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UNRESTRICTED

ASPECTS OF THE BIOLOGY OF TRYPANORHYNCH TAPEWORMS AND INVESTIGATIONS
ON THEIR USE AS BIOLOGICAL TAGS

Submitted by

RACHEL MARGARET BATES, B.Sc.

to The Open University as a thesis for the degree of

DOCTOR OF PHILOSOPHY

in the Faculty of Science

Declaration

I certify that all material in this thesis which is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

Author's number: M7021046

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Poor quality text in
the original thesis.

ABSTRACT

Four hundred papers published in refereed papers during the years 1935-1985 were researched for information on the biology of trypanorhynchs, and a publishable host-parasite list was compiled for this period as a complement to the only previous monograph (Dollfus, 1942) (published forty-five years ago) on all known members of the order Trypanorhyncha (Platyhelminthes: Cestoda). The theoretical information gained from this initial exercise was then used in carrying out original research on trypanorhynchs found in over 1,000 elasmobranch and teleost fish. This led to a choice of three research topics for more detailed investigations: (i) taxonomic studies on four little-known species and the application of this information to fisheries biology, (ii) life-cycle studies on Grillotia erinaceus (van Beneden, 1858) and (iii) the use of Grillotia smarigora (Wagener, 1854) Dollfus, 1946 as a biological tag for commercially important teleosts. A pre-requisite of this last problem was the need to review critically all information on the use of parasites as population indicators. Thus a further 100 papers published in primary journals were researched.

The work concludes with a discussion of the above and also brief comments on the need for further research on tapeworms of the order Trypanorhyncha as an aid to our understanding of other basic contemporary problems in parasitology, relating to host-specificity, ecology and phylogeny.

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ASPECTS OF THE BIOLOGY OF TRYPANORHYNCH TAPEWORMS AND INVESTIGATIONS
ON THEIR USE AS BIOLOGICAL TAGS

PART 1

INTRODUCTION AND MATERIALS AND METHODS

Introduction

Less than 200 species are known for the order Trypanorhyncha (Platyhelminthes : Cestoda). With one notable exception, they are highly characteristic tapeworms in having four eversible hooked tentacles. Adult trypanorhynchs mature only in the spiral valve intestine of elasmobranchs. Larval stages have been recorded from many sites in a variety of hosts, predominantly crustaceans, molluscs and teleosts.

During the last thirty years, trypanorhynchs have been recognised as important in fisheries research for two main reasons. First, they occur in very large numbers in the flesh of edible fish and, for this reason, large consignments of fish intended for the food markets are often rejected at a considerable economic loss (Rae, 1958; Overstreet, 1978). Secondly, it was discovered in the 1960s that they have great potential use as biological tags in determining the spawning grounds, stocks and movements of commercially important food fish (Sindermann, 1957). It is surprising, therefore, that they remain a sadly neglected group of worm parasites. This neglect is immediately apparent from the literature, as no comprehensive review exists after the early studies of Vaulleuard (1899), Linton (1890, 1897a, 1897b) Pintner (1880, 1893, 1896, 1903, 1913, 1931), Southwell (1929, 1930) and Dollfus (1929, 1930, 1942).

When this work commenced in 1983, there were about five known researchers of the group world-wide. All seemed to agree that the taxonomy of the group was in a state of confusion and that schemes of

identification and classification then in use were all arbitrary. No complete life-cycle is known for the trypanorhynchs and yet fishery biologists and helminthologists are unanimous in suggesting the need for more research on the taxonomy of the group and on life-cycles. Such information is thought to be of basic importance in understanding the biology of the group as a whole, including such aspects as host-specificity, ecology and phylogeny.

For reasons given above, the primary aims of my chosen research topic were four-fold: (1) to produce and publish a host-parasite checklist for the years 1935-1985; (2) to investigate the taxonomy of selected representatives from the three main groups of the Trypanorhyncha, including a study of the unique tentacle-less species Aporhynchus norvegicus (Olssen, 1866) Nybelin, 1918; (3) to gain some insight into life-cycle aspects of the group; and (4) to gain theoretical and practical experience in the use of trypanorhynchs as biological tags.

My long-term objective was to attract far more attention to this intriguing group of tapeworms from both the applied and academic aspects of their biology, including their origin, evolution and success as a group of invertebrates.

Materials and Methods

Fish and tapeworms required for this project were collected by me during a three week research cruise on the F.R.V. "Explorer" in the North Sea (20 May - 9 June 1983) and three weeks on the "Kay B.B." in

Cardigan Bay in August 1984 and September 1985. The material obtained was supplemented by further expeditions to collect off Mevagissey in Cornwall, Tromsø in Northern Norway and Passamaquoddy Bay in New Brunswick. Additional specimens of fish and tapeworms were obtained, details of all sources of material are given in Tables 1 - 3.

Whenever possible living fish were obtained, killed by a blow to the head and examined immediately for parasites. This forestalled autolysis within the gut damaging the parasites, and prevented the build-up of mucus in elasmobranch intestines, which tends to obscure small specimens.

The length (and also the greatest width across the wings in rays) and weight of all fish were recorded, when feasible, and otoliths of teleosts taken for ageing. The problems of measuring the age of elasmobranchs are well known (Holden, 1974), but it was assumed that although the weight and length of elasmobranch specimens are not directly proportional to age, the measurements might give an indication of the relative age of individuals belonging to the same sex and species, and caught in the same season in the same area.

The examination of the elasmobranchs was initially focussed on the oesophagus, the cardiac and pyloric stomachs, duodenum, spiral valve, intestine, rectum and rectal gland. Because no adult trypanorhynch have been recorded from any site other than the stomach, spiral valve and rectal gland (see Section 1), effort was later concentrated on these areas.

The spiral valves were opened as described by McVicar (1979), first by cutting longitudinally along the line of the blood vessels on the ventral surface. Each tier of the spiral valve was then cut transversely. This causes each tier to appear as a flap which can be examined on both sides under a Wild dissecting microscope at a magnification of X6-X12. The number and position of parasites were recorded and the trypanorhynchs identified. Only trypanorhynchs with scoleces were included in the totals. Notes were taken of stomach contents.

Teleosts were sexed and measured to the nearest centimetre from the tip of the snout to the fork in the tail, and an incision made to expose the body cavity and contents. The lumen and outside surfaces of the entire digestive tract were examined under a dissecting microscope at a magnification of X6-X12. The gut contents were also searched, and the contents identified. In any further examination of the fish particular attention was given to the eyes, gonads and musculature.

On a number of occasions fresh fish were not immediately available to me. When collected on my behalf teleost fish were deep frozen as whole specimens whilst with elasmobranchs their digestive tracts only were sent. Each elasmobranch gut was ligatured anterior to the cardiac stomach and posterior to the rectal gland, injected with as much 4% formaldehyde as they would hold, excised and stored in 4% formaldehyde with all relevant host information. Dissection of preserved spiral valves began with making an incision in the anterior portion, and extending the cut posteriorly and spirally. This resulted in an easily

examined single band of tissue whose upper and lower surfaces corresponded with anterior and posterior facing surfaces of the spiral valve (Williams, 1961).

The position of trypanorhynchs in the intestine was noted during dissection but treated with caution as migration of the parasites along the gut could have taken place after the death of the host unless it had been fixed immediately (Crompton, 1973).

The tentacles of adult trypanorhynchs from freshly caught elasmobranchs were everted wherever possible. Usually coverslip pressure was enough to achieve this. It was preferred to the traditional method of addition of freshwater to achieve tentacle eversion because this method results also in the relaxation and death of the parasites, and this renders them unsuitable for S.E.M. work.

The measurements of cysts containing larval trypanorhynchs were taken, and the plerocerci then dissected out. Tentacle eversion was again achieved by coverslip pressure. In frozen samples containing robust specimens (e.g. Hepatoxylon sp.) or species with tentacles of moderate width (e.g. Grillotia erinaceus), tentacle extrusion could still be accomplished by applying moderate pressure, but not in small, delicate specimens, e.g. Grillotia smarigora.

Representative specimens of adults and plerocerci were taken from various hosts and measurements were taken of each part of the scolex considered to be of taxonomic importance as described by Schmidt

(1986), e.g. the lengths and widths of the pars bothridialis, pars post-bulbosa and pars vaginalis.

Trypanorhynchs prepared for S.E.M. study were dehydrated through a graded series of ethanol and dried in a Samdri-780 Critical Point Drier using CO₂. They were then sputter coated with gold in an argon atmosphere in an Emscope SC500 and examined using a Jeol JSM-T100 scanning electron microscope operated at 15 KV.

Whole mounts were stained with Ehrlich's haematoxylin and eosin, or Gower's carmine and Fast Red salt B (Johri and Smyth, 1956). Serial sections of both parasites and host gut were cut at 8-12 μ m and stained with Ehrlich's haematoxylin and eosin. All parasites were entered into the collections maintained by the National Museum of Wales, Cathays Park, Cardiff.

Grillotia erinaceus from Raja erinaceus caught in Passamaquoddy Bay, New Brunswick was chosen for training in the understanding of life-cycle work largely because Dr. L. Jarecka, an internationally recognised expert on tapeworm life-cycles, was based at the University of New Brunswick, Canada. Gravid worms were stimulated to release eggs by placing them in fresh seawater. The eggs were maintained in aerated seawater at 15-19°C before being presented to locally collected copepods. Development was observed using both dissecting and compound microscopes.

Table 1: Original records of fish examined for trypanorhynchs

Fish species	Collection area	No. of fish examined	Trypanorhynch species
EUSELACHII			
Pleurotremata			
Hexanchidae			
<u>Hexanchus griseus</u> (Bonnaterre, 1788)	North Sea	7	
Scyliorhinidae			
<u>Galeus melastomus</u> Rafinesque - Schmaltz, 1810	North Sea	2	
<u>Scyliorhinus caniculus</u> (Linnaeus, 1758)	North Sea	25	
<u>S. stellaris</u> (Linnaeus, 1758)	Concarneau North Sea	15 3	
Isuridae			
<u>Lamna nasus</u> (Bonnaterre, 1788)	North Sea	9	
Carcharinidae			
<u>Galeorhinus galeus</u> Linnaeus, 1758)	North Sea	8	<u>Lacistorhynchus tenuis</u>
<u>Prionace glauca</u> (Linnaeus, 1758)	North Sea Aberystwyth	7 3	
Triakidae			
* <u>Mustelus asterias</u> Cloquet, 1819	North Sea	6	<u>Eutetrarhynchus ruficollis</u>
<u>M. mustelus</u> (Linnaeus, 1758)	North Sea	5	
Squaloidae			
<u>Etmopterus spinax</u> (Linnaeus, 1758)	Northern Norway	87	<u>Aporhynchus norvegicus</u>
<u>Squalus acanthias</u> (Linnaeus, 1758)	North Sea	62	<u>Gilquinia squali</u>
Squatinae			
<u>Squatina squatina</u> (Linnaeus, 1758)	Aberystwyth, Cardigan Bay S.W. Ireland	21 4	<u>Grillotia smarigora</u> <u>G. smarigora</u>

contd.

Fish species	Collection area	No. of fish examined	Trypanorhynch species
Hypotremata			
Torpedinidae			
<u>Torpedo marmorata</u> Risso, 1810	North Sea	3	
<u>T. nobiliana</u> Bonaparte, 1835	North Sea	2	
Rajidae			
<u>Raja batis</u> Linnaeus, 1758	North Sea	1	
<u>R. brachyura</u> Lafont, 1873	North Sea	27	<u>Grillotia erinaceus</u>
<u>R. circularis</u> Couch, 1835	North Sea	4	
<u>R. clavata</u> Linnaeus, 1758	Aberystwyth North Sea	5 7	<u>G. erinaceus</u>
+ <u>R. erinaceus</u> Mitchill, 1825	Passamaquoddy Bay, Canada	46	<u>G. erinaceus</u>
<u>R. fullonica</u> Linnaeus, 1758	North Sea	2	
+* <u>R. hollandi</u> Jordan and Richardson	South China Sea	9	<u>Parachristianella monomegacantha</u>
<u>R. montagui</u> Fowler, 1910	North Sea Aberystwyth	44 3	
<u>R. naevus</u> Müller and Henle, 1841	North Sea	9	<u>G. erinaceus</u>
<u>R. ocellata</u> Mitchill	Passamaquoddy Bay, Canada	10	
<u>R. radiata</u> Donovan, 1806	Passamaquoddy Bay, Canada North Sea	10 11	
<u>R. santa</u>	Passamaquoddy Bay, Canada	16	
Dasyatidae			
+ <u>Dasyatis pastinaca</u> (Linnaeus, 1758)	North Sea	1	<u>Parachristianella trygonis</u>
Myliobatidae			
<u>Myliobatis aquila</u> (Linnaeus, 1758)	North Sea	2	
OSTEICHTHYES			
Isopondyli			
Clupeidae			
<u>Clupea harengus</u> Linnaeus, 1758	North Sea Ireland	29 3	<u>Nybelinia sp.</u> <u>Lacistorhynchus tenuis</u>

contd.

Fish species	Collection area	No. of fish examined	Trypanorhynch species
Argentinidae			
<u>Argentina sphyraena</u> Linnaeus, 1758	North Sea	25	
Anacanthini			
Gadidae			
* <u>Enchelyopus cimbrius</u> (Linnaeus, 1776)	North Sea	1	<u>G. erinaceus</u>
<u>Gadus morhua</u> Linnaeus, 1758	North Sea	15	<u>G. erinaceus</u>
<u>Melanogrammus aeglefinus</u> (Linnaeus, 1758)	North Sea	27	<u>G. erinaceus</u>
<u>Merlangius merlangus</u> (Linnaeus, 1758)	North Sea	57	<u>Gilquinia squali</u>
<u>Merluccius merluccius</u> (Linnaeus, 1758)	North Sea	7	
<u>Micromesistius poutassou</u> (Risso, 1826)	North Sea	14	
<u>Phycis blennoides</u> (Brünnich, 1768)	North Sea	1	
<u>Pollachius virens</u> (Linnaeus, 1758)	North Sea	9	<u>Hepatoxylon trichiuri</u>
<u>Trisopterus esmarkii</u> (Nilsson, 1855)	North Sea Aberystwyth	17	
<u>T. luscus</u> (Linnaeus)	North Sea	8	
Carangidae			
* <u>Trachurus trachurus</u> (Linnaeus, 1758)	Celtic Sea	76	<u>Grillotia smarigora</u>
Sparidae			
<u>Boops boops</u> (Linnaeus, 1758)	North Sea Aberystwyth and Bay of Biscay	12	<u>Grillotia sp.</u>
<u>Pagellus acarne</u> (Risso, 1826)	Bay of Biscay	8	
* <u>Pagellus bogaraveo</u> (Brünnich, 1758)	Bay of Biscay	37	<u>G. smarigora</u>
Scombridae			
<u>Scomber scombrus</u> Linnaeus, 1758	Aberystwyth North Sea	7 23	<u>G. smarigora</u>
Anarhichadidae			
<u>Anarhichas lupus</u> Linnaeus, 1758	North Sea	4	<u>G. smarigora</u>

contd.

Fish species	Collection area	No. of fish examined	Trypanorhynch species
Scleroparei			
Triglidae			
<u>Aspitrigla cuculus</u> (Linnaeus, 1758)	North Sea	10	
<u>Eutrigla gurnadus</u> (Linnaeus, 1758)	North Sea	11	<u>G. erinaceus</u>
Cottidae			
<u>Taurulus bubalis</u> (Euphrasen, 1786)	Aberystwyth	3	<u>G. erinaceus</u>
Heterosomata			
Pleuronectidae			
<u>Hippoglossoides platessoides</u> (Fabricius, 1780)	North Sea	12	<u>G. erinaceus</u>
<u>Hippoglossus hippoglossus</u> (Linnaeus, 1758)	North Sea	2	<u>G. erinaceus</u>
<u>Platichthys flesus</u> (Linnaeus, 1758)	North Sea	13	
	Aberystwyth	7	
<u>Pleuronectes platessa</u> Linnaeus, 1758	North Sea	9	
Bothidae			
<u>Lepidorhombus whiffiagonis</u> (Walbaum, 1792)	North Sea	21	<u>G. erinaceus</u>
Pediculati			
Lophiidae			
<u>Lophius piscatorius</u> Linnaeus, 1758	North Sea	12	<u>G. erinaceus</u>

* New host record

+ New distribution record

Table 2: Original records of trypanorhynchs found in fish

<u>Homeoacanth</u> s			
<u>Hepatoxylidae</u>			
<u>Hepatoxylon trichiuri</u> (Holten, 1802)	post-larva	<u>Pollachius virens</u>	liver
<u>Tentaculariidae</u>			
<u>Nybelinia</u> sp.	plerocercus	<u>Clupea harengus</u>	encysted on stomach wall
<u>Poeciloacanth</u> s			
<u>Lacistorhynchidae</u>			
<u>Grillotia erinaceus</u> (van Beneden, 1858)	plerocercus	<u>Anarhichas lupus</u>	encysted on intestine
		<u>Boops boops</u>	encysted on pyloric caeca
		<u>Enchelyopus cimbricus</u>	encysted on stomach and liver
		<u>Eutrigla gurnadus</u>	encysted on pyloric caeca
		<u>Gadus morhua</u>	encysted on stomach, intestine
		<u>Hippoglossus hippoglossus</u>	encysted on stomach and intestine
		<u>Hippoglossoides platessoides</u>	encysted on stomach and intestine
		<u>Lepidorhombus whiffiagonis</u>	encysted on stomach and intestine
		<u>Lophius piscatorius</u>	encysted on stomach and intestine
		<u>Melanogrammus aeglefinus</u>	encysted on stomach and intestine
	adult	<u>Raja brachyura</u>	spiral valve
		<u>R. clavata</u>	spiral valve
		<u>R. erinaceus</u>	spiral valve
		<u>R. naevus</u>	spiral valve
<u>Grillotia smaris-gora</u> (Wagener, 1854), Dollfus, 1946	plerocercus	<u>Pagellus bogaraveo</u>	encysted on stomach and pyloric caeca
		<u>Scomber scombrus</u>	encysted on stomach and pyloric caeca

contd.

<u>Grillotia smarigora</u> (Wagener, 1854) Dollfus, 1946	plerocercus adult	<u>Trachurus</u> <u>trachurus</u> <u>Squatina squatina</u>	encysted on stomach and pyloric caeca spiral valve
<u>Grillotia</u> sp.	plerocercus	<u>Boops boops</u>	encysted on pyloric caeca
<u>Lacistorhynchus tenuis</u>	plerocercus adult	<u>Clupea harengus</u> <u>Galeorhinus</u> <u>galeus</u>	encysted on pyloric caeca spiral valve
Heteroacanth			
Eutetrarhynchidae			
<u>Parachristianella</u> <u>monomegacantha</u> Kruse, 1959	adult	<u>Raja hollandi</u>	spiral valve
<u>P. trygonis</u> Dollfus, 1946	adult	<u>Dasyatis</u> <u>pastinaca</u>	spiral valve
<u>Eutetrarhynchus</u> <u>ruficollis</u> (Eysenhardt, 1829)	adult	<u>Mustelus</u> <u>asterias</u>	spiral valve
Gilquiniidae			
<u>Aporhynchus</u> <u>norvegicus</u> (Olssen, 1868) Nybelin, 1918	adult	<u>Etmopterus</u> <u>spinax</u>	spiral valve
<u>Gilquinia squali</u> (Fabricius, 1794)	plerocercus adult	<u>Merlangius</u> <u>merlangus</u> <u>Squalus</u> <u>acanthias</u>	eyes spiral valve

Table 3: Additional trypanorhynchs examined from collections

Trypanorhynch	Host	Source
Homeoacanth		
Hepatoxylidae		
<u>Hepatoxylon trichiuri</u> (Holten, 1802)	<u>Lamna cornubica</u> (Gmelin)	North Sea, NMW
Sphyricephalidae		
<u>Sphyricephalus viridus</u> (Wagener, 1854)	<u>Scymnorhinus licha</u> (Bonnaterre)	North Sea, NMW
Tentaculariidae		
<u>Nybelinia surmenicola</u> Okada in Dollfus, 1929	<u>Sphyrna blochii</u>	Singapore, BM(NH)
<u>N. perideraeus</u> (Shipley and Hornell, 1906)	<u>Carcharhinus obscurus</u>	River van der Elst BM(NH)1982.4.6.37-45
Poeciloacanth		
Lacistorhynchidae		
<u>Grillotia acanthoscolex</u> Rees, 1944	<u>Hexanchus griseus</u> (Gmelin)	BM(NH)1976.4.13.48 -49
<u>G. branchii</u> Shaharom and Lester, 1982	<u>Scomberomorus commersoni</u>	Point Lockout, Australia BM(NH)1981.3.8.1- 3
<u>G. smaris-gora</u> (Wagener, 1854) Dollfus, 1946	<u>Squatina squatina</u>	Museum National d'Histoire Naturelle
	<u>Synodus lucioceps</u>	US National Helminthological Collection No. 76803 M1345-15
<u>Lacistorhynchus tenuis</u> (van Beneden, 1858)	<u>Galeorhinus galeus</u>	Scarborough, England BM(NH)1979.1.12.89- 90
Gymnorhynchidae		
<u>Gymnorhynchus malleum</u> (Linton, 1929)	<u>Trygon kuhli</u>	Sri Lanka, 1960 BM(NH)1977.11.15.62 -64
<u>Pterobothrium</u> sp.	<u>Lepturacanthus savala</u>	Hooghly Estuary, India BM(NH)1980.6. 23.11-12

contd.

Trypanorhynch	Host	Source
Heteroacanth		
<u>Eutetrarhynchidae</u> <u>Eutetrarhynchus</u> sp.	<u>Dasyatis</u> sp.	Hooghly Estuary, India
<u>Christianella</u> sp.	blue spotted ray	BM(NH)1968.11.4.6
<u>Prochristianella</u> <u>monomegacantha</u> , Kruse, 1959 (adult)	<u>Dasyatis americana</u>	USNM 73827
<u>Rhynchobothrium</u> <u>longispine</u> Linton, 1890		USNM 7707, 7718
<u>Otobothriidae</u> <u>Otobothrium dipsacum</u> Linton 1897	<u>Serranus undulosus</u>	Sri Lanka BM(NH)1977.11.15. 58-60
<u>O. linstowi</u> Southwell, 1912	<u>Rhynchobatis</u> <u>djeddensis</u>	Sri Lanka BM(NH)1977.11.15.29
Trypanorhynchs of uncertain taxonomic status		
<u>Oncomegas wagneri</u> (Linton, 1890)	<u>Holothuria</u> <u>leucospilota</u>	Singapore BM(NH)1968.2.14. 16-25
<u>Synbothrium malleum</u>	<u>Pteroplata micrura</u>	BM(NH)1977.11.16. 25-32
<u>Tetrarhynchus macrocephalus</u> Shipley and Hornell, 1906	<u>Trygon kuhli</u>	Sri Lanka 1910 BM(NH)1977.11.4. 32-38

SECTION ONE
A CHECKLIST OF THE TRYPANORHYNCHA (PLATYHELMINTHES : CESTODA)
OF THE WORLD (1935-1985)

A checklist of the Trypanorhyncha (Platyhelminthes: Cestoda) of
the world (1935-1985)

by R M Bates

A checklist of the Trypanorhyncha (Platyhelminthes: Cestoda) of the world (1935-1985)

by R M Bates

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Summary

The literature over a 50-year period was analysed for records of trypanorhynchs. About 400 papers, mainly taxonomic or brief summaries of survey results, were published during this period. 150 species of trypanorhynchs were recorded from about 500 hosts. The results are presented as parasite-host and host-parasite lists since this information is not readily available to modern researchers of this unique group of tapeworms.

Introduction

In March, 1983, I advisedly began work on the biology of the Trypanorhyncha in view of the increased interest in this unique but sadly neglected group of tapeworms. This neglect was emphasised by the time-consuming and laborious task of searching for the scattered literature, which appeared sporadically in many journals of different disciplines and in various languages.

The dispersed papers included many synonyms and mis-identifications, reflecting the chaotic state of the Order's taxonomy, including many highly controversial aspects of classification and major difficulties in identifying genera and species. Such information, however, is of increased importance since it is now thought that trypanorhynchs can be used as biological tags for fish of economic importance.

Apart from Southwell's (1930) historical review of the Trypanorhyncha and Dollfus' (1942) monograph, there has been no attempt to bring together all papers on the Trypanorhyncha in one publication. Since over 400 relevant papers have been published since 1935, it was considered advisable to collate and publish the information in the checklist as a basis for future work on the group.

Collection of the host-parasite records began with the aid of a Dialog search of the Commonwealth Agricultural Bureaux Abstracts Database for the period 1972-1982, carried out by the CAB International Institute of Parasitology. Abstracts from papers published during the years 1935-1971 and from 1983 onwards were obtained by scanning the Helminthological Abstracts published for those years. Further references were traced from the bibliographies of original papers, and from the Host-Parasite catalogue at the British Museum (Natural History) in London.

This checklist is largely based on original papers published in primary journals, in order to avoid the duplication of information in standard texts, e.g. Wardle and McLeod (1952), Yamaguti (1959), and checklists, e.g. Love and Moser (1983). The checklist is divided into two parts, the first containing a list of parasite species, arranged alphabetically within families, together with their stage of development, host, site of infection if given, geographical distribution and author index. The second part consists of a host-parasite list with their author index.

There are two appendices. The first contains references which include information other than original host-parasite data, which is still relevant to the study of the Trypanorhyncha. The second appendix consists of parasite records which I received too late to include in the main text.

In the light of new taxonomic knowledge some authors have used a variety of synonyms for the same trypanorhynch species in successive publications. I have, therefore, exercised my own

judgement in choosing the most commonly accepted name by experts on the group. The synonym may still be used in cross-referencing.

As is often customary for helminthologists who have little experience or knowledge of vertebrate taxonomy, little attempt has been made to investigate the most commonly used host name and its synonyms. Thus, the list of hosts contains those given in the original paper, appearing alphabetically within orders.

Although I have tried to include all papers primarily concerned with the Trypanorhyncha in this checklist, it is certain that some papers will have been missed. The checklist should, however, provide a useful base for workers in this field and it is hoped that a critical review of the literature may follow this checklist.

PARASITE-HOST LIST

PARASITE FAMILY

DASYRHYNCHIDAE

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931

Host: Vertebrata

Selachii

Carcharhinus leucas (Müller and Henle, 1841)

Location: spiral valve

Distribution: Nicaragua

WATSON, D.E. AND THORSON, T.B., 1976

Prionace glauca (Linnaeus, 1758)

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Osteichthyes

Chascanopsetta lugubris Alcock

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Chlorophthalmus agassizi Bonaparte

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Malacocephalus laevis (Lowe)

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Saurida undosquamis (Richardson)

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (?) (cysts)
(tentative identification)

REMARKS: Bane remarked that the cysts resembled those of
Callitetrarhynchus gracilis.

