: *Glossogobius giuris* (2,3,4)
unspecified fish (1)
Dist: Luzon
Records:1. Davy and Graham 1979 (-); 2. Lopez 1979[62], 3. 1986, 4.1988[63]
Remarks: Reports of *Proteocephalus* from the buccal cavity, esophagus and stomach are considered to be the result of post-mortem migration.

[62] Material reported as "proteocephalid larvae" by Lopez (1979, 1986) was subsequently listed as *Proteocephalis* [sic] larva by Lopez (1988).

[63] The report of Lopez (1988) appears only in her abstract

ORDER PSEUDOPHYLLIDEA

FAMILY BOTHRIOCEPHALIDAE

Bothriocephalus acheilognathi
Yamaguti, 1934 (F)
Location: intestine
Hosts: *Aristichthys nobilis* (1,3,4,5)
Ctenopharyngodon idella (1,2,3)
Hypophthalmichthys molitrix (1,3)
Dist: Luzon
Records: 1. Velasquez 1978, 2. 1982c; 3. Natividad 1987 (-); 4. Lumanlan et al. 1990, 5.1992[64]
Remarks: *Bothriocephalus acheilognathi,* the Asian fish tapeworm, is a well known pathogen of cyprinid fishes which was probably introduced into the Philippines with the importation of Chinese carps for aquaculture (see Lumanlan et al. 1992). Velasquez (1978) reported that this cestode caused epizootics in carp finger/lings reared at the SEAFDEC Binañgonan Experimental Station.

[64] The record of Lumanlan et al. (1992) involves bighead carp imported from Thailand for aquaculture which were examined in Quezon City. In a preliminary abstract in which the host was not given, this material was mentioned only as belonging to the genus *Bothriocephalus* (Lumanlan et al 1990).

Bothriocephalus travassosi Tubangui, 1938 (M?)
Location: intestine
Host *Anguilla marmorata*
Dist: Leyte
Record: Tubangui 1938

Bothriocephalus sp. (F)
Includes: Bothriocephalidae gen sp.of Velasquez, 1976a
Location: intestine
Host *Glossogobius giuris*
Dist: Luzon
Records: Velasquez 1976a (-), 1978 (-), 1982c (-); Lopez 1979, 1986,1988[65]
Remarks:Reports of *Bothriocephalus* from the esophagus and stomach are considered to be the result of post-mortem migration.

[65] The record of Lopez (1988) appears only in her abstract

FAMILY DIPHYLLOBOTHRIIDAE

Ligula sp. Plerocercoid (F)
Location: [body cavity]
Host: *Nematabramis verecundus*
Dist: Mindanao
Records: Velasquez 1986a (-), 1988
Remarks: Velasquez (1986a,1988) considered *Ligula* sp. to be the most pathogenic cestode found in Philippine fishes.

ORDER TETRAPHYLLIDEA

Tetraphyllidea of Uncertain Taxonomic Position

Scolex pleuronectis O. F. Müller, 1788
plerocercoid (M)
Syn.: *Scolex polymorphus Rudolphi,* 1819
Location: intestine
Host: *Chanos chanos*
Dist.: Mindanao
Records: Regidor and Arthur 1990 (-), 1992
Remarks: This genus is a collective

grouping for tetraphyllidean plerocercoids whose generic affinities are unknown.

ORDER TRYPANORHYNCHA

FAMILY OTOBOTHRIIDAE

Otobothrium penetrans Linton, 1907
Plerocercoid (M)
Location: musculature
Hosts: *Hyporhamphus dussumieri* (1,2)
Platybelone sp. (1,2)
Tylosurus acus acus (1,2)
T. crocodilus crocodilus (1,2)
Dist.: Visayan islands
Records: 1. Palm et al. 1993; 2. Petersen et al. 1993
Remarks: In the above studies, host specimens were purchased from fishermen and markets on the islands of Cebu, Mactan and Leyte. Although the exact origin of individual host species was not determined, all fish were noted to be from the Visayan Sea.

Unidentified Cestoda

Cestoda gen sp. (F,M)
Includes: Unidentified tapeworms
Location: intestine
Hosts: *Channa striata* (3,4)
Clarias batrachus (1,3,4)
Epinephelus malabaricus (6)
Glossogobius giuris (2)
Trichogaster pectoralis (3,4,5)
Dist.: Luzon
Records: 1. Anon 1975; 2. Lopez 1979[66]; 3. Guerrero and Paycana 1981b; 4. Guerrero 1982; 5. Llobrera 1987; 6. Leong and Wong 1990 (-)[67]
Remarks: Records of tapeworms from the buccal cavity, esophagus and stomach are considered to result from post-mortem migration.

[66] The report of Lopez (1979) was given as "cysticercoid larvae."

[67] Leong and Wong (1990) reported unidentified metacestodes in juvenile grouper imported to Malaysia from the Philippines.

PHYLUM NEMATHELMINTHES

CLASS NEMATODA

SUBCLASS ADENOPHOREA

ORDER ENOPLIDA

SUPERFAMILY TRICHUROIDEA

FAMILY CAPILLARIIDAE

Aonchotheca philippinensis (Chitwood, Velasquez and Salazar, 1968) Moravec, 1982 larva (B)
Syn.: *Capillaria philippinensis* Chitwood, Velasquez and Salazar, 1968
Location: mucosa of digestive tract, liver
Hosts: *Ambassis miops* (1,2,4,5)
Chonophorus melanocephalus (5)
Eleotris melanosoma (1,2,4,5)
Hypseleotris bipartita (2,3,4,5)
Poecilia reticulata (3,4,5)
Sicyopterus sp. (4,5)
Dist: Luzon
Records: 1. Cabrera et al. 1969[68]; 2. Cross et al. 1972[69], 3. 1978; 4. Cross and Bhaibulaya 1983[70]; 5. Cross and Basaca-Sevilla 1991[71]
Remarks: Human intestinal capillariasis caused by *Aonchotheca philippinensis* is an important zoonotic disease endemic in coastal areas of northern Luzon, with cases also having been reported from Bohol, Leyte and northeastern Mindanao, (see Cross and Bhaibulaya 1983, Cross 1990, 1992; Eduardo 1991, Cross and Basaca-Sevilla 1989, 1991). Small brackishwater fishes serve as intermediate hosts, while migratory piscivorous birds are considered the natural definitive hosts. Human infections, related to the local custom of eating raw fish, may result in fatalities if untreated.

Moravec (1982) transferred this species to *Aonchotheca* Lopez-Neyra, 1947. More recently, Anderson (1992), in a *lapsus calami,* placed it in the genus *Calodium* (R.C. Anderson, University of Guelph, pers. comm.).

[68] The records of Cabrera et al. (1969) are based on the finding of eggs only.

[69] Cross et al. (1972) reported finding *Apogon* sp. naturally infected with a larval capillariid which was in all

probability *Anochotheca philippinensis*.These authors were also able to infect *Apogon* sp., *Eleotris melanosoma* and *Ambassis commersoni* experimentally. Their identification *of Apogon* sp. was later corrected to *Hypeselotris bipartita* (Cross et al. 1978), while *A. commersoni* was later corrected to *A. miops* (Cross and Bhaibulaya 1983).

[70] The records of Cross and Bhaibulaya (1983) are based on experimental infections.

[71] Cross and Basaca-Sevilla (1991) established experimental infections in six species of fish obtained from lagoons in northern Luzon. They also isolated *Capillaria-like* larvae in three of these species

SUBCLASS SECERNENTEA

ORDER ASCARIDIDA

SUPERFAMELY ASCARIDOIDEA

FAMILY ANISAKIDAE

Anisakis sp. Larva (M)
Location: body cavity, mesenteries, musculature, viscera
Hosts: Acanthopagrus berda (2)
Caesio lunaris (4)
Carangoides armatus (2)
Caranx sp. (4)
Decapterus macrosoma (2,3,4)
Decapterus sp. (4)
Euthynnus affinis (2,4)
Lutjanus vitta (2,4)
Mene maculata (2,4)
Muraenesox cinereus (5)
Platax orbicularis (1)
Sardinella albella (4)
Scomberomorus commerson (4)
Selar crumenophthalmus (3,4)
Selaroides leptolepsis (1,4)
Sphyraena langsar (4)
Stolephorus sp. (2,4)
Terapon puta (2)
Dist: Luzon, Visayan islands
Records: 1. Velasquez 1966 (Luzon), 2. 1974 (-), 3. Cabrera 1968 (-); 4. Jueco et al. 1971 (Luzon)[72]; 5. Petersen et al. 1993 (Visayan islands)[73]
Remarks: Anisakiasis represents a potential human health threat in the Philippines due to the widespread habit of eating raw or lightly marinated fish. Although *Anisakis* is common in local marine fish, to date, no human infections have been reported.

Also see Velasquez (1972), who reported *Anisakis-type* larvae from 12 species of marine fish (see listings under Anisakidae gen sp.).

(Hypeselotris bipartita, Ambassis miops and *Chonophorus melanocephalus)* collected from natural waters.

[72] The records of Jueco et al. (1971) from shortfin scad *(Decapterus macrosoma)* and bigeye scad *(Selar crumenopthalmus)* were for fish purchased from Manila markets; other records given by these authors are based on the unpublished records of Dr. C.C. Velasquez and do not include collection localities.

[73] Petersen et al (1993) examined fish purchased from fishermen and local markets on the islands of Cebu, Mactan and Leyte; however, the exact origin of individual host species was not given.

Contracaecum sp. Larva (F)
Location: wall of pyloric caeca and intestine
Host: C*larias macrocephalus*
Dist: Luzon
Record: Hanviriyapant 1977
Remarks: Also see Velasquez (1972), who reported *Contracaecum-type* larvae from 38 species of marine fish (see listings under Anisakidae gen sp.).

Raphidascaris sp. Larva (M)
Location: not given
Host: *Epinephelus malabaricus*
Dist.: Philippines
Record: Leong and Wong 1990
Remarks:This report is based on a finding in juvenile grouper imported to Malaysia from the Philippines.

Also see Velasquez (1972), who reported *Raphidascaris-type* larvae from seven species of marine fish (see listings under Anisakidae gen sp).

Terranova sp. Larva (M)
Location: viscera
Host: unspecified fish
Dist.: Palawan
Record: Schmidt and Kuntz 1969
Remarks: Schmidt and Kuntz (1969) reported that larval *Terranova* were present in nearly every fish examined but did not specify the species infected.

As the taxonomy of the Anisakinae has

undergone considerable change since the above report, the generic assignment of these larvae requires verification.

Unidentified Anisakidae

Anisakidae gen. sp. Larva (M)
Includes: Anisalrinae gen. sp. of Velasquez, 1972
Location: musculature, viscera
Hosts: *Acanthopagrus berda*
Acanthurus sp.
Alectis sp.
Amblygaster sirm
Apogon ellioti
Caesio lunaris
Carangoides armatus
Caranx sp.
Decapterus sp.
Eleutheronema tetradactylum
Epinephelus sp.
Euthynnus qffinis
Gerres filamentosus
Lactarius lactarius
Leiognathus equulus
Leiognathus sp.
Lutjanus malabaricus
L vitta
Megalaspis cordyla
Mene maculata
Muraenesox cinereus
Nemipterus sp.
Ototithes ruber
Oxyurichthys microlepis
Pennahia anea
Pinjalo pinjalo
Poecilia latipinna
Priacanthus tqyenus
Psettodes erumei
Rastrelliger brachysoma
R. kanagurta
Sardinella albella
S. longiceps
Saurida tumbil
Scatophagus argus
Scomberomorus commerson
Selar crumenophthalmus
Selaroides leptolepsis
Sphyraena langsar
Stolephorus sp.
Synaptura sorsogonensis
Terapon jarbua
Trichiurus lepturus
"boloan"
"igat"
Dist: Luzon, Mindoro, Panay
Record: Velasquez 1972
Remarks: Velasquez (1972), in her survey of anisakine larvae in marine fishes sold at markets in Manila and vicinity, classified the larvae found into the following types: *"Anisakis-type", "Contracaecum-type", "Porrocaecum-type", "Amplicaecum-typs", "Multicaecum-typs", "Raphidascaris-type"* and "ascarid" larvae.

SUPERFAMILY SEURATOIDEA

FAMILY CUCULLANIDAE

Cucullanus lutjani Schmidt and Kuntz, 1969 (M)
Location: intestine
Hosts: *Gymnocranius griseus*
Lutjanus gibbus
Dist.: Palawan
Record: Schmidt and Kuntz 1969

Oceanicucullanus pacifica Schmidt and Kuntz, 1969 (F)
Location: intestine
Host: *Puntius binotatus*
Dist: Palawan
Record: Schmidt and Kuntz 1969
Remarks: Schmidt and Kuntz (1969) characterized the genus *Oceanicucullanus* as containing parasites of marine fishes. However, the host fish from which their new genus and species was described, purchased at a public market, was actually a freshwater cyprinid (see Mohsin and Ambak 1983).
Arya (1991) reduced *Oceanicucullanus* to a subgenus of *Indocucullanus;* however, Moravec and Scholz (1991) retained it as an independent genus.

Unidentified Ascaridida

Ascaridida gen sp. Larva (F)
Location: buccal cavity, intestine,

stomach
Hosts: *Clarias macrocephalus* (1)
Glossogobius giuris (2,3)
Dist: Luzon
Records: 1. Hanviriyapant 1977; 2. Lopez 1979[74], 3. 1988[75]

[74] Lopez (1979) initially (p. 86) listed ascarid larva from the stomach and intestine *of Glossogobius giuris,* but then (p. 98) gave the location as the buccal cavity and intestine. The same material was listed as being from the intestine by Lopez (1988).

[75] The record of Lopez (1988) appears only in her abstract

ORDER SPIRURIDA

SUPERFAMILY CAMALLANOIDEA

FAMILY CAMALLANIDAE

Camallanus (Zeylanema) anabantis Pearse, 1933 (F)
Syn.: *Zeylanema anabantis* (Pearse, 1933)
Location: intestine
Host: *Anabas testudineus*
Dist: Luzon
Record: Velasquez 1966, 1980a
Remarks: Moravec and Scholz (1991) considered *Zeylanema* a subgenus of *Camallanus.*

Camallanus (Camallanus) carangis Olsen, 1954 (M)
Location: [intestine]
Host: *Caranx* sp.
Dist: Luzon
Record: Velasquez 1966

Camallanus (Camallanus) marinus Schmidt and Kuntz, 1969 (M)
Location: intestine
Hosts: *Atule mate*
Cymbacephalus nematophthalmus
Gazza minuta
Trichiurus lepturus
Dist: Palawan
Record: Schmidt and Kuntz 1969

Camallanus (Camallanus) paracarangis Velasquez, 1980 (M)
Location: intestine
Hosts: *Arius sp.*
Caranx sp.
Gazza minuta
Leiognathus sp.
Terapon puta
Dist: Luzon, Mindoro
Record: Velasquez 1980a

Camallanus sp. (F,M)
Includes: *Zeylanema philippinensis* Velasquez, 1966 *nomen nudum*
Location: intestine
Hosts: *Apogon ellioti* (1)
Channa striata (3,4,5)
unspecified fish (2)
Dist: Luzon
Records: 1. Velasquez 1966 (-); 2. Davy and Graham 1979 (-); 3. Hopkins and Cruz 1982[76]; 4. Quines and Paycana 1982b, 5. 1983
Remarks: Velasquez (1966, Table 1) included the name *Zeylanema philippinensis* among a listing of new species of helminths described by her from Philippine fishes; however, as the species was never described nor illustrated, the name must be regarded as a *nomen nudum.*
The records from snakehead probably involve *Neocamallanus ophicephali.*

[76] The record of Hopkins and Cruz (1982) involves a tentative parasite identification.

Neocamallanus ophicephali (Pearse, 1933) Moravec and Sey, 1988 (F)
Syn.: *Camallanus ophicephali* Pearse, 1933
Location: stomach, pyloric caeca, intestine
Hosts: *Channa striata* (1,2,5,6,7,8)
Clarias macrocephalus (3)
unspecified fish (4)
Dist.: Luzon
Records: 1. Velasquez 1966, 2. 1980a; 3. Haviriyapant 1977; 4. Davy and Graham 1979 (-); 5. Calhoun 1981; 6. Boromthanarat 1982; 7. Lopez 1986, 8. 1988
Remarks: The life cycle of *Neocamallanus ophicephali* in the Philippines has been studied by Calhoun (1981), who found that a single intermediate host, a copepod, was necessary for its completion.

Haviriyapant (1977) considered *Clarias macrocephalus* a possible paratenic host for this nematode, as she did not find mature specimens.

Boromthanarat (1982) regarded the pyloric caeca and anterior intestine to be the typical location for this nematode.

Various authors have considered the genus *Neocamallanus* Ali, 1957 a synonym of *Camallanus* Railliet and Henry, 1915. We follow Moravec and Sey (1988) in considering it valid. These authors list as junior synonyms many species described from freshwater fishes (particularly Channidae) of South and Southeast Asia.