Host: Vertebrata

Osteichthyes

Thunnus albacares

Location: stomach

Distribution: South of Accra, Ghana, Atlantic

BANE, G.W., 1969

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (adult) syn.

Tentacularia macfieii Southwell, 1929

REMARKS: Subhadrappa considered Tentacularia macfieii Southwell,
1929 and Tentacularia pseudodera Shuler, 1938 to be synonyms of
Callitetrarhynchus gracilis.

Host: Vertebrata

Selachii

Carcharias sp.

Location: spiral valve

Distribution: Madras Coast, India

SUBHAPRADHA, C.K., 1955

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (encysted
plerocercoid)

Host: Vertebrata

Osteichthyes

Pomatomus saltatrix (L.)

Location: pyloric caeca, mesenteries

Distribution: Raritan Bay, southern, New Jersey

MEYERS, T.R., 1978

- Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larve)
 Host: Vertebrata Osteichthyes
- Euthynnus pelamys (Linné)
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Merluccius gayi peruanus Gingsburg, 1954
 Location: mesenteries
 Distribution: Callao, Peru
 DURAN, L.E. AND OLIVA, M., 1980
- Muranesox cinereus (Forsk.)
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Platycephalus indicus (Linné)
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Platycephalus punctatus Cuvier and Valenciennes
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Pomatomus saltatrix (L.)
 Location: coelom, attached to the surface of the visceral peritoneum
 Distribution: Rio de Janeiro, Brazil
 CARVAJAL, J. AND REGO, A.A., 1985
- Sciaena albiflora (Richardson)
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Scomber japonicus Houttuyn
 Distribution: Sea of Japan, inland, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Scomberoides guttatum Bloch and Schneider
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Seriola purpurascens Temmick and Schlegel
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Trichiurus japonicus (Temmick and Schlegel)
 Distribution: inland Sea of Japan, Pacific Coast of Japan, East China Sea
 YAMAGUTI, S., 1952
- Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (plerocercoid)
 Host: Vertebrata Osteichthyes
- Cerberus rhynchops
 Location: body cavity
 Distribution: Palawan, Philippines
 JENSEN, L.A., SCHMIDT, G.D. AND KUNTZ, K.E., 1983
- Megalaspis cordyla (L.)
 Distribution: Indian Ocean
 REIMER, L.W., 1980
- Secutor ruconius Buchanan-Hamilton
 Distribution: Indian Ocean
 REIMER, L.W., 1980
- Selar kalla (Cuvier and Valenciennes)

Distribution: Indian Ocean

REIMER, L.W., 1980

Synodus lucioceps

Location: mesentery

JENSEN, L.A., MOSER, M. AND HECKMANN, R.A., 1979

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (plerocercus)

Host: Vertebrata Osteichthyes

Alopiostes afer

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Caranx cryos (Mitchill)

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Caranx rhonchus Saint-Hilaire, 1809

Location: peritoneum, body cavity

Distribution: Mauritania

DOLLFUS, R.P., 1942

Caranx ruber

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Centropomus undecimalis Lacépède

Location: peritoneum

Distribution: Ilha Marajo, Brazil

DOLLFUS, R.P., 1942

Cephalopholis fulvus

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Epinephelus adscensionis

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Epinephelus aeneus (Et. Geoff. St-Hil)

Location: peritoneum

Distribution: Mauritania, depth 95-100 m

DOLLFUS, R.P., 1942

Epinephelus guttatus

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Epinephelus striatus (Bloch)

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Euthynnus alleteratus (Rafinesque, 1810)

Location: peritoneal cysts

Distribution: Atlantic

BUSSIÉRAS, J. AND BAUDIN-LAURENCIN, F., 1973

Euthynnus sp. (Cuvier and Valenciennes)

Location: viscera

Distribution: Miami

WARD, H.L., 1954
Lutjanus griseus (L.)
 Location: body cavity, mesentery, gut, viscera,
 liver, gonad
 Distribution: Bermuda
 REES, G., 1969

Lutjanus guineensis Bleeker
 Location: peritoneum
 Distribution: Guinea Coast, 55-60 m deep
 DOLLFUS, R.P., 1942

Morone labrax
 Location: peritoneum
 Distribution: "SS Vanneau", Stou CXXI
 DOLLFUS, R.P., 1942

Mullus barbatus L.
 Location: abdominal cavity
 Distribution: Concarneau, Finistère, Marseille, Coast
 of
 DOLLFUS, R.P., 1942

Mycteroperca bonaci (Poey)
 Location: body cavity, mesentery, gut, viscera,
 liver, gonad
 Distribution: Bermuda
 REES, G., 1969

Mycteroperca falcata
 Location: body cavity, mesentery, gut, viscera,
 liver, gonad
 Distribution: Bermuda
 REES, G., 1969

Mycteroperca tigris
 Location: body cavity, mesentery, gut, viscera,
 liver, gonad
 Distribution: Bermuda
 REES, G., 1969

Mycteroperca venenosa (L.)
 Location: body cavity, mesentery, gut, viscera,
 liver, gonad
 Distribution: Bermuda
 REES, G., 1969

Ocyurus chrysurus Bloch
 Location: body cavity, mesentery, gut, viscera,
 liver, gonad
 Distribution: Bermuda
 REES, G., 1969

Otolithus senegalensis Valenciennes
 Location: body cavity
 Distribution: Mauritania
 DOLLFUS, R.P., 1942

Palameton
 Location: peritoneum
 Distribution: Mauritania
 DOLLFUS, R.P., 1942

Platycephalus bassensis
 Location: mesenteries, encysted among
 Distribution: Hobart, Tasmania
 PRUDHOM, S., 1969

Rachycentron canadum (L.)
 Location: peritoneum, body cavity
 Distribution: Dakar, Senegal
 DOLLFUS, R.P., 1942

Sarda sarda (Bloch)
 Location: peritoneum

Distribution: Fedhala, Morocco

DOLLFUS, R.P., 1942

Sciaena aquila (Lacépède)

Location: peritoneum

Distribution: Rabat, Morocco, Mauritania

DOLLFUS, R.P., 1942

Temnodon saltator (L.)

Location: peritoneum

Distribution: Casablanca, Morocco

DOLLFUS, R.P., 1942

Location: visceral surfaces

Distribution: Mauritania

DOLLFUS, R.P., 1942

Thunnus albacores (Bonnaterre, 1788)

Location: peritoneal cysts

Distribution: Atlantic

BUSSIÉRAS, J. AND BAUDIN-LAURENCIN, F., 1973

Trachinotus goodes

Location: body cavity, mesentery, gut, viscera,
liver, gonad

Distribution: Bermuda

REES, G., 1969

Trigla lucerna L.

Location: on the pyloric caeca

Distribution: Mauritania

DOLLFUS, R.P., 1942

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (post-larva)

Host: Vertebrata Osteichthyes

Thunnus albacares

Location: viscera

Distribution: Gulf of Guinea

BAUDIN-LAURENCIN, F., 1971

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 syn.

Tentacularia pseudodera Shuler, 1938

REMARKS: Dollfus (1942) and Subhadrappa (1955) considered

Tentacularia pseudodera to be a synonym of Callitetrarhynchus gracilis.

Host: Vertebrata Selachii

Hypoprion brevirostris Poey

Location: spiral valve

Distribution: Tortugas, Florida

SHULER, R.H., 1938

Callitetrarhynchus lepidus (Chandler, 1935) Chandler 1942 (larva)

REMARKS: Chandler (1942) reallocated Tentacularia lepidus Chandler, 1935 to the genus Callitetrarhynchus.

Host: Vertebrata Osteichthyes

Galeichthys felis

Location: mesenteries, attached to

Distribution: Galveston Bay, Texas

CHANDLER, A.C., 1935a

Callitetrarhynchus lepidus (Chandler, 1935) Chandler, 1942 (larva) syn.

Tentacularia lepida Chandler, 1935

REMARKS: Chandler (1942) reallocated Tentacularia lepida Chandler, 1935 to the genus Callitetrarhynchus.

Host: Vertebrata Osteichthyes
Bagre marina
Location: mesenteries, attached to
Distribution: Galveston Bay, Texas
CHANDLER, A.C., 1935a

Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (adult)

Host: Vertebrata Selachii
Scoliodon walbeemi
Location: spiral valve
Distribution: Bungo Channel, Japan
NAKAJIMA, K. AND EGUSA, S., 1972a
Sphyrna zygaena (L.)
Location: spiral valve
Distribution: Bungo Channel, Japan
NAKAJIMA, K. AND EGUSA, S., 1972a
Iriakis scyllia Müller and Henle
Location: spiral valve
Distribution: Japan
NAKAJIMA, K. AND EGUSA, S., 1972d
NAKAJIMA, K. AND EGUSA, S., 1973

Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (plerocercus)

Host: Vertebrata Selachii
Iriakis scyllia Müller and Henle
Distribution: Japan
NAKAJIMA, K. AND EGUSA, S., 1972b
Osteichthyes
Seriola quinqueradiata Temmick and Schlegel
Location: body cavity
Distribution: Japan
NAKAJIMA, K. AND EGUSA, S., 1972b
NAKAJIMA, K. AND EGUSA, S., 1972c
NAKAJIMA, K. AND EGUSA, S., 1973
Distribution: Suge, Japan
NAKAJIMA, K. AND EGUSA, S., 1969c

Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (plerocercus) syn.

Callitetrarhynchus sp. Nakajima and Egusa, 1968

REMARKS: Callitetrarhynchus sp. referred to by Nakajima and Egusa, (1968) (1969a), (1969b), (1969c), (1971a), (1971b), (1972a), (1972b), (1972c), (1972d), (1972e), (1972f) was named C. nipponica by Nakajima and Egusa in 1973.

Host: Vertebrata Osteichthyes
Seriola quinqueradiata Temmick and Schlegel
Location: abdominal cavity
Distribution: Shikoku, Japan
NAKAJIMA, K. AND EGUSA, S., 1968

- Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (plerocercus, adult)
 Host: Vertebrata Selachii
Iriakis scyllia Müller and Henle
 Location: spiral valve
 Distribution: Japan
 NAKAJIMA, K. AND EGUSA, S., 1972c
- Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (proceroid)
 Host: Vertebrata Osteichthyes
Engraulis japonica (Houttuyn)
 Location: body cavity
 Distribution: Bungo Channel, Hyuga Sea, Japan
 NAKAJIMA, K. AND EGUSA, S., 1971a
 Distribution: Bungo Channel, Sea of Suo, Iyo harbour, Japan
 NAKAJIMA, K. AND EGUSA, S., 1969a
 Distribution: Japan
 NAKAJIMA, K. AND EGUSA, S., 1972b
 Distribution: Japanese coast
 NAKAJIMA, K. AND EGUSA, S., 1971b
 Location: body cavity, liver
 Distribution: Bungo Channel, Sea of Suo, Japan
 NAKAJIMA, K. AND EGUSA, S., 1969b
- Callitetrarhynchus sp. (larva)
 Host: Vertebrata Osteichthyes
Clevelandia ios (Jordan and Gilbert)
 Distribution: Mission Bay, San Diego, California
 BROOKS, D.R. AND BROTHERS, E.B., 1974
Illyonus gilberti (Eigenmann and Eigenmann)
 Distribution: Mission Bay, San Diego, California
 BROOKS, D.R. AND BROTHERS, E.B., 1974
Quietula y-cauda (Jenkins and Evermann)
 Distribution: Mission Bay, San Diego, California
 BROOKS, D.R. AND BROTHERS, E.B., 1974
- Callitetrarhynchus sp. Nakajima and Egusa, 1968 SEE: Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (plerocercus)
- Callitetrarhynchus sp. (plerocercoid)
 Host: Vertebrata Osteichthyes
Epinephelus morio Valenciennes, 1824
 Location: muscles, digestive tract, liver, gonads
 Distribution: Bance de Campeche
 FEJER, E., VALDES, R. AND BARRERA, M., 1979
- Callitetrarhynchus speciosus (Linton, 1897) Carvajal and Rego, 1985 (larva)
 Host: Vertebrata Osteichthyes
Pomatomus saltatrix (L.)
 Location: coelom, attached to the surface of the visceral peritoneum
 Distribution: Rio de Janeiro, Brazil
 CARVAJAL, J. AND REGO, A.A., 1985

Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (adult)

Host: Vertebrata Selachii

Carcharhinus leucas (Müller and Henle, 1841)

BUTEAU, JR., G.H., SIMMONS, J.E., FAIRBAIRN, D., 1969

Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (adult)

REMARKS: Dollfus (1969b) considered that although the tentacles of his specimens corresponded with descriptions of D. giganteus, the strobile corresponded to D. varioucinatus and D. talismani.

Host: Vertebrata Selachii

Carcharhinus leucas (Müller and Henle, 1841) syn.

Prionodon platydon (Poey, 1861) syn. Carcharhinus commersoni Blainville, 1816

Distribution: Florida, Sarasota

DOLLFUS, R.P., 1969b

Negaprion brevirostris (Poey, 1868) syn. Hypoprion brevirostris Poey

Distribution: Florida, Sarasota

DOLLFUS, R.P., 1969b

Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (immature adult)

Host: Vertebrata Selachii

Carcharhinus amblyrhynchus Bleeker

Location: spiral valve

Distribution: Hawaii

CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

Carcharhinus limbatus (Valenciennes)

Location: spiral valve

Distribution: Hawaii

CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

Dasyrhynchus ingens (Linton, 1921) (adult) SEE: Floriceps saccatus
Cuvier, 1817 (adult)

Dasyrhynchus insigne (Linton, 1924)

Host: Vertebrata Selachii

Carcharias platyodon (Poey)

CHANDLER, A.C., 1942

Dasyrhynchus pacificus Robinson, 1965 (larva)

Host: Vertebrata Osteichthyes

Sciaena antarctica Castelnau

Location: viscera, encysted amongst

Distribution: McKenzie Bay, New South Wales

ROBINSON, E.S., 1965

Dasyrhynchus pillersi (Southwell, 1929)

Host: Vertebrata Osteichthyes

Saurida undosquamis (Richardson)

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Dasyrhynchus pillerei (Southwell, 1929) (larva)

Host: Vertebrata Osteichthyes
Paettodes erumei (Bloch and Schneider)
Distribution: Coast of Mozambique
REIMER, L.W., 1984

Dasyrhynchus sp.

Host: Vertebrata Osteichthyes
Thyrsites atun (Euphrasen, 1791)
Distribution: New Zealand, Australia
KOROTAEVA, V.D., 1971

Dasyrhynchus sp. (adult)

Host: Vertebrata Selachii
Raja kincaidii
DOUGLAS, L.I., 1959

Dasyrhynchus sp. (encysted plerocercoid)

Host: Vertebrata Osteichthyes
Paralichthys dentatus
Location: stomach wall, intestine wall, pyloric caeca, mesenteries
Distribution: Raritan Bay, southern, New Jersey
MEYERS, T.R., 1978
Pomatomus saltatrix (L.)
Location: stomach wall, pyloric caeca, pericardium, mesenteries
Distribution: Raritan Bay, southern, New Jersey
MEYERS, T.R., 1978
Scophthalmus aquosus
Location: stomach wall
Distribution: Raritan Bay, southern, New Jersey
MEYERS, T.R., 1978

Dasyrhynchus sp. (plerocercus)

Host: Vertebrata Osteichthyes
Trachurus symmetricus (Ayres)
Location: throughout the fish, abdominal wall and muscle tissue, especially
DAILEY, M.D., 1969

Dasyrhynchus talismani Dollfus, 1935

Host: Vertebrata Selachii
Carcharhinus longimanus (Poey, 1861)
Distribution: Pacific Ocean, east
HEINZ, M.L. AND DAILEY, M.D., 1974

Dasyrhynchus talismani Dollfus, 1935 (adult)

Host: Vertebrata Selachii
Galeus glaucus Rondelet, 1554 syn. Carcharias
(Prionodon glaucus (L.) Möller and Henle)
Distribution: Dakar and Ile de Santiago, Cape Verde, Archipelago
DOLLFUS, R.P., 1942

Dasyrhynchus talismani Dollfus, 1935 (plerocercus)

Host: Vertebrata Osteichthyes

Thunnus albacores (Bonnaterre, 1788)

Location: circulatory system

Distribution: Atlantic

BUSSIÉRAS, J. AND BAUDIN-LAURENCIN, F., 1973

Location: liver, spleen, pyloric caeca

Distribution: Gulf of Guinea

BUSSIÉRAS, J. AND ALDRIN, J.F., 1965

Thunnus obesus (Lowe, 1839)

Location: circulatory system

Distribution: Atlantic

BUSSIÉRAS, J. AND BAUDIN-LAURENCIN, F., 1973

Location: liver, spleen, pyloric caeca

Distribution: Gulf of Guinea

BUSSIÉRAS, J. AND ALDRIN, J.F., 1965

Dasyrhynchus talismani Dollfus, 1935 (post-larva)

Host: Vertebrata Osteichthyes

Thunnus albacores

Location: branchial arteries, ducts in the
hepato-spleno-pyloric region

Distribution: Gulf of Guinea

BAUDIN-LAURENCIN, F., 1971

Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928

Host: Vertebrata Selachii

Carcharhinus leucas (Müller and Henle, 1841)

Location: spiral valve

Distribution: Nicaragua

WATSON, D.E. AND THORSON, T.B., 1976

Carcharias sp.

Location: spiral valve

Distribution: Madras Coast, India

SUBHAPRADHA, C.K., 1955

Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928 (plerocercoid)

Host: Vertebrata Osteichthyes

Xiphias gladius Linnaeus, 1758

Location: stomach

Distribution: Atlantic, north west

HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY,
P.C.F., 1983

Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928 (plerocercus)

Host: Vertebrata Osteichthyes

Caran sp.

Location: under the tegument in the gill chamber

Distribution: Cote d'Annam

DOLLFUS, R.P., 1942

Caranx armatus (Forsk.)

Location: under the tegument in the gill chamber

Distribution: Cote d'Annam

DOLLFUS, R.P., 1942

Euthynnus yaito Kishinouye

Location: under the tegument in the gill chamber

Distribution: Cote d'Annam

DOLLFUS, R.P., 1942

"Loche saumonée"

Location: intramuscular capsules

Distribution: New Caledonia

DOLLFUS, R.P., 1942

Polynemus quadrifiliis Cuvier

Location: gill chamber under the tegument

Distribution: Pointe Padron, Belgian Congo

DOLLFUS, R.P., 1942

Seriola dumerili Risso, 1810

Location: body cavity

Distribution: Miami

WARD, H.L., 1954

Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928 syn. Ientacularia insignis (Linton, 1819) Shuler, 1938

Host: Vertebrata Selachii

Hypoprion brevirostris Poey

Distribution: Tortugas, Florida

SHULER, R.H., 1938

SHULER, R.H., 1938

Floriceps caballeroi Cruz-Reyes, 1977 (adult)

Host: Vertebrata Selachii

Negaprion brevirostris (Poey, 1868)

Location: spiral valve

Distribution: Laguna de Agiabampo, Mexico

CRUZ-REYES, A., 1977

Floriceps oxneri Guiart, 1938 (larva)

Host: Vertebrata Osteichthyes

Coris julis

Location: peritoneal cavity

Distribution: Monaco

GUIART, J., 1938

Floriceps saccatus Cuvier, 1817

Host: Vertebrata Selachii

Carcharhinus limbatus (Valenciennes)

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Carcharias sp.

Location: spiral valve

Distribution: Madras Coast, India

SUBHAPRADHA, C.K., 1955

Notorhynchus maculatus Ayres, 1855

Distribution: Mexico

HEINZ, M.L. AND DAILEY, M.D., 1974

Floriceps saccatus Cuvier, 1817 (adult)

Host: Vertebrata Selachii

Negaprion brevirostris (Poey, 1868)

Distribution: Mexico, north west coast

CRUZ-REYES, A., 1974b

Floriceps saccatus Cuvier, 1817 (adult) syn. Dasyrhynchus ingens (Linton, 1921) (adult)

REMARKS: Dollfus (1942) recognised Dasyrhynchus ingens (Linton, 1921) as a synonym of Floriceps saccatus Cuvier, 1817.

Host: Vertebrata Selachii

Carcharhinus japonicus

Location: spiral intestine

Distribution: Japan

IWATA, S., 1939

Floriceps saccatus Cuvier, 1817 (adult) syn. Dasyrhynchus ingens (Linton, 1921) (adult)

Host: Vertebrata Selachii
Prionace glauca (Linnaeus, 1758)
Location: spiral intestine
Distribution: Japan
IWATA, S., 1939

Floriceps saccatus Cuvier, 1817 (larva)

Host: Vertebrata Osteichthyes
Glyptocephalus stelleri (Schmidt)
Distribution: Peter the Great Bay
TSIMBALYUK, E.M., 1978b
Distribution: Zaliv Petra Velikogo, Japan, Sea of
TSIMBALYUK, E.M., 1978a

Floriceps saccatus Cuvier, 1817 (larva)

REMARKS: Guiart (1935) considered that Floriceps saccatus Cuvier, 1817 was a rare, minute trypanorhynch found under the peritoneum of Mola mola and not the giant trypanorhynch commonly found in the liver of the same host.

Host: Vertebrata Osteichthyes
Mola mola (L.)
Location: under the peritoneum
Distribution: Nice
GUIART, J., 1935c

Floriceps saccatus Cuvier, 1817 (larva)

Host: Vertebrata Osteichthyes
Spheroides borealis
Distribution: Peter the Great Bay
TSIMBALYUK, E.M., 1978b
Trichiurus japonicus
Distribution: Peter the Great Bay
TSIMBALYUK, E.M., 1978b

Floriceps saccatus Cuvier, 1817 (plerocercoid)

Host: Vertebrata Osteichthyes
Mola mola (L.)
Location: body wall, inside
Distribution: Ireland, Co. Donegal
HILLIS, J.P. AND O'RIORDAN, C.E., 1961

Floriceps saccatus Cuvier, 1817 (plerocercus)

Host: Vertebrata Osteichthyes
Coryphaenoides hippurus
Location: visceral cavity, wall of
Distribution: Concarneau
DOLLFUS, R.P., 1946b
Diodon holacanthus Linnaeus, 1758
Location: body cavity
Distribution: Guadeloupe
DOLLFUS, R.P., 1975
Mola mola (L.)
Location: liver
DOLLFUS, R.P., 1942
Location: peritoneum
Distribution: Mediterranean
DOLLFUS, R.P., 1969a
Mola mola (L.) syn. Orthogoriscus mola (L.)
Location: encysted in liver, mesentery, stomach wall,

surface of the intestine, musculature
DOLLFUS, R.P., 1946a
Sercola mazatlana Steindachner, 1876
Location: musculature
Distribution: Antofagaster, Chile
SOTO, J. AND CARVAJAL, J., 1979

Tentacularia insignis (Linton, 1819) Shuler, 1938 SEE: Dasyrhynchus
variouncinatus (Pintner, 1913) Pintner, 1928

Tentacularia lepida Chandler, 1935 SEE: Callitetrarhynchus lepida
(Chandler, 1935) Chandler, 1942 (larva)

Tentacularia macfieii Southwell, 1929 SEE: Callitetrarhynchus gracilis
(Rudolphi, 1819) Pintner, 1931 (adult)

Tentacularia pseudodera Shuler, 1938 SEE: Callitetrarhynchus gracilis
(Rudolphi, 1819) Pintner, 1931

Christianella minuta (Van Beneden, 1849)

Host: Vertebrata Osteichthyes
Trachurus trachurus trachurus L.
 Distribution: Atlantic
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a

Christianella minuta (Van Beneden, 1849) (adult)

Host: Vertebrata Selachii
Dasyatis pastinaca L.
 Location: spiral valve
 Distribution: Black Sea
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Raja clavata L.
 Location: spiral valve
 Distribution: Black Sea
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Rhinobatus halavi (Forsk)
 Location: spiral valve
 Distribution: Madras Coast, India
 SUBHAPRADHA, C.K., 1955
Squalus acanthias (L.)
 Location: spiral valve
 Distribution: Black Sea
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Squatina squatina (L.)
 Location: spiral valve
 Distribution: Mauritania, Coasts of
 DOLLFUS, R.P., 1942
Trygon imbricata (Bloch and Schneider)
 Location: spiral valve
 Distribution: Madras Coast, India
 SUBHAPRADHA, C.K., 1955

Christianella minuta (Van Beneden, 1849) (adult) syn. Tetrarhynchus minutus
 Van Beneden, 1849 (in Nybelin, 1940) syn. Wageneria porrecta Lühe, 1902
 REMARKS: Nybelin (1940) and Dollfus (1942) both suggested that
Tetrarhynchus minutus and Wageneria porrecta were synonyms of
Christianella minuta.

Host: Vertebrata Selachii
Squatina squatina (L.) syn. Rhina squatina (L.)
 Distribution: Roscoff, France
 NYBELIN, O., 1940

Christianella minuta (Van Beneden, 1849) larva

Host: Vertebrata Osteichthyes
Trachurus trachurus trachurus L.
 Distribution: North Sea, Atlantic, north
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b

Christianella minuta (Van Beneden, 1849) (larva)

Host: Vertebrata Osteichthyes
Mullus barbatus ponticus Essipov
 Distribution: Black Sea
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Ophidium rochei Möller
 Distribution: Black Sea
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Platichthys flesus luscus (Pallas)
 Distribution: Black Sea
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978

Scorpaena porcus L.

Distribution: Black Sea

KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978

Solea laecharis nasutan (Pallas)

Distribution: Black Sea

KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978

Christianella minuta (Van Beneden, 1849) (plerocercus) syn. Lacistorhynchus
sp. in Pintner, 1893 syn. Grillotia sp. in Dollfus, 1942

REMARKS: Nybelin (1948) suggested that the plerocercus described as Lacistorhynchus sp. by Pinter (1893) was really Christianella minuta (Van Beneden, 1849). Dollfus 1942 remarked on its similarity to Grillotia spp.

Host: Vertebrata Osteichthyes

Smaris sp.

Distribution: Naples, Nice, Trieste

NYBELIN, O., 1948

Christianella sp. (adult)

Host: Vertebrata Selachii

Urobatis halleri (Cooper)

Distribution: California, southern

YOUNG, R.T., 1954a

Christianella sp. (larva)

Host: Invertebrata Gastropoda

Bullia melanoides (Deshayes)

Distribution: Madras, India

REIMER, L.W., 1975a

Thais rudolphi (Lamarck)

Distribution: Madras, India

REIMER, L.W., 1975a

Host: Vertebrata Osteichthyes

Cubiceps natalensis Gilchrist and Von Bonde

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Christianella trygon-brucco of Euzet, 1956 SEE: Parachristianella
trygonis Dollfus, 1946 (adult)

Christianella trygonis-bucconis (Wagener, 1854) adult

Host: Vertebrata Selachii

Urobatis halleri (Cooper) (?)

Distribution: California, southern

YOUNG, R.T., 1954a

Christianella trygonis-bucconis (Wagener, 1854) (larva)

Host: Invertebrata Crustacea

Callinassa sp.

Distribution: California

YOUNG, R.T., 1954a

Hemigrapsus

Distribution: California, southern

YOUNG, R.T., 1954a

Pachygrapsus sp.

Distribution: California, southern

YOUNG, R.T., 1954a

Eutetrarhynchid sp.

Host: Vertebrata Selachii
Carcharhinus leucas (Müller and Henle, 1841)
Location: spiral valve
Distribution: Texas
HENSON, R.N., 1975

Eutetrarhynchidae sp. (larva)

Host: Invertebrata Crustacea
Euphausia similis Sars
Distribution: Saruga Bay, Japan
SHIMAZU, T., 1975a

Eutetrarhynchus araya (Woodland, 1934) Rego and Dias, 1976

Host: Vertebrata Selachii
Paratrygon motoro (Müller and Henle)
Distribution: Salobra, Mato Grosso
REGO, A.A., 1979

Eutetrarhynchus araya (Woodland, 1934) Rego and Dias, 1976 (adult) syn.

Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958

REMARKS: The hosts Potamotrygon hystrix and Preticulatys were tentatively identified pending a taxonomic revision of the potamotrygonids.

Host: Vertebrata Selachii
Potamotrygon falkneri
Location: middle third of spiral valve
Distribution: Venezuela
BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959

Host: Vertebrata Selachii
Paratrygon hystrix (Müller and Henle)
Distribution: Rio Amazonas, South America
REGO, A.A., 1979

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult)

REMARKS: Rego and Dias (1976) concluded that Eutetrarhynchus baeri described by López-Neyra and Diaz-Ungria (1958) was a synonym of Eutetrarhynchus araya.

Host: Vertebrata Selachii
Potamotrygon hystrix (Müller and Troschel)
Location: spiral valve
Distribution: Orinoco River Delta, Venezuela
LÓPEZ-NEYRA, C.R. AND DIAZ-UNGRÍA, C., 1958

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult) syn.

Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958

REMARKS: Rego and Dias (1976) redescribed Eutetrarhynchus araya and considered that E. baeri is a synonym.

Host: Vertebrata Selachii
Paratrygon motoro (Müller and Henle)
Location: spiral valve
Distribution: Salobra, Mato Grosso
REGO, A.A. AND DIAS, A.P.L., 1976

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult) syn.

Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958

Host: Vertebrata

Selachii

Potamotrygon hystrix (Müller and Troschel)

Location: middle third of spiral valve

Distribution: Venezuela

BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981

Potamotrygon motoro (Müller and Henle)

Location: middle third of spiral valve

Distribution: Venezuela

BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981

Potamotrygon reticulatus (Gunther)

Location: middle third of spiral valve

Distribution: Venezuela

BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (post-larva)

Host: Invertebrata Crustacea

Dilocarcinus (Dilocarcinus) pagei Stimson, 1861

Distribution: Mato Grosso

REGO, A.A., 1982

Valdivia serrata Bott, 1969

Distribution: Mato Grosso

REGO, A.A., 1982

Eutetrarhynchus australis Prudhoe, 1969 (adult)

Host: Vertebrata

Selachii

Mustelus antarcticus Günther

Location: spiral valve

Distribution: Hobart, Tasmania

PRUDHOE, S., 1969

Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958 SEE:

Eutetrarhynchus araya (Woodland, 1934) Rego and Dias, 1976 (adult)

Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958 SEE:

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult)

Eutetrarhynchus carayoni Dollfus, 1942 (plerocercus)

Host: Vertebrata Osteichthyes

Clibanarius misanthropus Risso

Location: bile duct

Distribution: Arachon, Gironde, France

DOLLFUS, R.P., 1942

Eutetrarhynchus carayoni Dollfus, 1942 (plerocercus-tentative identification)

Host: Invertebrata Crustacea

Upogebia gracilipes De Man 1927

Location: liver

Distribution: Castigoise, Algiers

DOLLFUS, R.P., 1946b

Eutetrarhynchus caribbensis Kovacs and Schmidt, 1980 (adult)

Host: Vertebrata Selachii

Urolophus jamaicensis (Cuvier, 1817)

Location: spiral valve

Distribution: Discovery Bay, Jamaica

KOVACS, K.J. AND SCHMIDT, G.D., 1980

Eutetrarhynchus geraschmidti Dollfus, 1974 (pre-adult)

Host: Vertebrata Selachii

Urolophus testaceus (Möller and Henle)

Location: spiral valve

Distribution: Australia, South

DOLLFUS, R.P., 1974a

Eutetrarhynchus glaber Dollfus, 1969 (adult)

Host: Vertebrata Selachii

Myliobatis aquila (Linnaeus, 1758)

Location: spiral valve

Distribution: Mediterranean, Sete

DOLLFUS, R.P., 1969a

Eutetrarhynchus leucomelanus (Shiple and Hornell, 1906) (larva)

Host: Invertebrata Crustacea

Metapenaeus affini (Milne Edwards)

Location: digestive gland

Distribution: Bay of Bengal

CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981

Metapenaeus brevisornis (Milne Edwards)

Location: digestive gland

Distribution: Bay of Bengal

CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981

Metapenaeus monoceros (Fabricius, 1788)

Location: digestive gland

Distribution: Bay of Bengal

CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981

Parapenaeus stylifera Alcock

Location: digestive gland

Distribution: Bay of Bengal

CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981

Penaeus indicus (Milne Edwards)

Location: digestive gland

Distribution: Bay of Bengal

CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981

Penaeus semisulcatus (de Haan)

Location: digestive gland

Distribution: Bay of Bengal

CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981

Eutetrarhynchus lineatus (Linton, 1909) syn. Tentacularia lineata (Linton, 1909) (adult)

REMARKS: Dollfus (1942) examined specimens mentioned by Shuler (1938) as Tentacularia lineata (Linton) and transferred them into the genus Eutetrarhynchus.

Host: Vertebrata Selachii

Ginglymostoma cirratum (Bonnaterre)

Location: spiral valve

Distribution: Dry Tortugas, Florida

DOLLFUS, R.P., 1942

Eutetrarhynchus lineatus (Linton, 1909) syn. Tentacularia lineata (Linton, 1909) Shuler, 1938

REMARKS: Dollfus, 1942 considered that Rhynchobothrium lineatum Linton, 1909 was an eutetrarhynchid.

Host: Vertebrata Selachii

Ginglymostoma cirratum

Distribution: Tortugas, Florida

SHULER, R.H., 1938

Eutetrarhynchus litocephalus Heinz and Dailey, 1974 (adult)

Host: Vertebrata Selachii

Mustelus californicus

Location: spiral valve

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Triakis semifasciata Girard, 1854

Distribution: Mexico

HEINZ, M.L. AND DAILEY, M.D., 1974

Eutetrarhynchus macrotrachelus Heinz and Dailey, 1974 (adult)

Host: Vertebrata Selachii

Mustelus californicus

Location: spiral valve

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Eutetrarhynchus ruficollis (Eysenhardt, 1829) (adult)

Host: Vertebrata Selachii

Mustelus canis (Mitchell, 1815)

Distribution: Mediterranean

DOLLFUS, R.P., 1969a

Mustelus mustelus (Linnaeus, 1758)

Distribution: Mediterranean

DOLLFUS, R.P., 1969a

Eutetrarhynchus ruficollis (Eysenhardt, 1829) (larva)

Host: Invertebrata Crustacea

Macropipus depurator (L.)

Location: body cavity

Distribution: Sète, France

VIVARES, C.P., 1971

Eutetrarhynchus ruficollis (Eysenhardt, 1829) (plerocercoid)

Host: Invertebrata Crustacea

Penaeus trisulcatus Leach

Location: hepatopancreas

HELDY, J.H., 1949

Eutetrarhynchus schmidti Heinz and Dailey, 1974 (adult)

Host: Vertebrata Selachii

Rhinobatos productus (Ayres)

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Urolophus halleri

Location: spiral valve

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Eutetrarhynchus sp. (adult)

Host: Vertebrata Selachii

Dasyatis pastinaca L.

Location: spiral valve

Distribution: Bay of Bengal, northern
CHOUDHURY, A. AND ROY, A., 1982

Dasyatis uarnak

Location: spiral valve

Distribution: Bay of Bengal, northern
CHOUDHURY, A. AND ROY, A., 1982

Rhinobatus granulatus

Location: spiral valve

Distribution: Bay of Bengal, northern
CHOUDHURY, A. AND ROY, A., 1982

Eutetrarhynchus sp. of Sparks and Mackin (1957) SEE: Prochristianella
hispidus (Linton, 1890) Campbell and Carvajal, 1975 (larva)

Eutetrarhynchus sp. (plerocercoid)

Host: Invertebrata Gastropoda

Busycon spiratum pyruloides (Say)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Location: encysted in muscular folds of valve of
Leiblein

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Crepidula fornicata (Linné)

Location: encysted in muscular folds of valve of
Leiblein

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Crepidula sp.

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Fasciolaria liliun hunteria (Perry)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Location: encysted in muscular folds of valve of
Leiblein

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Fasciolaria tulipa (Linné)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Location: encysted in muscular folds of valve of
Leiblein

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Melongena corona (Gmelin)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Pleuroploca gigantea (Kiener)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Pleuroploca gigantea (Kiener)

Location: encysted in muscular folds of valve of
Leiblein

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Thais haemastoma canaliculata (Gray)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977
Location: encysted in muscular folds of valve of
Leiblein
Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Pelecypoda

Argopecten irradians concentricus (Say)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977
Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Atrina rigida (Lightfoot)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977
Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Atrina seminuda (Lamarck)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977
Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Dosinia discus (Reeve)

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Ensis spp.

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Eutetrarhynchus sp. (post-larva)

Host: Invertebrata Gastropoda
gastropod

Distribution: Gulf of Mexico
CAKE, E.W. JR., 1975

Pelecypoda

pelecypod

Distribution: Gulf of Mexico
CAKE, E.W. JR., 1975

Eutetrarhynchus spinifer Dollfus, 1969 (larva, adult)

Host: Vertebrata Selachii

Myliobatis aquila (Linnaeus, 1758)

Location: spiral valve
Distribution: Mediterranean, Sete
DOLLFUS, R.P., 1969a

Eutetrarhynchus thalassius Kovacs and Schmidt, 1980 (adult)

Host: Vertebrata Selachii

Urolophus jamaicensis (Cuvier, 1817)

Location: spiral valve
Distribution: Discovery Bay, Jamaica
KOVACS, K.J. AND SCHMIDT, G.D., 1980

Laciatorhynchus sp. in Pintner, 1893 syn. Grillotia sp. in Dollfus, 1942

SEE: Christianella minuta (Van Beneden, 1849) (plerocercus)

Mecistobothrium myliobati Heinz and Dailey, 1974 (adult)

Host: Vertebrata Selachii

Myliobatis californica

Location: spiral valve

Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Urolophus halleri

Location: spiral valve

Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Parachristianella dimegacantha Kruse, 1959

Host: Invertebrata Crustacea

Penaeus duorarum Burkenroad

Location: digestive gland with blastocyst protruding
through the wall of the digestive gland

Distribution: Alligator Harbour, Apalachicola
Harbour, Florida
KRUSE, D.N., 1959

Parachristianella dimegacantha (larva)

Host: Invertebrata Crustacea

Penaeus aztecus Ives

Distribution: Gulf of Mexico, north western coast
CORKERN, C.C., 1978

Parachristianella heteromegacanthus Feigenbaum, 1975 (plerocercoid)

Host: Invertebrata Crustacea

Penaeus brasiliensis Latreille

Distribution: Galveston Bay, Texas
COUCH, J.A., 1978

Parachristianella heteromegacanthus Feigenbaum, 1975 (plerocercus)

Host: Invertebrata Crustacea

Penaeus brasiliensis Latreille

Location: body, hepatopancreas

Distribution: Sinaloa, Mexico
FEIGENBAUM, D.L., 1975

Location: digestive gland

Distribution: Biscayne Bay, Florida
FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976

Penaeus duorarum Burkenroad

Location: digestive gland

Distribution: Biscayne Bay, Florida
FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976

Parachristianella monomegacantha Kruse, 1959

Host: Invertebrata Crustacea

Penaeus duorarum Burkenroad

Location: digestive gland with blastocyst protruding
through the wall of the digestive gland

Distribution: Gulf Coast, northern, Florida
KRUSE, D.N., 1959

Host: Vertebrata Selachii

Rhinobatos planiceps Garman, 1880

Location: spiral valve, stomach

Distribution: Antofagaster, Chile
DAILEY, M.D. AND CARVAJAL, J., 1976

Rhinobatos productus (Ayres)

Location: spiral valve

Distribution: California, southern

Parachristianella monomegacantha Kruse, 1959 (adult)

Host: Vertebrata Selachii

Dasyatis americana Hildebrand and Schroeder

Distribution: Chesapeake Bay, Virginia
CAMPBELL, R.A. AND CARVAJAL, J., 1975

Dasyatis lata (Garman)

Location: spiral valve

Distribution: Hawaii

CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

Rhinobatos productus (Ayres)

Location: spiral valve

Distribution: Seal Beach, California

MUDRY, D.R., DAILEY, M.D., 1971

Parachristianella monomegacantha Kruse, 1959 (plerocercus)

Host: Invertebrata Crustacea

Penaeus brasiliensis Latreille

Location: body, hepatopancreas

Distribution: Sinaloa, Mexico

FEIGENBAUM, D.L., 1975

Location: digestive gland

Distribution: Biscayne Bay, Florida

FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976

Penaeus duorarum Burkenroad

Location: digestive gland

Distribution: Biscayne Bay, Florida

FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976

Penaeus merguensis de Man

Distribution: Norman river, Queensland

OWENS, L., 1980

Location: hepatopancreas

Distribution: Norman River, Queensland, northern

OWENS, L., 1981

Parachristianella monomegacantha Kruse, 1959 (plerocercus) syn.

Prochristianella sp. of Villella, Iversen and Sindermann (1970)

REMARKS: Feigenbaum and Carnuccio (1976) identified the

Prochristianella sp. as Parachristianella monomegacantha.

Host: Invertebrata Crustacea

Penaeus duorarum Burkenroad

Distribution: Biscayne Bay, Florida

VILLELLA, J.B., IVERSEN, E.S. AND SINDERMANN, C.J.,
1970

Parachristianella monomegacantha Kruse, 1959 (procercoid)

Host: Invertebrata Crustacea

Tigriopus californicus

Distribution: California

MUDRY, D.R., DAILEY, M.D., 1971

Parachristianella monomegacantha (larva)

Host: Invertebrata Crustacea

Penaeus aztecus Ives

Distribution: Gulf of Mexico, north western coast

CORKERN, C.C., 1978

Parachristianella sp. (larva)

Host: Vertebrata Osteichthyes

Chascanopsetta lugubris Alcock

Distribution: Coast of Mozambique
REIMER, L.W., 1984

Parachristianella sp. (plerocercoid)

Host: Invertebrata Gastropoda

Busycon spiratum pyruloides (Say)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Cantharus cancellarius (Conrad)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Crepidula fornicata (Linné)

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Crepidula sp.

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Fasciolaria lilium hunteria (Perry)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Fasciolaria tulipa (Linné)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Polinices duplicatus (Say)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Pelecypoda

Anadara transversa (Say)

Location: encysted in intestine walls

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Argopecten irradians concentricus (Say)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Location: encysted in intestine walls

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Atrina rigida (Lightfoot)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Location: encysted in intestine walls

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Atrina seminuda (Lamarck)

Distribution: Gulf of Mexico, north eastern
CAKE, E.W. JR., 1977

Location: encysted in intestine walls

Distribution: Gulf of Mexico, northern
CAKE, E.W. JR., 1976

Chione cancellata (Linné)

Location: encysted in intestine walls
 Distribution: Gulf of Mexico, northern
 CAKE, E.W. JR., 1976

Chione cancellata (Linné) (sp.1)
 Distribution: Gulf of Mexico, north eastern
 CAKE, E.W. JR., 1977

Donax variabilis (Say)
 Distribution: Gulf of Mexico, north eastern
 CAKE, E.W. JR., 1977
 Location: encysted in intestine walls
 Distribution: Gulf of Mexico, northern
 CAKE, E.W. JR., 1976

Dosinia diacus (Reeve)
 Distribution: Gulf of Mexico, north eastern
 CAKE, E.W. JR., 1977

Macrocallista maculata (Linné)
 Distribution: Gulf of Mexico, north eastern
 CAKE, E.W. JR., 1977
 Location: encysted in intestine walls
 Distribution: Gulf of Mexico, northern
 CAKE, E.W. JR., 1976

Macrocallista nebulosa (Lightfoot)
 Distribution: Gulf of Mexico, north eastern
 CAKE, E.W. JR., 1977

Macrocallista nimbose (Lightfoot)
 Location: encysted in intestine walls
 Distribution: Gulf of Mexico, northern
 CAKE, E.W. JR., 1976

Noetia ponderosa (Say)
 Distribution: Gulf of Mexico, north eastern
 CAKE, E.W. JR., 1977
 Location: encysted in intestine walls
 Distribution: Gulf of Mexico, northern
 CAKE, E.W. JR., 1976

Raeta plicatella (Lamarck)
 Location: encysted in intestine walls
 Distribution: Gulf of Mexico, northern
 CAKE, E.W. JR., 1976

Spicula solidissima similis (Say)
 Distribution: Gulf of Mexico, north eastern
 CAKE, E.W. JR., 1977
 Location: encysted in intestine walls
 Distribution: Gulf of Mexico, northern
 CAKE, E.W. JR., 1976

Crustacea

Metapenaeus monoceros (Fabricius, 1788)
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984

Penaeus indicus Edwards, 1837
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984

Penaeus japonicus Bate, 1888
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984

Penaeus monodon Fabricius, 1798
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984

Parachristianella sp. (post-larva)

Host: Invertebrata Gastropoda

gastropod

Distribution: Gulf of Mexico

CAKE, E.W. JR., 1975

Pelecypoda

pelecypod

Distribution: Gulf of Mexico

CAKE, E.W. JR., 1975

Parachristianella trygonis Dollfus, 1946 (adult)

Host: Vertebrata Selachii

Trygon pastinaca (L.)

Location: spiral valve

Distribution: Concarneau

DOLLFUS, R.P., 1946b

Urobatis halleri (Cooper)

Distribution: California, southern

YOUNG, R.T., 1954a

Parachristianella trygonis Dollfus, 1946 (adult) syn. Christianella trygon-brucco of Euzet, 1956

REMARKS: Dollfus (1969a) examined Euzet's specimens and suggested that those described as Christianella trygon-brucco were Parachristianella trygonis.

Host: Vertebrata Selachii

Myliobatis aquila (Linnaeus, 1758)

Distribution: Sète

EUZET, L., 1956

Parachristianella trygonis Dollfus, 1946 (immature adult)

Host: Vertebrata Selachii

Myliobatis aquila (Linnaeus, 1758)

Distribution: Mediterranean, Sète

DOLLFUS, R.P., 1969a

Parachristianella trygonis Dollfus, 1946 (plerocercus)

Host: Invertebrata Crustacea

Upogebia stellata (Montagu, 1808)

Location: body cavity

Distribution: Arcaehon

DOLLFUS, R.P., 1946b

Prochristianella aetobatis Robinson, 1959

Host: Vertebrata Selachii

Aetobatis tenuicaudatus (Hector)

Location: spiral valve

Distribution: New Zealand

ROBINSON, E.S., 1959b

Prochristianella fragilis Heinz and Dailey, 1974 (adult)

Host: Vertebrata Selachii

Rhinobatos productus (Ayres)

Location: spiral valve

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Prochristianella heteracantha Dailey and Carvajal, 1976 (adult)

Host: Vertebrata Selachii
Rhinobatos planiceps Garman, 1880
Location: spiral valve, stomach
Distribution: Antofagaster, Chile
DAILEY, M.D. AND CARVAJAL, J., 1976

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975 (adult)

syn. Rhynchobothrium hispidum Linton, 1890 syn. Prochristianella penaei
Kruse, 1959
Host: Vertebrata Selachii
Dasyatis americana Hildebrand and Schroeder
Distribution: Chesapeake Bay, Virginia
CAMPBELL, R.A. AND CARVAJAL, J., 1975

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975 (larva)

syn. Eutetrarhynchus sp. of Sparks and Mackin (1957)
REMARKS: Sparks and Mackin (1957) misidentified the
trypanorhynch as Eutetrarhynchus sp. Sparks and Fontaine (1973)
re-identified it as Prochristianella penaei, a synonym of P.
hispida.

Host: Invertebrata Crustacea
Penaeus setiferus (L.)
Location: digestive gland
Distribution: Grand Isle, Louisiana
SPARKS, A.K. AND MACKIN, J.G., 1957

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975

(oncosphere, proceroid, plerocercus)
Host: Invertebrata Crustacea
Copepods (unspecified)
Location: haemocoel
Distribution: United States, south eastern
OVERSTREET, R.M., 1983

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975

(plerocercoid) syn. Prochristianella penaei Kruse, 1959
Host: Invertebrata Crustacea
Penaeus duorarum Burkenroad
Location: hepatopancreas
Distribution: Atlantic, north west
COUCH, J.A., 1978
Penaeus setiferus (L.)
Location: hepatopancreas
Distribution: Gulf of Mexico
SPARKS, A.K. AND FONTAINE, C.T., 1973

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975

(plerocercus)
Host: Invertebrata Crustacea
Penaeus brasiliensis Latreille
Location: digestive gland
Distribution: Biscayne Bay, Florida
FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Penaeus duorarum Burkenroad
Location: digestive gland
Distribution: Biscayne Bay, Florida
FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Penaeus setiferus L.
Location: hepatopancreas
Distribution: Louisiana, south eastern

RAGAN, J.C. AND ALDRICH, D.V., 1972
Distribution: United States, eastern
OVERSTREET, R.M., 1983

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975
(plerocercus) syn. Prochristianella penaei Kruse, 1959

Host: Invertebrata Crustacea

Penaeus aztecus Ives

Location: digestive gland

Distribution: Galveston Bay, Gulf of Mexico, Western
ALDRICH, D.V., 1965

Location: digestive gland, tissues surrounding the
digestive gland, stomach

Distribution: Gulf Coast, northern, Florida

KRUSE, D.N., 1959

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975
(plerocercus) syn. Prochristianella penaei Kruse, 1959

REMARKS: Campbell and Carvajal (1975) gave Prochristianella penaei Kruse, 1959 as a synonym of Prochristianella hispida.

Host: Invertebrata Crustacea

Penaeus aztecus Ives

Location: hepatopancreas

Distribution: Louisiana, south eastern

RAGAN, J.C. AND ALDRICH, D.V., 1972

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975
(plerocercus) syn. Prochristianella penaei Kruse, 1959

Host: Invertebrata Crustacea

Penaeus duorarum Burkenroad

Distribution: Biscayne Bay, Florida

VILLELLA, J.B., IVERSEN, E.S. AND SINDERMANN, C.J.,
1970

Location: digestive gland, tissues surrounding the
digestive gland, stomach

Distribution: Gulf Coast, northern, Florida

KRUSE, D.N., 1959

Penaeus setiferus L.

Location: digestive gland

Distribution: Galveston Bay, Gulf of Mexico, Western
ALDRICH, D.V., 1965

Penaeus setiferus (L.)

Location: digestive gland, tissues surrounding the
digestive gland, stomach

Distribution: Gulf Coast, northern, Florida

KRUSE, D.N., 1959

Prochristianella hispida (Linton, 1890) Campbell and Carvajal, 1975
(plerocercus) syn. Prochristianella sp. in Hutton et al. (1959)

Host: Invertebrata Crustacea

Penaeus aztecus Ives

Location: digestive gland, tissues surrounding the
digestive gland, stomach, various organs within
the cephalothoracic cavity

Distribution: Florida

HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B.,
INGLE, R.M. AND WOODBURN, K.D., 1959

Penaeus duorarum Burkenroad

Location: digestive gland, tissues surrounding
digestive gland, stomach, various organs within
the cephalothoracic cavity

Distribution: Florida

HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B.,
INGLE, R.M. AND WOODBURN, K.D., 1959
Penaeus setiferus L.
Location: digestive gland, tissues surrounding the
digestive gland, stomach, various organs within
the cephalothoracic cavity

Distribution: Florida

HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B.,
INGLE, R.M. AND WOODBURN, K.D., 1959

Trachypenaeus constrictus (Stimpson)

Location: digestive gland, tissues surrounding the
digestive gland, stomach, various organs within
the cephalothoracic cavity

Distribution: Florida

HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B.,
INGLE, R.M. AND WOODBURN, K.D., 1959

Prochristianella hispida (Linton, 1898) Campbell and Carvajal, 1975

(plerocercus) syn. Rhynchobothrium hispidum Linton, 1898 syn.

Prochristianella penaei Kruse, 1959

REMARKS: Campbell and Carvajal (1975) recognised

Prochristianella penaei, described by Kruse (1959) as a synonym
of Rhynchobothrium hispidum, described by Linton (1898) from
Dasyatis centroura at Woods Hole, Massachusetts.

Rhynchobothrium was listed as an invalid genus by Dollfus
(1942) and Yamaguti (1959), so R. hispidum became a species
inquirenda. It is now a synonym of Prochristianella hispida
(Linton, 1898) Campbell and Carvajal, 1975.

Host: Invertebrata Crustacea

Penaeus brasiliensis Latreille

Location: body, hepatopancreas

Distribution: Sinaloa, Mexico

FEIGENBAUM, D.L., 1975

Prochristianella hispida (Linton, 1898) Campbell and Carvajal, 1975 (pre
adult and adult) syn. Prochristianella penaei Kruse, 1959

Host: Vertebrata Selachii

Dasyatis sabina LeSueur

Location: spiral valve

Distribution: Galveston Bay, Gulf of Mexico, Western
ALDRICH, D.V., 1965

Prochristianella hispida (Linton, 1898) Campbell and Carvajal, 1975 syn.