Procamallanus (Procamallanus) clarius Ali, 1957 (F)
Location: stomach, intestine
Host: *Clarias batrachus*
Dist.: Luzon
Records: Velasquez 1986a (-), 1988 (-); Lopez 1986, 1988; Natividad 1987 (-); Quines and Fernandez 1986
Remarks: Lopez (1988) suggested that *Procamallanus clarius* was introduced along with the importation of walking catfish.

Procamallanus (Spirocamallanus) guttatusi Andrade-Salas, Pineda-Lopez and Garcia-Magaña, 1994 (M)
Syn.: *Spirocamallanus philippinensis* Machida and Taki, 1985
nec *Spirocamallanus philippinensis* Velasquez, 1980
Location: intestine
Host: *Siganus guttatus*
Dist: Panay
Record: Machida and Taki 1985
Remarks: As the name used by Machida and Taki (1985) was preoccupied, Andrade-Salas et al. (1994) renamed their species *Procamallanus guttatusi.* We follow Moravec and Sey (1988) in considering *Spirocamallanus* Olsen, 1952 a subgenus of *Procamallanus* Baylis, 1923.

Machida and Taki (1985) noted that morbidity and death in captive rabbitfish were associated with heavy infection by this nematode.

Procamallanus (Spirocamallanus) philippinensis (Velasquez, 1980) n comb. (M)
Syn.: *Spirocamallanus philippinensis* Velasquez, 1980
Location: stomach, intestine
Hosts: *Acanthopagrus berda*
Pennahia anea
Sillago sihama
Dist: Luzon
Record: Velasquez 1980a

Procamallanus (Spirocamallanus) spiralis Baylis, 1923 (M)
Syn.: *Spirocamallanus spiralis* (Baylis, 1923)
Location: [stomach, intestine]
Hosts: *Acanthopagrus berda*
Acanthurus sp.
Nemipterus sp.
Platycephalus indicus
Tylosurus sp.
Dist: Luzon
Record: Velasquez 1966

Procamallanus sp. (F,M)
Location: stomach
Hosts: *Clarias macrocephalus* (1)
Siganus canaliculatus (3)
S. spinus (3)
unspecified fish (2)
Dist: Luzon, Palawan
Records:1. Anon 1975 (Luzon); 2. Davy and Graham 1979 (-); 3. Schmidt and Kuntz 1969 (Palawan)

Unidentified

Camallanidae gen. sp. (F)
Location: intestine
Host: unspecified fish
Dist: Mindanao
Record: Velasquez 1986b[77]

[77] Velasquez (1986b) noted *that Puntius amarus, P. binotatus, P. disa, P. manalak* and *Spratellicypris palata* were parasitized by heterophyiids, strigeids and camallanids, but in this short abstract, she did not indicate which parasite taxa occurred in individual host species.

SUPERFAMELY DRACUNCULOIDEA

FAMILY PHILOMETRIDAE

Philometra lateolabracis Yamaguti, 1935 (M)
Location: body cavity
Hosts: *Cephalopholis sonnerati*
Pseudorhombus javanicus
Dist: Palawan
Record: Schmidt and Kuntz 1969

Philometra robusta Moravec, Möller and Heeger, 1992 (M)
Location: body cavity
Host: *Arothron mappa*
Dist: Tawi-Tawi
Record: Moravec et al. 1992
Remarks:As noted by Moravec et al. (1992), this extremely large nematode (females may be up to 45 cm in length) probably impairs the swimming ability of its host making it more susceptible to predation
Tawi-Tawi Island is in the Sulu Archipelago.

Philometra sp. (F,M)
Location: musculature, palate
Hosts: *Clarias batrachus* (1,2)
Tylosurus crocodilus crocodilus (3)
Dist: Luzon, Visayan islands
Records:1. Lopez 1986 (Luzon), 2. 1988 (Luzon); 3. Petersen et al. 1993 (Visayan islands)[78]

[78] Petersen et al (1993) examined fish purchased from fishermen and local markets on the islands of Cebu, Mactan and Leyte but did not give the exact origin of individual host species.

SUPERFAMILY GNATHOSTOMATOIDEA

FAMILY GNATHOSTOMATIDAE

Gnathostoma spinigerum Owen, 1836 larva (F)
Location: musculature, visceral linings
Hosts: *Anabas testudineus* (3,5)
Channa striata (1)
Clarias batrachus (3)
Glossogobius giuris (1,2)
Terapon plumbeus (1)
unspecified fish (4,6)
Dist: Luzon
Records: 1. Africa et al. 1936[79], 2. 1937 (-); 3. Refuerzo and Garcia 1938 (Luzon -experimental?)[80]; 4. Vazquez-Colet 1943b (-); 5. Velasquez 1974 (-), 6. Davy and Graham 1979 (-)
Remarks: *Gnathostoma spinigerum* is of zoonotic importance in the Philippines (see Eduardo 1991). Life cycle studies conducted in the Philippines by Africa et al. (1936, 1937) and Rufuerzo and Garcia (1938) have confirmed that copepods act as first intermediate hosts, fish as second intermediate hosts, and mammals such as cats and dogs, as final hosts. When larvae from fish are ingested by humans, they may undergo migrations to the skin, visceral linings, mucous membranes, eye or brain, producing "creeping eruptions" (Velasquez 1974).

[79] Larval gnathostomes reported by Africa et al. (1936, 1937) were presumed to be *Gnathostoma spinigerum,* and adults of this nematode were recovered from a cat experimentally fed these larvae (Africa et al. 1937).

[80] Refuerzo and Garcia (1938) found single infections in *Clarias 'batrachus* and*Anabas testudineus* experimentally exposed to infected copepods.However, they were uncertain as to whether these larvae were the result of natural or experimental infection.

SUPERFAMILY HABRONEMATOIDEA

FAMILY CYSTIDICOLIDAE

Ascarophis beryx Kataitseva, 1979 (M)
Location: stomach
Host: *Beryx splendens*
Dist: Philippines
Record: Kataitseva 1979b
Remarks: As the name used by Kataitseva (1979b) for her new species *of Ascarophis* from *Beryx splendens* from the Philippine Sea was given only in the Cyrillic alphabet, we have transliterated it into the Latin alphabet.

Ascarophis erythrichthys Kataitseva, 1981 (M)
Location: stomach, body cavity
Host: *Dipterygonotus balteatus*
Dist: Philippines
Record: Kataitseva 1981
Remarks: As the name used by

Kataitseva (1981) for her new species of *Ascarophis* from *Erythrichthys leucogrammicus* (syn. of *Dipterygonotus balteatus)* from the Philippine Sea was given only in the Cyrillic alphabet, we have transliterated it into the Latin alphabet.

Metabronema magnum (Taylor, 1925) Yorke and Maplestone, 1926 (M)
Syn.: *Metabronema caranxi* Tubangui and Masiluñgan, 1938
Location: abdominal cavity
Host: *Gnathanodon speciosus*
Dist.: Luzon
Record: Tubangui and Masiluñgan 1938
Remarks: The synonymy follows Rasheed (1966).

Metabronema polymixia Kataitseva, 1979 (M)
Location: stomach
Host: *Polymixia japonica*
Dist: Philippines
Record: Kataitseva 1979a
Remarks: As the name used by Kataitseva (1979a) for her new species of *Metabronema* from *Polymixia japonica* from the Philippine Sea was given only in the Cyrillic alphabet, we have transliterated it into the Latin alphabet The generic assignment of *M. polymixia* requires reassessment; possibly it is *an Ascarophis.*

Spinitectus palawanensis Schmidt and Kuntz, 1969 (M)
Location: intestine
Host: *Euthynnus affinis*
Dist: Palawan
Record: Schmidt and Kuntz 1969

Unidentified Nematoda

Nematoda gen sp. adult and larva (F,B,M)
Location: gills, intestine, intestinal wall, musculature, stomach
Hosts: *Ambassis miops* (10)
Aristichthys nobilis (11)
Channa striata (2,4,5)
Chanos chanos (8,9)
Chonophorus melanocephalus (10)
Clarias batrachus (4,5)
C. *macrocephalus* (6)
Hypseleotris bipartita (10)
Monopterus albus (11)
Mugil sp.(ll)
Muraenesox cinereus (1)
Pantodon buchholzi (11)
Siganus guttatus (7)
Sphaerichthys osphromenoides (11)
Terapon jarbua (1)
Trichogaster pectoralis (7)
unspecified fish (3)
Dist: Luzon, Palawan, Panay
Records: 1. Velasquez 1972 (Luzon); 2. Anon. 1975 (Luzon); 3. Cross et al.1978 (Luzon)[81]; 4. Guerrero and Paycana 1981b (Luzon); 5. Guerrero 1982 (Luzon); 6. Kabata 1985 (-); 7. Llobrera 1987 (Luzon, Panay); 8. Regidor and Arthur 1990 (-), 9. 1992 (Luzon, Palawan); 10. Cross and Basaca-Sevilla 1991 (Luzon); 11. Lumanlan et al. 1992 (Luzon)[82]

[81] Cross et al. (1978) and Cross and Basaca-Sevilla (1991) reported *Capillaria-like* larvae from fishes examined on Luzon Island. It was not known if these larvae were *C. philippinensis* (syn. of *Anochotheca philippinensis).*

[82] The records of Lumanlan et al. (1992) involve fishes imported for aquaculture and the aquarium fish trade which were examined in Quezon City.

PHYLUM ACANTHOCEPHALA

CLASS PALAEACANTHOCEPHALA

ORDER ECHINORHYNCHIDA

FAMILY CAVISOMIDAE

Cavisoma magnus (Southwell, 1927) Van Cleave, 1931 (M)
Location: intestine
Host: *Chanos chanos*
Dist: Mindanao
Records: Regidor and Arthur 1990 (-), 1992; Arthur et al. 1995
Remarks: Arthur et al. (1995) redescribed *C. magnus* from Philippine sabalo. They considered the reports of unidentified acanthocephalans from adult milkfish by Velasquez (1976a, 1976b, 1977a,1979),which were later referredto *Acanthocephalus* sp. by

Velasquez (1984, 1986a, 1988), as likely pertaining to this species.

Filisoma rizalinum Tubangui and Masiluñgan, 1946 (M)
Location: intestine
Hosts: *Scatophagus argus* (1)
unspecified fish (2)
Dist.: Luzon
Records: 1. Tubangui and Masiluñgan 1946; 2. Velasquez 1988

FAMILY DIPLOSENTIDAE

Diplosentis amphacanthi Tubangui and Masiluñgan, 1937 (M)
Location: intestine
Host: *Siganus canaliculatus*
Dist: Mindanao
Record: Tubangui and Masiluñgan 1937

FAMILY ECHINORHYNCHIDAE

Acanthocephalus sp. (F,M)
Includes: Acanthocephala of Velasquez, 1976,1977, 1979
Location: intestine
Hosts: *Chanos chanos* (1,2,3,4,5,6,7)
Clarias macrocephalus (8)
Dist: Luzon, Mindoro
Records: 1. Velasquez 1976a (-), 2. 1976b (-), 3. 1977a (-), 4. 1979 (Luzon, Mindoro), 5. 1984 (Luzon, Mindoro), 6. 1986a (Luzon, Mindoro), 7. 1988 (Luzon, Mindoro); 8. Hanviriyapant 1977 (Luzon)
Remarks: Material from adult milkfish reported only as unidentified acanthocephalans by Velasquez (1976a, 1976b, 1977a, 1979) was subsequently assigned to *Acanthocephalus* sp. (Velasquez 1984, 1986a, 1988). Arthur et al. (1995) believed that these reports probably involve *Cavisoma magnus.*

CLASS EOACANTHOCEPHALA

ORDER GYRACANTHOCEPHALA

FAMILY QUADRIGYRIDAE

Acanthogyrus sp. (?)
Syn: *Acanthosentis* sp.
Location: not given
Host: unspecified fish
Dist.: Philippines
Record: Davy and Graham 1979
Remarks:Davy and Graham (1979) in their Appendix 1, listed the genus *Acanthosentis* as occurring in the Philippines. This report requires substantiation.

Pallisentis cleatus (Van Cleave, 1928) Harada,1935 (F)
Syn: *Neosentis cleatus* Van Cleave, 1928
Location: intestine
Host: *Monopterus albus*
Dist: Luzon (tank-held)
Record: Lumanlan et al. 1992
Remarks: This report involves swamp eel, examined in Quezon City, which were imported from China for re-export to Taiwan. This acanthocephalan has not been shown to occur in natural waters of the Philippines.

ORDER NEOECHINORHYNCHIDA

FAMILY NEOECHINORHYNCHIDAE

Neoechinorhynchus octonucleatus Tubangui, 1933 (F)
Location: intestine
Hosts: *Terapon plumbeus* (1)
unspecified fish (2)
Dist: Luzon
Records: 1. Tubangui 1933a[83]; 2. Velasquez 1988

[83] Tubangui (1933a) gave the host as "'ayuñgan' *(?Therapon argenteus)"* and later (Tubangui 1947) listed it as this species.

Unidentified Acanthocephala

Acanthocephalà gen. sp. (F,M)
Location: intestine
Hosts: *Leiocassis siamensis* (2)
Scatophagus argus (1)
Dist: Luzon (aquarium)
Records: 1. Velasquez 1976b (-); 2. Lumanlan et al. 1992[84]

[84] The record of Lumanlan et al. (1992) involves an aquarium fish imported from Singapore which was examined in Quezon City.

PHYLUM ANNELIDA

CLASS HIRUDINEA

ORDER GNATHOBDELLIDA

FAMILY PISCICOLIDAE

Piscicola sp. (F)
Location: skin
Hosts: *Channa striata* (2,3)
grouper (4,5)
unspecified fish (1)
Dist: Luzon
Records: 1. Davy and Graham 1979 (-); 2. Velasquez 1986a (-), 3. 1988 (-); 4. ADB/NACA 1991 (-); 5. Bondad-Reantaso 1992

PHYLUM MOLLUSCA

CLASS PELECYPODA

SUBCLASS PALAEAHETERODENTA

ORDER UNIONIDA

FAMILY UNIONIDAE

Cristaria plicata (Leach, 1814) von Ihering, 1892 glochidia (F)
Includes: Unionidae gen sp. glochidia of Bondad-Reantaso and Arthur, 1990
Location: gills, skin
Hosts: *Clarias batrachus* (1,2)
Oreochromis niloticus niloticus (3)
Dist: Luzon
Records:1. Velasquez 1986a (-)[85], 2. 1988 (-); 3. Bondad-Reantaso and Arthur 1990
Remarks:This species is believed to have been introduced with the importation of carp from China (Bondad-Reantaso 1989).
Bondad-Reantaso (1992) referred the report of unidentified unionid glochidia by Bondad-Reantaso and Arthur (1990) to this species.

[85] The records of Velasquez (1986a, 1988) are for experimentally infected walking catfish

PHYLUM ARTHROPODA

CLASS CRUSTACEA

SUBCLASS BRANCHIURA

ORDER ARGULOIDEA

FAMILY ARGULIDAE

Argulus indicus Weber, 1892 (F)
Location: skin
Hosts: *Carassius sp.* (3,4)
Channa striata (1,2,3,4)
Oreochromis mossambicus (1,2)
Dist.: Luzon
Records:1. Lopez 1986, 2. 1988; 3.Velasquez 1986a (-), 4.1988 (-)

Argulus japonicus Thiele, 1900 (F)
Location: skin
Host: *Aristichthys nobilis*
Distribution: Luzon
Records: Lumanlan et al. 1990[86], 1992
Remarks: As this report involves bighead carp examined in Quezon City which were imported from Taiwan and Thailand for aquaculture, it is probable that this parasite has become established in the Philippines.

[86] Host species and specific identity for material listed only as *Argulus* in the meeting abstract of Lumanlan et al (1990) were given in their 1992 paper.

Argulus sp. (F)
Location: skin
Hosts: *Channa striata* (4,8)
Cyprinus carpio carpio (1,3,5)
Tilapia sp. (6)
eel (6)
mullet (6)
unspecified fish (2,7)
Dist.: Luzon
Records: 1. Anon 1975; 2. Davy and Graham 1979 (-); 3. Guerrero 1981 (-); 4. Quines and Paycana 1983; 5. Lio-Po et al. (1983); 6. Kabata 1985 (-); 7. Llobrera 1987; 8. Natrvidad 1988
Remarks: Guerrero (1981) and Lio-Po et al. (1983) noted *that Argulus* has caused heavy mortalities of Japanese ornamental carp, Lio-Po et al. (1983) reporting that about 20% of stocks were lost

Unidentified Branchiura

Branchiura gen sp. (B)
Location: fins
Host: top minnow
Dist.: Panay
Record: Anon 1973b

SUBCLASS COPEPODA

ORDER CYCLOPOIDA

FAMILY LERNAEIDAE

Lamproglena monodi Capart, 1944 (F)
Syn: *Lamproglena* sp. of Yambot, 1996
Location: gills
Host: *Oreochromis niloticus niloticus*
Dist.: Luzon
Records: Yambot 1996; Yambot and Lopez 1997
Remarks: This parasite appears to have entered the Philippines with the recent importation of Nile tilapia from Africa for broodstock improvement (see Yambot and Lopez 1997).

Lernaea cyprinacea Linnaeus, 1758 (F)
Syn: *Lernaea* sp. Auctorum
Location: head embedded in eye, nostril, musculature, with body protruding externally
Hosts: *Anabas testudineus* (6)
Carassius auratus (7,8)
Channa striata (6)
Chanos chanos (1,2,3,5)
Glossogobius biocellatus (6)
G. giuris (6)
Terapon plumbeus (6)
unspecified fish (4)
Dist.: Luzon
Records: 1. Velasquez 1979[87], 2. 1986a, 3. 1988; 4. Davy and Graham 1979 (-); 5. Regidor and Arthur 1986; 6. Vallejo 1988[88]; 7. Lumanlan et al. 1990[89]-[90], 8. 1992
Remarks: This important pathogen is believed to have been introduced along with importation of an unknown host (see Velasquez 1979). Velasquez (1986a, 1988) noted that *Lemaea cyprinacea* has caused great economic loss to freshwater milkfish culture on Luzon.

[87] Specimens reported as *Lemaea* sp. by Velasquez (1979) were later (Velasquez 1984) referred to *L. cyprinacea.*

[88] The record of Vallejo (1988) for *Anabas testudineus* involves an experimental infection.

[89] The records of Lumanlan et al. (1990, 1992) involve goldfish imported from Hongkong which were examined in Quezon City.

[90] Host species and specific identity for material listed only as *Lernaea* in the meeting abstract of Lumanlan et al. (1990) were given in their 1992 publication.

Lernaea lophiara Harding, 1950 (F)
Location: head embedded in musculature with body protruding externally
Hosts: *Anabas testudineus*
Glossogobius giuris
Dist: Luzon
Record: Vallejo 1988[91]

[91] The report of this copepod from *Anabas testudineus* involves an experimental infection.

Lernaea sp. (F)
Location: head embedded in musculature with body protruding externally
Hosts: *Channa striata* (6)
Cyprinus carpio carpio (1,2)
Hypophthalmichthys molitrix (2)
Ophieleotris aporos (7)
Terapon plumbeus (7)
unspecified fish (3,4,5)
Dist: Luzon
Records: 1. Anon 1975; 2. Guerrero 1981; 3. Mines and Baluyot 1986[92], 4. 1988; 5. Palisoc 1988[93]; 6. Natividad 1988; 7. Vallejo 1988[94]
Remarks: Records of *Lernaea* sp. from milkfish are referred to *L. cyprinacea.*

[92] Mines and Baluyot (1986, 1988) noted a few cases of *Lernaea* infecting the open wounds of fish suffering from epizootic ulcerative syndrome in Laguna Lake. The fish examined in their study included *Arius manillensis, Clarias* sp., *Ophicephalus striatus* (syn. of *Channa striata), Puntius* sp. and *Trichogaster sp.* However, the precise host(s) to which these reports pertain was not indicated.

[93] Palisoc (1988) noted that *Lernaea* was among the parasites found on tilapia, milkfish, dalag and carp in Laguna Lake, but did not indicate on which hosts individual parasite taxa were found.

[94] The report of Vallejo (1988) was given as *"Lernaea* sp. of *lophiara* Harding."

ORDER POECILOSTOMATOIDA

FAMILY BOMOLOCHIDAE

Bomolochus bellones Burmeister, 1835 (M)
Syn.: *Parabomolochus bellones* (Burmeister, 1835)
Location: gill chamber
Hosts: *Strongylura incisa*
S. urvillii
Dist.: Luzon
Record: Cressey and Colette 1970[95]

[95] The exact origin of the hosts from which the Philippine specimens examined by Cressey and Collette (1970) were taken was not given in their description of this species. However, in their host-parasite list, the material from *Strongylura urvillii* is noted to be from Manila.

Nothobomolochus digitatus Cressey, in Cressey and Collette, 1970 (M)
Location: [gills]
Hosts: *Strongylura leiura*
S. strongylura
Dist: Panay
Record: Cressey and Collette 1970[96]

[96] The exact origin of the hosts from which the specimens examined by Cressey and Collette (1970) were taken was not given. However, the material from *Strongylura leiura* is noted as being from Panay.

Nothobomolochus gibber (Shiino, 1957) Vervoort, 1962 (M)
Location: [gills]
Hosts: *Ablennes hians*
Tylosurus crocodilus crocodiles
Dist: Luzon
Record: Cressey and Collette 1970
Remarks: Yamaguti (1963b) included this species in the genus *Pseudartacolax.*

FAMILY ERGASILIDAE

Ergasilus coleus Cressey, in Cressey and Collette, 1970 (F3)
Location: [gills]
Hosts: *Strongylura strongylura*
S. urvillii
Dist: Culion, Mindanao
Record: Cressey and Collette 1970[97]

[97] Although the exact collection locality for *Strongylura urvillii* was not specified in the description of this new species, Cressey and Collette (1970) indicate in their host-parasite list that this host was collected at Culion Island, off the northern tip of Palawan.

Ergasilus philippinensis Velasquez, 1951 (F)
Location: gills
Host *Glossogobius giuris*
Dist: Luzon
Record: Velasquez 1951

Ergasilus rotundicorpus Jones and Hine, 1983 (B)
Location: gills
Host: *Siganus guttatus*
Dist: Panay
Record: Jones and Hine 1983

Ergasilus sp. (F)
Location: [gills]
Host: unspecified fish
Dist.: Philippines
Record: Davy and Graham 1979

FAMILY PHYLICHTHYIDAE

Colobomatus goodingi Cressey and Collette, 1970 (M)
Location: cephalic canals of head
Hosts: *Tylosurus acus melanotus*
T. crocodilus crocodiles
Dist.: Jolo, Luzon
Record: Cressey and Collette 1970[98]

[98] The exact collection locality (Jolo, Philippines) for the specimens from *Tylosurus acus melanotus* is given only in the host-parasite list of Cressey and Collette (1970). Jolo Island is part of the Sulu Archipelago.

ORDER SIPHONOSTOMATOIDA

FAMILY CALIGIDAE

Caligus epidemicus Hewitt, 1971 (B.M)
Location: skin
Hosts: *Chanos chanos* (3,4,5,6)
Oreochromis niloticus niloticus (1,2,7,8)
Dist: Luzon, Mindanao, Panay
Records: 1. Natividad et al. 1986a (Luzon)[99], 2. 1986b (Luzon, Panay); 3. Regidor et al. 1986 (-); 4. Regidor and Arthur 1986 (Luzon, Panay), 5. 1990 (-), 6. 1992 (Luzon, Mindanao); 7. Bondad-Reantaso and Arthur 1989a (-), 8. 1990 (Panay)

[99] Full identities for material reported only as belonging to the genus *Caligus* in the meeting abstracts of Natividad et al. (1986a) and Regidor et al. (1986) were provided by Natividad (1986b) and Regidor and Arthur (1986).

Caligus patulus Wilson, 1937 (M)
Syn.: *Caligus* sp. of Laviña, 1977, 1978, and of Velasquez, 1979
Location: skin
Host: *Chanos chanos*
Dist: Panay
Records: Laviña 1977, 1978; Velasquez 1979, 1986a, 1988; Jones 1980
Remarks: Laviña (1977, 1978) reported this copepod to be a problem in milkfish broodstock kept in canvas tanks at the SEAFDEC research station at Mag-aba, Pandan.

Jones (1980) identified *Caligus* sp. of Laviña (1977) as *C. patulus,* while material reported only as "Caligue" [sic] by Velasquez (1979) was later identified as this species in Velasquez (1984, 1986a, 1988).

Reports of *Caligus patulus* from the gills of milkfish are considered to result from displacement during host collection.

Caligus productus Dana, 1852 (M)
Syn.: *Caligus mirabilis* Leigh-Sharpe, 1934
Location: skin
Host: *Pseudobalistes flavimarginatus*
Dist.: Tapul
Record: Leigh-Sharpe 1934
Remarks:The location for this record, given as Kapul Island by Leigh-Sharpe (1934), is probably Tapul Island, Sulu Archipelago.

The synonomy follows Cressey (1991).

Caligus robustus Bassett-Smith, 1898 (M)
Location: [skin]
Hosts: *Alectis* sp.
Caranx sexfasciatus
Dist.: Philippines
Record: Cressey 1991[100]

[100] Cressey (1991) gave the hosts and localities as "...Philippines and Celebes: *Caranx sexfasciatus, Alectis* species..."

Caligus tylosuri (Rangnekar, 1956) Pillai, 1961(M)
Location: [skin]
Hosts: *Tylosurus acus melanotus*
T. crocodilus crocodilus
Dist.: Leyte, Luzon
Record: Cressey and Collette 1970

Caligus sp. (B)
Location: skin
Hosts: *Mugil cephalus* (1)
Scatophagus argus (3,4)
Siganus guttatus (2)
Strongylura incisa (5)
S. urvillii (5)
Dist.: Panay, Verde
Records: 1. Baticados and Quinitio 1984 (Panay); 2. Llobrera 1987 (Panay); 3. Cruz 1988 (Panay); 4. Lio-Po and Barry 1988 (Panay); 5. Cressey and Collette 1970 (Verde)[101]
Remarks of *Caligus* sp. from the gills are considered to result from displacement during host capture and transport.

[101] In their text, Cressey and Collette (1970) did not specify precise collection localities; however, in their host-parasite listing, the specimen of *"Caligus* sp. D" from *Strongylura urvillii* was noted to have originated from Verde del Sur Island (probably Verde Island, located between Luzon and Mindoro islands).

Caligodes laciniatus (Krøyer, 1863) Heller, 1865 (M)
Location: skin, generally attached beneath oral valve
Hosts: *Strongylura leiura*
Tylosurus acus melanotus
T. crocodilus crocodilus
Dist: Philippines
Record: Cressey and Collette 1970

Unidentified Caligidae

Caligidae gen sp. (M)
Location: [skin]
Host: *Dischistodus fasciatus*
Dist.: Sanguisiapo
Record: Leigh-Sharpe 1934
Remarks:SanguisiapoIsland is in the Sulu Archipelago.

FAMILY HATSCHEKIIDAE

Hatschekia tennis (Heller, 1865) Wilson, 1922 (M)
Syn: *Clavella tennis* Heller, 1865
Location: [gills]
Host: *Monocentris* sp.
Dist.: Luzon
Record: Heller 1865[102]

[102] Hell4er (1865) indicates that his material originated from Manila (Luzon Island) only in the table summarizing the geographic distribution of individual species (p. 262).

FAMILY LERNANTHROPIDAE

Lernanthropus belones Krøyer, 1863 (M)
Location: [gills]
Hosts: *Strongylura incisa*
S. strongylur
Dist.: Philippines
Record: Cressey and Collette 1970

Lernanthropus musca Blainville, 1822 (M)
Location: skin
Host: *Arothron manilensis*
Dist: Luzon
Record: Blainville 1822

Lernanthropus tylosuri Richiardi, 1880 (M)
Location: [gills]
Hosts: *Ablennes hians*
Strongylura leiura
S. urvillii
Tylosurus acus melanotus
T. crocodilus crocodilus
T. punctulatus
Dist: Culion, Luzon
Record: Cressey and Collette 1970[103]

[103] The exact origin of the hosts from which the Philippine specimens examined by Cressey and Collette (1970) were taken was not given in their description of this species. However, in their host-parasite list, the material from Strongylura urvillii is noted to be from Culion Island (located off northern Palawan), while that from Tylosurus punctulatus was from Culion and Luzon islands.

FAMILY PENNELLIDAE

Lernaeenicus sp. (M)
Location: base of pectoral fin
Host *Tylosurus crocodilus crocodilus*
Dist: Luzon
Record: Cressey and Collette 1970

Pennella sagitta (Linnaeus, 1768) Oken, 1816 (M)
Syn: *Lerneopenna brachiata* Blainville, 1822
Location: head embedded in musculature with body protruding externally
Host: *Arothron manilensis*
Dist: Luzon
Record: Blainville 1822

Unidentified Copepoda

Copepoda gen sp. (F)
Location: gills
Host *Aristichthys nobilis*
Dist: Philippines
Record: Lumanlan et al. 1992[104]

[104] This report involves bighead carp imported from Taiwan for aquaculture which were examined in Quezon City.

SUBCLASS MALACOSTRACA

ORDER ISOPODA

SUBORDER FLABELLIFERA

Alitropus typicus Edwards, 1840 (F,B)
Syn.: *Rocinela typicus* (Edwards, 1840)
Location: [gill cavity, skin]
Hosts: *Chanos chanos* (1,2,3,4)
Oreochromis niloticus niloticus (6)
unspecified fish (5)
Dist.: Luzon, Panay
Records: 1. Velasquez 1977a (Panay), 2. 1979 (Panay), 3. 1986a (Panay), 4. 1988 (Panay); 5. Davy and Graham 1979 (-)[105]; 6. Del Mundo et al. 1996 (Luzon)
Remarks: Velasquez (1977a, 1986a, 1988) noted that mass infestation of milkfish by *Alitropus typicus* caused great mortalities in Iloilo fishponds in 1968. More recently, Del Mundo et al. (1996) reported that Nile tilapia cultured in net-cages at Talisay, Bantangas suffered mortalities of 40-80% due to this isopod, while only 5% of juvenile tilapia reared at Taal Lake survived infection.

Although Velasquez (1979, 1984), in a rather ambiguous fashion, initially

mentioned the genus *Ichthyoxenous,* as well as *Rocinella typicus,* she subsequently (Velasquez 1986a, 1988) referred only to *R. typicus* as the cause of milkfish mortalities.

[105] In their Appendix 1, Davy and Graham (1979) incorrectly gave the name of this species as *"Rocinela typhus".*

FAMILY CYMOTHOIDAE

Anilocra dimidiata Bleeker, 1857 (M)
Location: nuchal region
Host: *Scolopsis* sp.
Dist.: Bohol, Burias, Luzon
Record: Richardson 1910
Remarks: Burias Island is located off southwestern Luzon Island.

Cymothoa eremita (Brünnich, 1783) Fabricius, 1793 (M)
Syn.: *Cymothoa stromatei* Bleeker, 1857
Location: mouth, skin
Hosts: *Xyrichtys* sp.
unspecified fish
Dist.: Bubuan, Panay
Record: Richardson 1910
Remarks: The synonomy follows Trilles (1991).
The specimens from Bubuan Island were noted to have been taken from a barracuda-like fish.

Elthusa propinqua (Richardson, 1904) Bruce, 1990 (M)
Syn.: *Livoneca propinqua* Richardson, 1904
Location: [gills]
Host: unspecified fish
Dist.: Sombrero
Record: Richardson 1910[106]
Remarks: The synonomy follows Bruce (1990). Sombrero Island is located off Maricaban, Batangas, Luzon Island.

[106] Richardson (1910) noted that this species was collected from a macrurid fish.

Renocila richardsonae Williams and Bunkley-Williams, 1992 (M)
Syn.: *Renocila ovata* of Richardson, 1910
Location: skin
Hosts: *Parupeneus macronema* (2)
snapper (1,2)
Dist.: Bubuan, Jolo
Records: 1. Richardson 1910 (Bubuan); 2. Williams and Bunkley-Williams 1992 (Bubuan, Jolo)
Remarks: Bubuan and Jolo islands are in the Sulu Archipelago.
Richardson (1910) reported this species as *Renocila ovata* from the tail of an unidentified snapper. Her specimen was among those used by Williams and Bunkley-Williams (1992) to describe *R. richardsonae.* They noted that the specimens from Jolo Island were probably from the long-barbel goatfish, *Parupeneus macronema.*[107] Original information accompanying this material gave the host as *Pseudupeneus macronema* (a synonym of *Parupeneus macronema)*
The synonymy follows Williams and Bunkley-Williams (1992).

[107] Although Williams and Bunkley-Williams (1992) noted that this host may not occur in Philippine waters, Froese and Pauly (1996) list it as being native.

FAMILY GNATHIIDAE

Gnathiidae gen. sp. Larva (F,B)
Location: buccal cavity
Hosts: *Chanos chanos* (2,3,4,5)
Oreochromis niloticus niloticus (1)
Dist.: Luzon
Records: 1. Natividad et al. 1986b; 2. Regidor et al. 1986 (-); 3. Regidor and Arthur 1986, 4. 1990 (-), 5.1992
Remarks: Although these isopods were listed as occurring on the skin and gills, their true location is probably the buccal cavity (F. Rafi, Canadian Museum of Nature, Ottawa, pers. comm.).