Prochristianella penaei Kruse, 1959

Host: Vertebrata Selachii

Dasyatis sabina LeSueur

Location: spiral valve

Distribution: Texas

HENSON, R.N., 1975

Prochristianella micracantha Carvajal, Campbell and Cornford, 1976

(immature adult)

Host: Vertebrata Selachii

Dasyatis lata (Garman)

Location: spiral valve

Distribution: Hawaii

CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

- Prochristianella minima Heinz and Dailey, 1974 (adult)
 Host: Vertebrata Selachii
Platyrrhinoidis triseriata (Gordon and Gilbert)
 Distribution: California, southern
 HEINZ, M.L. AND DAILEY, M.D., 1974
Urolophus halleri
 Location: spiral valve
 Distribution: California, southern
 HEINZ, M.L. AND DAILEY, M.D., 1974
- Prochristianella musteli Carvajal, 1974 (adult)
 Host: Vertebrata Selachii
Mustelus mento Cope, 1877
 Distribution: San Antonio, Antofagaster
 CARVAJAL, J., 1974
- Prochristianella penaei Kruse, 1959 SEE: Prochristianella hispida
 (Linton, 1890) Campbell and Carvajal, 1975
- Prochristianella penaei Kruse, 1959 SEE: Prochristianella hispida
 (Linton, 1890) Campbell and Carvajal, 1975 (plerocercoid)
- Prochristianella penaei Kruse, 1959 SEE: Prochristianella hispida
 (Linton, 1890) Campbell and Carvajal, 1975 (plerocercus)
- Prochristianella penaei Kruse, 1959 SEE: Prochristianella hispida
 (Linton, 1890) Campbell and Carvajal, 1975 (pre adult and adult)
- Prochristianella penaei (larva)
 Host: Invertebrata Crustacea
Penaeus aztecus Ives
 Distribution: Gulf of Mexico, north western coast
 CORKERN, C.C., 1978
- Prochristianella sp. in Hutton et al. (1959) SEE: Prochristianella
hispida (Linton, 1890) Campbell and Carvajal, 1975 (plerocercus)
- Prochristianella sp. of Villella, Iversen and Sindermann (1970) SEE:
Parachristianella monomegacantha Kruse, 1959 (plerocercus)
- Prochristianella sp. (plerocercoid)
 Host: Invertebrata Crustacea
Metapenaeus monoceros (Fabricius, 1788)
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984
Penaeus indicus Edwards, 1837
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984
Penaeus japonicus Bate, 1888
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984
Penaeus monodon Fabricius, 1798
 Location: hepatopancreas
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984

Prochristianella tenuispine (Linton, 1898)

Host: Vertebrata Selachii

Dasyatis sabina LeSueur

Location: spiral valve

Distribution: Texas

HENSON, R.N., 1975

Prochristianella trygonicola Dollfus, 1946 (adult)

Host: Vertebrata Selachii

Trygon pastinaca (L.)

Location: spiral valve

Distribution: Concarneau

DOLLFUS, R.P., 1946b

Prochristianella trygonicola Dollfus, 1946 (plerocercus)

Host: Invertebrata Crustacea

Upogebia stellata (Montagu, 1808)

Location: body cavity

Distribution: Arcachon

DOLLFUS, R.P., 1946b

Rhynchobothrium hispidum Linton, 1898 syn. Prochristianella penaei Kruse, 1959 SEE: Prochristianella hispida (Linton, 1898) Campbell and Carvajal, 1975 (adult)

Rhynchobothrium hispidum Linton, 1898 syn. Prochristianella penaei Kruse, 1959 SEE: Prochristianella hispida (Linton, 1898) Campbell and Carvajal, 1975 (plerocercus)

Tentacularia lineata (Linton, 1909) (adult) SEE: Eutetrarhynchus lineatus (Linton, 1909)

Tentacularia lineata (Linton, 1909) Shuler, 1938 SEE: Eutetrarhynchus lineatus (Linton, 1909)

Tetrarhynchus minutus Van Beneden, 1849 (in Nybelin, 1948) syn. Wageneria porrecta Lühe, 1902 SEE: Christianella minuta (Van Beneden, 1849) (adult)

Aporhynchus norvegicum (Olssen, 1868) Nybelin, 1918

Host: Vertebrata Selachii
Spinax spinax (L.)
 Location: intestine
 Distribution: Porcupine Bank
 REES, G. AND LLEWELLYN, J., 1941

Aporhynchus norvegicum (Olssen, 1868) Nybelin, 1918 (adult)

Host: Vertebrata Selachii
Spinax spinax (L.)
 Location: intestine
 Distribution: Ireland, west
 REES, G., 1941b

Gilquinia anteropus (Hart, 1936) (adult) syn. Tetrarhynchus anteropus Hart, 1936 syn. Gilquinia squali (Fabricius, 1794) syn. Gilquinia tetraboathrium (Van Beneden, 1894) in Wardle (1933) syn. Gilquinia squali (Fabricius, 1793) in Wardle (1933)

REMARKS: Hart (1936) considered that specimens described by Wardle (1932) as Gilquinia tetraboathrium (Van Beneden, 1849) and by Wardle (1933) as Gilquinia squali (Fabricius, 1793) were synonyms of Tetrarhynchus anteropus Hart, 1936

REMARKS: Dollfus (1942) considered Tetrarhynchus anteropus to be a synonym of Gilquinia squali (Fabricius, 1794) but Yamaguti (1959) considered it a separate species Gilquinia anteropus.

Host: Vertebrata Selachii
Squalus suckleyi (Girard)
 Location: spiral valve
 Distribution: Puget Sound
 HART, J.F., 1936

Gilquinia sp. (larva)

Host: Vertebrata Osteichthyes
Micropogon opercularis (Desmarest)
 Location: intestine
 Distribution: Plate Estuary, Argentina
 SURIANO, D.M., 1966
Trachurus trachurus capensis Castelnau
 Distribution: Namibia, Coast of, Atlantic, South
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
 Location: body cavity
 KOVALEVA, A.A., 1970

Gilquinia sp. (larvae)

Host: Vertebrata Osteichthyes
Trachurus trachurus capensis Castelnau
 Location: body cavity
 Distribution: Africa, south west
 KOVALEVA, A.A., 1968

Gilquinia sp. (plerocercoid)

Host: Vertebrata Osteichthyes
Ceratoscopelus maderensis (Lowe, 1839)
 Distribution: Africa, north west
 REIMER, L.W., 1975b
Paralepis elongata (Brauer, 1906)
 Distribution: Africa, north west
 REIMER, L.W., 1975b

Gilquinia squali (Fabricius, 1794)

Host: Vertebrata Selachii

Squalus acanthias (L.)

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Distribution: Mediterranean

DOLLFUS, R.P., 1969a

Distribution: North Sea

WILLEMSE, J.J., 1968

Distribution: Pacific Ocean

PAPPAS, P.W., 1970

Location: intestine

Distribution: British Isles

WILLIAMS, H.H., 1960

Location: spiral valve

Distribution: Iceland

MANGER, B.R., 1972

Squalus ferdinandinus Molina

Distribution: Mediterranean

DOLLFUS, R.P., 1969a

Gilquinia squali (Fabricius, 1794) (adult)

Host: Vertebrata Selachii

Raja binoculata

Location: spiral valve anterior portion

Distribution: Puget Sound

RIGBY, D.W. AND MARX, R.A., 1962

Squalus acanthias (L.)

Location: intestine

Distribution: Newfoundland

THRELFALL, W., 1969

Distribution: North Sea

ORLOWSKA, K., 1979

Location: spiral valve

Distribution: Irish Sea

MCCULLOUGH, J.S. AND FAIRWEATHER, I., 1983

Squalus suckleyi

Location: spiral valve, anterior portion

Distribution: Puget Sound

RIGBY, D.W. AND MARX, R.A., 1962

Gilquinia squali (Fabricius, 1794) (immature adult)

Host: Vertebrata Selachii

Centroscyllium granulatus Günther, 1880

Distribution: Coquimbo

CARVAJAL, J., 1974

Gilquinia squali (Fabricius, 1794) (plerocercoid)

Host: Vertebrata Osteichthyes

Gadus merlangus L.

Location: eyes

Distribution: North Sea

MACKENZIE, K., 1965

Merlangius merlangus (L.)

Location: eyes

Distribution: North Sea

MACKENZIE, K., 1975

Gilquinia squali (Fabricius 1794) (plerocercus)

Host: Vertebrata Osteichthyes

Merlangius merlangus (L.)

Location: eye

Distribution: North Sea, northern

HISLOP, J.R.G. AND MACKENZIE, K., 1976

Tetrarhynchus anteropus Hart, 1936 syn. Gilquinia squali (Fabricius, 1794)

syn. Gilquinia tetrabothrium (Van Beneden, 1894) in Wardle (1933) syn.

Gilquinia squali (Fabricius, 1793) in Wardle (1933) SEE: Gilquinia

anteropus (Hart, 1936) (adult)

Gymnorhynchus cybiumi Chincholikar and Shinde, 1977 (larva)

Host: Vertebrata Osteichthyes
Cybium guttatum
 Location: intestinal wall, encysted in
 Distribution: India, Maharashtra, Ratnagiri
 CHINCHOLIKAR, L.N. AND SHINDE, G.B., 1977

Gymnorhynchus gigas (Cuvier, 1817)

Host: Vertebrata Selachii
Isurus oxyrinchus Rafinesque, 1810
 Distribution: California, southern
 HEINZ, M.L. AND DAILEY, M.D., 1974
 Osteichthyes
Brama raii (Bloch, 1791)
 Distribution: Madrid, Malaga
 LOPEZ-NEYRA, C.R., 1947
 Location: muscle
 Distribution: British Isles
 WILLIAMS, H.H., 1960

Gymnorhynchus gigas (Cuvier, 1817) (adult)

Host: Vertebrata Selachii
Carcarodon lamia
 Location: intestine
 LOPEZ-NEYRA, C.R., 1947
Cetrina vulpecula Cuv
 Location: intestine
 Distribution: Madrid, Malaga
 LOPEZ-NEYRA, C.R., 1947
Oxyrina pallanani Bonaterre
 Location: intestine
 Distribution: Madrid, Malaga
 LOPEZ-NEYRA, C.R., 1947

Gymnorhynchus gigas (Cuvier, 1817) (larva)

Host: Vertebrata Osteichthyes
Otolithus argenteus (C.V.)
 Location: body cavity
 Distribution: Karachi coast
 BILQEES, F.M. AND KAZMI, F.S., 1974

Gymnorhynchus gigas (Cuvier, 1817) (plerocercoid)

Host: Vertebrata Osteichthyes
Diodon hystrix L.
 Location: liver
 Distribution: Shankymughom, Trivandrum, India, Val
 yathurai, Trivandrum, India
 RADHAKRISHNAN, S. AND NAIR, N.B., 1980

Gymnorhynchus gigas (Cuvier, 1817) (plerocercus)

Host: Vertebrata Osteichthyes
Brama raii (Bloch, 1791)
 Location: muscle
 Distribution: Africa, north west coast
 SEYDA, M., 1976
Brama rayi Schneid.
 Location: musculature
 Distribution: Genoa
 BRIAN, A., 1952

Gymnorhynchus isuri Robinson, 1959 (adult)

Host: Vertebrata Selachii

Isurus glaucus (Müller and Henle)

Location: spiral valve

Distribution: Makara, New Zealand, Cook Strait, New Zealand

ROBINSON, E.S., 1959b

Gymnorhynchus malleus (larva)

Host: Invertebrata Crustacea

Penaeus indicus (Milne Edwards)

Location: digestive gland

Distribution: Waltair Coast, Bay of Bengal

CHANDRA, K.J. AND RAO, K.H., 1982

Gymnorhynchus (Molicola) horridus Goodsir, 1841

Host: Vertebrata Osteichthyes

Thyreites sp.

Location: musculature

Distribution: Amsterdam

JOYEUX, C. AND BAER, J.G., 1954

Gymnorhynchus (Molicola) horridus Goodsir, 1841 (adult)

REMARKS: Dollfus (1942) recognised Floriceps elongatus

(Rudolphi, 1819) as a synonym of Gymnorhynchus (Molicola)

horridus Goodsir, 1841.

Host: Vertebrata Selachii

Isuropsis glauca

Location: spiral intestine

Distribution: Japan

IWATA, S., 1939

Gymnorhynchus (Molicola) horridus Goodsir, 1841 (larva)

Host: Vertebrata Osteichthyes

Mola mola (L.)

Location: liver

Distribution: Japan

IWATA, S., 1939

Location: liver, intestine

Distribution: Marseille, France

GUIART, J., 1935a

Gymnorhynchus (Molicola) horridus Goodsir, 1841 (larva) syn. Tetrarhynchus elongatus Wagener, 1901

REMARKS: Dollfus 1942 considered Tetrarhynchus elongatus to be a synonym of Gymnorhynchus horridus.

Host: Vertebrata Osteichthyes

Mola mola (L.)

Location: liver

Distribution: Newfoundland

THRELFALL, W., 1967

Gymnorhynchus (Molicola) horridus Goodsir, 1841 (plerocercus)

Host: Vertebrata Osteichthyes

Mola mola (L.)

Location: liver

Distribution: Marché de Lorient, Morbihan

DOLLFUS, R.P., 1942

Distribution: Mediterranean

DOLLFUS, R.P., 1969a

Distribution: New Zealand

ROBINSON, E.S., 1959a
Mola mola (L.) syn. Orthagoriscus mola (L.)
Location: encysted in liver, musculature
DOLLFUS, R.P., 1946a

Gymnorhynchus (Molicola) horridus Goodsir, 1841 (plerocercus) syn.

Tetrarhynchus elongatus Wagener, 1901

REMARKS: Dollfus (1942) considered Tetrarhynchus elongatus to
be a synonym of Gymnorhynchus horridus.

Host: Vertebrata Osteichthyes
Mola mola (L.)
THRELFALL, W., 1967

Gymnorhynchus (Molicola) thyrsitae Robinson, 1959

Host: Vertebrata Osteichthyes
Thyrsites atun (Euphrasen, 1791)
Distribution: New Zealand, Australia
KOROTAEVA, V.D., 1971
Location: muscle
Distribution: Cape Campbell, New Zealand, Cook
Strait, New Zealand
ROBINSON, E.S., 1959b
Location: musculature
Distribution: New Zealand
VALOVA, V.N., 1976
Location: ventral muscle mass, dorsal muscle mass
Distribution: eastern Cook Strait, New Zealand
MEHL, J.A.P., 1970

Gymnorhynchus (Molicola) thyrsitae Robinson, 1959 (plerocercus)

Host: Vertebrata Osteichthyes
Thyrsites atun (Euphrasen, 1791)
Location: muscle mass
Distribution: sore of Island of Banks, New Zealand
KAGEI, N., KIHATA, M. AND ASANO, K., 1977

Gymnorhynchus sp.

Host: Vertebrata Osteichthyes
Coridodax pullax (Bloch and Schneider, 1801)
Location: spine, around, skull, behind
Distribution: New Zealand
RITCHIE, L.D., 1969
H. ilisha (full name missing)
Location: coelom
Distribution: Chandpur, East Pakistan
ALI, M.Y., 1968
P. pangasius (full name missing)
Location: coelom
Distribution: Chandpur, East Pakistan
ALI, M.Y., 1968
S. pama (full name missing)
Location: coelom
Distribution: Chandpur, East Pakistan
ALI, M.Y., 1968
S. silondia (full name missing)
Location: coelom
Distribution: Chandpur, East Pakistan
ALI, M.Y., 1968

Gymnorhynchus sp. (larva)

Host: Vertebrata Osteichthyes

Pama pama

Location: viscera on the coelom, encysted on, free in the viscera

RAHMAN, A.K.A., 1971

Molicola horridus (Goodair, 1841)

Host: Vertebrata Selachii

Isurus oxyrinchus Rafinesque, 1810

Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Osteichthyes

Masturus oxyuropterus (Bleeker)

Location: liver

Distribution: Gulf of Mannar, Pudumadam, Indian Coast
DEVARAJ, M., NAMMALWAR, P. AND THIAGARAJAN, T., 1976

[1981]

Molicola uncinatus (Linton, 1924)

Host: Vertebrata Selachii

Alopias vulpinus (Bonnaterre)

Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Molicola uncinatus (Linton, 1924) (adult) syn. Rhynchobothrium uncinatum

Linton, 1924 syn. Floriceps uncinatus (Linton, 1924) Yamaguti, 1952

REMARKS: Yamaguti (1952) placed Rhynchobothrium uncinatum in the genus Floriceps. He later (1959) transferred it to the genus Molicola.

Host: Vertebrata Selachii

Vulpecula marina Valmont

Location: spiral valve

Distribution: Taizi, Japan

YAMAGUTI, S., 1952

Myrmillorhynchus pearsoni (Southwell, 1929) Bilqees, 1980 (adult) syn.

Tetrarhynchus pearsoni Southwell, 1929

REMARKS: Bilqees described Myrmillorhynchus pearsoni n.g., n.comb., as the adult of Tetrarhynchus pearsoni Southwell, 1929. Yamaguti (1959) listed T. pearsoni amongst those species of incorrect or doubtful generic diagnosis.

Host: Vertebrata Selachii

Myrmillo manazo (Bik.)

Location: intestine

Distribution: Karachi coast

BILQEES, F.M., 1980

Myrmillorhynchus pearsoni (Southwell, 1929) Bilqees, 1980 (larva) syn.

Tetrarhynchus pearsoni Southwell, 1929

REMARKS: Bilqees (1980) i.e. described Tetrarhynchus pearsoni as Myrmillorhynchus pearsoni.

Host: Vertebrata Osteichthyes

Otolithus argenteus (C.V.)

Distribution: Karachi coast

BILQEES, F.M. AND KAZMI, F.S., 1974

Neogymnorhynchus platycephali Bilqees and Shah, 1982 (plerocercus)

REMARKS: The absence of large hooks at the base of the tentacles distinguishes the genus Neogymnorhynchus Bilqees and Shah, 1982 from other genera in the family Gymnorhynchidae.

Host: Vertebrata Osteichthyes

Platycephalus scaber (L.)

Location: encysted on the visceral mesenteries

Distribution: Karachi coast

BILQEES, F.M. AND SHAH, M., 1982

Rhynchobothrium uncinatum Linton, 1924 syn. Floriceps uncinatus (Linton, 1924) Yamaguti, 1952 SEE: Molicola uncinatus (Linton, 1924) (adult)

Tetrarhynchus elongatus Wagener, 1901 SEE: Gymnorhynchus (Molicola)
horridus Goodsir, 1841 (larva)

Tetrarhynchus elongatus Wagener, 1901 SEE: Gymnorhynchus (Molicola)
horridus Goodsir, 1841 (plerocercus)

Tetrarhynchus pearsoni Southwell, 1929 SEE: Myrmillorhynchus pearsoni
(Southwell, 1929) Bilqees, 1980 (adult)

Tetrarhynchus pearsoni Southwell, 1929 SEE: Myrmillorhynchus pearsoni
(Southwell, 1929) Bilqees, 1980 (larva)

Dibothriorhynchus attenuatus (Rudolphi, 1819) SEE: Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)

Dibothriorhynchus attenuatus (Rudolphi, 1819) SEE: Hepatoxylon trichiuri (Holten, 1802) (post-larva)

Dibothriorhynchus carchariae (Welch, 1876) SEE: Hepatoxylon trichiuri (Holten, 1802) (post-larva)

Dibothriorhynchus claviger (Leuckart, 1819) SEE: Hepatoxylon trichiuri (Holten, 1802) (post-larva)

Dibothriorhynchus grossum (Rudolphi, 1819) SEE: Hepatoxylon trichiuri (Holten, 1802) (larva)

Dibothriorhynchus grossum (Rudolphi, 1819) SEE: Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)

Dibothriorhynchus squali La Martinère, 1797 SEE: Hepatoxylon trichiuri (Holten, 1802) (adult)

Dibothriorhynchus squali (La Martinère, 1797) SEE: Hepatoxylon trichiuri (Holten, 1802) (larva)

Dibothriorhynchus stenocephala Guiart, 1935 SEE: Hepatoxylon trichiuri (Holten, 1802) (post-larva)

Hepatoxylon attenuatus (Rudolphi, 1819) (plerocercoid)

REMARKS: Dollfus (1942) considers Hepatoxylon attenuatus a synonym of H. trichiuri.

Host: Vertebrata Osteichthyes

Xiphias gladius Linnaeus, 1758

Location: stomach, mesenteries and serosa, intestine, mesenteres and serosa

Distribution: Atlantic, north west

HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY, P.C.F., 1983

Hepatoxylon grossum (Rudolphi) SEE: Hepatoxylon trichiuri (Holten, 1802) (post-larva)

Hepatoxylon megacephalum (Rudolphi, 1819) (adult)

Host: Vertebrata Selachii

Carcharodon carcharias (Linnaeus)

Location: spiral valve

Distribution: Tory Channel, New Zealand

ROBINSON, E.S., 1959a

Hepatoxylon megacephalum (Rudolphi, 1819) (post-larva)

Host: Vertebrata Selachii

Dalatius licha (Bonnaterre)

Location: body cavity

Distribution: Kaikoura Coast, New Zealand

ROBINSON, E.S., 1959a

Galaeorhinus australis Macleay

Location: body cavity

Distribution: Cook Strait, New Zealand

ROBINSON, E.S., 1959a

Notorhynchus pectorosus (Garman)

Location: body cavity

Distribution: Dusky Sound, New Zealand
ROBINSON, E.S., 1959a

Hepatoxylon squali (? Martiniere, 1797) SEE: Hepatoxylon trichiuri
(Holten, 1802) (post-larva)

Hepatoxylon squali Bosc, 1811 SEE: Hepatoxylon trichiuri (Holten, 1802)
(post-larva)

Hepatoxylon squali (Martin, 1797) in Heinz and Dailey, 1974 SEE:
Hepatoxylon trichiuri (Holten, 1802)

Hepatoxylon trichiuri

Host: Vertebrata Osteichthyes
Salmo salar L.
Location: attached to or partially embedded in
viscera
Distribution: S.W. England, Godthaab, Greenland,
Greenland, west, Miramichi River, New Brunswick,
Margaree River, Nova Scotia, Chaleur Bay, Canada,
Bay of Fundy, Canada
PIPPY, J.H.C., 1969

Hepatoxylon trichiuri (Holten, 1802)

Host: Vertebrata Selachii
Lamna cornubica (Gmelin)
Location: stomach
Distribution: British Isles
WILLIAMS, H.H., 1960
Osteichthyes
Gadus virens L.
Location: mesentery
Distribution: British Isles
WILLIAMS, H.H., 1960
Genypterus chilensis (Guichenot, 1848)
Location: mesenteries
Distribution: Talcahuano, Chile
VERGARA, L.A. AND GEORGE-NASCIMENTO, M., 1982
Hippoglossus hippoglossus (L.)
Location: mesentery
Distribution: British Isles
WILLIAMS, H.H., 1960
Lepidopus lex Phillips, 1932
Distribution: New Zealand, Australia
KOROTAEVA, V.D., 1971
Merluccius merluccius (L.)
Location: mesentery
Distribution: British Isles
WILLIAMS, H.H., 1960
Ostorhinchus conwail
Location: intestines
Distribution: Great Australian Bight
KOROTAEVA, V.D., 1974a
Salmo salar L.
Distribution: Labrador, Coastal
HICKS, F.J. AND THRELFALL, W., 1973
Location: stomach
Distribution: tributaries of River Backwater, County
Cork, Lake Currane, County Kerry, Ireland
KANE, M.B., 1966

Hepatoxylon trichiuri (Holten, 1802) (adult) syn. Dibothriorhynchus squali
La Martinère, 1797

Host: Vertebrata Selachii
Isuropsis glauca
Location: spiral valve
Distribution: Japan
IWATA, S., 1939

Hepatoxylon trichiuri (Holten, 1802) (larva)

Host: Vertebrata Osteichthyes
Argentina elongata
Distribution: Antarctic
POIS, N.V., 1975
Gadus aeglefinus L.
Location: peritoneal cavity
Distribution: Iceland
BAER, J.G., 1962
Gadus callarias L.
Location: peritoneal cavity
Distribution: Iceland
BAER, J.G., 1962
Gadus virens L.
Location: peritoneal cavity
Distribution: Iceland
BAER, J.G., 1962
Genypterus blacodes
Distribution: Antarctic
POIS, N.V., 1975
Hippoglossus maximus Nilss.
Location: peritoneal cavity
Distribution: Iceland
BAER, J.G., 1962
Lepidorhynchus denticulatus
Distribution: Antarctic
POIS, N.V., 1975
Macrurus australis
Distribution: Antarctic
POIS, N.V., 1975
Merluccius capensis Castelnau
Location: body cavity
Distribution: Namibia
KRZEPTOWSKI, M., 1980 [1982]
"merluza"
Location: muscles
Distribution: Puerto Montt, Chile
TAGLE, I., 1951

Hepatoxylon trichiuri (Holten, 1802) (larva) syn. Dibothriorhynchus grossum
(Rudolphi, 1819)

Host: Vertebrata Osteichthyes
Gadus virens L.
Location: coelom
Distribution: Irish Atlantic Slope
REES, G. AND LLEWELLYN, J., 1941
Mammalia
Homo sapiens
Location: anus, passed alive from
Distribution: Johannesburg
HEINZ, H.J., 1954

Hepatoxylon trichiuri (Holten, 1802) (larva) syn. Dibothriorhynchus squali
(La Martinère, 1797)

Host: Vertebrata Selachii
Prionace glauca (Linnaeus, 1758)
Location: stomach, liver
Distribution: Japan
IWATA, S., 1939

Hepatoxylon trichiuri (Holten, 1802) (metacestode)

Host: Vertebrata Osteichthyes
Salmo salar L.
Location: coelom
Distribution: River Lune, Lancashire
CHUBB, J.C., 1965

Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)

Host: Vertebrata Agnatha
Geotria australis Gray
Location: coelomic cavity
Distribution: Donnelly River, Australia, south
western
LETHBRIDGE, R.C., POTTER, I.C., BRAY, R.A. AND
HILLIARD, R.W., 1983

Osteichthyes
Gadus callarias L.
Location: coelom
Distribution: Iceland
REES, G., 1953

Genypterus blacodes
Location: muscles
Distribution: South Island, New Zealand, Campbell
Island, New Zealand
GRABDA, J. AND SLOSARCZYK, W., 1981

Hippoglossus hippoglossus (L.)
Location: body cavity, mesenteries
Distribution: Atlantic, north east
RAE, B.B., 1958

Macruronus novae-zealandiae (Hector)
Location: body cavity
Distribution: South Island, New Zealand, Campbell
Island, New Zealand, Auckland Island, New Zealand
GRABDA, J. AND SLOSARCZYK, W., 1981

Merluccius australis
Location: muscles
Distribution: South Island, New Zealand
GRABDA, J. AND SLOSARCZYK, W., 1981

Micromesistius australis
Location: muscles
Distribution: Campbell Island, New Zealand
GRABDA, J. AND SLOSARCZYK, W., 1981

Pollachius virens (L.) syn. Gadus virens
Location: all organs, liver, stomach, intestine
Distribution: Atlantic, north
HEINRICH, L., 1975

Hepatoxylon trichiuri (Holten, 1802) (plerocercoid) syn. Dibothriorhynchus attenuatus (Rudolphi, 1819)

Host: Vertebrata Osteichthyes
Xiphias gladius Linnaeus, 1758
Location: body cavity
Distribution: Nova Scotia
NIGRELLI, R.F., 1938

Hepatoxylon trichiuri (Holten, 1802) (plerocercoid) syn. Dibothriorhynchus grossum (Rudolphi, 1819)

REMARKS: Dibothriorhynchus grossum (Rudolphi) was recognised by Dollfus (1942) as a synonym of Hepatoxylon trichiuri.

Host: Vertebrata Selachii
Prionace glauca (Linnaeus, 1758)
Location: visceral cavity
Distribution: Chile, Caleta Cochoa
YANEZ, A.P., 1950

Hepatoxylon trichiuri (Holten, 1802) (plerocercoid) syn. Dibothriorhynchus grossum (Rudolphi, 1819)

Host: Vertebrata Osteichthyes
Gadus virens L.
Location: coelom
Distribution: Ireland, west
REES, G., 1941a

Hepatoxylon trichiuri (Holten, 1802) (plerocercus)

Host: Vertebrata Selachii
Prionace glauca (Linnaeus, 1758)
Location: body cavity, on serous membrane of stomach, liver
Distribution: Antofagaster
CARVAJAL, J., 1974
Osteichthyes
Salmo sp.
Location: gut
Distribution: Ireland
HEALY, A., 1956
Salmon
Location: ovary
Distribution: River Mourne, Ireland
HALE, P.A., 1959

Hepatoxylon trichiuri (Holten, 1802) (post-larva)

Host: Invertebrata Cephalopoda
Architeuthis dux Steenstrup, 1857
Location: caecal portion of digestive tract
Distribution: White Bay, Newfoundland
PIPPY, J.H.C. AND ALDRICH, F.A., 1969

Host: Vertebrata Selachii
Daenia kiakourae Whitley
Distribution: Kaikoura Coast, New Zealand
ROBINSON, E.S., 1959a
Galeus glaucus Rondelet, 1554 syn. Squalus glaucus L. 1758
Location: liver
Distribution: Concarneau, Finistère, France
DOLLFUS, R.P., 1942
Isurus glaucus (Müller and Henle)
Distribution: Bay of Islands, New Zealand
ROBINSON, E.S., 1959a

Isurus nasus (Bonnaterre, 1788) Lamna cornubica
(Gmelin, 1789) Cuvier, 1817
Location: liver
Distribution: Concarneau, Finistère, France
DOLLFUS, R.P., 1942

Isurus oxyrinchus Rafinesque, 1810 syn. Oxyrhina
Spallanzanii (Rafinesque, 1810) Bonaparte, 1841
Location: liver
Distribution: Concarneau, Finistère, France, Cape
Hadia, Morocco
DOLLFUS, R.P., 1942

Prionace glauca (Linnaeus, 1758)
Distribution: Kapiti Island, New Zealand
ROBINSON, E.S., 1959a
Location: liver
Distribution: Juan Fernandez Archipelago
CATTAN, P.E., CARVAJAL, J., TORRES, D. AND YANEZ,
J.L., 1979

Somniosus pacificus
Location: attached to internal intestinal wall
Distribution: Curaco de Vélez, Chile
REYES PIRIANO, X, 1982

Squalus acanthias (L.)
Location: free in coelom
Distribution: Strangford Lough, Co. Down, Ireland
GOTTO, R.V., 1955

Squalus acanthias (Rondelet, 1554) L.1754 syn.
Acanthias vulgaris Risso, 1826
Distribution: Concarneau, Finistère, France
DOLLFUS, R.P., 1942

Squalus lebruni (Vaillant)
Distribution: Cape Campbell, New Zealand
ROBINSON, E.S., 1959a

Torpedo fairchildi Hutton
Distribution: Cape Campbell, New Zealand
ROBINSON, E.S., 1959a

Osteichthyes

Cheilodactylus macropterus (Bloch and Schneider)
Distribution: New Zealand
VOOREN, C.M. AND TRACEY, D., 1976

Cyttus novae-zealandiae (Arthur)
Location: body cavity
Distribution: Pallister Bay, New Zealand
ROBINSON, E.S., 1959a

Gadus (Pollachius) virens L.
Location: on the liver
Distribution: La Rochelle, Coast of
DOLLFUS, R.P., 1942

Genypterus blacodes (Bloch and Schneider)
Location: body cavity
Distribution: Kapiti Island, New Zealand
ROBINSON, E.S., 1959a

Genypterus blacodes Schneider
Location: stomach
Distribution: Talcahuano, Chile
CATTAN, P.E., 1977

Germo alalonga (Gmelin)
Location: internal and external stomach walls
Distribution: Concarneau, Finistère, France
DOLLFUS, R.P., 1942

Katsuwonus pelamis (L.)
Location: body cavity, stomach wall

Distribution: Atlantic
 BUSSIÈRAS, J. AND BAUDIN-LAURENCIN, F., 1973
Lepidopus caudatus (Euphrasen)
 Location: body cavity, pericardium, mesentery, swim bladder
 Distribution: Castle Point, New Zealand
 ROBINSON, E.S., 1959a
Macruronus novae-zealandiae (Hector)
 Location: body cavity
 Distribution: Cape Campbell, New Zealand
 ROBINSON, E.S., 1959a
Oncorhynchus tschawytscha (Walbaum)
 Location: abdominal cavity
 Distribution: Curaco de Vélez, Chile
 REYES PIRIAND, X, 1982
Thunnus albacores (Bonnaterre, 1788)
 Location: body cavity, stomach wall
 Distribution: Atlantic
 BUSSIÈRAS, J. AND BAUDIN-LAURENCIN, F., 1973
Thyreites atun (Euphrasen, 1791)
 Location: body cavity
 Distribution: sore of Island of Banks, New Zealand
 KAGEI, N., KIHATA, M. AND ASANO, K., 1977

Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 REMARKS: The child had been eating fish while on holiday in Maputo.

Host: Vertebrata Mammalia
Homo sapiens
 Location: passed in faeces
 FRIPP, P.J. AND MASON, P.R., 1983

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Dibothriorhynchus attenuatus (Rudolphi, 1819)

Host: Vertebrata Osteichthyes
Coryphaena hippurus Linnaeus
 Location: stomach
 Distribution: L'île Flores, Azores, Atlantic
 GUIART, J., 1935a
Coryphaena sp.
 Location: intestine wall
 Distribution: Azores, west of, Atlantic
 GUIART, J., 1935a

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Dibothriorhynchus carchariae (Welch, 1876)

Host: Vertebrata Selachii
Carcharias (Galeus) glaucus (Rond., 1554) Rafinesque, 1810
 Location: abdominal cavity
 Distribution: Strait of Gibraltar, Atlantic
 GUIART, J., 1935a

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Dibothriorhynchus claviger (Leuckart, 1819)

Host: Vertebrata Osteichthyes
Coryphaena sp.
 Location: stomach
 Distribution: Azores, Atlantic
 GUIART, J., 1935a

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Dibothriorhynchus stenocephale Guiart, 1935

Host: Vertebrata Osteichthyes
Coryphaena sp.
Location: intestinal wall
Distribution: Azores, Atlantic
GUIART, J., 1935a

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Hepatoxylon grosseum (Rudolphi)

Host: Vertebrata Osteichthyes
Xiphias gladius Linnaeus, 1758
Location: swim bladder
Distribution: Roskilde fjord, Denmark
RASMUSSEN, E., 1973

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Hepatoxylon squali (? Martiniere, 1797)

Host: Vertebrata Selachii
Prionace glauca (Linnaeus, 1758)
Location: body cavity
Distribution: Newfoundland
THRELFALL, W., 1969

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Hepatoxylon squali Bosc, 1811

Host: Vertebrata Selachii
Prionace glauca (Linnaeus, 1758)
Location: exterior of liver
Distribution: Humboldt Bay
PAPPAS, P.W., 1970

Hepatoxylon trichiuri (Holten, 1802) syn. Hepatoxylon squali (Martin, 1797) in Heinz and Dailey, 1974

Host: Vertebrata Selachii
Alopias vulpinus (Bonnaterre)
Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Hornelliella annandalei (Hornell, 1912) Yamaguti, 1954 (adult) syn.

Tetrarhynchus annandalei, Hornell, 1912

REMARKS: Yamaguti (1954) describes the family Hornelliellidae with a characteristic hermaphroditic vesicle. He places Hornelliella annandalei, originally described as Tetrarhynchus annandalei, in this family.

Host: Vertebrata Selachii

Stegostoma tigrinum

Location: spiral valve

Distribution: Macassar, Celebes

YAMAGUTI, S., 1954

Hornelliella palasoorahi Zaidi and Khan, 1976 (adult)

Host: Vertebrata Selachii

Scoliodon palasoorah (Cuvier)

Location: intestine

Distribution: Karachi, Arabian Sea

ZAIDI, D.A. AND KHAN, D., 1976

Tetrarhynchus annandalei, Hornell, 1912 SEE: Hornelliella annandalei
(Hornell, 1912) Yamaguti, 1954 (adult)

Eulacistorhynchus chiloscyllius Subhadrada, 1955 (adult)

REMARKS: Subhadrada (1955) erected the subfamily
Eulacistorhynchidae and the genus Eulacistorhynchus to
accomodate Eulacistorhynchus chiloscyllius.

Host: Vertebrata Selachii
 Chiloscyllium griseum Müller and Henle
 Location: spiral valve
 Distribution: Madras Coast, India
 SUBHADRADA, C.K., 1955

Grillotia acanthoscolex Rees, 1944 (adult)

Host: Vertebrata Selachii
 Hexanchus griseus (Gmelin)
 Location: intestine
 Distribution: Porcupine Bank, Atlantic
 REES, G., 1944

Grillotia angeli Dollfus, 1969 (immature adult)

Host: Vertebrata Selachii
 Squatina squatina (L.)
 Location: spiral valve
 Distribution: Mediterranean
 DOLLFUS, R.P., 1969a

Grillotia angeli Dollfus, 1969 (larva)

Host: Vertebrata Osteichthyes
 Scomber scombrus L.
 Location: visceral cavity outside the gut
 Distribution: North Sea
 MACKENZIE, K., 1982

Grillotia angeli Dollfus, 1969 (plerocercus)

Host: Vertebrata Osteichthyes
 Scomber scombrus L.
 Location: stomach wall, the outer surfaces of pyloric
 caeca, intestine
 Distribution: Mevagissey Bay, Cornwall
 MACKENZIE, K., 1980

Grillotia bothridiopunctata Dollfus, 1969 (larva)

Host: Vertebrata Osteichthyes
 Caranx trachurus (L.)
 Location: body cavity
 Distribution: Mediterranean, Sète
 DOLLFUS, R.P., 1969a

Grillotia branchii Shaharom and Lester, 1982 (metacestode)

Host: Vertebrata Osteichthyes
 Scomberomorus commersoni (Lacépède)
 Location: gill arches
 Distribution: Brisbane, Australia, Pulau Ketam,
 Malaysia
 SHAHAROM, F.M. AND LESTER, R.J.G., 1982

Grillotia dolichocephala (Guiart, 1935) (larva)

REMARKS: Dollfus (1942) was unable to comment on the validity of Grillotia dolichocephala (Guiart, 1935) without a more detailed description.

Host: Vertebrata Selachii
Centroscymnus coelolepis Bocage and Capello, 1864
Location: skin, under
Distribution: S. Jorge, north, Cape Verde Isles,
Atlantic
GUIART, J., 1935a

Grillotia dolichocephala (Guiart, 1935) (larva)

Host: Vertebrata Selachii
Pseudotriakis microdon Capello, 1867
Location: musculature
Distribution: Sal, south west, Cape Verde Islands,
Atlantic
GUIART, J., 1935a

Grillotia dollfusi Carvajal, 1971

Host: Vertebrata Selachii
Raja chilensis Guichenot, 1848
Distribution: Anna Pink Bay, Chile
WHITTAKER, F.H., CARVAJAL, J.G. AND APKARIAN, R.,
1982

Grillotia dollfusi Carvajal, 1971 (adult)

Host: Vertebrata Selachii
Raja chilensis Guichenot, 1848
Location: spiral valve
Distribution: Chile
CARVAJAL, J., 1971

Grillotia dollfusi Carvajal, 1971 (plerocercus)

Host: Vertebrata Osteichthyes
Merluccius gayi (Guichenot, 1848)
Distribution: Los Vilos and Constitución, Chile
CARVAJAL, J., CATTAN, P.E., CASTILLO, C. AND SCHATTE,
P., 1979
Location: surface of gonads, serosal surface of
intestine and liver
Distribution: Chile
CARVAJAL, J. AND CATTAN, P.E., 1978

Grillotia erinaceus (Van Beneden, 1858)

Host: Vertebrata Selachii
Raja batis L.
Location: intestine, mesentery
Distribution: British Isles
WILLIAMS, H.H., 1968
Raja brachyura Lafont
Location: intestine, mesentery
Distribution: British Isles
WILLIAMS, H.H., 1968
Raja clavata L.
Location: intestine
Distribution: Irish Sea
REES, G. AND LLEWELLYN, J., 1941
Location: intestine, mesentery
Distribution: British Isles
WILLIAMS, H.H., 1968

- Raja fullonica L.
 Location: intestine, mesentery
 Distribution: British Isles
 WILLIAMS, H.H., 1968
- Raja laevis Mitchell, 1817 syn. Raja stabuliformis
 Garman, 1913
 Distribution: Magdalen Islands, Gulf of St. Lawrence
 MYERS, B.J., 1959
- Raja micro-ocellata Montagu
 Location: intestine, mesentery
 Distribution: British Isles
 WILLIAMS, H.H., 1968
- Raja miraletus L. 1758
 Distribution: Arcachon
 DOLLFUS, R.P., 1946b
- Raja naevus Müller and Henle, 1841
 Location: intestine, mesentery
 Distribution: British Isles
 WILLIAMS, H.H., 1968
 Location: spiral intestine
 Distribution: Aberdeen, North Sea, Plymouth, English
 Channel
 MCVICAR, A.H., 1977
 Distribution: Plymouth, English Channel, Aberdeen,
 North Sea
 MCVICAR, A.H., 1979
- Raja ocellata Mitchell, 1815
 Location: spiral valve
 Distribution: Buzzard's Bay, Massachusetts
 SIMMONS, J.E., 1961
- Raja ocellata Mitchell, 1815 syn. Raja diaphanes
 Garman, 1913
 Distribution: Magdalen Islands, Gulf of St. Lawrence
 MYERS, B.J., 1959
- Raja oxyrhynchus L.
 Location: intestine
 Distribution: Irish Atlantic Slope
 REES, G. AND LLEWELLYN, J., 1941
 Location: intestine, mesentery
 Distribution: British Isles
 WILLIAMS, H.H., 1968
- Raja radiata Donovan
 Distribution: Iceland
 BAER, J.G., 1962
- Ray
 Location: spiral valve
 Distribution: Irish Sea
 HALTON, D.W. AND MCKERR, G., 1979
- Osteichthyes
- Limanda aspera (Pallas)
 Distribution: Far Eastern seas
 MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
- Melanogrammus aeglefinus (L.)
 Location: mesenteries
 Distribution: Scotian Gulf, Canada
 SCOTT, J.S., 1981
- Solea solea
 Distribution: Porto-Lago, Aegean Sea
 PAPOUTSOGLU, S.E. AND PAPAPARASKEVA-PAPOUTSOGLU,
 E.G., 1977
- Trachurus trachurus trachurus L.
 Distribution: Atlantic

Grillotia erinaceus (Van Beneden, 1858) (?) (tentative identification) syn.

Tetrarhynchus erinaceus Van Beneden

REMARKS: Tetrarhynchus erinaceus Van Beneden, 1858 is accepted (Dollfus, 1942) (Rae, 1958) (Jones, 1970) as a synonym of

Grillotia erinaceus.

Host: Vertebrata Osteichthyes
 Sebastes marinus (L.)
 Location: musculature
 Distribution: Norway, coast of
 KAHL, W., 1937

Grillotia erinaceus (Van Beneden, 1858) (adult)

Host: Vertebrata Selachii

Raja clavata L.

Distribution: South Devon, British Isles
 BAYLIS, H.A., 1939

Location: spiral valve

Distribution: Black Sea

KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978

Osteichthyes

Torpedo marmorata Risso

Distribution: Arcachon, Gironde

DOLLFUS, R.P., 1942

Grillotia erinaceus (Van Beneden, 1858) (larva)

Host: Vertebrata Selachii

Centrophorus squamosus (Gmelin)

Location: coelom

Distribution: Porcupine Bank, Atlantic
 REES, G. AND LLEWELLYN, J., 1941

Raja naevus Møller and Henle

Location: intestine wall

Distribution: Porcupine Bank

REES, G. AND LLEWELLYN, J., 1941

Osteichthyes

Clupea harengus L., 1758

Location: mesenteries, pyloric caeca, stomach wall

Distribution: Gulf of Maine, Cape Cod

SINDERMANN, C.J., 1957

Conger conger

Distribution: South Devon, British Isles

BAYLIS, H.A., 1939

Cottus bubalis Euphrasen

Location: stomach wall

Distribution: Aberystwyth, rock pools, Wales

REES, G., 1945

Gadus merlangus L.

Distribution: South Devon, British Isles

BAYLIS, H.A., 1939

Location: stomach wall

Distribution: Irish Sea

REES, G. AND LLEWELLYN, J., 1941

Glyptocephalus cynoglossus (L.)

Location: stomach wall

Distribution: Porcupine Bank

REES, G. AND LLEWELLYN, J., 1941

Merluccius bilinearis

Distribution: Atlantic, north west

GAEVSKAYA, A.V. AND UMNOVA, B.A., 1977

Odontogadus merlangus euxinus (Nordman)

Distribution: Black Sea
 KORNUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Pleuronectes platessa L.
 Location: stomach wall
 Distribution: Irish Atlantic Slope
 REES, G. AND LLEWELLYN, J., 1941
Scophthalmus rhombus
 Distribution: South Devon, British Isles
 BAYLIS, H.A., 1939
Theragra chalcogramma (Pallas, 1811)
 Distribution: Kamchatka
 MAMAEV, Y.L. AND BAEVA, O.M., 1963
Trachurus trachurus trachurus L.
 Distribution: North Sea, Atlantic, north
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b

Grillotia erinaceus (Van Beneden, 1858) (larva ; tentative identification)
 Host: Vertebrata Osteichthyes
Sebastes mentella Travin
 Location: mesenteries lining the body cavity or
 supporting the viscera
 Distribution: Atlantic, North
 JONES, D.H., 1970

Grillotia erinaceus (Van Beneden, 1858) (larva) syn. Tentacularia sp. of
 Hart 1936
 Host: Vertebrata Osteichthyes
Ophiodon elongatus Girard
 Location: vertebrae, region of
 Distribution: Puget Sound
 HART, J.F., 1936

Grillotia erinaceus (Van Beneden, 1858) (larva) syn. Tetrarhynchus
erinaceus
 Host: Vertebrata Osteichthyes
Lophius piscatorius Linnaeus, 1758
 Location: musculature
 Distribution: San Benedetto del Tronto, Italy
 TESTI, F., 1960

Grillotia erinaceus (Van Beneden, 1858) (larva) syn. Tetrarhynchus
erinaceus REMARKS: Tetrarhynchus erinaceus was widely accepted (Dollfus,
 1942) (Jones, 1970) as a synonym of Grillotia erinaceus.
 Host: Vertebrata Osteichthyes
Sebastes marinus (L.)
 Location: musculature
 LÖLING, K.H., 1952

Grillotia erinaceus (Van Beneden, 1858) (larva) syn. Tetrarhynchus
erinaceus REMARKS: Löling (1951) considered that the larval
 trypanorhynchs found by Kahl (1937) were specimens of Grillotia
 (= Tetrarhynchus) erinaceus.
 Host: Vertebrata Osteichthyes
Sebastes marinus (L.)
 Location: musculature
 Distribution: Norway, Coast of
 LÖLING, K.H., 1951

Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)

REMARKS: Lubieniecki (1976) commented on the possibility of previous identifications of Grillotia erinaceus being misidentifications of Grillotia pseudoerinaceus.

Host: Vertebrata Osteichthyes
Gadus morhua L.

Location: oesophagus, stomach, pyloric caeca,
intestine

Distribution: North Sea
LUBIENIECKI, B., 1976

Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)

Host: Vertebrata Osteichthyes

Hippoglossus hippoglossus (L.)

Location: throughout the fish

Distribution: Atlantic, north east
RAE, B.B., 1958

Melanogrammus aeglefinus (L.)

Location: oesophagus, stomach, pyloric caeca,
intestine

Distribution: North Sea
LUBIENIECKI, B., 1976

Merlangius merlangus (L.)

Location: musculature of pyloric stomach,
perivisceral cavity, posterior of

Distribution: Isle of Man, British Isles
SHOTTER, R.A., 1976

Odontogadus merlangus L.

Location: body cavity, viscera

Distribution: Isle of Man, British Isles
SHOTTER, R.A., 1973

Location: stomach wall, lumen of stomach, intestine,
caeca

Distribution: Irish Sea, northern
SHOTTER, R.A., 1972

Pollachius virens (L.)

Location: oesophagus, stomach, pyloric caeca,
intestine

Distribution: North Sea
LUBIENIECKI, B., 1976

Trigla gurnardus (L.)

Location: body cavity

Distribution: Shetland Islands
DUNIEC, H., 1980

whiting

Location: stomach wall, body cavity
MCKERR, G., 1978

Grillotia erinaceus (Van Beneden, 1858) (plerocercus)

Host: Vertebrata Selachii

Raja clavata L.

Distribution: Concarneau, Finistère
DOLLFUS, R.P., 1942

Raja maculata Montagu 1815 Raja montagui Fowler 1910

Location: mesentery, peritoneum

Distribution: Concarneau, Finistère
DOLLFUS, R.P., 1942

Raja naevus Müller and Henle, 1841

Distribution: SS "Président Théodore Tissier" St.80,
3-1-1934

DOLLFUS, R.P., 1942

Raja sp.

Distribution: Arcachon, Gironde
DOLLFUS, R.P., 1942

Osteichthyes

Clupea harengus L., 1758

Location: stomach wall, encysted in
Distribution: Massachusetts, Woods Hole
DOLLFUS, R.P., 1956

Gadus morhua L.

Location: mesentery
Distribution: New Brunswick, Atlantic, north west
APPY, R.G. AND BURT, M.D.B., 1982
APPY, R.G. AND BURT, M.D.B., 1982

Melanogrammus aeglefinus (L.)

Location: body cavity
Distribution: North Sea
LUBIENIECKI, B., 1977

Mullus surmuletus L.

Location: stomach wall
Distribution: Bay of Biscay
DOLLFUS, R.P., 1942

Irigla sp.

Location: mesentery, peritoneum
Distribution: Concarneau, Finistère
DOLLFUS, R.P., 1942

Grillotia erinaceus (Van Beneden, 1858) (plerocercus) tentative
identification

Host: Vertebrata Osteichthyes
Melanoglaea ventralis Barnard, 1941
Location: body cavity
Distribution: Keyar
DOLLFUS, R.P., 1968a

Grillotia heptanchi (Vaullegeard, 1899) (adult)

Host: Vertebrata Selachii
Hexanchus griseus (Bonnaterre, 1788)
Distribution: Chile
CARVAJAL, J., 1974
Location: spiral valve
Distribution: Chile
CARVAJAL, J., 1971

Notorhynchus pectoroaeus (German)

Location: spiral valve
Distribution: Cook Strait, New Zealand
ROBINSON, E.S., 1959a

Grillotia heptanchi (Vaullegeard, 1899) (larva)

Host: Vertebrata Osteichthyes
"merluza"
Location: muscles
Distribution: Puerto Montt, Chile
TAGLE, I., 1951

Molva dipterygia (Pennant, 1784)

Location: musculature
Distribution: Rockall, North Sea
DOLLFUS, R.P., 1975b

Sciaena coiter

Location: abdominal cavity in cloacal region
Distribution: Burma, Rangoon, estuarine
KYAW-MYINT, 1968

Grillotia heptanchi (Vaullegeard, 1899) (plerocercoid)

Host: Vertebrata Osteichthyes

Merluccius merluccius (L.)

Location: supra-orbital lateral line canal

Distribution: British Isles, west coast

REES, G., 1950

Theragra chalcogramma (Pallas, 1811)

Location: cephalic canals

Distribution: Strait of Georgia, British Columbia,

Pacific Ocean, north eastern, West Coast, British

Columbia, Pacific Ocean, north eastern

ARTHUR, J.R., 1984

Grillotia heptanchi (Vaullegeard, 1899) (plerocercus)

Host: Vertebrata Osteichthyes

Genypterus chilensis (Guichenot, 1848)

Location: musculature

Distribution: Puerto Montt, Chile

CARVAJAL, J. AND CAMPBELL, R.A., 1979

Macruronus magellanicus

Location: viscera and coelomic cavity

Distribution: Puerto Montt, Chile

CARVAJAL, J. AND CAMPBELL, R.A., 1979

Merluccius polylepsis

Location: musculature

Distribution: Puerto Montt, Chile

CARVAJAL, J. AND CAMPBELL, R.A., 1979

Grillotia megabothridia (Hart, 1936) (adult) syn. Tentacularia

megabothridia Hart, 1936 syn. Grillotia heptanchi (Vaullegeard, 1899)

REMARKS: Dollfus (1942) considered Tentacularia megabothridia to be a synonym of Grillotia heptanchi. Yamaguti (1959) listed Grillotia megabothridia as a distinct species.

Host: Vertebrata Selachii

Hexanchus griseus (Bonnaterre, 1788)

Location: spiral valve

Distribution: Puget Sound

HART, J.F., 1936

Grillotia microthrix Dollfus, 1969 (plerocercus)

Host: Vertebrata Selachii

Torpedo nobiliana Bonaparte

Distribution: Mediterranean, Sète

DOLLFUS, R.P., 1969a

Grillotia minor Guiart, 1935 (larva)

REMARKS: Dollfus (1942) was unable to comment on the validity of Grillotia minor Guiart, 1935 without further information.