Unidentified Isopods

Isopoda gen. sp.(F,B)
Location: buccal cavity, gills, skin
Hosts: *Chanos chanos* (1,2)
Scatophagus argus (3)
Dist.: Luzon, Panay
Records: 1. Ronquillo and Caces-Borja 1968 (Luzon); 2. Anon 1973b (Panay); 3. Lio-Po and Barry 1988 (Panay)

Remarks: Ronquillo and Caces-Borja (1968) ambiguously noted that other fishes such as *Gerres, eels*, slipmouths, mullets, tilapia, gobies and tarpons were also infected with isopodsKabata (1985) listed thse same hosts when discussing *Alitropus typicus*.

HOST-PARASITE LIST

CLASS ACTINOPTERYGII

ORDER OSTEOGLOSSIFORMES

SUBORDER OSTEOGLOSSOIDEI

FAMILY PANTODONT1DAE

Pantodon buchholzi Peters — freshwater butterflyfish (-)
Status: exotic
Environment: fresh water
Myxozoa
Myxidium sp. (Luzon - aquarium)
Digenea
Digenea gen. sp. (Luzon - aquarium)
Nematoda
Nematoda gen. sp. (Luzon - aquarium)
Remarks: Native to Africa, this aquarium species does not occur in Philippine natural waters.

ORDER ELOPIFORMES

FAMILY MEGALOPIDAE

Megalops cyprinoides (Broussonet) — IndoPacific tarpon buan-buan
Status: native
Environment: marine, brackish water, fresh water
Digenea
Transversotrema patialense (Luzon)
Remarks: A catadromous species; adults are only found at sea, while young inhabit river mouths,inner bays and mangrove forests (Froese and Pauly 1996).

ORDER ANGUILLIFORMES

SUBORDER ANGUILLOIDEI

FAMILY ANGUILLIDAE

Anguilla bicolor paciflca Schmidt (-)
Status: native (-)
Environment: fresh water, brackish water, marine
Microspora
Pleistophora anguillarum (-)
Remarks: This catadromous species was noted by Froese and Pauly (1996) as having an Indo-Pacific distribution, but not reported from the Philippines. However, Herre (1953) listed it as occurring in the country.

Anguilla celebensis Kaup — Celebes longfin eel
Status: native (-)
Environment: fresh water, brackish water, marine
Microspora
Pleistophora anguillarum (-)
Remarks: The Celebes longfin eel is catadromous.

Anguilla marmorata Quoy and Gaimard — giant mottled eel igat, palos
Syn.: *Anguilla mauritiana* Bennett
Status: native
Environment: fresh water, brackish water, marine
Digenea
Galactosomum anguillarum[108] metacercaria? (Leyte)
Cestoda
Bothriocephalus travassosi (Leyte)
Remarks: The giant mottled eel is catadromous.

[108] *Species inquirenda.*

Anguilla sp. — eel igat
Status: unknown
Environment: fresh water, brackish water, marine
Ciliophora
Ichthyophthirius sp. (Luzon)

"eel"or"igat"
Status: unknown
Environment: fresh water, brackish water, marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Branchiura
Argulus sp. (-)

SUBORDER CONGEROIDEI

FAMILY MURAENESOCIDAE

Muraenesox cinereus (Forsskäl) — daggertooth pike conger pindanga

Status: native
Environment: marine, brackish water, occasionally fresh water
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisakis sp. larva (Visayan islands)
Nematoda gen. sp. (Luzon)
Remarks: This marine species is reported also to occur in estuaries and sometimes fresh water.

ORDER CLUPEIFORMES

FAMILY CLUPEIDAE

Amblygaster sirm (Walbaum) — spotted sardinella
Syn.: *Sardinella sirm* (Walbaum) — tambang bato, tonsoy
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)

Anodontostoma chacunda (Hamilton) — chacunda gizzard shad, kabasi
Status: native
Environment: marine, brackish water
Digenea
Gyliauchen papillatus (Palawan)
Transversotrema patialense (Luzon)

Herlklotsichthys dispilonotus (Bleeker) — blacksaddle herring, tambang-bato
Syn.: *Harengula dispilonotus* Bleeker
Status: native
Environment: marine
Digenea
Aphanurus stossichi (Palawan)

Sardinella albella (Valenciennes) — white sardinella, bagasbas, halobaybay[109]
Syn.: *Sardinella perforata* (Cantor)
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisakis sp. larva (Luzon)

[109] Additional Tagalog common names include "lapid" and "tambang lapid."

Sardinella longiceps Valenciennes — Indian oil sardine, tamban[110]
Status: exotic?
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Remarks: The above record may involve a host misidentification. Froese and Pauly (1996) note that the range of this species probably does not extend into Philippine waters and that records from the Philippines likely pertain to the Bali sardinella *(S. lemuru* Bleeker).

[110] Additional Tagalog common names include "tamban siya" and "turay."

FAMILY ENGRAULIDAE

Stolephorus commerson (Lacépède) — Commerson's anchovy, dilis[111]
Status: native
Environment: marine, brackish water
Digenea
Hexangium sigani (Palawan)

[111] Additional Tagalog common names include "bulinao," "matalos" and "tuwankang."

Stolephorus sp. — anchovy, dilis
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisakis sp. larva (Luzon)

ORDER GONORYNCHIFORMES

FAMILY CHANIDAE

Chanos chanos (Forsskäl) — milkfish, bangos[112]
Status: native
Environment: marine, brackish water
Ciliophora
Ambiphyra sp. (-)
Apiosoma sp. (Luzon)
Riboscyphidia sp. (Luzon, Mindanao, Panay)
Trichodina sp. (Luzon, Mindanao, Palawan, Panay)
?*Trichodinella* sp. (Luzon)
Tripartiella sp. (Luzon)
Mastigophora
Cryptobia branchialis (Luzon)

Cryptobia sp. (Luzon)
Dinoflagellida gen. sp. (Panay)
Myxozoa
Ceratomyxa sp. (Luzon)
Leptotheca sp. (Luzon)
Digenea
Digenea gen. sp. Metacercaria (Luzon, Panay)
Digenea gen. sp. (Mindanao)
Genolinea awa (Mindanao)
Haplorchis yokogawai metacercaria (Luzon)
Heterophyopsis expectans metacercaria (Luzon)
Isorchis parvus (Luzon)
Posthodiplostomum grayi metacercaria (-)
Procerovum calderoni metacercaria (Luzon &/or Mindanao)
Transversotrema patialense (Luzon)
Monogenea
Monogenea gen. sp. (Panay)
Cestoda
Scolex pleuronectis plerocercoid (Mindanao)
Nematoda
Nematoda gen. sp. (Luzon, Palawan)
Acanthocephala
Acanthocephalus sp. (Luzon, Mindoro)
Cavisoma magnus (Mindanao)
Copepoda
Caligus epidemicus (Luzon, Mindanao, Panay)
C. patulus (Panay)
Lernaea cyprinacea (Luzon)
Isopoda
Alitropus typicus (Panay)
Gnathiidae gen. sp. larva (Luzon)
Isopoda gen. sp. (Luzon, Panay)
Remarks:A marine species entering rivers and lakes (Herre 1953), milkfish are also cultured in freshwater pens on Luzon Island.

[112] Additional Tagalog common names include "banglis," "bangris," "garongin," "hatirin," "lumulukso," "kawag-kawag" and "sabalo."

ORDER CYPRINIFORMES

FAMILY CYPRINIDAE

Aristichthys nobilis (Richardson) bighead carp
Status: exotic (-)
Environment: fresh water
Ciliophora
Apiosoma sp. (Luzon)
Chilodonella sp. (Luzon)
Ichthyophthirius multifiliis (Luzon)
Trichodina heterodentata (Luzon)
T. nigra (Luzon)
T. nobillis (Luzon)
Trichodina sp. (Luzon)
Trichodinella epizootica (Luzon)
Tripartiella tilapiae (Luzon)
Mastigophora
Cryptobia sp. (Luzon)
Ichthyobodo sp. (Luzon)
Myxozoa
Myxidium sp. (Luzon)
Monogenea
Dactylogyrus sp. (Luzon)
Cestoda
Bothriocephalus acheilognathi (Luzon)
Nematoda
Nematoda gen. sp. (Luzon)
Branchiura
Argulus japonicus (Luzon)
Copepoda
Copepoda gen. sp. (-)
Remarks: Native to China and eastern Siberia, this species was imported from Taiwan in 1968 for aquaculture. It is maintained only through artificial reproduction (Froese and Pauly 1996).

Carassius auratus (Linnaeus) goldfish
Status: exotic (-)
Environment: fresh water
Apicomplexa
Goussia carpelli (Luzon - aquarium)
Ciliophora
Apiosoma sp. (Luzon - aquarium)
Ichthyophthirius multifiliis (Luzon - aquarium)
Trichodina reticulata (Luzon - aquarium)
Trichodina sp. (Luzon - aquarium)
Trichodinella epizootica (Luzon - aquarium)

Mastigophora
Cryptobia sp. (Luzon - aquarium)
Ichthyobodo sp. (Luzon - aquarium)
Myxozoa
Myxobolus pavlovskii (Luzon -aquarium)
Myxobolus sp. (Luzon - aquarium)
Digenea
Digenea gen. sp.metacercaria (Luzon - aquarium)
Monogenea
Dactylogyrus sp. (Luzon - aquarium)
Gyrodactylus sp. (Luzon - aquarium)
Copepoda
Lernaea cyprinacea (Luzon - aquarium)
Remarks: Native to central Asia and China, goldfish were introduced for culture for the aquarium fish trade . Herre (1953) noted that this species has become established in the Trinidad River, near Bagio, Luzon Island, as a result of stocking by a Japanese gardener.

Carassius carassius crucian carp (Linnaeus)
Status: exotic (-)
Environment: freshwater
Ciliophora
Chilodonella sp. (Luzon)
Epistylis sp. (Luzon)
Trichodina sp. (Luzon)
Digenea
Digenea gen. sp. (Luzon)
Monogenea
Dactylogyrus sp. (Luzon)
Gyrodactylus sp. (Luzon)
Remarks: Crucian carp were introduced into the natural waters of the Philippines in 1964 via importation from Japan (Froese and Pauly 1996).

Carassius sp. (-)
Status: exotic (-)
Environment: fresh water
Monogenea
Dactylogyrus sp. (Luzon)
Gyrodactylus sp. (Luzon)
Branchiura
Argulus indicus (-)

Cirrhinus mrigala (Hamilton) mrigal
Syn.: *Cirrhina mrigala* (-)
Valenciennes
Status: exotic
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon)
Mastigophora
Cryptobia sp. (Luzon)
Remarks: Native to South Asia, mrigal were introduced from India in 1967 for culture and are maintained only by artificial reproduction (Froese and Pauly 1996).

Ctenopharyngodon idella grass carp (Valenciennes) (-)
Status: exotic
Environment: fresh water
Ciliophora
Trichodina acuta (Luzon)
T. heterodentata (Luzon)
T. kupermani (Luzon)
T. nigra (Luzon)
T. nobillis (Luzon)
Trichodinella epizootica (Luzon)
Tripartiella tilapiae (Luzon)
Myxozoa
Chloromyxum ellipticum (Luzon)
Myxidium sp. (Luzon)
Myxobolus artus (Luzon)
Cestoda
Bothriocephalus acheilognathi (Luzon)
Remarks: Native to China and eastern Siberia, grass carp were imported from China in 1964 for aquaculture and are maintained only by artificial breeding (Froese and Pauly 1996).

Cyprinus carpio carpio common carp Linnaeus
Syn.: *Cyprinus carpio* karpa[113] Linnaeus
Status: exotic
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon)
Trichodina acuta (Luzon)
T. heterodentata (Luzon)
T. mutabilis (Luzon)
T. nigra (Luzon)

T. nobillis (Luzon)
Trichodina sp. (Luzon)
Trichodinella carpi (Luzon)
T. epizootica (Luzon)
Trichodinella sp. (Luzon)
Myxozoa
Myxobolus artus (Luzon)
M. koi (Luzon)
M. pavlovskii (Luzon)
Thelohanellus nikolskii (Luzon)
Digenea
Clinostomidae gen. sp. (-)
Monogenea
Dactylogyrus sp. (Luzon)
Gyrodactylus sp. (Luzon)
Monogenea gen. sp. (-)
Branchiura
Argulus sp. (Luzon)
Copepoda
Lernaea sp. (Luzon)
Remarks: Common carp, first introduced into the Philippines in 1910 and 1915 from China and Hongkong, are now widely distributed in natural waters (Froese and Pauly 1996).

[113] The common name comes from the Visayan dialec

Cyprinus sp. Japanese ornamental carp, fancy carp (-)
Status: exotic
Habitat: fresh water
Ciliophora
Trichodina sp. (Luzon - aquarium)
Mastigophora
Ichthyobodo sp. (Luzon - aquarium)
Monogenea
Dactylogyrus sp. (Luzon - aquarium)

Epalzeorhynchos bicolor redtail sharkminnow (Smith) (-)
Syn.: *Labeo bicolor* Smith
Status: exotic
Environment: fresh water
Digenea
Digenea gen. sp. Metacercaria (Luzon - aquarium)
Remarks: Native to Thailand, this aquarium species does not occur in Philippine natural waters.

Epalzeorhynchos frenatum rainbow sharkminnow (Fowler) (-)
Syn.: *LabeofrenatusFcmler*
Status: exotic
Environment: fresh water
Ciliophora
Chilodonella sp. (Luzon - aquarium)
Trichodina sp. (Luzon - aquarium)
Mastigophora
Cryptobia sp. (Luzon - aquarium)
Digenea
Digenea gen. sp. Metacercaria (Luzon - aquarium)
Monogenea
Dactylogyrus sp. (Luzon - aquarium)
Remarks: Native to Thailand and adjacent countries, this aquarium species does not occur in Philippine natural waters.

Hypophíhalmichthys molitrix silver carp (Valenciennes) (-)
Status: exotic
Environment: fresh water
Myxozoa
Myxobolus ellipsoides (Luzon)
M. pavlovskii (Luzon)
Cestada
Bothrtocephalus acheilognathi (Luzon)
Copepoda
Lernaea sp. (Luzon)
Remarks: Native to China and eastern Siberia, silver carp were introduced in 1964 and 1968 firom China and Taiwan for aquaculture. Populations are maintained only by artificial reproduction (Froese and Pauly 1996).

Mylopharyngodon piceus blackcarp (Richardson) (-)
Status: exotic
Environment: fresh water
Mastigophora
Cryptobia sp. (Luzon)
Ichthyobodo sp. (Luzon)
Myxozoa
Myxobolus sp. (Luzon)

Remarks: Native to East Asia, black carp were recently introduced for aquaculture purposes.

Nematabramis verecundas Herré (-)
Status: native (-)
Environment: fresh water
Cestoda
Lígula sp. plerocercoid (Mindanao)
Remarks:This cyprinid is endemic to Lanao Province, Mindanao (Froese and Pauly 1996).

Puntius binotatus (Valenciennes) spotted barb
Status: native pait
Environment: fresh water
Digenea
Didymozoidae gen. sp. (Palawan)[114]
Haplorchis pumilio metacercaria (Mindanao)
H. taichui metacercaria (Luzon &/or Mindanao)
Nematoda
Oceanicucullcmus pacifica (Palawan)

[114] Possible host misidentilication.

Puntius manalak (Herré) giant barb[115]
Status: native manalak
Environment: fresh water
Digenea
Procerovum sp. metacercaria (Mindanao)
Remarks:The giant barb is endemic to Lake Lanao, Mindanao (Froese and Pauly 1996).

[115] The English common ñame is provided by Herré and Umali (1948)

Puntius tetrazona (Bleeker) Sumatra barb
Syn.: *Capoeta tetrazona* Bleeker (-)
Status: exotic
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon - aquarium)
Monogenea
Ancyrocephalinae gen. sp. (Luzon - aquarium)
Remarks: A Southeast Asían species occurring from Myanmar to Borneo, the Sumatra barb does not occur in the natural waters of the Philippines.

Rasbora kalochroma (Bleeker) clown rasbora
Status: exotic (-)
Environment: fresh water
Ciliophora
Apiosoma sp. (Luzon - aquarium)
Ichthyophthirius multifiliis (Luzon - aquarium)
Trichodina sp. (Luzon - aquarium)
Remarks: Native to the Malay Peninsula, Sumatra and Borneo, this aquarium fish does not occur in Philippine natural waters.

Spratellicypris palata (Herre) narrow barb[116]
Syn.: *Puntius palata* (Herre) manobud, palata[117]
Status: native
Environment: fresh water
Digenea
Haplorchis taichui metacercaria (Mindanao)
Remarks: The narrow barb is endemic to Lake Lanao, Dansalan, Mindanao Island (Froese and Pauly 1996).

[116] The English common name is provided by Herre and Umali (1948).

[117] The common names come from the Maranao, Salmal and Tao Sug dialects.

Tanichthys albonubes Lin white cloud mountain minnow
Status: exotic (-)
Environment: fresh water
Mastigophora
Cryptobia sp. (Luzon - aquarium)
Ciliophora
Trichodina sp. (Luzon - aquarium)
Remarks: NativetosouthernChina,this aquarium species does not occur in Philippine natural waters.

FAMILY COBITIDAE

Acanthophthalmus semicinctus Fraser-Bunner[118] half banded loach (-)
Status: exotic
Environment: fresh water
Mastigophora
Trypanosoma sp. (Luzon - aquarium)
Remarks:NativetoIndonesia,Malaysia, Singapore and Thailand, this tropical aquarium fish does not occur in Philippine natural waters.
Some authorities consider *Acanthophthalmus semicinctus* a synonym of *A. kuhlii* (Valenciennes) (Eschmeyer et al. 1996).

[118] The spelling of the genus name follows Eschmeyer et al. (1996).

Botia macracanthus (Bleeker) clown loach
Status: exotic (-)
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon - aquarium)
Myxozoa
Chloromyxum sp. (Luzon - aquarium)
Remarks:Native to Sumatra and Borneo, this aquarium species does not occur in Philippine natural waters.

ORDER CHARACIFORMES

FAMILY CHARACIDAE

Moenkhausia collettii Steindachner Collett's tetra
Status: exotic (-)
Habitat: fresh water
Ciliophora
Apiosoma sp. (Luzon - aquarium)
Remarks:An aquarium fish native to South America,Collett's tetra doesnot occur in Philippine natural waters.

Paracheirodon simulans (Gery) green neon tetra
Status: exotic (-)
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon - aquarium)
Trichodina sp. (Luzon - aquarium)
Mastigophora
Cryptobia sp. (Luzon - aquarium)
Remarks: Native to northern South America, this aquarium fish does not occur in Philippine natural waters.

ORDER SILURIFORMES

FAMILY BAGRIDAE

Leiocassis siamensis Regan Asian bumblebee catfish (-)
Status: exotic
Environment: fresh water
Mastigophora
Hexamita sp. (Luzon - aquarium)
Myxozoa
Chloromyxum sp. (Luzon - aquarium)
Monogenea
Ancylodiscoidinae gen. sp. (Luzon - aquarium)
Acanthocephala
Acanthocephala gen. sp. (Luzon - aquarium)
Remarks: Native to Laos, Thailand and Cambodia, this aquarium fish does not occur in Philippine natural waters.

FAMILY PANGASIIDAE

Pangasius sutchi Fowler sutchi catfish
Status: exotic (-)
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon - aquarium)
Trichodina sp. (Luzon - aquarium)
Mastigophora
Cryptobia sp. (Luzon - aquarium)
Monogenea
Silurodiscoides sp. (Luzon - aquarium)
Remarks: Native to the Mekong River area of Southeast Asia, the sutchi catfish was imported from Thailand in 1978 for aquaculture. It is maintained, by artificial reproduction and has not become established in natural waters (Froese and Pauly 1996).

FAMILY CLARIIDAE

Clarias batrachus (Linnaeus) walking catfish
Status: native hito[119]
Environment: fresh water
Myxozoa
Henneguya sp. (Luzon)
Myxobolus sp. (Luzon)
Digenea
Clinostomoides brieni metacercaria (Luzon)
Digenea gen. sp. (Luzon)
Gauhatiana batrachii (Luzon)
Haplorchis yokogawai metacercaria (Luzon)
Neodiplostomum sp. metacercaria (Luzon)
Opegaster minima (Luzon)
Orientocreadium batrachoides (Luzon)
Phyllodistomum sp. (Luzon)
Posthodiplostomum grayi metacercaria (-)
Monogenea
Ancyrocephalinae gen. sp. (Luzon)
?Dactylogyrus sp. (Luzon)
Gyrodactylus sp. (Luzon)
Monogenea gen. sp. (Luzon)
Cestoda
Boviena serialis (Luzon)
Caryophyllidea gen. sp. (-)
Cestoda gen. sp. (Luzon)
Lytocestus birmanicus (-)
Nematoda
Gnathostoma spinigerum larva (Luzon - experimental?)
Nematoda gen. sp. (Luzon)
Philometra sp. (Luzon)
Procamallanus (Procamallanus) clarius (Luzon)
Mollusca
Cristaria plicata (-)

[119] Additional Tagalog common names include "hitong batukan" and "pantat"

Clarias macrocephalus (Günther) freshwater catfish (-)
Status: native
Environment: fresh water
Digenea
Clinostomidae gen. sp. (-)
Clinostomoides brieni metacercaria (Luzon)
Digenea gen. sp. (Luzon)
Orientocreadium batrachoides metacercaria (Luzon - experimental)
O. batrachoides (Luzon)
Monogenea
Ancyrocephalinae gen. sp. (Luzon)
?Dactylogyrus sp. (-)
Gyrodactylus sp. (Luzon)
Cestoda
Gangesia sp. (Luzon)
Nematoda
Ascaridida gen. sp. larva (Luzon)
Contracaecum sp. larva (Luzon)
Nematoda gen. sp. (-)
Neocamallanus ophicephali (Luzon)
Procamallanus sp. (Luzon)
Acanthocephala
Acanthocephalus sp. (Luzon)

"catfish"
Monogenea
Dactylogyrus sp. (Luzon)
Monogenea gen. sp. (Luzon)

FAMILY ARIIDAE

Arius manillensis (Valenciennes) Manila catfish[120] Manila kanduli
Status: native
Environment: fresh water
Digenea
Haplorchis taichui metacercaria (Luzon)
H. yokogawai metacercaria (Luzon)
Neodiplostomum sp. metacercaria (Luzon)
Opegaster minima (Luzon)
Posthodiplostomum grayi metacercaria (-)
Stictodora manilensis metacercaria (Luzon)
Remarks:The Manila catfish is not listed by Froese and Pauly (1996).According to Herre (1953), it is known only from the area of Luzon Island around Manila.

[120] The English common name is provided by Herre (19S3).

Arius sp. sea catfish
Status: native kanduli
Environment: fresh water, brackish water, marine
Nematoda
Camallanus (Camallanus) paracarangis (Luzon &/or Mindoro)

Netuma thalassina giant catfish (Riippell)
Syn.: *Arius thalassinus* kanduling-dagat (Rüppell)
Status: native
Environment: marine
Digenea
Elongoparorchis pneumatis (Palawan)
Monodhelmis torpedinis (Luzon)
Remarks: The status of this species in the Philippines requires clarification.Although Herre (1953) noted it to be the commonest Philippine ariid catfish,Froeseand Pauly (1996) reported that it does not occur in Philippine waters.

FAMILY PLOTOSIDAE

Plotosus lineatus striped eel catfish (Thunberg)
Syn.: *Plotosus anguillaris* (Bloch) kanduli[121]
Status: native
Environment: marine
Myxozoa
Coccomyxa hoffmani (-)
Septemcapsula yasunagai (-)
Monogenea
Gyrodactylus plotosi (-)
Remarks: According to Herre (1953), plotosids are marine stinging catfishes which sometimes enter estuaries and rivers.

[121] Additional Tagalog common names include "i-ito," "patuna" and "sumbilang."

ORDER AULOPIFORMES

SUBORDER ALEPISAUROIDEI

FAMILY SYNODONTIDAE

Saurida tumbil greater lizardfish (Bloch)
Status: native kalaso, uting bondo
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)

ORDER ATHERINIFORMES

FAMILY ATHERINIDAE

Atherina balabacensis silverside[122] Seale
Syn.: *Hepsetia balabacensis* Seale guno
Status: native
Environment: fresh water; brackish water, marine
Digenea
Centrocestus sp. metacercaria (Luzon)
Heterophyopsis expectans metacercaria (Luzon)
Procerovum calderoni metacercaria (Luzon)
Stictodora guerreroi metacercaria (Luzon)
S. manilensis metacercaria (Luzon)
Remarks: This species is not listed by Froese and Pauly (1996); the host synonymy follows Eschmeyer et al. (1996).

[122] The English common name is provided by Herre and Umali (1948).

ORDER CYPRINODONTIFORMES

FAMILY POECILIIDAE

Poecilia latipinna (Lesueur) sailfin molly
Syn.: *Mollienesia latipinna* Lesueur bubuntis
Status: exotic
Environment: fresh water, brackish water
Digenea
Procerovum calderoni metacercaria (Luzon, Mindanao?)
P. varium metacercaria (Luzon)
Transversotrema patialense (Luzon)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Remarks: According to Natividad (1987), *Poecilia latipinna* was introduced from Hawaii in 1914, while Froese and Pauly (1996) record it as having been introduced from Mexico (year

unknown) for mosquito control. It is now self-sustaining in natural waters.

The synonymy is provided by Eschmeyer et al. (1996).

Poecilia reticulata Peters guppy
Status: exotic (-)
Environment: fresh water
Mastigophora
Cryptobia sp. (Luzon-aquarium)
Nematoda
Aonchotheca philippinensis larva (Luzon)
Remarks:A South American species introduced from Hawaii in 1905 for mosquito control, the guppy is now found throughout the country (Froese and Pauly 1996).

Xiphophorus maculatus southern platyfish
(Günther) (-)
Status: exotic
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon - aquarium)
Mastigophora
Hexamita sp. (Luzon - aquarium)
Remarks: Native toCentralAmerica,this aquarium species is not known to occur in Philippine natural waters.

Xiphophorus sp. swordtail
Status: exotic (-)
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon - aquarium)

"top minnow"
Status: exotic
Environment: fresh water
Ciliophora
Trichodina sp. (Panay)
Branchiura
Branchiura gen. sp. (Panay)

ORDER BELONIFORMES

SUBORDER EXOCOETOIDEI

FAMILY BELONIDAE

Ablennes hians flat needlefish
(Valenciennes)
Status: native kambabalo
Environment: marine, brackish water
Copepoda
Lernanthropus tylosuri (-)
Nothobomolochus gibber (Luzon)

Platybelone sp. needlefish
Status: native (-)
Environment: marine
Cestoda
Otobothrium penetrans plerocercoid (Visayan islands)

Strongylura incisa reef needlefish
(Valenciennes) doal
Status: native
Environment: marine
Copepoda
Bomolochus bellones (Luzon)
Caligus sp. (Verde)
Lernanthropus belones (-)

Strongylura leiura banded
(Bleeker) needlefish
Status: native haba, kambabalo
Environment: marine, brackish water
Copepoda
Caligodes laciniatus (-)
Lernanthropus tylosuri (-)
Nothobomolochus digitatus (Panay)

Strongylura strongylura spottail needlefish
(van Hasselt) batalay, hamalit
Status: native
Environment: marine, brackish water
Copepoda
Ergasilus coleus (Mindanao)
Lernanthropus belones (-)
Nothobomolochus digitatus (Panay)
Remarks: Found in coastal areas and lagoons and occasionally entering fresh water.

Strongylura urvillii needlefish
(Valenciennes)
Status: native (-)
Environment: marine, brackish water
Copepoda
Bomolochus bellones (Luzon)
Caligus sp. (Verde)
Ergasilus coleus (Culion)

Lernanthropus tylosuri (Culion Island)

Tylosurus acus acus agujon needlefish (Lacépède) (-)
Syn.: *Tylosurus acus* (Lacépède)
Status: native
Environment: marine
Cestoda
Otobothrium penetrans plerocercoid (Visayan islands)

Tylosurus acus melanotus agujon needlefish (Bleeker) (-)
Status: native
Environment: marine
Copepoda
Caligodes laciniatus (-)
Caligus tylosuri (Leyte, Luzon)
Colobomatus goodingi (Jolo)
Lernanthropus tylosuri (-)

Tylosurus crocodilus crocodilus hound needlefish (Peron and Lesueur) doal
Syn.: *Tylosurus crocodilus* (Peron and Lesueur)
Status: native
Environment: marine
Microspora
Microsporidia gen. sp. (Visayan islands)
Cestoda
Otobothrium penetrans plerocercoid (Visayan islands)
Nematoda
Philometra sp. (Visayan islands)
Copepoda
Caligodes laciniatus (-)
Caligus tylosuri (Leyte, Luzon)
Colobomatus goodingi (Luzon)
Lernaeenicus sp. (Luzon)
Lernanthropus tylosuri (-)
Nothobomolochus gibber (Luzon)

Tylosurus punctulatus needlefish (Günther)
Status: native (-)
Environment: marine
Copepoda
Lernanthropus tylosuri (Culion, Luzon)

Tylosurus sp. needlefish
Status: native balo, batalay, doal
-Environment: marine
Nematoda
Procamallanus (Spirocamallanus) spiralis (Luzon)

FAMILY HEMIRAMPHIDAE

Hyporhamphus dussumieri Dussumier's halfbeak (Valenciennes) (-)
Syn.: *Hemiramphus dussumieri* Valenciennes
Status: native
Environment: marine
Digenea
Centrocestus caninus metacercaria (Luzon)
Cestoda
Otobothrium penetrans plerocercoid (Visayan islands)
Remarks: The synonymy follows Eschmeyer et al. (1996), who note that this species has been considered a synonym of *H. afflnis* (Günther).

Rhynchorhamphus georgii long billed halfbeak (Valenciennes) buging
Syn.: *Hemiramphus georgii* Valenciennes
Status: native
Environment: marine
Digenea
Haplorchis yokogawai metacercaria (Luzon)
Heterophyopsis expectans metacercaria (Luzon)
Procerovum calderoni metacercaria (Luzon)
Stictodora guerreroi metacercaria (Luzon)
Transversotrema patialense (Luzon)

ORDER BERYCIFORMES

SUBORDER BERCOIDEI

FAMILY MONOCENTRIDAE

Monocentris sp. pine cone fish
Status: native (-)
Environment: marine

Copepoda
Hatschekia tenuis (Luzon)

FAMILY ANOMALOPIDAE

Anomalops katoptron (Bleeker) splitfrn flashlightfish (-)
Status: native
Environment: marine
Digenea
Deretrema (Luxitrema) philippinensis (Mactan)

FAMILY BERYCIDAE

Beryx splendens Lowe slender alfonsino
Status: native (-)
Environment: marine
Nematoda
Ascarophis beryx (-)

FAMILY HOLOCENTRIDAE

Neoniphon sammara (Forsskäl) sammara squirrelfish baga-baga
Syn.: *Holocentrus sammara* (Forsskäl)
Status: native
Environment: marine
Digenea
Hexangium sigani (-)

Sargocentron violaceum (Bleeker) violet squirrelfish baga-baga
Syn.: *Holocentrus violaceus* (Bleeker)
Status: native
Environment: marine
Digenea
Helicometra nasae (Palawan)

SUBORDER POLYMIXIOIDEI

FAMILY POLYMIXI1DAE

Polymixia japonica Günther (-)
Status: native (-)
Environment: marine
Nematoda
Metabronema polymixia (-)

ORDER SYNBRANCHIFORMES

FAMILY SYNBRANCHIDAE

Monopterus albus (Zouiev) swamp eel
Status: native (-)
Environment: fresh water
Mastigophora
Trypanosoma sp. (Luzon - tank held)
Digenea
Digenea gen. sp. (Luzon - tank held)
Nematoda
Nematoda gen. sp. (Luzon - tank held)
Acanthocephala
Pallisentis cleatus (Luzon - tank held)
Remarks: Herre (1953) noted that this species is rare in the Philippines.All parasitological records involve fish imported from China for shipment to Taiwan.

ORDER SCORPAENIFORMES

SUBORDER PLATYCEPHALOIDEI

FAMILY PLATYCEPHALIDAE

Cymbacephalus nematophthalmus (Günther) fringe-eyed flathead
Syn.: *Thysanophrys nematophthalmus* (Günther) (-)
Status: native
Environment: marine
Nematoda
Camallanus (Camallanus) marinus (Palawan)
Remarks: This species is not listed in Froese and Pauly (1996); the synonymy follows Eschmeyer et al. (1996).

Platycephalus indicus (Linnaeus) Indian flathead sunog
Status: native
Environment: marine, brackish water
Digenea
Procerovum calderoni metacercaria (Luzon)
Nematoda
Procamallanus (Spirocamallanus) spiralis (Luzon)
Remarks:Juveniles have been taken in fresh water.

ORDER PERCIFORMES

SUBORDER PERCOIDEI

FAMILY CENTROPOMIDAE

Lates calcarifer (Bloch) barramundi
Status: native apahap[123]
Environment: fresh water, brackish water, marine
Ciliophora
Trichodinidae gen. sp. (-)
Digenea
Erilepturus hamati (Luzon)
Lecithochirium sp. (-)
Prosorhynchus luzonicus (Luzon)
Pseudometadena celebesensis (Luzon)
Pseudometadena sp. (-)
Transversotrema patialense (Luzon)
Monogenea
Diplectanum sp. (-)
Remarks: A diadromous species, barramundi inhabit rivers before returning to estuaries to spawn.