Host: Vertebrata Osteichthyes

Lepidorhinus squamosus (Bonnaterre, 1788)

Location: under peritoneum

Distribution: Bay of Biscay

GUIART, J., 1935a

- Grillotia (Paragrillotia) simmonsii Dollfus, 1969 (adult)
 Host: Vertebrata Selachii
Ginglymostoma cirratum
 Distribution: Florida
 BUTEAU, JR., G.H., SIMMONS, J.E., FAIRBAIRN, D., 1969
- Grillotia (Paragrillotia) simmonsii Dollfus, 1969 (adult)
 REMARKS: The subgenus Paragrillotia described by Dollfus (1969b) showed no demarcation between the rows of principal hooks and the chainette.
 Host: Vertebrata Selachii
Ginglymostoma cirratum (Gmelin, 1788)
 Location: alimentary canal
 Distribution: Florida, Sarasota
 DOLLFUS, R.P., 1969b
- Grillotia perelica (Shuler, 1938) Dollfus, 1942
 Host: Vertebrata Selachii
Carcharias sp.
 Location: spiral valve
 Distribution: Madras Coast, India
 SUBHAPRADHA, C.K., 1955
- Grillotia perelica (Shuler, 1938) Dollfus, 1942 (adult)
 Host: Vertebrata Selachii
Carcharhinus platyodon (Poey)
 Location: spiral valve
 Distribution: Bermuda
 REES, G., 1969
- Grillotia perelica (Shuler, 1938) Dollfus, 1942 (adult) syn. Tentacularia perelica Shuler, 1938
 Host: Vertebrata Selachii
Hypoprion brevirostris Poey
 Location: spiral valve
 Distribution: Tortugas, Florida
 SHULER, R.H., 1938
- Grillotia (Progrillotia) pastinacae Dollfus, 1946 (adult)
 Host: Vertebrata Selachii
Trygon pastinaca (L.)
 Location: spiral valve
 Distribution: Concarneau
 DOLLFUS, R.P., 1946b
- Grillotia pseuderinaceus Dollfus, 1969 (immature adult)
 Host: Vertebrata Selachii
Raja oxyrhynchus L.
 Distribution: Mediterranean, Sète
 DOLLFUS, R.P., 1969a
- Grillotia recurvispinis Dollfus, 1969 (immature adult)
 Host: Vertebrata Selachii
Raja clavata L.
 Distribution: Mediterranean, Sète
 DOLLFUS, R.P., 1969a

Grillotia scolecina (Rudolphi, 1819) (larva)

REMARKS: Dollfus (1942) was unable to comment on the validity of Grillotia scolecina (Rudolphi, 1819) without further information.

Host: Vertebrata Selachii

Centroscymnus coelolepis Bocage and Capello, 1864

Location: skin, under

Distribution: S. Jorge, north, Azores, Atlantic

GUIART, J., 1935a

Grillotia smaris-gora (Wagener, 1854)

Host: Vertebrata Selachii

Squatina californica Ayres

Distribution: California, southern

HEINZ, M.L. AND DAILEY, M.D., 1974

Grillotia smaris-gora (Wagener, 1854) Dollfus, 1946 (adult)

Host: Vertebrata Selachii

Squatina squatina (L.)

Location: spiral valve

Distribution: Concarneau Arcachon

DOLLFUS, R.P., 1946b

Grillotia smaris-gora (Wagener, 1854) (plerocercoid)

Host: Vertebrata Osteichthyes

Synodus lucioceps

Location: mesentery, spleen, stomach

JENSEN, L.A., MOSER, M. AND HECKMANN, R.A., 1979

Grillotia sp.

Host: Vertebrata Selachii

Raja clavata L.

Location: spiral valve

Distribution: St. Andrews Bay, Scotland

LAVERACK, M.S. AND BLACKLER, M., 1974

Raja naevus Møller and Henle, 1841

Location: spiral valve

Distribution: North Sea

WILLIAMS, H.H., 1968

Raja scabrata

Location: spiral valve, intestine

Distribution: Baie de Chaleur region, Canada

HELLER, A.F., 1949

Grillotia sp. (adult)

Host: Vertebrata Selachii

Raja radiata Donovan

Location: spiral valve, tiers 1-3

Distribution: Scotland, waters

WILLIAMS, H.H., MCVICAR, A.H. AND RALPH, R., 1978

Grillotia sp. (encysted plerocercoid)

Host: Vertebrata Osteichthyes

Merluccius bilinearis

Location: intestinal wall, liver surface,
mesenteries, stomach wall

Distribution: Raritan Bay, southern, New Jersey

MEYERS, T.R., 1978

Grillotia sp. (identified as G. heptanchi group by Dollfus, 1942)

Host: Vertebrata Osteichthyes
Cynoscion nebulosus (Cuvier)
CHANDLER, A.C., 1954

Grillotia sp. (larva)

Host: Vertebrata Osteichthyes
Genypterus blacodes
Location: muscles
Distribution: Campbell Island, New Zealand
GRABDA, J. AND SLOSARCZYK, W., 1981
Macruronus novae-zealandiae (Hector)
Location: muscles
Distribution: South Island, New Zealand
GRABDA, J. AND SLOSARCZYK, W., 1981
Platichthys flesus (L.)
Distribution: Scotland, Coast of Aberdeenshire
GIBSON, D.I., 1972

Grillotia sp. (plerocercoid)

Host: Vertebrata Osteichthyes
Micromesistius poutassou (Risso)
Location: visceral cavity
Distribution: Scotland, north and west coast of,
Faroe Islands
MACKENZIE, K., 1979

Grillotia sp. (plerocercus)

Host: Vertebrata Osteichthyes
Lophius piscatorius Linnaeus, 1758
Location: in the thickness of the stomach wall
Distribution: La Rochelle, Charente-Maritime
DOLLFUS, R.P., 1942
Thunnus thynnus
Location: peritoneum
Distribution: Persian Gulf
TIGARI, M., RADHAKRISHNAN, C.V. AND HOWARD, B.R.,
1975
Trachurus trachurus (L.)
Location: encysted on surface of stomach
Distribution: SS "Président Théodore Tissier" St.2,
24-11-1933
DOLLFUS, R.P., 1942
Irigla sp.
Location: body cavity
Distribution: Concarneau, Finistère
DOLLFUS, R.P., 1942

Grillotia spinosissima Dollfus, 1969 (larva, immature adult, adult)

Host: Vertebrata Selachii
Hexanchus griseus (Bonnaterre, 1788)
Distribution: Mediterranean, Sète
DOLLFUS, R.P., 1969a

Lacistorhynchus bulbifer (Linton, 1889) SEE: Lacistorhynchus tenuis
(Van Beneden, 1858) (adult)

Lacistorhynchus sp.

Host: Vertebrata Osteichthyes
Clupea harengus L., 1758
Location: surfaces of the pyloric caeca
Distribution: Scotland, north and west, North Sea
MACKENZIE, K., 1985
Morone saxatilis (Walbaum, 1792)
Location: muscle, encysted in
Distribution: California, Sacramento-Sn Joaquin delta
HENSLEY, G.H. AND NAHHAS, F.M., 1975
Scomber scombrus L.
Distribution: Mediterranean
DOLLFUS, R.P., 1969a
Sebastes diplopro
Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Lacistorhynchus sp. (larva)

Host: Vertebrata Osteichthyes
herring
Location: visceral cavity outside the gut
Distribution: Bløden area, North Sea
MACKENZIE, K., 1982

Lacistorhynchus sp. syn. Lacystorhynchus sp. of Kilejian and MacInnis, 1976

Host: Vertebrata Selachii
Mustelus canis (Mitchell, 1815)
Distribution: Bodega Bay, California
KILEJIAN, A. AND MACINNIS, A.J., 1976

Lacistorhynchus tenue (Van Beneden, 1858) Pintner, 1913 SEE:

Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)

Lacistorhynchus tenue (Van Beneden, 1858) SEE: Lacistorhynchus tenuis
(Van Beneden, 1858)

Lacistorhynchus tenue (Van Beneden, 1858) SEE: Lacistorhynchus tenuis
(Van Beneden, 1858) (adult)

Lacistorhynchus tenuis (Van Beneden, 1858)

Host: Vertebrata Selachii
Mustelus californicus
Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974
Mustelus canis (Mitchell, 1815)
Distribution: Massachusetts
LUMSDEN, R.D., OAKS, J.A. AND ALWORTH, W.L., 1978
Location: spiral valve
LAURIE, J.S., 1961
PAPPAS, P.W., 1978
READ, C.P., 1957
Distribution: Buzzard's Bay, Massachusetts
SIMMONS, J.E., 1961
SIMMONS, J.E., 1969
Distribution: Massachusetts
BUTEAU, JR., G.H., SIMMONS, J.E., BEACH, D.H., HOLTZ,
JR., G.G., AND SHERMAN, I.W., 1971
LUMSDEN, R.D. AND BYRAM, J., III., 1967

Mustelus henlei (Gill)

Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Rhinobatos productus (Ayres)

Distribution: California, southern, California,
southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Rhinotriakis henlei

Location: spiral valve, rectal gland
Distribution: San Francisco
BUTEAU, JR., G.H., SIMMONS, J.E., BEACH, D.H., HOLTZ,
JR., G.G., AND SHERMAN, I.W., 1971

Iriakis henlei (Gill, 1862)

Location: spiral valve, rectal gland
Distribution: Humboldt Bay
PAPPAS, P.W., 1970

Iriakis semifasciata Girard, 1854

Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974
Location: spiral valve
Distribution: Humboldt Bay
PAPPAS, P.W., 1970
Location: spiral valve, rectal gland
Distribution: Tomales Bay
BUTEAU, JR., G.H., SIMMONS, J.E., BEACH, D.H., HOLTZ,
JR., G.G., AND SHERMAN, I.W., 1971

Osteichthyes

Belone belone (L.)

Distribution: North Sea
WILLEMSE, J.J., 1968

Clupea harengus L., 1758

MACKENZIE, K., 1978

Coridodax pullus (Bloch and Schneider, 1801)

Location: body wall
Distribution: New Zealand
RITCHIE, L.D., 1969
RITCHIE, L.D., 1969

Trachurus trachurus trachurus L.

Distribution: Atlantic
GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a

Lacistorhynchus tenuis (Van Beneden, 1858) (adult)

Host: Vertebrata Selachii

Galaeorhinus australia Macleay

Location: spiral valve, anterior portion
Distribution: Cook Strait, New Zealand
ROBINSON, E.S., 1959a

Galeus canis (Rondelet, 1554) syn. Squalus galeus L.,
1758 syn. Eugaleus galeus (L., 1758) Gill, 1864 syn.
Galaeorhinus galeus (L., 1758) Blainville, 1816

Location: spiral valve
Distribution: Ostende, Concarneau, Finistère,
Lorient, La Rochelle
DOLLFUS, R.P., 1942

Mustelus canis (Mitchell, 1815)

Distribution: Massachusetts
LUMSDEN, R.D., 1965
LUMSDEN, R.D., 1966a
OAKS, J.A. AND LUMSDEN, R.D., 1971
Location: intestine
Distribution: Mediterranean, Sète
DOLLFUS, R.P., 1969a

Location: spiral valve
Distribution: Fire Island
LACEY, R.J. AND SPATZ, E.M., 1969
Distribution: Massachusetts
CAMPBELL, J.W., 1968
CAMPBELL, J.W. AND LEE, T.W., 1963
LUMSDEN, R.D., 1966b
LUMSDEN, R.D., 1967

Mustelus mustelus (Linnaeus, 1758)

Location: intestine
Distribution: Mediterranean, Sete
DOLLFUS, R.P., 1969a

Rhinotriakis henlei

Distribution: California
VOGE, M., EDMONDS, H., 1969

Triakis maculata Kner and Steindachner, 1867

Distribution: Antofagaster
CARVAJAL, J., 1974

Triakis semifasciata Girard, 1854

Distribution: California
VOGE, M., EDMONDS, H., 1969
Distribution: California, southern
YOUNG, R.T., 1954a
Location: spiral valve
RISER, N.W., 1956
Distribution: Mission Bay, California
MUDRY, D.R., DAILEY, M.D., 1971
Distribution: Monterey Bay, California
SAKANARI, J. AND MOSER, M., 1985b

Lacistorhynchus tenuis (Van Beneden, 1858) (adult) syn. Lacistorhynchus bulbifer (Linton, 1889)

Host: Vertebrata Selachii
Eugaleus galeus (L., 1758) Gill, 1864
Location: spiral valve
Distribution: Azores, Atlantic
GUIART, J., 1935a

Lacistorhynchus tenuis (Van Beneden, 1858) (adult) syn. Lacistorhynchus tenue (Van Beneden, 1858)

Host: Vertebrata Selachii
Mustelus canis (Mitchell, 1815)
Location: spiral valve
STUNKARD, H.W., 1981

Lacistorhynchus tenuis (Van Beneden, 1858) (immature adult)

Host: Vertebrata Selachii
Triakis semifasciata Girard, 1854
Location: spiral valve
Distribution: kept in laboratory
SAKANARI, J. AND MOSER, M., 1985b

Lacistorhynchus tenuis (Van Beneden, 1858) (immature adult) (experimental infection)

Host: Vertebrata Selachii
Triakis semifasciata Girard, 1854
Distribution: California
YOUNG, R.T., 1954b

Lacistorhynchus tenuis (Van Beneden, 1858) (larva)

Host: Vertebrata Osteichthyes

Clupea harengus L., 1758

Location: mesenteries, pyloric caeca, stomach wall

Distribution: Gulf of Maine, Cape Cod

SINDERMANN, C.J., 1957

Merluccius gayi peruanus Gingsburg, 1954

Location: mesenteries

Distribution: Callao, Peru

DURAN, L.E. AND OLIVA, M., 1980

Trachurus trachurus trachurus L.

Distribution: North Sea, Atlantic, north

GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b

Lacistorhynchus tenuis (Van Beneden, 1858) (metacestode)

Host: Vertebrata Osteichthyes

Gambusia affinis

Location: body cavity, musculature

Distribution: kept in laboratory

SAKANARI, J. AND MOSER, M., 1985b

Genyonemus lineatus Ayres, 1855

Distribution: Monterey Bay, California

SAKANARI, J. AND MOSER, M., 1985b

Morone saxatilis (Walbaum, 1792)

Location: mesentery, intestine, peritoneum, muscle,
external surface, lesions

Distribution: San Francisco Bay, California

MOSER, M., SAKANARI, J., WELLINGS, S. AND LINDSTROM,
K., 1984

Location: surface of the fish

Distribution: San Francisco Bay, Delta area

SAKANARI, J.A., MOSER, M. AND SIMMONS, J.E., 1983

Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercoid)

Host: Vertebrata Osteichthyes

Clupea harengus pallasii Valenciennes, 1847

Distribution: San Francisco Bay, California

SAKANARI, J. AND MOSER, M., 1985a

Cymatogaster aggregata Gibbons

Distribution: California, southern

YOUNG, R.T., 1954a

Distribution: San Diego Bay, California

YOUNG, R.T., 1954b

Damalichthys vacca (Girard, 1855)

Distribution: San Francisco Bay, California

SAKANARI, J. AND MOSER, M., 1985a

Genyonemus lineatus Ayres, 1855

Distribution: San Francisco Bay, California

SAKANARI, J. AND MOSER, M., 1985a

Morone saxatilis (Walbaum, 1792)

Distribution: San Francisco Bay, California

SAKANARI, J. AND MOSER, M., 1985a

Platichthys stellatus (Pallas)

Location: intestine, stomach walls

Distribution: Monterey Bay, California

ORCUTT, H.G., 1950

Synodus lucioceps

Location: liver, mesentery, skeletal, muscle

JENSEN, L.A., MOSER, M. AND HECKMANN, R.A., 1979

Laciatorhynchus tenuis (Van Beneden, 1858) (plerocercus)

Host: Vertebrata Osteichthyes

Agnostomus forsteri (Cuvier and Valenciennes)

Location: body cavity

Distribution: Waikane, New Zealand

ROBINSON, E.S., 1959a

Belone belone (L.)

Distribution: Mediterranean

DOLLFUS, R.P., 1969a

Location: abdominal cavity

Distribution: Pomeranian Bay

GRABDA, J., 1981

Belone belone (L.) syn. Belone vulgaris Flem.

Location: on the liver and intestine

Distribution: Concarneau, Finistère

DOLLFUS, R.P., 1942

Clupea harengus L., 1758

Location: muscles, encysted in, viscera, encysted in

Distribution: Massachusetts, Woods Hole

DOLLFUS, R.P., 1956

Gadus luscus L.

Location: under the tegument of gill cavity

Distribution: Roscoff, Finistère

DOLLFUS, R.P., 1942

Gadus pollachius L.

Location: on and encapsulated in liver and pyloric
and external surfaces of stomach and external
surface of intestine,

Distribution: France, Coasts of, Roscoff, Finistère

DOLLFUS, R.P., 1942

Morone labrax (L.) syn. Labrax lupus Cuvier

Location: peritoneum

Distribution: Morocco, Ston CXXI

DOLLFUS, R.P., 1942

Scomber scomber (L.)

Location: peritoneum, body cavity

Distribution: Erquy, France, north coast, Goury and
Aurigny

DOLLFUS, R.P., 1942

Thyrsites atun (Euphrasen, 1791)

Location: body cavity, ribs, anterior extremity of

Distribution: Petone Beach, New Zealand

ROBINSON, E.S., 1959a

Trachurus trachurus (L.)

Location: body cavity

Distribution: Gijon, Oviedo

DOLLFUS, R.P., 1942

Trigla gurnardus (L.)

Location: body cavity

Distribution: Concarneau, Finistère

DOLLFUS, R.P., 1942

Undetermined gadoid

Distribution: Dogger Bank

DOLLFUS, R.P., 1942

Zenopsis nebulosus (Schlegel)

Location: body cavity

Distribution: Cape Campbell, New Zealand

ROBINSON, E.S., 1959a

Zeus faber L.

Distribution: French Coasts

DOLLFUS, R.P., 1942

Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus) syn.

Lacistorhynchus tenue (Van Beneden, 1858) Pintner, 1913

Host: Invertebrata Cephalopoda

Loligo paeleii (LeSueur, 1821)

Location: stomach washings

Distribution: Cape Cod area

STUNKARD, H.W., 1977

Lacistorhynchus tenuis (Van Beneden, 1858) (proceroid)

Host: Invertebrata Crustacea

Tigriopus californicus

Distribution: California

MUDRY, D.R., DAILEY, M.D., 1971

Location: kept in laboratory

SAKANARI, J. AND MOSER, M., 1985b

Tigriopus fulvus (Fisher)

Location: haemocoel

RISER, N.W., 1951

RISER, N.W., 1956

Lacistorhynchus tenuis (Van Beneden, 1858) syn. Lacistorhynchus tenue (Van Beneden, 1858)

Host: Invertebrata Crustacea

Acartia tonsa

Distribution: sea water, experimental

STUNKARD, H.W., 1981

Lacystorhynchus sp. of Kilejian and MacInnis, 1976 SEE: Lacistorhynchus sp.

Pintneriella musclicola Yamaguti, 1934 SEE: Grillotia musclicola (Yamaguti, 1934) (larva)

Progrillotia dollfusi Carvajal and Rego, 1983

Host: Vertebrata Osteichthyes

Cynoscion striatus (Cuvier)

Location: visceral cavity

Distribution: Rio de Janeiro

CARVAJAL, J. AND REGO, A.A., 1983

Progrillotia louiseuzeti Dollfus, 1969 (immature adult)

Host: Vertebrata Selachii

Dasyatis violacea Bonaparte

Distribution: Mediterranean

DOLLFUS, R.P., 1969a

Tentacularia megabothridia Hart, 1936 syn. Grillotia heptanchi

(Vaullegeard, 1899) SEE: Grillotia megabothridia (Hart, 1936) (adult)

Tentacularia musculara Hart, 1936 SEE: Grillotia musculara (Hart, 1936) Dollfus, 1942 (adult)

Tentacularia perelica Shuler, 1938 SEE: Grillotia perelica (Shuler, 1938) Dollfus, 1942 (adult)

Tentacularia sp. of Hart 1936 SEE: Grillotia erinaceus (Van Beneden, 1858) (larva)

Tetrarhynchus erinaceus Van Beneden SEE: Grillotia erinaceus (Van Beneden, 1858) (?) (tentative identification)

Tetrarhynchus erinaceus SEE: Grillotia erinaceus (Van Beneden, 1858) (larva)

PARASITE FAMILY

MIXODIGMATIDAE

Mixodigma leptaleum Dailey and Vogelbein, 1982 (adult)

REMARKS: Dailey and Vogelbein (1982) erected the family Mixodigmatidae for the species Mixodigma leptaleum which possesses some features of the Eutetrarhynchidae and the Dasyrhynchidae, and distinguishing features such as combined heteroacanthous and poeciloacanthous arrangements of hooks.

Host: Vertebrata Selachii

"Megamouth"

Location: spiral valve

Distribution: Hawaii

DAILEY, M.D. AND VOGELBEIN, W., 1982

PARASITE FAMILY

MUSTELICOLIDAE

Mustelicola woodsholei Dollfus, 1969 (adult)

REMARKS: Dollfus, 1969b described a new family, Mustelicolidae to contain the species Mustelicola woodsholei. The family belongs to the atypical Heterocantha.

Host: Vertebrata Selachii

Mustelus canis (Mitchell, 1815)

Location: alimentary canal

Distribution: Massachusetts, Woods Hole

DOLLFUS, R.P., 1969b

Diplootobothrium springeri Chandler, 1942 (adult)

Host: Vertebrata Selachii
 Platysqualus tudes (Cuvier)
 Location: spiral valve
 Distribution: Florida, Gulf Coast
 CHANDLER, A.C., 1942

Diplootobothrium springeri Chandler, 1942 (plerocercoid)

Host: Vertebrata Osteichthyes
 Pogonias cromis (Linnaeus)
 Location: musculature, encysted in
 Distribution: Texas, Avansas Bay
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967

Diplootobothrium tamilnadensis Reimer, 1980 (plerocercoid)

Host: Vertebrata Osteichthyes
 Secutor ruconius Buchanan-Hamilton
 Distribution: Indian Ocean
 REIMER, L.W., 1980

Otobothrium arii Bilqees and Shaukat, 1976 (plerocercoid)

Host: Vertebrata Osteichthyes
 Arius serratus (Day)
 Location: encysted in head muscles and visceral
 mesenteries
 Distribution: Karachi coast
 BILQEES, F.M. AND SHAUKAT, N., 1976

Otobothrium conglobatus Khambata and Bal, 1953

Host: Vertebrata Selachii
 Elasmobranch sp.
 Distribution: Bombay
 KHAMBATA, F.S. AND BAL, D.V., 1953

Otobothrium crenacolle Linton, 1890

Host: Vertebrata Osteichthyes
 Neoscombrops annectens Gilchrist
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984

Otobothrium crenacolle Linton, 1890 (larva)

Host: Vertebrata Osteichthyes
 Bagre bahiensis
 Location: peritoneum, mesenteries
 Distribution: Alvarado, Veracruz, Mexico
 PALACIOS, N.M. AND BARROETA, L.F., 1967
 Location: peritoneum, muscles
 Distribution: Alvarado, Veracruz, Mexico
 PALACIOS, N.M., 1963
 Lepidotrigla natalensis Gilchrist and Thompson
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984
 Wallagonia attu
 Location: body wall under the peritoneum, encysted in
 Distribution: Burma, Rangoon
 KYAW-MYINT, 1968

Otobothrium crenacolle Linton, 1890 (larva)

REMARKS: O'Rourke does not state whether Otobothrium crenacolle was found in one or more of the named hosts.