[123] Additional Tagalog common names include "katuyot" and "matang pusa."

FAMILY AMBASSIDAE

Ambassis buruensis (-)
Bleeker
Status: native lañgaray
Environment: marine, brackish water, fresh water
Digenea
Centrocestus sp. metacercaria (Luzon)
Cercarioides sp. metacercaria (Luzon)
Haplorchis pumilio metacercaria (Luzon)
H. taichui metacercaria (Luzon)
H. yokogawai metacercaria (Luzon)
Heterophyopsis expectans metacercaria (Luzon)
Phagicola sp. metacercaria (Luzon)
Procerovum calderoni metacercaria (Luzon)
Prosorhynchus paracrucibulus metacercaria (Luzon)
Stictodora guerreroi metacercaria (Luzon)
S. manilensis metacercaria (Luzon)
Remarks:The lañgaray occurs in mangrove forests and lower reaches of freshwater streams.

Ambassis miops flag-tailed glass
Günther fish
Syn.: *Ambassis* bagsang[124]
commersoni auctorum
Status: native
Environment: marine, brackish water, fresh water
Nematoda
Aonchotheca philippinensis larva (Luzon)
Nematoda gen. sp. (Luzon)
Remarks:This species iscommonly found in brackish waters, such as in river mouths and near mangroves.

[124] The local common name is from the Ilokano dialect

FAMILY SERRANIDAE

Anyperodon slender
leucogrammicus grouper
(Valenciennes) lapu-lapu[125]
Status: native
Environment: marine
Monogenea
Ancyrocephalus manilensis (Luzon - aquarium)

[125] Additional Tagalog common names include "kigting," "lubo" and "sigapo."

Cephalopholis tomato hind
sonnerati
(Valenciennes) lapu-lapu
Status: native
Environment: marine
Nematoda
Philometra lateolabracis (Palawan)

Epinephelus bleekeri duskytail
(Vaillant) grouper
Status: native lapu-lapu
Environment: marine
Digenea
Prosorhynchus mcintoshi metacercaria (Luzon)
P. mcintoshi (Luzon)

Epinephelus malabar grouper
malabaricus
(Bloch and Schneider) lapu-lapu

Status: native
Environment: marine, brackish water
Digenea
Erilepturus hamati (-)
Prosorhynchus pacificus (-)
Monogenea
Pseudorhabdosynochus epinepheli (-)
Cestoda
Cestoda gen sp. (-)
Nematoda
Raphidascaris sp. larva (-)

Epinephelus undulosus (Quoy and Gaimard) — wavy-lined grouper, lapu-lapu[126]
Status: native
Environment: marine
Monogenea
Bendenia malaboni (Luzon)

[126] AdditionalTagalogcommonnamesinclude"abo-abo," "buluan" and "puol."

Epinephelus sp. — grouper, lapu-lapu
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)

"grouper"
Monogenea
Monogenea gen. sp. (-)
Hirudinea
?Piscicola sp. (Luzon)

FAMILY TERAPONTIDAE

Pelates quadrilineatus (Bloch) — fourlined terapon, agaak, babansi
Status:native
Environment: brackish water, marine
Digenea
Heterophyopsis expectans metacercaria (Luzon, Mindanao)
Procerovum calderoni metacercaria (Luzon, Mindanao?)
Stictodora manilensis metacercaria (Luzon)

Terapon jarbua (Forsskäl) — jarbua terapon, bagaong[127]
Status: native
Environment: marine, brackish water
Digenea
Azygia pristipomai (-)
Didymozoidae gen. sp. (Visayan islands)[128]
Stictodora manilensis metacercaria (Luzon)
Torticaecum nipponicum (Luzon)[129]
Nematoda
Anisakidae gen. sp. larva (Luzon)
Nematoda gen. sp. (Luzon)
Remarks: A marine species entering rivers.

[127] Additional Tagalog common names include "bungao," "gagaong," "gunggong" and "tutot"

[128] Possible incorrect host listing.

[129] Possible incorrect host listing.

Terapon plumbeus (Kner) — silver perch[130]
Syn.: *Terapon argenteus* auctorum — ayuñgin
Status: native
Environment: fresh water
Digenea
Azygia pristipomai (Luzon)
Centrocestus caninus metacercaria (Luzon)
Echinochasmus novalichesensis (Luzon)
Haplorchis pumilio metacercaria (Luzon)
H. yokogawai metacercaria (Luzon)
Neodiplostomum sp. metacercaria (Luzon)
Opegaster minima (Luzon)
Procerovum varium metacercaria (Luzon)[131]
Posthodiplostomum grayi metacercaria (-)
Stictodora manilensis metacercaria (Luzon)
Transversotrema patialense (Luzon)
Nematoda
Gnathostoma spinigerum larva (Luzon)
Acanthocephala
Neoechinorynchus octonucleatus (Luzon)
Copepoda
Lernaea cyprinacea (Luzon)
Lernaea sp. (Luzon)
Remarks:Some of the above records

appeared under the name *Terapon argenteus,* a synonym of *Mesopristes elongatus,* a species occurring only in East Africa (Froese and Pauly 1996). The ayuñgin is endemic to Luzon Island.

[130] The English common name is provided by Herre and Umali (1948).

[131] Possible parasite misidentification.

Terapon puta (Cuvier) small-scaled terapon
Status: native babansi, dukuson
Environment: marine, brackish water
Digenea
Heterophyopsis expectans metacercaria (Mindanao)
Nematoda
Anisakis sp. larva (-)
Camallanus(Camallanus) paracarangis (Luzon &/or Mindoro)

FAMILY PRIACANTHIDAE

Priacanthus tayenus Richardson purple-spotted bigeye bisugong china
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon, Panay)

FAMILY APOGONIDAE

Apogon ellioti Day flag-in cardinalfish
Syn.: *Apogonichthys ellioti* (Day) dangat[132]
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Panay)
Camallanus sp. (-)

[132] Additional Tagalog common names include "langaray" and "suga."

FAMILY SILLAGINIDAE

Sillago maculata Quoy and Guimard trumpeter sillago asohos
Status: native
Environment: marine, brackish water
Digenea
Stictodora palmifera metacercaria (-)[133]

[133] Possible *nomen nudum.*

Sillago sihama (Forsskäl) silver sillago
Status: native asohos
Environment: marine, brackish water, fresh water
Digenea
Rhipidocotyle eggletoni metacercaria (Luzon)
Torticaecum nipponicum (Luzon)
Nematoda
Procamallanus (Spirocamallanus) philippinensis (Luzon)
Remarks: Herre (1953) notes that the sillaginids are marine fishes; Froese and Pauly (1996) list the silver sillago as also occurring in fresh and brackish waters.

FAMILY LACTARIIDAE

Lactarius lactarius (Bloch and Schneider) false trevally pagapa[134]
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)

[134] Other Tagalog common names include "algudon," "pelyan" and "rigudon."

FAMILY CARANGIDAE

Alectis sp. threadfish[135]
Status: native pampanog puti
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Copepoda
Caligus robustus (-)

[135] The English common name is provided by Herre and Umali (1948).

Atule mate (Cuvier) yellowtail scad
Syn.: *Caranx qffinis* Rüppell talakitok
Status: native
Environment: marine, brackish water
Digenea
?Lecithocladium angustiovum (Palawan)

Nematoda
Camallanus (Camallanus) marinus (Palawan)

Carangoides armatus (Rüppell) longfin trevally
Syn.: *Caranx armatus* (Rüppell) lawayan, palatikat
Status: native
Environment: marine, brackish water
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisakis sp. larva (-)
Remarks:The longfin trevally is a marine species whose juveniles may enter estuaries.

Caranx sexfasciatus Quoy and Gaimard bigeye trevally malipito, muslo[136]
Status: native
Environment: marine
Copepoda
Caligus robustus (-)

[136] Other Tagalog common names include "mamsa," "pinkit" and "simbad."

Caranx sp. cavalla[137]
Status: native talakitok
Environment: marine
Digenea
Alcicornis cirrudiscoides (Luzon)
Bucephalus various (Luzon)
Prosogonotrema bilabiatum (Luzon)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisakis sp. larva (Luzon)
Camallanus (Camallanus) carangis (Luzon)
Camallanus (Camallanus) paracarangis (Luzon &/or Mindoro)

[137] The English common name is provided by Herre and Umali (1948).

Decapterus macrosoma Bleeker shortfin scad
Status: native galunggong
Environment: marine
Nematoda
Anísalas sp. larva (-)

Decapterus sp. scad[138]
Status: native galongong
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisákis sp. larva (Luzon)

[138] The English common ñame is provided by Herré (1953).

Gnathanodon speciosus (Forsskal) golden trevally garapeche[139]
Syn.: *Caranx speciosus* (Forsskal)
Status: native
Environment: marine
Nematoda
Metabronema magnum (Luzon)

[139] AdditionalTagalogcommonñamesinclude"banlog," "malapandong dilau," "talingan" and "talakitok."

Megalaspis cordyla (Linnaeus) torpedo scad
Status: native oriles[140]
Environment: marine Digenea
Bucephalus fragilis (Luzon)
Lecithocladium megalaspis (Luzon) Nematoda
Anisakidae gen. sp. larva (Luzon)

[140] AdditionalTaglalogcommonñamesinclude"atulay," "bakutut," "balangoan," "malaguno" and "pak-an."

Parastromateus niger (Bloch) black pomfret
Syn.: *Apolectus niger* (Bloch) duhay, pámpano
Status: native
Environment: marine
Digenea
Lecithocladium apolecti (Luzon)

Scomberoides lysan (Forsskal) doublespotted queenfish dorado[141]
Status: native
Environment: marine, brackish water
Digenea
Erilepturus lemeriensis (Luzon)

[141] Additional Tagalog common ñames include "atulay," "dularo," "lapis," "malaguno," "palean," "pipikan," "talang-talang," "talang-talapya," "talapya," "talipa" and "talupak."

Scomberoides sp. leatherjacket[142]
Status: native dorado
Environment: marine, brackish water
Digenea
Erilepturus lemeriensis (Luzon)

[142] The English common ñame is provided by Herré (1953).

Selar crumenophthalmus (Bloch) bigeye scad
Status: native matangbaka[143]
Environment: marine
Microspora
Microsporidia gen. sp. (Visayan islands)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisákis sp. larva (Luzon)

[143] AdditionalTagalogcommonñamesinclude"bunutan,""mapuao" and "tingin."

Selaroides leptolepsis (Cuvier) yellowstripe scad
Status: native alay-salay batang, salay-salay
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisákis sp. larva (Luzon)

Seriolina nigrofasciata (Rüppell) blackbanded trevally lapis
Syn.: *Serióla nigrofasciata* Rüppell
Status: native
Environment: marine
Digenea
Bucephalus paraheterotentaculatus (Luzon)
Remarks: The synonymy follows Herré (1953).

FAMILY MENID AE

Mene maculata (Bloch and Schneider) moonfish
Status: native hiwas[144]
Environment: marine, brackish water
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisákis sp. larva (Luzon)

[144] Additional Tagalog common ñames include "chabita,""sapatero," "tabas" and "tsabita."

FAMILY LEIOGNATHIDAE

Gazza minuta (Bloch) toothpony
Status: native motambo, sapsap
Environment: marine, brackish water
Digenea
Elongoparorchis pneumatis (Palawan)
Rhipidocotyle eggletoni metacercaria (Luzon)
Nematoda
Camallanus (Camallanus) marinus (Palawan)
C. (Camallanus) paracarangis (Luzon &/or Mindoro)

Leiognathus equulus (Forsskäl) common ponyfish
Status: native lawayakan[145]
Environment: marine, brackish water
Nematoda
Anisakidae gen. sp. larva (Luzon)

[145] Additional Tagalog common names include "malaway" and "sapsap."

Leiognathus sp. slipmouth[146]
Status: native sapsap, tambong
Environment: marine, brackish water
Digenea
Bucephalusleognathi (Luzon)
Nematoda
Anisakidae gen. sp. larva (Luzon, Mindoro)
Camallanus (Camallanus) paracarangis (Luzon &/or Mindoro)
Remarks: Herre (1953) notes the members of thegenus *Leiognathus* are marine fishes, some species entering fresh water.

[146] The English common name is provided by Herre and Umali (1948).

FAMLY LUTJANIDAE

Lutjanus bohar (Forsskäl) two-spot red snapper
Syn.: *Lutjanus rangus* (Cuvier) bambangon[147]
Status: native
Environment: marine
Digenea
Stephanostomum casum (Palawan)

[147] Additional Tagalog common names include "matangal" and "maya-maya."

Lutjanus fulviflamma blackspot

(Forsskäl) snapper
Status: native bambangon[148]
Environment: marine
Digenea
Paracryptogonimus manilensis (Palawan)
P. orientalis (Palawan)
Remarks: Froese and Pauly (1996) note that this species is sometimes found in mangrove estuaries and in the lower reaches of freshwater streams.

[148] Additional Tagalog common names include "bitilla" and "maya-maya."

Lutjanus gibbus humpback
(Forsskäl) snapper
Status: native bambangon[149]
Environment: marine
Digenea
Hamacreadium lethrini (Palawan)
Nematoda
Cucullanus lutjani (Palawan)

[149] Additional Tagalog common names include "alsis," "dapak" and "maya-maya."

Lutjanus malabaricus malabar blood snapper
(Bloch and Schneider) maya-maya[150]
Syn.: *Lutjanus dodecacanthus* (Bleeker)
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)

[150] Additional Tagalog common names include "dapak" and "pulahan."

Lutjanus vitta brownstripe red snapper
(Quoy and Gaimard) dayang-dayang[151]
Status: native
Environment: marine
Digenea
Paracryptogonimus manilensis (Luzon)
Nematoda
Anisakidae gen. sp. Larva (Luzon, Mindoro)
Anisakis sp. larva (Luzon)

[151] Additional Tagalog common names include "bambañgin" and "maya-maya."

Lutjanus sp. snapper
Status: native bambañgin, maya-maya
Environment: marine
Digenea
Paracryptogonimus acanthostomus (Luzon)
P. apharei (Luzon)
Pseudallacanthochasmus grandispinus (Luzon)
Monogenea
Ancyrocephalus manilensis (Luzon - aquarium)
Tetrancistrum lutiani (Luzon - aquarium)

Pinjalo pinjalo (Bleeker) pinjalo
Status: native sulid
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)

FAMILY CAESIONIDAE

Caesio cuning redbelly yellowtail
(Bloch) fusilier
Syn: *Caesio erythrogaster* Cuvier dalagang bukid, lapid
Status: native
Environment: marine
Digenea
Hexangium sigani (-)

Caesio lunaris lunar fusilier
Cuvier
Status: native dalagang bukid, morong
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisakis sp. larva (Luzon)

Dipterygonotus balteatus mottled fusilier
(Valenciennes) dalagang bukid
Syn.: *Erythrichthys leucogrammicus* (Bleeker)
Status: native
Environment: marine
Nematoda
Ascarophis erythrichthys (-)
Remarks: Herre (1953) listed *Erythrichthys leucogrammicus* as a

synonym of *Dipterygonotus leucogrammicus* Bleeker, Froese and Pauly (1996) listed *D. leucogrammicus* as a synonym of *D. balteatus.*

FAMILY GERREIDAE

Gerres filamentosus Cuvier — whipfin silver-biddy
Status: native — malakapas, manobon
Environment: fresh water, brackish water, marine
Digenea
- *Haplorchis pumilio* metacercaria (Luzon)
- *Heterophyopsis expectans* metacercaria (Luzon)
- *Procerovum calderoni* metacercaria (Luzon)
- *Stictodora manilensis* metacercaria (Luzon)

Nematoda
- Anisakidae gen. sp. larva (Luzon)

Gerres kapas Bleeker — Singapore silver-biddy
Status: native — malakapas
Environment: marine
Digenea
- *Haplorchis yokogawai* metacercaria (Luzon)
- *Heterophyopsis expectans* metacercaria (Luzon)

FAMILY HAEMULIDAE

Pomadasys argenteus (Forsskäl) — silver grunt
Syn.: *Pomadasyshasta* (Bloch) — ikuran[152]
Pristipoma hasta (Bloch)
Status: native
Environment: marine, brackish water
Digenea
- *Aephnidiogenes barbarus* (Palawan)
- *Azygia pristipomai* (Luzon)
- *Cercaria dorsocauda* metacercaria (-)
- *Neochasmus microvatus* (Luzon)
- *Opegaster minima* (Luzon)

[152] Additional Tagalog common names include "aguot" and "ibalay."

FAMILY SPARIDAE

Acanthopagrus berda (Forsskäl) — picnic seabream
Syn.: *Sparus berda* Forsskäl — bakoko[153]
Status: native
Environment: marine, brackish water, fresh water
Digenea
- *Prosorhynchus crucibulum* metacercaria (Luzon)

Nematoda
- Anisakidae gen. sp. larva (Luzon)
- *Anisakis* sp. larva (-)
- *Procamallanus (Spirocamallanus) philippinensis* (Luzon)
- *P. (Spirocamallanus) spiralis* (Luzon)

Remarks: The picnic seabream is a marine and estuarine species which may enter fresh water.