Host: Vertebrata Osteichthyes Food fishes including
Cynoscion regalis, Micropogon undulatus and Leioostomus xanthurus
Distribution: Maryland, Solomons
O'ROURKE, A.E., 1949

Otobothrium crenacolle Linton, 1890 (plerocercus)

Host: Invertebrata Cephalopoda
Loligo paeleii (LeSueur, 1821)
Location: stomach washings
Distribution: Cape Cod area
STUNKARD, H.W., 1977

Host: Vertebrata Osteichthyes
Acanthurus caeruleus Bloch and Schneider
Location: body cavity, intestine, surface of, stomach
Distribution: Bermuda
REES, G., 1969
Euthynnus alleteratus (Rafinesque, 1810)
Location: body cavity, intestine, surface of, stomach
Distribution: Bermuda
REES, G., 1969

Otobothrium cysticum (Mayer, 1842)

Host: Vertebrata Selachii
Dasybatus sp.
Distribution: Cameroons
DOLLFUS, R.P., 1942

Otobothrium cysticum (Mayer, 1842) (plerocercus)

Host: Vertebrata Selachii
Carcharinus melanopterus (Quoy and Gaimard)
Location: stomach wall
Distribution: Red Sea
DOLLFUS, R.P., 1942
Osteichthyes
Corvina nigrata Cuvier
Location: peritoneum
Distribution: Cameroons
DOLLFUS, R.P., 1942
Dentex macrophthalmus Cuvier and Valenciennes
Location: intestine
Distribution: Castiglione, Algiers
DOLLFUS, R.P., 1942
Osteolaemus tetraspis Cope
Location: stomach wall
Distribution: French Congo
DOLLFUS, R.P., 1942
Reptilia
Chelone mydas L.
Location: stomach wall, external
Distribution: Port-Etienne, Mauritania
DOLLFUS, R.P., 1942

- Otobothrium dipsacum Linton, 1897 SEE: Otobothrium (Pseudotobothrium) dipsacum Linton, 1897
- Otobothrium harpodoni Kotwal and Masurekar, 1978 (encysted larva)
 Host: Vertebrata Osteichthyes
 Harpodon nehereus (Ham-Buch)
 Location: muscles and visceral organs
 Distribution: Bombay
 KOTWAL, V.P. AND MASUREKAR, V.B., 1978
 Johnius ruber (Bloch-Schn)
 Location: muscles and visceral organs
 Distribution: Bombay
 KOTWAL, V.P. AND MASUREKAR, V.B., 1978
- Otobothrium ilisha (Southwell and Prashad, 1918) Goldstein, 1963
 (plerocercus) syn. Poecilancistrum ilisha (Southwell and Prashad, 1918)
 Dollfus, 1942
 REMARKS: Goldstein (1963) suggested that Poecilancistrum ilisha (Southwell and Prashad, 1918) should be placed in the genus Otobothrium.
 Host: Vertebrata Osteichthyes
 Hilsa hilsa
 GOLDSTEIN, R.J., 1963
- Otobothrium karachiensis Bilqees and Muslehuddin, 1976 (adult)
 Host: Vertebrata Selachii
 Myrmillo manazo (Bik.)
 Location: intestine
 Distribution: Karachi Coast
 BILQEES, F.M. AND MUSLEHUDDIN, R., 1976
- Otobothrium kurisi Shields, 1985 (adult)
 Host: Vertebrata Selachii
 Sphyrna lewini
 Location: spiral valve
 Distribution: 400 m east of Campus Point, Santa Barbara, California
 SHIELDS, J.D., 1985
- Otobothrium linstowi Southwell, 1912 (adult)
 Host: Vertebrata Selachii
 Rhynchobatus djeddensis (Forsk) Bleeker
 Location: spiral valve
 Distribution: Madras Coast, India
 SUBHAPRADHA, C.K., 1955
- Otobothrium minutum Subhpradha, 1955 (adult)
 Host: Vertebrata Selachii
 Carcharhinus limbatus (Müller and Henle)
 Location: spiral valve
 Distribution: Madras Coast, India
 SUBHAPRADHA, C.K., 1955
 Carcharias walbeehmi Bleeker
 Location: spiral valve
 Distribution: Madras Coast, India
 SUBHAPRADHA, C.K., 1955

- Otobothrium mugilis Hiscock, 1954
 Host: Vertebrata Osteichthyes
Hilsa ilisha (Hamilton)
 Location: coelom, mesentery
 Distribution: Sind River
 RIZVI, S.S.H., 1971
- Otobothrium mugilis Hiscock, 1954 (plerocercus)
 Host: Vertebrata Osteichthyes
Mugil cephalus L.
 Location: gut mesentery
 Distribution: Brisbane, Australia
 HISCOCK, I.D., 1954
Netuma australis (Gunther)
 Location: body wall, between peritoneum and
 musculature
 Distribution: Brisbane, Australia
 HISCOCK, I.D., 1954
- Otobothrium penetrans Linton, 1907
 Host: Vertebrata Selachii
Carcharhinus leucas (Müller and Henle, 1841)
 Location: spiral valve
 Distribution: Nicaragua
 WATSON, D.E. AND THORSON, T.B., 1976
Carcharhinus limbatus (Müller and Henle)
 Distribution: Tortugas, Florida
 SHULER, R.H., 1938
 SHULER, R.H., 1938
Scoliodon terrae-novae (Richardson)
 Distribution: Tortugas, Florida
 SHULER, R.H., 1938
 SHULER, R.H., 1938
- Otobothrium pephrikos Dollfus, 1969 (adult)
 Host: Vertebrata Selachii
Sphyrna zygaena (L.)
 Location: intestine
 Distribution: Mediterranean
 DOLLFUS, R.P., 1969a
- Otobothrium propectysticum Dollfus, 1969 (adult)
 Host: Vertebrata Selachii
Sphyrna zygaena (L.)
 Location: intestine
 Distribution: Mediterranean
 DOLLFUS, R.P., 1969a
- Otobothrium (Pseudotobothrium) dipsacum (Linton, 1897) Dollfus, 1942 syn.
Otobothrium (Pseudotobothrium) insigne (Linton, 1905) Dollfus, 1942
 REMARKS: Cruz-Reyes (1974) re-described Otobothrium
(Pseudotobothrium) dipsacum and relegated Otobothrium
(Pseudotobothrium) insigne as a synonym.
 Host: Vertebrata Osteichthyes
Balistes polylepis Steindachner, 1876
 Distribution: Mexico, Puerto Angel
 CRUZ-REYES, A., 1974a

- Otobothrium (Pseudotobothrium) dipsacum Linton, 1897 (plerocercus)
 Host: Vertebrata Osteichthyes
Otoperca aurita (Valenciennes)
 Location: encysted in gills
 Distribution: Pointe Padron, Belgian Congo
 DOLLFUS, R.P., 1942
Polynemus quadrifiliis Cuvier
 Location: encysted in gills, encysted in musculature
 of head
 Distribution: Pointe Padron, Belgian Congo
 DOLLFUS, R.P., 1942
- Otobothrium (Pseudotobothrium) dipsacum (Linton, 1897) (plerocercus) syn.
Pseudotobothrium dipsacum (Linton, 1897) in Ward (1954)
 Host: Vertebrata Osteichthyes
Sphyraena barracuda (Walbaum)
 Location: body cavity
 Distribution: Miami
 WARD, H.L., 1954
- Otobothrium (Pseudotobothrium) dipsacum Linton, 1897 syn. Otobothrium dipsacum Linton, 1897
 REMARKS: Dollfus (1942), Wardle and McLeod (1952) and Yamaguti (1959) recognised that Otobothrium dipsacum belonged to the subgenus Pseudotobothrium.
 Host: Vertebrata Osteichthyes
Chelidonichthys kumu Lesson and Garnot
 Location: body cavity
 Distribution: East China Sea
 YAMAGUTI, S., 1952
- Otobothrium (Pseudotobothrium) insigne (Linton, 1905) Dollfus, 1942 SEE:
Otobothrium (Pseudotobothrium) dipsacum (Linton, 1897) Dollfus, 1942
- Otobothrium (Pseudotobothrium) linstowi (Southwell, 1912) (plerocercoid)
 Host: Vertebrata Osteichthyes
Coryphaesopia cornuta (Kaup)
 Distribution: Indian Ocean
 REIMER, L.W., 1980
- Otobothrium robustum Chandler, 1935 (larva)
 Host: Vertebrata Osteichthyes
Eriscion nebulosus
 Location: musculature
 Distribution: Galveston Bay, Texas
 CHANDLER, A.C., 1935b
- Otobothrium septemspinigerens Khambata and Bal, 1953
 Host: Vertebrata Selachii
 Elasmobranch sp.
 Distribution: Bombay
 KHAMBATA, F.S. AND BAL, D.V., 1953

Otobothrium sp. (larva)

Host: Vertebrata Osteichthyes
Trachynotus sp.
Location: encysted in body cavity
Distribution: Madras, India
ANANTARAMAN, S., 1963

Otobothrium vermicularis Khambata and Bal, 1953

Host: Vertebrata Selachii
Elasmobranch sp.
Distribution: Bombay
KHAMBATA, F.S. AND BAL, D.V., 1953

Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929 (adult)

Host: Vertebrata Selachii
Carcharhinus leucas (Müller and Henle, 1841)
BUTEAU, JR., G.H., SIMMONS, J.E., FAIRBAIRN, D., 1969
Distribution: Gulf of Mexico
GOLDSTEIN, R.J., 1963
Negaprion brevirostris (Poey, 1868)
Distribution: Gulf of Mexico
GOLDSTEIN, R.J., 1963

Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929 (larva)

Host: Vertebrata Osteichthyes
Sciaena antarctica Castelnau
Location: encysted in flesh
Distribution: McKenzie Bay, New South Wales, Richmond
River, New South Wales
ROBINSON, E.S., 1965

Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929 (plerocercoid)

Host: Vertebrata Osteichthyes
Bairdiella chrysura (Lacépède)
Location: dorsal muscle masses, adjacent to the
vertebral column and in the vicinity of the vent
Distribution: Texas, coast
SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
Location: musculature
Distribution: Gulf of Mexico
OVERSTREET, R.M., 1977
Cynoscion arenarius Ginsberg
Location: dorsal muscle masses, adjacent to the
vertebral column and in the vicinity of the vent
Distribution: Texas, coast
SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
Location: musculature
Distribution: Gulf of Mexico
OVERSTREET, R.M., 1977
Cynoscion nebulosus (Cuvier)
Location: dorsal muscle masses, adjacent to the
vertebral column and in the vicinity of the vent
Distribution: Texas, coast
SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
Location: musculature
Distribution: Gulf of Mexico
OVERSTREET, R.M., 1977
Distribution: Steinhatchee, Gulf of Mexico
COLLINS, M.R., MARSHALL, M.J. AND LANCIANI, C.A.,
1984
Distribution: United States, north eastern coast,

Gulf of Mexico, northern
OVERSTREET, R.M., 1978b

Cynoscion nothus

Location: dorsal muscle masses, adjacent to the
vertebral column and in the vicinity of the vent

Distribution: Texas, coast

SCHLICHT, F.G. AND MCFARLAND, W.N., 1967

Leiostomus xanthurus Lacépède

Location: dorsal muscle masses, adjacent to the
vertebral column and in the vicinity of the vent

Distribution: Texas, coast

SCHLICHT, F.G. AND MCFARLAND, W.N., 1967

Location: musculature

Distribution: Seahorse Key, Gulf of Mexico

COLLINS, M.R., MARSHALL, M.J. AND LANCIANI, C.A.,
1984

Menticirrhus americanus (Linnaeus)

Location: musculature

Distribution: Gulf of Mexico

OVERSTREET, R.M., 1977

Micropogon undulatus (Linnaeus)

Location: dorsal muscle masses, adjacent to the
vertebral column and in the vicinity of the vent

Distribution: Texas, coast

SCHLICHT, F.G. AND MCFARLAND, W.N., 1967

Micropogonias undulatus (Linnaeus)

Location: musculature

Distribution: Gulf of Mexico

OVERSTREET, R.M., 1977

Pogonias cromis (Linnaeus)

Location: musculature

Distribution: Gulf of Mexico

OVERSTREET, R.M., 1977

Sciaenops ocellata (Linnaeus)

Location: dorsal muscle masses, adjacent to the
vertebral column and in the vicinity of the vent

Distribution: Texas, coast

SCHLICHT, F.G. AND MCFARLAND, W.N., 1967

Location: musculature

Distribution: Gulf of Mexico

OVERSTREET, R.M., 1977

Umbrina coroides (Cuvier)

Location: musculature

Distribution: Palm Beach, Florida

COLLINS, M.R., MARSHALL, M.J. AND LANCIANI, C.A.,
1984

Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929 (plerocercus)

Host: Vertebrata Osteichthyes

Cynoscion nebulosus (Cuvier)

GOLDSTEIN, R.J., 1963

Cynoscion regalis

GOLDSTEIN, R.J., 1963

Micropogon undulatus (Linnaeus)

GOLDSTEIN, R.J., 1963

- Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929 syn.
Poecilancistrum gangeticum (Shiple and Hornell, 1906) syn. Otobothrium robustum (Chandler, 1935)
 REMARKS: Goldstein (1963) suggested that the genus Poecilancistrum is monotypic and that Poecilancistrum gangeticum (Shiple and Hornell, 1906) and Poecilancistrum robustum (Chandler, 1935) are synonyms of Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1942.
 Host: Vertebrata Osteichthyes
Leioostomus xanthurus Lacépède
 GOLDSTEIN, R.J., 1963
- Poecilancistrum gangeticum (Shiple and Hornell, 1906) syn. Otobothrium robustum (Chandler, 1935) SEE: Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
- Poecilancistrum ilisha (Southwell and Prashad, 1918) Dollfus, 1942
 Host: Vertebrata Osteichthyes
Hilsa ilisha (Hamilton)
 Location: coelom, mesentery
 Distribution: Sind River
 RIZVI, S.S.H., 1971
- Poecilancistrum ilisha (Southwell and Prashad, 1918) Dollfus, 1942 SEE:
Otobothrium ilisha (Southwell and Prashad, 1918) Goldstein, 1963
 (plerocercus)
- Poecilancistrum robustum
 Host: Vertebrata Osteichthyes
Cynoscion nebulosus (Cuvier)
 Distribution: Gulf of Mexico
 GUEST, W.C. AND GUNTER, G., 1958
- Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942
 Host: Vertebrata Osteichthyes
Pogonias cromis (Linnaeus)
 Distribution: Texas, coast
 CHANDLER, A.C., 1954
- Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942 (adult)
 Host: Vertebrata Selachii
Carcharhinus leucas (Müller and Henle, 1841)
 Distribution: Gulf of Mexico, north west
 GOLDSTEIN, R.J., 1962
Carcharhinus limbatus (Müller and Henle)
 Location: spiral valve
 Distribution: Gulf of Mexico, northern, Grand Isle, Barataria Pass
 THATCHER, V.E., 1961
Negeprion brevirostris (Poey, 1868)
 Distribution: Gulf of Mexico, north west
 GOLDSTEIN, R.J., 1962

Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942 (plerocercoid)

Host: Vertebrata Osteichthyes

Cynoscion nebulosus (Cuvier and Valenciennes)

Location: musculature

Distribution: Gulf Coast, Louisiana

BOERTJE, S.B., 1976

Pseudotobothrium dipsacum (Linton, 1897) in Ward (1954) SEE:

Otobothrium (Pseudotobothrium) dipsacum (Linton, 1897) (plerocercus)

PARASITE FAMILY

PSEUDOGILQUINIIDAE

Pseudogilquinia karachiense Bilqees and Khatoon, 1988 (plerocercus)

Host: Vertebrata Osteichthyes

Pomadasys olivaceus Day

Location: stomach mesenteries

Distribution: Karachi, Pakistan

BILQEES, F.M. AND KHATOON, A., 1988

Pseudogrillotia basipunctata Carvajal, Campbell and Cornford, 1976 (adult)

Host: Vertebrata Selachii
 Carcharhinus amblyrhynchos Bleeker
 Location: spiral valve
 Distribution: Hawaii
 CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

Pseudogrillotia basipunctata Carvajal, Campbell and Cornford, 1976

(plerocercus)

Host: Vertebrata Osteichthyes
 Diodon hystrix L.
 Location: pharyngeal connective tissue
 Distribution: Hawaii
 CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

Pseudogrillotia pleistacantha Dollfus, 1969 (plerocercoid)

Host: Vertebrata Osteichthyes
 Pogonias cromis (Linnaeus)
 Location: musculature
 Distribution: Gulf of Mexico
 OVERSTREET, R.M., 1977

Pseudogrillotia pleistacantha Dollfus, 1969 (post-larva)

REMARKS: The family Pseudogrillotiidae, described by Dollfus (1969) contains the species Pseudogrillotia pleistacantha. This differs from any species of Grillotia because it possesses a post-larval stage and a long, craspedote scolex.

Host: Vertebrata Osteichthyes
 Pogonias cromis (L., 1766)
 Location: musculature
 Distribution: Texas, Galveston
 DOLLFUS, R.P., 1969b

Pseudogrillotia sp. (larva)

Host: Vertebrata Osteichthyes
 Coelorhynchus parallelus (Günther)
 Distribution: Coast of Mozambique
 REIMER, L.W., 1984

Gymnorhynchus gigas (Cuvier, 1817) of Chandler (1935a) SEE:
Pterobothrium filicolle (Linton, 1889) (larva)

Halysiorhynchus macrocephalus (Shiple and Hornell, 1906) (adult)

Host: Vertebrata Selachii
Pteroplatea micrura Day
Location: intestine
Distribution: Karachi, Arabian Sea
ZAIDI, D.A. AND KHAN, D., 1976

Pterobothrium chaeturichthydis Yamaguti, 1952 (larva)

Host: Vertebrata Osteichthyes
Chaeturichthys hexanemus (Bleeker)
Location: body cavity
Distribution: Maisaka, Sikuoka Prefecture, Japan
YAMAGUTI, S., 1952

Pterobothrium filicolle (Linton, 1889) (larva) syn. Gymnorhynchus gigas
(Cuvier, 1817) of Chandler (1935a)

REMARKS: Chandler (1942) reidentified his specimens of
Gymnorhynchus gigas (in Chandler, 1935a) as Pterobothrium
filicolle.

Host: Vertebrata Osteichthyes
Galeichthys felis
Location: mesenteries, encysted on
Distribution: Galveston Bay, Texas
CHANDLER, A.C., 1935a

Pterobothrium filicolle (Linton, 1889) (larva) syn. Gymnorhynchus gigas
(Cuvier, 1817) of Chandler (1935a)

Host: Vertebrata Osteichthyes
Micropogon undulatus (Linnaeus)
Location: body cavity
Distribution: Galveston Bay, Texas
CHANDLER, A.C., 1935a

Pterobothrium hawaiiensis Carvajal, Campbell and Cornford, 1976 (adult)

Host: Vertebrata Selachii
Dasyatis lata (Garman)
Location: spiral valve
Distribution: Hawaii
CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

Pterobothrium heteracanthum Diesing, 1850

Host: Vertebrata Osteichthyes
Hilsa ilisha (Hamilton)
Location: parietal layer, liver
Distribution: Sind River
RIZVI, S.S.H., 1971

Pterobothrium heteracanthum Diesing, 1850 (plerocercoid) syn.

Syndesmobothrium filicolle Linton, 1890

REMARKS: Dollfus, 1942 considered Syndesmobothrium filicolle
Linton, 1890 to be a synonym of Pterobothrium heteracanthum
Diesing, 1850.

Host: Vertebrata Osteichthyes
Hilsa ilisha (Hamilton)
Location: lateral muscle
Distribution: Hooghly Estuary
PAL, R.N., 1963

Pterobothrium heteracanthum Diesing, 1850 syn. Syndesmobothrium filicolle

Linton, 1890

Host: Vertebrata Osteichthyes
Hilsa ilisha (Hamilton)
Distribution: Hooghly River
GOPALAKRISHNAN, V. AND PAL, R.N., 1964

Pterobothrium hira Yamaguti, 1952 (larva)

Host: Vertebrata Osteichthyes
Ilisha elongata (Bennett)
Location: body cavity, especially on liver and pyloric caeca
Distribution: Sea of Ariake, Kyusu, Japan
YAMAGUTI, S., 1952

Pterobothrium hira Yamaguti, 1952 (plerocercoid)

Host: Vertebrata Osteichthyes
Gazza minuta
Location: body cavity
Distribution: Palawan, Philippines
JENSEN, L.A., SCHMIDT, G.D. AND KUNTZ, K.E., 1983

Pterobothrium lintoni (MacCallum, 1916)

Host: Vertebrata Selachii
Dasyatis centrura
Location: spiral valve
Distribution: Buzzard's Bay, Massachusetts
SIMMONS, J.E., 1961
Osteichthyes
Arius gogora
Distribution: Burma
KYAW-MYINT, 1968
Sillago sp.
Distribution: Burma
KYAW-MYINT, 1968

Pterobothrium lintoni (MacCallum, 1916) (larva)

Host: Vertebrata Osteichthyes
Arius platystomus
Distribution: Burma
KYAW-MYINT, 1968
Sciaena coiter
Location: abdominal cavity
Distribution: Burma, Rangoon, estuarine
KYAW-MYINT, 1968

Pterobothrium lintoni (MacCallum, 1916) (larva) syn. Pterobothrium malleum

(Linton, 1924) syn. Gymnorhynchus malleus (Linton, 1924) of Chandler, 1942
REMARKS: Chandler (1942) reidentified his specimens of Gymnorhynchus malleus (in Chandler 1935a) as Pterobothrium malleum. Dollfus (1942) considered Pterobothrium malleum to be a synonym of Pterobothrium lintoni.

Host: Vertebrata Osteichthyes
Galeichthys felis
Location: mesenteries
Distribution: Galveston Bay, Texas
CHANDLER, A.C., 1935a

Pterobothrium lintoni (MacCallum, 1916) (plerocercoid)

Host: Vertebrata Osteichthyes
Menticirrhus americanus (Linnaeus)
Location: musculature
Distribution: Gulf of Mexico
OVERSTREET, R.M., 1977
Micropogonias undulatus (Linnaeus)
Location: musculature
Distribution: Gulf of Mexico
OVERSTREET, R.M., 1977

Pterobothrium malleum (Linton, 1924) (adult)

Host: Vertebrata Selachii
Dasyatis akajei
Location: spiral intestine
Distribution: Japan
IWATA, S., 1939

Pterobothrium malleum (Linton, 1924) syn. Gymnorhynchus malleus (Linton, 1924) of Chandler, 1942 SEE: Pterobothrium lintoni (MacCallum, 1916) (larva)

Pterobothrium rubromaculatum (Diesing, 1863) (plerocercoid)

Host: Vertebrata Osteichthyes
Rastrelliger kanagurta (Russell)
Distribution: Indian Ocean
REIMER, L.W., 1980

Pterobothrium sp. (larva)

Host: Vertebrata Osteichthyes
Pteroplatea micrura
Location: encysted in body cavity
Distribution: Madras, India
ANANTARAMAN, S., 1963

Pterobothrium sp. (plerocercoid)

Host: Vertebrata Osteichthyes
Caranx affinis
Location: body cavity
Distribution: Palawan, Philippines
JENSEN, L.A., SCHMIDT, G.D. AND KUNTZ, K.E., 1983
Menticirrhus americanus (Linnaeus)
Location: viscera, entwined about the mesenteries,
in the
Distribution: Texas, coast
SCHLICHT, F.G. AND MCFARLAND, W.N., 1967

Pterobothrium sp. (plerocercus)

Host: Vertebrata Selachii
Dasyatis uarnak
Location: ovary
TANDON, R.S., 1972
Ray sp.
Location: spiral valve
Distribution: Guanabara, Rio de Janeiro
REGO, A.A., SANTOS, J.C. AND SILVA, P.P., 1974
Osteichthyes
Caranx sp.
Location: intestine
Distribution: Persian Gulf
MIRZAYANS, A., 1970

Cynoscion leiarchus (Cuvier and Valenciennes)

Location: body cavity

Distribution: Rio de Janeiro

REGO, A.A., SANTOS, J.C. AND SILVA, P.P., 1974

Reptilia

Hydrodynastes bicinctus bicinctus

Location: body cavity

Distribution: Rio Approyage, French Guyana

REGO, A.A., 1980

Syndesmobothrium filicolle

Host: Vertebrata Osteichthyes

Hilsa ilisha (Hamilton)

Distribution: Hugli estuary, India

PAL, R.N., 1980

Syndesmobothrium filicolle Linton, 1890 SEE: Pterobothrium
heteracanthum Diesing, 1850

Syndesmobothrium filicolle Linton, 1890 SEE: Pterobothrium
heteracanthum Diesing, 1850 (plerocercoid)

Renibulbus penaeus Feigenbaum, 1975 (plerocercus)

REMARKS: Feigenbaum described the heterocanthous family Renibulbidae as being most similar to the family Otobothriidae, but lacking sensory fossettes.

Host: Invertebrata Crustacea

Penaeus brasiliensis Latreille

Location: body, hepatopancreas

Distribution: Sinaloa, Mexico

FEIGENBAUM, D.L., 1975

Renibulbus penaeus Feigenbaum, 1975 (plerocercus)

Host: Invertebrata Crustacea

Penaeus brasiliensis Latreille

Location: digestive gland

Distribution: Biscayne Bay, Florida

FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976

Penaeus duorarum Burkenroad

Location: digestive gland

Distribution: Biscayne Bay, Florida

FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976

Rhinoptericola megacantha Carvajal and Campbell, 1975 (adult)

REMARKS: Carvajal and Campbell erected a new family Rhinoptericolidae to accomodate this new species. It belongs to the heteroacanthous trepanorhynchs with atypical armature and is most closely allied to the families Otobothriidae and Mustelicolidae.

Host: Vertebrata Selachii

Rhinoptera bonasus (Mitchell, 1815)

Location: spiral valve

Distribution: Chesapeake Bay, Virginia

CARVAJAL, J. AND CAMPBELL, R.A., 1975

PARASITE FAMILY SPHYRIOCEPHALIDAE

Sphyriocephalus Alberti Guiart, 1935 SEE: Sphyriocephalus viridis
(Wagener, 1854) Pintner, 1913 (post-larva)

Sphyriocephalus alberti Guiart, 1935 SEE: Sphyriocephalus viridis
(Wagener, 1854) (post-larva)

Sphyriocephalus dollfusi Bussi ras and Aldrin, 1968 (post-larva)

Host: Vertebrata Osteichthyes
 Thunnus obesus (Lowe, 1839)
 Location: stomach
 Distribution: Africa, West Coast
 BUSSI RAS, J. AND ALDRIN, J.F., 1968
 Distribution: Atlantic
 BUSSI RAS, J. AND BAUDIN-LAURENCIN, F., 1973

Sphyriocephalus pelorosoma Heinz and Dailey, 1974 (adult)

Host: Vertebrata Selachii
 Alopias superciliosus (Lowe)
 Location: stomach
 Distribution: California, southern
 HEINZ, M.L. AND DAILEY, M.D., 1974

Sphyriocephalus Richardi Guiart, 1935 SEE: Sphyriocephalus viridis
(Wagener, 1854) Pintner, 1913 (post-larva)

Sphyriocephalus tergestinus Pintner, 1913 (adult)

Host: Vertebrata Selachii
 Euprotomicrus bispinatus (Quoy and Gaimard, 1842)
 Location: stomach, cardiac
 Distribution: Indian Ocean, east South Pacific
 DOLLFUS, R.P., 1967a

Sphyriocephalus viridis (Wagener, 1854) Pintner, 1913

Host: Vertebrata Selachii
 Alopias superciliosus (Lowe)
 Distribution: California, southern
 HEINZ, M.L. AND DAILEY, M.D., 1974
 Scymnorhinus licha (Bonnaterre)
 Location: stomach
 Distribution: British Isles
 WILLIAMS, H.H., 1968

Sphyriocephalus viridis (Wagener, 1854) Pintner, 1913 (adult)

Host: Vertebrata Selachii
 Isuropsis glauca
 Location: spiral intestine
 Distribution: Japan
 IWATA, S., 1939
 Scymnorhinus licha (Bonnaterre)
 Location: stomach
 Distribution: Concarneau
 DOLLFUS, R.P., 1946b

Sphyriocephalus viridis (Wagener, 1854) Pintner, 1913 (post-larva) syn.

Sphyriocephalus Alberti Guiart, 1935

Host: Vertebrata Selachii

Centroscymnus coelolepis Bocage and Capello, 1864

Location: digestive tract

Distribution: Azores, south west, Atlantic

GUIART, J., 1935a

Pseudotriakis microdon Capello, 1867

Location: stomach mucosa

Distribution: Cape Verde Isles, Atlantic

GUIART, J., 1935a

Sphyriocephalus viridis (Wagener, 1854) Pintner, 1913 (post-larva) syn.

Sphyriocephalus Richardi Guiart, 1935

Host: Vertebrata Osteichthyes

Synaphobranchus sp.

Location: abdominal cavity

Distribution: Azores, south west, Atlantic

GUIART, J., 1935a

Sphyriocephalus viridis (Wagener, 1854) (post-larva) syn. Sphyriocephalus alberti Guiart, 1935

REMARKS: Bussieras considered Sphyriocephalus alberti Guiart, 1935 to be synonymous with S. viridis after making a detailed comparison of scolex morphology and proboscis armature.