[153] Additional Tagalog common names include "bakokong moro" and "gaud-gaud."

FAMILY LETHRINIDAE

Gymnocranius griseus (Temminck and Schlegel) — grey large-eye bream
Status: native — bitilya, kutambal
Environment: marine
Digenea
- *Propycnadenoides philippinensis* (Palawan)

Nematoda
- *Cucullams lutjani* (Palawan)

Lethrinus erythropterus Valenciennes — longñn emperor
Syn.: *Lethrinus hypselopterus* Bleeker — bitilya
Status: native
Environment marine
Digenea
- *Hamacreadium lethrini* (Palawan)

Lethrinus nebulosas (Forsskül) — spangled emperor
Status: native — bitilya
Environment: marine
Monogenea
- *Encotyllabe caballeroi* (Mindoro)

FAMILY NEMIPTERIDAE

Nemipterus sp. bisugo[154]
Status: native bisugo
Environment: marine
Microspora
Microsporidia gen. sp. (Visayan islands)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Procamallanus (Spirocamallanus) spiralis (Luzon)

[154] The EngUsh eommon ñame is providsd by Herré and Umali (1948).

Scolopsis sp. (-)
Status: native (-)
Environment: marine
Isopoda
Anilocra dimidiata (Bohol, Burias, Luzon)

FAMILY SCIAENIDAE

Otolithes ruber tiger-toothed croaker
(Bloch and Schneider) alakaak
Status: native
Environment marine, brackish water
Nematoda
Anisakidae gea sp. larva (Luzon)
Remarks:The tiger-tooth croaker is a marine species which entere river mouths(Herré 1953).

Pemahia anea greyfin croaker
(Bloch)
Syn.: alakaak
Pseudosdaena anea (Bloch)
Status: native
Environment marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Procamallanus (Spirocamallanus) philippinensis (Luzon)

FAMILY MULLIDAE

Parupeneus barberinus dash-and-dot goatfish
(Lacépéde) saramulyete
Status: native
Environment: marine
Digenea
Paropecoelus palawanensis (Palawan)

Parupeneus indicus Indian goatfish
(Shaw)
Status: native saramulyete
Environment marine
Digenea
Paropecoelus palawanensis (Palawan)

Parupeneus macronema long-barbel goatfish
(Lacépéde) (-)
Status: native
Environment marine
Isopoda
Renocila richardsonae (Jólo)

FAMILY EPHIPPIDAE

Platax orbicularis batfish
(Forsskál)
Status: native bayang[155]
Environment: marine, brackish water
Monogenea
Allometabenedeniella orbicularis (Luzon)
Caballerocotyla philippina (Luzon)
Neobenedenia manilae (Luzon)
Nematoda
Anísalas sp. larva (Luzon)

[155]Additional Tagalog conunon ñames include "daitoog gobiⁿ and "darapugan."

FAMILY SCATOPHAGIDAE

Scatophagus argus spotted scat
(Linnaeus)
Status: native kikiro, kitang
Environment: marine
Ciliophora
Trichodina sp. (Panay)
Mastigophora
Amyloodinium sp. (Panay)
Microspora
Microsporidia gen. sp. (Panay)
Digenea
Procerovum calderoni metacercaria (Luzon)
Transversotrema patialense (Luzon)
Waretrema piscícola (Luzon)

Monogenea
Monogenea gen. sp. (Panay)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Acanthocephala
Acanthocephala gen. sp. (-)
Filisoma rizalinum (Luzon)
Copepoda
Caligus sp. (Panay)
Isopoda
Isopoda gen. sp. (Panay)
Remarks: Juveniles are found in firesh and brackish water.

FAMILY CHAETODONTIDAE

Chaetodon coliare Bloch redtail butterflyfish
Status: native (-)
Environment: marine
Myxozoa
Pentacapsula muscularis (-)

Parachaetodon ocellatus (Cuvier) sixspine butterflyfish ikuran, paru-paru
Status: native
Environment: marine
Digenea
Hurleytrematoides malabonensis (Luzon)
Paraayptogonimus manilensis (Luzon)

FAMELY CICHLIDAE

Oreochromis mossarñbicus (Peters) Mossambique tilapia (-)
Syn.: *Tilapia mossambica* (Peters)
Status: exotic
Environment: firesh water; brackish water, marine
Ciliophora
Epistylis sp. (Luzon)
Ichthyophthirius sp. (Luzon)
Trichodina compacta (Luzon)
T. heterodentata (Luzon)
Trichodina sp. (Luzon)
Trichodinella sp. (Luzon)
Mastigophora
Oodinidae gen. sp. (Luzon)
Digenea
Orientocreadium batrachoides metacercaria (Luzon - experimental)
Transversotrema patialense (Luzon)
Monogenea
Cichlidogyrus sclerosus (Luzon)
Dactylogyrus sp. (Luzon)
Monogenea gen. sp. (Luzon)
Branchiura
Argulus indicas (Luzon)
Remarks: Native to southern África, Mossambique tilapia were introduced from Thailand for aquaculture in 1950 and are now found throughout the country (Froese and Pauly 1996). A freshwater species, this fish can be reared under hypersaline conditions.

Oreochromis mossambicus (Peters) hybrid tilapia,
x *Oreochromis niloticus niloticus* (Linnaeus) red tilapia (-)
Status: exotic
Environment: freshwater
Ciliophora
Ichthyophthirius sp. (Luzon)
Trichodina sp. (Luzon)
Mastigophora
Oodinidae gen. sp. (Luzon)
Monogenea
Dactylogyrus sp. (Luzon)
Remarks:Natividad (1987) noted that the red tilapia was introduced during the 1950s or 60s.

Oreochromis niloticus niloticus (Linnaeus) Nile tilapia pla-pla, tilapia
Syn.: *Tilapia ni lo tica* (Linnaeus)
Status: exotic
Environment: fresh water, brackish water
Ciliophora
Apiosoma sp. (Luzon, Mindano, Panay)
Epistylis sp. (Luzon)
Ichthyophthirius sp. (Luzon)
Trichodina centrostrigata (Luzon, Mindanao)
T. compacta (Luzon)
T. heterodentata (Luzon, Mindanao, Palawan)

T. siluri (Luzon)[156]
T. velasquezae (Panay)
Trichodina sp. (Luzon, Panay)
Trichodinidae gen. sp. (Luzon)
Tripartiella spatula (Luzon, Panay)
T. tilapiae (Panay)
Mastigophora
Cryptobia branchialis (Luzon, Mindanao, Palawan, Panay)
Oodinidae gen. sp. (Luzon)
Digenea
Digenea gen. sp. metacercaria (Luzon)
Digenea gen. sp. (Luzon)
Transversotrema patialense (Luzon, Palawan, Panay)
Monogenea
Cichlidogyrus longicornis (Luzon, Mindanao)
C. sclerosus (Luzon, Mindanao)
C. tiberianus (Luzon, Mindanao)
C. tilapiae (Luzon, Mindanao)
Cichlidogyrus sp. (Luzon)
Dactylogyrus sp. (Luzon)
Enterogyrus cichlidarum (Luzon)
Gyrodactylus niloticus (Luzon)
G. shariffi (Panay)
Gyrodactylus sp. (Luzon, Panay)
Mollusca
Cristaria plicata (Luzon)
Copepoda
Caligus epidemicus (Luzon, Panay)
Lamproglena monodi (Luzon)
Isopoda
Alitropis typicus (Luzon)
Gnathiidae gen. sp. larva (Luzon)
Remarks: Native to Africa, the Nile tilapia was introduced in 1970 and 1973 from Thailand and Israel (Froese and Pauly 1996). Stocks occurring in natural waters are not pure, having interbred extensively with *Oreochromis mossambicus* (see Macaranas et al. 1986).

[156] Tentative parasite identification.

Petrochromis orthognathus Matthes — plain mouth petrochromis[157]
Status: exotic (-)
Environment: fresh water
Ciliophora
Ichthyophthirius multifiliis (Luzon - aquarium)
Remarks: An African cichlid, this aquarium fish does not occur in the natural waters of the Philippines.

[157] The English common name is provided by Axelrod et al. (1989).

Tilapia zillii (Gervais) — redbelly tilapia
Status: exotic (-)
Environment: fresh water, brackish water
Ciliophora
Trichodina compacta (Luzon)
T. heterodentata (Luzon)
Trichodina sp. (Luzon)
Trichodinella sp. (Luzon)
Tripartiella tilapiae (Luzon)
Mastigophora
Kinetoplastida gen. sp. (Luzon)
Monogenea
Monogenea gen. sp. (Luzon)
Remarks: An African cichlid, the redbelly tilapia wasintroducedin1973fromIsraelfor aquaculture (Froese and Pauly 1996).It has probably not established in native waters.

Tilapia sp. — tilapia
Status: exotic
Environment: fresh water
Digenea
Transversotrema patialense (Luzon)
Monogenea
Cichlidogyrus sclerosus (Luzon)
Branchiura
Argulus sp. (-)

"tilapia", "colored tilapia"
Status: exotic
Environment: fresh water
Ciliophora
Trichodina sp. (Luzon)
Digenea
Transversotrema patialense (Luzon)
Monogenea
Cichlidogyrus sp. (-)

FAMILY POMACENTRIDAE

Dischistodus fasciatus (Cuvier) — banded damsel

Syn.: *Pomacentrus fasciatus* Cuvier (-)
Status: native
Environment: marine
Copepoda
Caligidae gen. sp. (Sanguisiapo)

SUBORDER MUGILOIDEI

FAMILY MUGILIDAE

Liza subvirtáis (Valenciennes) greenback mullet
Syn.: *Mugil dussumieri* Valenciennes banak
Status: native
Environment: fresh water, brackish water, marine
Digenea
Haplorchis yokogawai metacercaria (Luzon)
Heterophyopsis expectans metacercaria (Luzon)
Procerovum calderoni metacercaria (Luzon, Mindanao?)
Pygidiopsis genata metacercaria (Luzon)
P. marivillai metacercaria (Luzon)
Stellantchasmus falcatus metacercaria (Luzon)
Stictodora guerreroi metacercaria (Luzon)
S. manilensis metacercaria (Luzon)

Mugil cephalus Linnaeus flathead mullet
Status: native aligasin, banak, talilong
Environment: fresh water, brackish water, marine
Mastigophora
Amyloodinium ocellatum (Panay)
Digenea
Carassotrema philippimnse (Mactan, Palawan)
Copepoda
Caligus sp. (Panay)
Remarks: The flathead mullet is an anadromous species.

Mugil sp. mullet
Status: native banak
Environment: fresh water, brackish water; marine
Ciliophora
Apiosoma sp. (Luzon)
Chilodonella sp. (Luzon)
Trichodina sp. (Luzon)
Digenea
Transversotrema patialense (Luzon)
Monogenea
Dactylogyrus sp. (Luzon)
Nematoda
Nematoda gen. sp. (Luzon)

"mullet," "banak," "talilong"
Status: native
Environment: fresh water, brackish water, marine
Digenea
Heterophyopsis expectans metacercaria (-)
Branchiura
Argulus sp. (-)

SUBORDER POLYNEMOIDEI

FAMILY POLYNEMIDAE

Eleutheronema tetradactylum (Shaw) fourfinger threadfin bikaw, mamali
Status: native
Environment: marine, brackish water
Digenea
Procerovum calderoni metacercaria (Luzon)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Remarks: Fourfinger threadfin also enter rivers.

SUBORDER LABROIDEI

FAMILY LABRIDAE

Bodianus mesothorax (Bloch and Schneider) splitlevel hogfish (-)
Syn.: *Lepidaplois mesothorax* (Bloch and Schneider)
Status: native
Environment: marine
Digenea
Scaphanocephalus adamsi

metacercaria (Luzon - aquarium)

Cheilio inermis (Forsskál) cigar wrasse
Status: native (-)
Environment: marine
Digenea
Lecithophyllum cheilionis (Palawan)

Choerodon anchorago (Bloch) orange-dotted tuskfish (-)
Status: native
Environment: marine
Digenea
Macvicaria longisaccus (Palawan)

Oxycheilinus diagrammus (Lacépéde) cheeklined wrasse mulmul
Syn.: *Cheilinus diagrammus* (Lacépéde)
Status: native
Environment: marine
Digenea
Transversotrema haasi (Cebú, Mindoro)

Xyrichtys sp. (-)
Syn.: *Iniisttus* sp. (-)
Status: native
Habitat: marine
Isopoda
Cymothoa stromatei (Panay)

FAMILY SCARIDAE

Scarus festivus Valenciennes (-)
Syn.: *Scarus lúnula* (Snyder) mulmol
Status: native
Environment: marine
Digenea
Transversotrema haasi (-)[158]

[158] Possible host misidentification.

SUBORDER GOBIOIDEI

FAMILY ELEOTRIDAE

Butis amboinensis (Bleeker) olive flathead-gudgeon biang sunog[159]
Status: native
Environment: freshwater, brackish water, marine
Digenea
Procerovum calderoni metacercaria (Luzon &/or Mindanao)

[159] Addhional Tagalog common ñames include Tcaple" and "susunog."

Eleotris fusca (Schneider and Forster) dusky sleeper mulug[160]
Status: native
Environment: brackish water, fresh water
Digenea
Torticaecum nipponicum (Palawan)

[160] The local common ñame is in from Bikolano dialect

Eleotris melanosoma Bleeker broadhead sleeper[161] virot[162]
Status: native
Environment: brackish water, fresh water
Nematoda
Aonchotheca philippinensis larva (Luzon)

[161] The English common ñame is provided by Srahh and Heemstra (1986).

[162] The local common ñame is from the Ilokano dialect

Hypseleotris bipartita Herré (-)
Syn.: *Apogon* sp. auctorum bagsit,
Status: native maringyan[163]
Environment: fresh water, brackish water
Nematoda
Aonchotheca philippinensis larva (Luzon)
Nematoda gen. sp. (Luzon)

[163] Herré (1953) provided the Bikol ñame "maringyan"; more recenüy, Cross and Basaca-Sevilla (1989) used the ñame "bagsit".

Ophieleotris aporos (Bleeker) snake-headed gudgeon bangayngay[164]
Syn.: *Ophiocara aporos* (Bleeker)
Status: native
Environment: fresh water
Digenea
Echinochasmus novalichesensis (Luzon)
Stictodora guetreroi metacercaria

(Luzon)
S. tanayensis metacercaria (Luzon)
Copepoda
Lemaea sp. (Luzon)

[164] Addhiona! Tagalog common ñames are "bakulihan," "dalagan," "palawan," "paluwon" and "simanwar."

FAMILY GOBÜDAE

Acentrogobius janthinopterus (Bleeker) brook goby[165] biang sapa
Syn.: *Creisson validus* Jordán and Seale
Status: native
Environment: fresh water, brackish water, marine
Digenea
Procerovum calderoni metacercaria (Luzon)
Remarks: Herré (1953) Usted *Creisson validus* as a synonym of *C. janthinopterus.* Froese and Pauly (1996) list the valid ñame for this species as *A centrogobius janthinopterus.*

[165] The English common ñame is provided by Herré and Umali (1948).

Chonophorus melanocephalus (Bleeker) rock goby[166] biang bato
Status: native
Environment: freshwater
Nematoda
Aonchotheca philippinensis larva (Luzon)
Nematoda gen. sp. (Luzon)

[166] The English common ñame is provided by Herré and Umali (1948).

Glossogobius biocellatus (Valenciennes) sleeper biang tulog
Status: native
Environment: marine, brackish water, fresh water
Digenea
Neochasmus microvatus (Luzon)
Opegaster mínima (Luzon)
Copepoda
Lemaea cyprinacea (Luzon)
Remarks:Intertidal, entering estuaries, lagoons and coastal rivers.

Glossogobius giuris (Hamilton) tank goby biyang puti[167]
Status: native
Environment: fresh water, brackish water, marine
Digenea
Azygia pristipomai (Luzon)
Cameophallus brevicaeca (Luzon)
Centrocestus caninus metacercaria (Luzon)
Digenea gen. sp. (Luzon)
Echinochasmus novalichesensis (Luzon)
Erilepturus lemeriensis (Luzon)[168]
Haplorchis pumilio metacercaria (Luzon)
Neochasmus microvatus (Luzon)
Opegaster mínima (Luzon)
Orientocreadium batrachoides (Luzon)
Posthodiplostomum grayi metacercaria (-)
Procerovum calderoni metacercaria (Luzon)
Prosorhynchus crucibulum (Luzon)
Cestoda
Bothriocephalus sp. (Luzon)
Cestoda gen. sp. (Luzon)
Proteocephalus sp. (Luzon)
Nematoda
Áscaridida gen. sp. larva (Luzon)
Gnathostoma spinigerum larva (Luzon)
Copepoda
Ergasilus philippinensis (Luzon)
Lernaea cyprinacea (Luzon)
L. lophiara (Luzon)

[167] Addhional Tagalog common ñames include "bato," "bia" and "dapal."

[168] Possible host misidentification.

Oxyurichthys microlepis (Bleeker) long-finned goby[169] talimusak
Status: native
Environment: marine, brackish water
Digenea
Procerovum calderoni metacercaria (Luzon)
Nematoda
Anisakidae gen. sp. larva (Luzon)

[169] The English common ñame is provided by Herré and Umali (1948).

Sicyopterus sp. (-)
Status: native ipon[170]
Environment: brackish water
Nematoda
Aonchotheca philippinensis larva (Luzon)

[170] The local ñame is from the Ilokano dialect

SUBORDER ACANTHUROIDEI

FAMILY SIGAMDAE

Siganus argenteus streamlined spinefoot
(Quoy and Gaimard) barangan, samaral
Syn.: *Teuthis rostrata* (Valenciennes)
Status: native
Environment: marine
Digenea
Hemiurus sigani (-)
Hexangium sigani (Luzon)
Remarks: Velasquez (1974, 1975a) Usted *Teuthis rostrata* as a synonym of *Siganus fuscescens.*

Siganus canaliculatus white-spotted spinefoot
(Park) barangan, samaral
Syn.: *Siganus oramin* (Bloch and Schneider) *Amphacanthus oramin* Bloch and Schneider
Status: native
Environment: marine
Digenea
Hexangium sigani (Palawan)
Nematoda
Procamallanus sp. (Palawan)
Acanthocephala
Diplosentis amphacanthi (Mindanao)

Siganus fuscescens mottled spinefoot
(Houttuyn) barangan, samaral
Status: native
Environment: marine
Digenea
Gyliauchen papillatus(-)
Hexangium sigani (-)

Siganus guttatus orange-spotted spinefoot
(Bloch) barangan, samaral
Syn.: *Teuthis concaténala* (Valenciennes)
Status: native
Environment: marine, brackish water
Ciliophora
Trichodina sp. (Panay)
Digenea
Hemiurus sigani (-)
Hexangium sigani (Samar)
Nematoda
Nematoda gen. sp. (Panay)
Procamallanus (Spirocamallanus) guttatusi (Panay)
Copepoda
Ergasilus rotundicorpus (Panay)
Caligus sp. (Panay)

Siganusjavus streaked spinefoot
(Linnaeus)
Syn.: *Teuthisjavus* barangan, samaral
Linnaeus
Amphacanthus javus (Linnaeus)
Status: native
Environment: marine, brackish water
Digenea
Haplorchis pumilio metacercaría (Luzon)
H. yokogawai metacercaria (Luzon)
Heterophyopsis expectans metacercaria (Luzon)
Hexangium sigani (Luzon)
Procerovum calderoni metacercaria (Luzon)

Siganus spinus little spinefoot
(Linnaeus)
Syn.: *Siganus striolatus* (Günther) barangan, samaral
Status: native
Environment: marine
Digenea
Hemiurus sigani (Palawan)
Hexangium sigani ((Palawan)
Nematoda
Procamallanus sp. (Palawan)

Siganus virgatus barhead spinefoot
(Valenciennes) barangan
Syn.: *Teuthis virgata* (Valenciennes)
Status: native
Environment: marine, brackish water

Monogenea
Ancyrocephalus manilensis (Luzon - aquarium)
Aspinatrium virgatarum (Luzon - aquarium)
Remarks: This species has been reported to enter fresh water.

Siganus sp. (-)
Status: native samaral
Environment: marine, brackish water
Microspora
Microsporidia gen. sp. (Visayan islands)
Digenea
Hexangium sigani (-)

FAMILY ACANTHUMDAE

Acanthurus lineatus (Linneaus) lined surgeonfísh
Status: native indangan, labahita
Environment: marine
Digenea
Megasolena acanthuri (-)

Acanthurus triostegus (Linnaeus) convict surgeonfish indangan, labahita
Status: native
Environment: marine
Digenea
Hysterolecitha acanthuri (Samar)

Acanthurus sp. (-)
Syn.: *Teuthis* sp. samaral
Status: native
Environment: marine
Nematoda
Anisakidae gen. sp. Larva (Luzon, Mindoro)
Procamallanus (Spirocamallanus) spiralis (Luzon)

Naso hexacanthus (Bleeker) sleek unicornfish
Status: native isdangilong
Environment: marine
Digenea
Lecithocladium chingi (Mactan)
Prosogonotrema bilabiatum (Mactan)

Naso unicornis (Forsskal) bluespine unicornfish
Status: native bakwak[171]
Environment: marine
Digenea
Hexangium leptosomum (Palawan)

[171] The common ñame comes from the Visayan dialect

Naso vlamingii (Valenciennes) bignose unicornfish isdang ilong
Status: native
Environment: marine
Digenea
Cleptodiscus bulbosus (Mactan)
Lecithocladium chingi (Mactan)
Preptetos caballeroi (Mactan)
Prosorchiopsis aluterae (Mactan)

SUBORDER SPHYRAENOIDEI

FAMILY SPHYRAENIDAE

Sphyraenajello Cuvier pickhandle barracuda
Status: native asugon, tursilyo
Environment: marine
Digenea
Pseudopecoeloides carangis (Palawan)

Sphyraena langsar Bleeker langsar barracuda[172]
Status: native dumbusan, tursilyo
Environment: marine
Digenea
Prosorhynchoides philippinorum (Luzon)
Nematoda
Anisakidae gen. sp. (Luzon)
Anisólas sp. larva (Luzon)
Remarks: The taxonomic status of this species is questionable (E.Capulí, ICLARM, Manila, pers. comm.).

[172] The English common ñame is provided by Herré (1953).

Sphyraena sp. barracuda
Status: native tursilyo
Environment:marine
Digenea
Didymozoon bravohollisae (Luzon)
Monogenea
Tristomella pricei (Visayan islands)[173]

[173] Possible host misidentification.

SUBORDER SCOMBROIDEI

FAMILY TRICHIURIDAE

Trichiurus lepturus Linnaeus largehead hairtail
Syn.: *Trichiurus haumela* (Forsskal) espada[174]
Status: native
Environment: marine, brackish water
Digenea
Plerurus digitatus (Palawan)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Camallanus (Camallanus) marinus (Palawan)

[174] Addhional Tagalog common ñames ¡nclude "laying" and "pinka."

FAMILY SCOMBRIDAE

Euthynnus qffinis (Cantor) kawakawa
Syn.: *Euthunnus yaito* Kishinouye Katsarita[175]
Status: native
Environment: marine
Digenea
Didymozoidae gen. sp. (Palawan)
Lecithochirium magnaporum (Palawan)
Prosorhyncoides sibi (Palawan)
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anisakis sp. larva (Luzon)
Spinitectus palawanensis (Palawan)

[175] Additional Tagalog common ñames include "katsot," "katsoreta," "kucharíta," "tulingangputi" and "tuliñgan."

Rastrelliger brachysoma (Bleeker) short mackerel alumahan[176]
Status: native
Environment: marine, brackish water
Monogenea
Eyelavera typica (Luzon)
Kuhnia scombercolias (Negros)
K. sprostonae (Negros)
Nematoda
Anisakidae gen. sp. larva (Panay)

[176] Additional Tagalog common ñames include "nasa-basa" and "kabalyas."

Rastrelliger faughni Matsui island mackerel
Status: native bulao-bulao[177]
Environment: marine
Monogenea
Eyelavera typica (Luzon)
Pseudoanthocotyle pavlovskyi (Cebú, Luzon, Palawan)

[177] The common ñame comes from the Visayan dialect

Rastrelliger kanagurta (Cuvier) Indian mackerel
Syn.: *Rastrelliger chrysozonus* (Rüppell) alumahan[178]
Status: native
Environment: marine
Digenea
Lecithocladium angustiovum (Luzon, Visayan islands)
Monogenea
Eyelavera typica (Luzon)
Nematoda
Anisakidae gen. sp. larva (Panay)

[178] Additional Tagalog common ñames include "hasa-hasa" and "lumahan."

Scomberomorus commerson (Lacépéde) narrow-barred Spanish mackerel
Status: native tanguigue[179]
Environment: marine
Nematoda
Anisakidae gen. sp. larva (Luzon)
Anísalas sp. larva (Luzon)

[179] Additional Tagalog common names include "maladyong," "tangigi" and "tangingü."

SUBORDER ANABANTOIDEI

FAMILY ANABANTTDAE

Anabas testudineus (Bloch) climbing perch
Status: native liwalo[180]
Environment: brackish water, fresh water
Digenea
Centrocestus caninus metacercaria (Luzon)
Clinostomidae gen. sp. (-)
Procerovum calderoni metacercaria (Luzon)
?*P. varium* metacercaria (Luzon)
Stellantchasmus falcatus metacercaria (Luzon)
Nematoda

Camallanus (Zeylanemá) anabantis (Luzon)
Gnathostoma spinigerum larva (-)
Copepoda
Lernaea cyprinacea (Luzon)
L. lophiara (Luzon - experimental)

[180] Additional Tagalog common names include "martiniko," "puyo" and "tímkan."

FAMILY BELONTUDAE

Sphaerichthys osphromenoides chocolate gourami
Canestrini (-)
Status: exotic
Environment: fresh water
Nematoda
Nematoda gen. sp. (Luzon - aquarium)
Remarks: Native to Malaysia and Indonesia, this aquarium species does not occur in Philippine natural waters.

Trichogaster lalia dwarf gourami
(Harnilton)
Syn.: *Colisa lalia* (-)
(Hamilton)
Status: exotic
Environment: fresh water
Monogenea
Heteronchocleidus sp. (Luzon - aquarium)
Digenea
Ascocotyle sp. Metacercaria (Luzon - aquarium)
Remarks: Native to South Asia, this aquarium species does not occur in Philippine natural waters.

Trichogaster pectoralis snakeskin gourami
(Regan) guraming Siam
Status: exotic
Environment: fresh water
Ciliophora
Trichodina sp. (Luzon)
Cestada
Cestoda gea sp. (Luzon
Nematoda
Nematoda gen. sp. (Luzon)
Remarks:Snakeskin gourami are native to ThailandandIndo-China.Theywere introduced from Bangkok to Luzon Island in 1938 (Herré 1953).

Trichogaster trichopterus three spot gourami
(Pallas) (-)
Status: exotic
Environment: fresh water
Ciliophora
Trichodina heterodentata (Luzon)
Remarks: Three spot gourami are self-reproducing in Philippine natural waters. They were recorded as being introduced from Borneo into a cráter lake on Cagayan Sulu Island, Sulu Province prior to 1909, with a subsequent introduction from Thailand occurring in 1938 (see Herré 1953).

SUBORDER CHANNOIDEI

FAMILY CHANNIDAE

Channa striata snakehead murrel
(Bloch)
Syn.: *Ophicephalus striatus* Bloch dalag[181]
Status: native
Environment: firesh water
Apicomplexa
Sporozoa gen. sp. (-)
Ciliophora
Apiosoma sp. (Luzon)
Chilodomlla sp. (Luzon)
Epistylis sp. (Luzon)
Trichodina sp. (Luzon)
Digenea
Centrocestus caninus metacercaria (Luzon)
Clinostomoides brieni metacercaria (Luzon)
Clinostomum complanatum metacercaria (Luzon)
C. philippinensis metacercaria (Luzon, Mindanao)
Clinostomum sp. metacercaria (Luzon)
Clinostomidae gen. sp. (-)
Digenea gen. sp. (Luzon)
Diplostomulum sp. metacercaria (Luzon)
Euclinostomum multicaecum metacercaria (Luzon)
Haplorchis pumilio metacercaria

(Luzon)
H. taichui metacercaria (Luzon, Mindanao?)
H. yokogawai metacercaria (Luzon)
Neodiplostomum sp. metacercaria (Luzon)
Opegaster mínima (Luzon)
Posihodiplostomum grayi metacercaria (-)
Posthodiplostomum sp. metacercaria (-)
Procerovum calderoni metacercaria (Luzon)
Monogenea
Gyrodactylus sp. (Luzon)
Cestada
Cestoda gen. sp. (Luzon)
Nematoda
Camallanus sp. (Luzon)
Gnathostoma spinigerum larva (Luzon)
Nematoda gen. sp. (Luzon)
Neocamallanus ophicephali (Luzon)
Hirudinea
Piscícola sp. (-)
Branchiura
Argulus indicas (Luzon)
Argulus sp. (Luzon)
Copepoda
Lernaea cyprínacea (Luzon)
Lernaea sp. (Luzon)
Remarks: Froese and Pauly (1996) noted that the snakehead murrel was introduced (source and year unknown) for aquaculture purposes. Herré (1953), however, indicates that this species is native to the Philippines, occurring in almost all freshwater lakes and streams throughout the country.

[181] Additional Tagalog common ñames inelude "bakule," "bulig," "bimdaki"and "bundalag."

ORDER PLEURONECTIFORMES

SUBORDER PSETTOIDEI

FAMILY PSETTODroAE

Psettodes erumei (Bloch and Schneider) — Indian spiny turbot — dapa[182]
Status: native
Environment: marine
Digenea
Prosorhynchus longus (Luzon)
Rhipidocotyle laruei (Luzon)
Nematoda
Anisakidae gen. sp. larva (Luzon)

[182] AdditionalTagalogcommonñamesinelude"dalapang tangkao" and "kalangkao."

SUBORDER PLEURONECTOIDEI

FAMILY PARALICHTHYIDAE

Pseudorhombus javanicus (Bleeker) — Javan flounder — dapa
Status: native
Environment: marine
Nematoda
Philometra lateolabracis (Palawan)

FAMILY SOLEIDAE

Synaptura sorsogonensis Evermann and Seale — (-) — dapa
Status: native
Environment: marine
Digenea
Didymozoidae gen. sp. (Luzon)
Nematoda
Anisakidae gen. sp. larva (Luzon)

ORDER TETRAODONTIFORMES

SUBORDER BALISTOIDEI

FAMILY BALISTIDAE

Pseudóbaíistes flavimarginatus (Rüppell) — yellowmargin triggerfish — papakol
Syn: *Balistes flavimarginatus* Rüppell
Status: native
Environment: marine
Copepoda
Caligus productus (Tapul)

SUBORDER TETRAODONTOIDEI

FAMILY TETRAODONTIDAE

Arothron manilensis (deProcé) — narrow-lined puffer — (-)
Syn.: *Tetrodon manilensis* de Procé

Status: native
Environment: marine, brackish water
Copepoda
Lernanthropus musca (Luzon)
Penella sagitta (Luzon)

Arothron mappa map puffer (Lesson)
Status: native (-)
Environment: marine
Nematoda
Philometra robusta (Tawi-Tawi)

FISHES OF ÜNCERTAIN TAXONOMIC AFFINITY

"boloan"
Nematoda
Anisakidae gen. sp. larva (Luzon)

"snapper"
Isopoda
Renocila richardsonae (Bubuan)

"fish"
Ciliophora
Epistylis sp. (-)
Ichthyophthirius multifiliis (-)
Tríchodina acuta (-)
T. heterodentata (-)
Trichodina sp. (Luzon)
Trichodinella carpí (-)
Mastigophora
Cryptobia sp. (-)
Ichthyobodo sp. (-)
Trypanosoma sp. (-)
Myxozoa
Henneguya sp. (-)
Myxobolus sp. (-)
Digenea
Carneophallus brevicaeca (-)
Clinostomum sp. metacercaria (-)
Digenea gen. sp. metacercaria (-)
Heterophyidae gen. sp. metacercaria (Mindanao)
Neochasmus microvatus metacercaria *(-)*
Orientocreadium batrachoides (-)
Strigeidae gen. sp. Metacercaria (Mindanao)
Monogenea
Cichlidogyrus sclerosus (-)
Cichlidogyrus sp. (-)
Dactylogyrus sp. (Luzon)
Gyrodactylus sp. (-)
Monogenea gen. sp. (Luzon)
Cestoda
Lytocestus sp. (-)
Proteocephalus sp. (-)
Acanthocephala
Acanthogyrus sp. (-)
Filisoma rizalinum (Luzon)
Neoechinorhynchus octonucleatus (Luzon)
Nematoda
Camallanidae gen. sp. (Mindanao)
Camallanus sp. (-)
Gnathostoma spinigerum larva (-)
Neocamallanus ophicephali (-)
Nematoda gen. sp. (Luzon)
Procamallanus sp. (-)
Terranova gen. sp. (Palawan)
Hirudinea
Piscícola sp. (-)
Branchiura
Argulus sp. (Luzon)
Copepoda
Ergasilus sp. (-)
Lernaea cyprinacea (-)
Lernaea sp. (Luzon)
Isopoda
Alitropus typicus (-)
Cymothoa eremita (Bubuan)
Elthusa propinqua (Sombrero)

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