Host: Vertebrata Selachii

Centroscymnus coelolepis Bocage and Capello, 1864

Distribution: La Corse

BUSSIERAS, J., 1970

Nybelinia (? Syngenes) sp. Dollfus, 1942 SEE: Nybelinia thyrsites
(Leiper and Atkinson, 1915) Korotaeva, 1971

Nybelinia (? Syngenes sp.) (post-larva)

Host: Vertebrata Osteichthyes
Thyrsites atun (Euphrasen, 1791)
Distribution: Cook Strait, New Zealand
ROBINSON, E.S., 1959a
Trachurus novae-zealandiae Richardson
Distribution: Cook Strait, New Zealand
ROBINSON, E.S., 1959a
Zeus faber L.
Location: body cavity, cardiac stomach
Distribution: Cook Strait, New Zealand
ROBINSON, E.S., 1959a

Nybelinia africana Dollfus, 196♂ (plerocercus, post-larva)

Host: Vertebrata Osteichthyes
Mullus barbatus L.
Location: pharynx, wall of
Distribution: Mediterranean
DOLLFUS, R.P., 196♂b

Nybelinia africana Dollfus, 196♂ (post-larva)

Host: Vertebrata Selachii
Galeoides polydactylus
Location: body cavity
Distribution: Atlantic, Dakar
DOLLFUS, R.P., 196♂b
Osteichthyes
Serranus cabrilla L. 1758
Location: branchial cavity
Distribution: Algiers
DOLLFUS, R.P., 196♂b
Trigla sp.
Location: gills
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 196♂b

Nybelinia alloiotica Dollfus, 196♂ (forma typica) (post-larva)

Host: Vertebrata Osteichthyes
Sphyraena quachancho Cuvier, 1829
Location: branchial cavity
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 196♂b

Nybelinia alloiotica Dollfus, 196♂ (var.) (post-larva)

Host: Vertebrata Osteichthyes
Coryphaena equisetis Linnaeus, 1758
Location: branchial cavity
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 196♂b

Nybelinia anantaramanorum Reimer, 1980 (plerocercoid)

Host: Vertebrata Osteichthyes
Sparidae gen. spec.
Distribution: Indian Ocean
REIMER, L.W., 1980

Nybelinia anguillicola Yamaguti, 1952 (larva)

Host: Vertebrata Osteichthyes
Anguilla japonica
Location: encysted in submucosa of the intestine
Distribution: Kuki, Mie Prefecture, Japan
YAMAGUTI, S., 1952

Nybelinia anthicosum Heinz and Dailey, 1974 (adult)

Host: Vertebrata Selachii
Heterodontus francisci (Girard)
Distribution: Mexico
HEINZ, M.L. AND DAILEY, M.D., 1974
Iriakis semifasciata Girard, 1854
Location: stomach, spiral valve
Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974

Nybelinia basimegacantha Carvajal, Campbell and Cornford, 1976 (post-larva)

REMARKS: The presence of the very mobile plerocerci in the mouth may have been a result of post mortem migration.

Host: Vertebrata Osteichthyes
Parapeneus multifasciatus Quoy and Gaimard
Location: mouth
Distribution: Hawaii
CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976

Nybelinia bengalensis Reimer, 1980 (plerocercoid)

Host: Vertebrata Osteichthyes
Cynoglossus macrolepidotus (Bleeker)
Distribution: Indian Ocean
REIMER, L.W., 1980
Cynoglossus sp.
Distribution: Indian Ocean
REIMER, L.W., 1980

Nybelinia bisulcata (Linton, 1889) Poche, 1926

Host: Vertebrata Selachii
Carcharhinus leucas (Müller and Henle, 1841)
Location: spiral valve
Distribution: Nicaragua
WATSON, D.E. AND THORSON, T.B., 1976

Nybelinia bisulcata (Linton, 1889) Poche, 1926 (plerocercus)

Host: Invertebrata Cephalopoda
Loligo paeleii (LeSueur, 1821)
Location: encysted in the wall of the stomach and caecum
Distribution: Cape Cod area
STUNKARD, H.W., 1977

Host: Vertebrata Osteichthyes
Coryphaena hippurus Linnaeus
Location: viscera
Distribution: Miami
WARD, H.L., 1954

- Nybelinia bisulcata (Linton, 1899) Poche, 1926 (larva)
 REMARKS: O'Rourke (1949) did not state whether N. bisulcata was found in one or more of the named hosts.
- Host: Vertebrata Osteichthyes Food fishes including
Cynoscion regalis, Micropogon undulatus and Leiostomus xanthurus
 Distribution: Maryland, Solomons
 O'ROURKE, A.E., 1949
- Nybelinia cadenati Dollfus, 1960
 Host: Vertebrata Osteichthyes
Fistularia tabaccaria L. 1758
 Location: branchial cavity
 Distribution: Atlantic, Gorée
 DOLLFUS, R.P., 1960b
Hynnys goreensis (Valenciennes, 1846)
 Distribution: Atlantic, Gorée
 DOLLFUS, R.P., 1960b
- Nybelinia cadenati Dollfus, 1960 (post-larva)
 Host: Vertebrata Osteichthyes
Epinephelus alexandrinus (Cuvier and Valenciennes, 1828)
 Location: branchial cavity
 Distribution: Atlantic, Gorée
 DOLLFUS, R.P., 1960b
- Nybelinia congru Guiart, 1935 (larva)
 REMARKS: Dollfus (1942) questions the validity of this species.
- Host: Vertebrata Osteichthyes
Synaphobranchus pinnatus (Gronnovius) (tentative identification)
 Location: stomach wall, encysted in
 Distribution: Maio, Cape Verde Isles, north east of, Atlantic
 GUIART, J., 1935a
- Nybelinia dakari Dollfus, 1960 (plerocercoid)
 Host: Vertebrata Osteichthyes
Secutor ruconius Buchanan-Hamilton
 Distribution: Indian Ocean
 REIMER, L.W., 1980
- Nybelinia dakari Dollfus, 1960 (post-larva)
 Host: Vertebrata Osteichthyes
Vorner (Argyreiosus) setipinnus (Mitchell, 1815)
 Location: gills
 Distribution: Atlantic, Dakar
 DOLLFUS, R.P., 1960b
- Nybelinia edwinlintoni Dollfus, 1960 (post-larva)
 Host: Vertebrata Selachii
Sphyrna diplana Springer
 Location: intestine
 Distribution: Atlantic, Gorée
 DOLLFUS, R.P., 1960b

- Nybelinia elongata Shah and Bilqees, 1979 (plerocercoid)
 Host: Vertebrata Osteichthyes
Erethestis elongata
 Distribution: Karachi Coast, Pakistan
 BILQEES, F.M., 1981
Pellona elongata
 Distribution: Karachi Coast
 SHAH, M. AND BILQEES, F.M., 1979
- Nybelinia erythraea Dollfus, 1968 (post-larva)
 Host: Vertebrata Osteichthyes
Cynoglossus sunus-arabici Chabanaud
 Location: muscles of caudal fin
 Distribution: Gulf of Suez
 DOLLFUS, R.P., 1968b
- Nybelinia estigmana Dollfus, 1968 (post-larva) (forma typica)
 Host: Vertebrata Osteichthyes
Vorner (Argyreiosus) setipinnus (Mitchell, 1815)
 Location: branchial cavity
 Distribution: Atlantic, Dakar
 DOLLFUS, R.P., 1968b
- Nybelinia estigmana Dollfus, 1968 (var. 1) (post-larva)
 Host: Vertebrata Osteichthyes
Hynnys goreensis (Valenciennes, 1846)
 Location: branchial cavity
 Distribution: Atlantic, Gorée
 DOLLFUS, R.P., 1968b
- Nybelinia estigmana Dollfus, 1968 (var. 2) (post-larva)
 Host: Vertebrata Osteichthyes
Box boops (L. 1758)
 Location: branchial cavity
 Distribution: Atlantic, Gorée
 DOLLFUS, R.P., 1968b
- Nybelinia eureia Dollfus, 1968 (post-larva)
 Host: Vertebrata Selachii
Mustelus canis (Mitchell, 1815)
 Location: gills
 Distribution: Atlantic, Gorée
 DOLLFUS, R.P., 1968b
 Osteichthyes
 Congrid sp.
 Location: stomach contents
 Distribution: Atlantic, Dakar
 DOLLFUS, R.P., 1968b
- Nybelinia jayapaulazarahi Reimer, 1988 (plerocercoid)
 Host: Vertebrata Osteichthyes
Cynoglossus sp.
 Distribution: Indian Ocean
 REIMER, L.W., 1988

- Nybelinia lamonteeae Nigrelli, 1938
 Host: Vertebrata Osteichthyes
Xiphias gladius Linnaeus, 1758
 Location: mesenteries
 Distribution: Nova Scotia
 NIGRELLI, R.F., 1938
- Nybelinia lamonteeae Nigrelli, 1938 (plerocercoid)
 Host: Vertebrata Osteichthyes
Xiphias gladius Linnaeus, 1758
 Location: stomach
 Distribution: Atlantic, north west
 HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY,
 P.C.F., 1983
- Nybelinia lingualis (Cuvier, 1817)
 Host: Vertebrata Selachii
Carcharhinus leucas (Müller and Henle, 1841)
 Location: spiral valve
 Distribution: Texas
 HENSON, R.N., 1975
 Osteichthyes
Maena smarís
 Distribution: Saronicos Gulf, Athens, Greece
 PAPOUTSOGLOU, S.E., 1976
Mullus surmuletus L.
 Distribution: Saronicos Gulf, Athens, Greece
 PAPOUTSOGLOU, S.E., 1976
Phycis blennioides
 Distribution: Saronicos Gulf, Athens, Greece
 PAPOUTSOGLOU, S.E., 1976
Trachurus trachurus (L.)
 Distribution: Saronicos Gulf, Athens, Greece
 PAPOUTSOGLOU, S.E., 1976
Trachurus trachurus trachurus L.
 Distribution: Atlantic
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a
- Nybelinia lingualis (Cuvier, 1817) f. typica (larva)
 Host: Invertebrata Cephalopoda
Sthenoteuthis pteropus (Steenstrup, 1855)
 Distribution: Atlantic Ocean
 GAEVSKAYA, A.V., 1977
- Nybelinia lingualis (Cuvier, 1817) (larva)
 Host: Invertebrata Cephalopoda
Ommastrephes bartrami LeSueur
 Distribution: tropical zone, Atlantic Ocean
 GAEVSKAYA, A.V., 1976
- Host: Vertebrata Osteichthyes
Merluccius bilinearis
 Distribution: Atlantic, north west
 GAEVSKAYA, A.V. AND UMNOVA, B.A., 1977
Trachurus trachurus capensis Castelnau
 Distribution: Namibia, Coast of, Atlantic, South
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
Trachurus trachurus trachurus L.
 Distribution: North Sea, Atlantic, north
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b

Nybelinia lingualis (Cuvier, 1817) (larva or post larva)

Host: Invertebrata Cephalopoda

Eledone Aldrovandi Rafin.

Location: capsules in the branchial region

Distribution: Morocco

DOLLFUS, R.P., 1942

Host: Vertebrata

Selachii

Mustelus asterias (Rondolet)

Location: intestine

Distribution: Mauritania

DOLLFUS, R.P., 1942

Osteichthyes

Balistes capriscus L.

Location: encapsulated on the viscera

Distribution: Concarneau, Finistère, France

DOLLFUS, R.P., 1942

Mullus barbatus Rondelet

Location: encapsulated on the body wall

Distribution: Concarneau, Finistère, France

DOLLFUS, R.P., 1942

Trigla gurnardus (L.)

Location: branchial cavity

Distribution: Concarneau, Finistère, France

DOLLFUS, R.P., 1942

Trigla lyra L.

Location: encapsulated on the mesentery

Distribution: Cape Cantin, Morocco

DOLLFUS, R.P., 1942

Nybelinia lingualis (Cuvier, 1817) (post-larva)

REMARKS: Dollfus reviewed previous records of trypanorhynchs from cephalopods.

Host: Invertebrata Cephalopoda

Eledone moschata (Lamarck, 1799)

Location: branchial region

Distribution: Monaco

DOLLFUS, R.P., 1958

Nybelinia lingualis (Cuvier, 1817) var. 1 (larva)

Host: Invertebrata Cephalopoda

Sthenoteuthis pteropus (Steenstrup, 1855)

Distribution: Atlantic Ocean

GAEVSKAYA, A.V., 1977

Nybelinia manazo Yamaguti, 1952 (adult)

Host: Vertebrata Selachii

Mustelus manazo Bleeker

Location: stomach

Distribution: Hamazina, Japan

YAMAGUTI, S., 1952

Nybelinia nipponica Yamaguti, 1952 (larva)

Host: Vertebrata Osteichthyes

Argentina kagoshimae Jordan and Snyder

Location: gastro-intestinal wall and body cavity

Distribution: Maisaka, Sikuoka Prefecture, Tosa Bay, Japan, Obama, Hukui Prefecture, Japan

YAMAGUTI, S., 1952

Neobythites macrops Günther

Location: gastro-intestinal wall and body cavity

Distribution: Maisaka, Sikuoka Prefecture, Tosa Bay,

- Japan, Obama, Hukui Prefecture, Japan
YAMAGUTI, S., 1952
Pseudorhombus pentophthalmus Günther
Location: gastro-intestinal wall and body cavity
Distribution: Maisaka, Sikuoka Prefecture, Tosa Bay,
Japan, Obama, Hukui Prefecture, Japan
YAMAGUTI, S., 1952
- Xystrius grigorjewi (Herzenstein)
Location: gastro-intestinal wall and body cavity
Distribution: Maisaka, Sikuoka Prefecture, Tosa Bay,
Japan, Obama, Hukui Prefecture, Japan
YAMAGUTI, S., 1952
- Nybelinia oodes Dollfus, 1960 (post-larva)
Host: Vertebrata Osteichthyes
Pristipoma bennetti Lowe, 1837
Location: gills
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 1960b
- Nybelinia palliata (Linton, 1924) (adult)
Host: Vertebrata Selachii
Sphyrna zygaena (L.)
Location: spiral valve
Distribution: Florida, Gulf Coast
CHANDLER, A.C., 1942
- Nybelinia perideraeus (Shipley and Hornell, 1906) (adult)
Host: Vertebrata Selachii
Carcharinus melanopterus (Quoy and Gaimard)
Location: stomach
Distribution: Ghardaqua, Egypt, south, The Gulf of
Suez
DOLLFUS, R.P., 1942
- Nybelinia pintneri Yamaguti, 1934
Host: Vertebrata Selachii
Isurus oxyrinchus Rafinesque, 1810
Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974
- Nybelinia pintneri Yamaguti, 1934 (adult)
Host: Vertebrata Selachii
Carcharias acutus Muller and Henle
Location: intestine
Distribution: Bombay, India, West Coast
DESHMUKH, R.A., 1980
Prionace glauca (Linnaeus, 1758)
Location: spiral valve
Distribution: Japan
IWATA, S., 1939
- Nybelinia pintneri Yamaguti, 1934 (larva)
Host: Vertebrata Osteichthyes
Paralichthys olivaceus
Location: mesentery
Distribution: Japan
IWATA, S., 1939

Nybelinia punctatissima Dollfus, 196Ø

Host: Vertebrata Osteichthyes
Hynnys goreensis (Valenciennes, 1846)
Location: branchial cavity
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 196Øb
Seriola dumerili Risso, 181Ø
Location: branchial cavity
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 196Øb

Nybelinia punctatissima Dollfus, 196Ø (forma typica) (post-larva)

Host: Vertebrata Osteichthyes
Sphyraena guachancho Cuvier, 1829
Location: branchial cavity
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 196Øb

Nybelinia punctatissima Dollfus, 196Ø (var.) (post-larva)

Host: Vertebrata Osteichthyes
Echeneis naucrates L. 1758
Location: gills
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 196Øb

Nybelinia riseri Dollfus, 196Ø (post-larva)

Host: Vertebrata Selachii
Raja binoculara
Location: stomach wall, spiral valve
Distribution: California, Monterey
DOLLFUS, R.P., 196Øb

Nybelinia robusta (Linton, 189Ø) (adult)

Host: Vertebrata Selachii
Scoliodon sorrakowah
Distribution: Burma, estuary
KYAW-MYINT, 1968

Nybelinia robusta (Linton, 189Ø) (larva)

Host: Vertebrata Osteichthyes
Sciaena coiter
Location: mesentery, in the region of the oesophagus
Distribution: Burma, Rangoon, estuarine
KYAW-MYINT, 1968

Nybelinia rougetcampanae Dollfus, 196Ø (plerocercoid)

Host: Vertebrata Osteichthyes
Hoplostethus mediterraneus (Val., 1928)
Distribution: Africa, north west
REIMER, L.W., 1975b

Nybelinia rougetcampanae Dollfus, 196Ø (post-larva)

Host: Vertebrata Osteichthyes
Liosaccus cutaneus (Günther, 187Ø)
Location: body cavity
Distribution: Atlantic, Dakar
DOLLFUS, R.P., 196Øb

Nybelinia senegalensis Dollfus, 1960

Host: Vertebrata Osteichthyes
Caranx rhonchus Saint-Hilaire, 1809
Location: branchial cavity
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 1960b

Nybelinia senegalensis Dollfus, 1960 (post-larva)

Host: Vertebrata Osteichthyes
Hynnys goreensis (Valenciennes, 1846)
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 1960b

Nybelinia sp.

Host: Invertebrata Cephalopoda
Lepidoteuthis grimaldi Joubin, 1895
Location: pen sac
Distribution: Madeira
CLARKE, M.R. AND MAUL, G.E., 1962
Crustacea
Thysanoessa sp.
Distribution: Bering Sea, Japan, Chukchi Sea, Japan
TSIMBALYUK, E.M., 1980

Host: Vertebrata Agnatha
Lampetra japonica (Martens)
Distribution: Amur
STRELKOV, YU A. AND SHULMAN, S.S.
Selachii
Dasyatis violacea Bonaparte
Distribution: Mediterranean
DOLLFUS, R.P., 1969a
Hexanchus griseus (Bonnaterre, 1788)
Distribution: Mediterranean
DOLLFUS, R.P., 1969a
Isurus oxyrinchus Rafinesque, 1810
Distribution: Mediterranean
DOLLFUS, R.P., 1969a
Notorhynchus maculatus Ayres, 1855
Distribution: Humboldt Bay
PAPPAS, P.W., 1970
Scyliorhinus canicula (L.)
Distribution: Mediterranean
DOLLFUS, R.P., 1969a
Osteichthyes
Gadus morhua macrocephalus (Tilesius)
Distribution: Pacific, north eastern
TKACHEV, V.A., 1976
Glyptocephalus zachirus
Distribution: Pacific, north eastern
TKACHEV, V.A., 1976
Hippoglossoides elassodon
Distribution: Pacific, north eastern
TKACHEV, V.A., 1976
Hippoglossus hippoglossus stenolepsis Schmidt
Distribution: Pacific, north eastern
TKACHEV, V.A., 1976
Hoplostethus
Distribution: Blanc, Cape and the Channel
REIMER, L.W., 1974
Scomber australasicus (Cuvier et Valenciennes, 1832)
Location: body cavity

Distribution: Australia
KOROTAEVA, V.D., 1974b

Sebastodes alutus

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976
TKACHEV, V.A., 1976

Sebastodes brevispinis

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Sebastodes crameri

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Sebastodes diplopros

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Sebastodes flavidus

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Sebastodes goodei

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Sebastodes jordani

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Sebastodes melanops

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976
TKACHEV, V.A., 1976

Sebastodes mystenus

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Sebastodes proriger

Distribution: Pacific, north eastern
TKACHEV, V.A., 1976

Trachurus trachurus (L.)

Distribution: Strait of Gibraltar
KOVALEVA, A.A., 1966

Nybelinia sp. (adult)

Host: Vertebrata Selachii

Carcharias walbeemhi Bleeker

Location: spiral valve
Distribution: Madras Coast, India
SUBHAPRADHA, C.K., 1955

Nybelinia sp. (encysted plerocercoid)

Host: Vertebrata Osteichthyes

Cynoscion regalis

Location: pericardium
Distribution: Raritan Bay, southern, New Jersey
MEYERS, T.R., 1978

Paralichthys dentatus

Location: stomach wall
Distribution: Raritan Bay, southern, New Jersey
MEYERS, T.R., 1978

Pomatomus saltatrix (L.)

Location: pericardial cavity, mesenteries, gill
filaments
Distribution: Raritan Bay, southern, New Jersey
MEYERS, T.R., 1978

Nybelinia sp. (larva)

Host: Invertebrata Cephalopoda

Sthenoteuthis pteropus (Steenstrup, 1855)

Distribution: Atlantic Ocean

GAEVSKAYA, A.V., 1977

Pelecypoda

Atrina seminuda (Lamarck)

Location: digestive gland

Distribution: Texas, Galveston Beach

WARDLE, W.J., 1974

Nybelinia sp. (larva)

REMARKS: The trypanorhynchs probably came from partially digested teleost flesh in the stomach of the kahawai.

Host: Vertebrata Osteichthyes

Arripis trutta (Bloch and Schneider)

Location: stomach

Distribution: Wellington Harbour, New Zealand

BAKER, A.N., 1971

Nybelinia sp. (larva)

Host: Vertebrata Osteichthyes

Chascanopsetta lugubris Alcock

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Coelorhynchus parallelus (Gunther)

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Coryphaenoides (Coryphaenoides) rupestris Gunnerus, 1765

Distribution: New York Bight

CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980

Glyptocephalus stelleri (Schmidt)

Distribution: Zaliv Petra Velikogo, Japan, Sea of

TSIMBALYUK, E.M., 1978a

Gonorhynchus gonorhynchus (L.)

Location: flesh

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Limanda aspera (Pallas)

TSIMBALYUK, E.M., 1978b

Distribution: Zaliv Petra Velikogo, Japan, Sea of

TSIMBALYUK, E.M., 1978a

Limanda yokohamae (Gunther)

Distribution: Peter the Great Bay

TSIMBALYUK, E.M., 1978b

Distribution: Zaliv Petra Velikogo, Japan, Sea of

TSIMBALYUK, E.M., 1978a

Malacocephalus laevis (Lowe)

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Melanogrammus aeglefinus (L.)

Location: body cavity, intestine

Distribution: Atlantic, north, Atlantic, south

RADULESCU, I.I., 1969

Merluccius gayi peruanus Gingsburg, 1954

Location: intestine

Distribution: Callao, Peru

DURAN, L.E. AND OLIVA, M., 1980

Merluccius merluccius capensis Castelnau

Distribution: Coast of Mozambique

REIMER, L.W., 1984
Merluccius merluccius parasoxus (Franca, 1968)
 Distribution: Coast of Mozambique

REIMER, L.W., 1984
Naucrates ductor Linnaeus
 Location: intestine
 Distribution: Georges Bank, Atlantic coast, United States

RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N., 1972
Peristedion adeni (Lloyd)
 Distribution: Coast of Mozambique

REIMER, L.W., 1984
Peristedion cataphractum
 Location: body cavity, intestine
 Distribution: Atlantic, north, Atlantic, south

RADULESCU, I.I., 1969
Physiculus bacchus
 Distribution: Antarctic

POIS, N.V., 1975
Polymixia nobilis (Lowe)
 Distribution: Coast of Mozambique

REIMER, L.W., 1984
Promethichthys prometheus
 Location: body cavity, muscle of stomach and intestine
 Distribution: Sagami Bay, Japan

ICHIHARA, A., 1968
Pseenes rotundatus Smith
 Distribution: Coast of Mozambique

REIMER, L.W., 1984
Salmo salar L.
 Location: swim bladder
 Distribution: River Sella, Spain

ALVAREZ, PELLITERO, M.P., 1973
Scomber colias Gmelin
 Location: body cavity
 Distribution: Africa, south west coast

SOLONCHENKO, A.I., 1968
Scomberesox saurus (W.)
 Location: oesophagus
 Distribution: Atlantic, south west

REIMER, L.W., 1982
Thyrsitoides marlayi Fowler
 Distribution: Coast of Mozambique

REIMER, L.W., 1984
Trachurus mediterraneus ponticus Aleev
 Distribution: Black Sea

NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966
Trachurus mediterraneus (Steindachner)
 KOVALEVA, A.A., 1978
 Location: muscles, pharynx, intestine
 Distribution: Mediterranean Sea

NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966
Trachurus trache
 KOVALEVA, A.A., 1978

Trachurus trachurus capensis Castelnau
 KOVALEVA, A.A., 1978
 Distribution: Namibia, Coast of, Atlantic, South

GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1988b
Trachurus trachurus (L.)
 KOVALEVA, A.A., 1978

Trichiuris haumela

Location: encysted in body cavity

Distribution: Madras, India

ANANTARAMAN, S., 1963

Mammalia

Phoca vitulina largha Pallas

Location: stomach

Distribution: Tatarskii Straits, Pacific Ocean, USSR

POPOV, V.N. AND GOL'TSEV, V.N., 1975

Nybelinia sp. (larva) syn. "Scolex" sp. VIII

Host: Invertebrata Pelecypoda

Donax variabilis (Say)

Location: digestive gland

Distribution: Texas, Galveston Beach

WARDLE, W.J., 1974

Nybelinia sp. (larvae)

Host: Vertebrata Osteichthyes

Trachurus trachurus capensis Castelnau

Distribution: Africa, south west

KOVALEVA, A.A., 1968

Nybelinia sp. of Wardle (1932) syn. Tetrarhynchus sp. of Hart (1936) SEE:

Nybelinia surmenicola Okada in Dolifus, 1929 (larva)

Nybelinia sp. (plerocercoid)

Host: Vertebrata Osteichthyes

Diodon hystrix L.

Location: oesophagus

Distribution: Trivandrum, India

RADHAKRISHNAN, S. AND NAIR, N.B., 1981

Fishballs

Distribution: Japan

KOYAMA, T. AND KOMIYA, Y., 1964

Saurida undosquamis (Richardson)

Location: flesh

Distribution: Coast of Mozambique

REIMER, L.W., 1984

Nybelinia sp. (plerocercus)

Host: Invertebrata Cephalopoda

Octopus sp.

Location: interior ventral wall of the mantle

Distribution: Andaman Isles, Indian Ocean

ADAM, W., 1938

Host: Vertebrata Osteichthyes

Trachurus murphyi Nichols, 1928

Distribution: Antofagaster, Chile

SOTO, J. AND CARVAJAL, J., 1979

Nybelinia sp. (post-larva)

Host: Invertebrata Cephalopoda

Illex illecebrosus illecebrosus (LeSueur, 1821)

Distribution: Newfoundland

BROWN, E.L. AND THRELFALL, W., 1968

Host: Vertebrata Osteichthyes

Cheilodactylus macropterus (Bloch and Schneider)

Distribution: New Zealand

VOOREN, C.M. AND TRACEY, D., 1976

Nybelinia sp. syn. Pleronybelinia sp. (plerocercoid)

REMARKS: Sezen and Price (1969) established the genus Pleronybelinia for cases in which the plerocercoid is known and the adult form is uncertain or unknown. Heinz and Dailey (1974) later suppressed the genus.

Host: Vertebrata Osteichthyes
Mullus barbatus L.
Distribution: Turkey
SEZEN, Y. AND PRICE, C.E., 1969

Nybelinia strongyla Dollfus, 1968 (post-larva)

Host: Vertebrata Osteichthyes
Liosaccus cutaneus (Günther, 1878)
Location: body cavity
Distribution: Atlantic, Dakar
DOLLFUS, R.P., 1968b

Nybelinia surmenicola Okada in Dollfus, 1929

Host: Invertebrata Cephalopoda
Todarodes pacificus Steenstrup
Distribution: Bering Sea
SHIMAZU, T., 1975b
Distribution: Ussuriiskii Gulf, USSR
KUROCHKIN, Y.V., 1972
Crustacea
Euphausiid sp.
Distribution: Bering Sea
SHIMAZU, T., 1975b
Distribution: Pacific Ocean, north northern
SHIMAZU, T., 1975c

Host: Vertebrata Osteichthyes
Acanthopsettia nadeshnyi
Distribution: Far Eastern seas
MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Atheresthes evermanni Jordan et Starks
Distribution: Far Eastern seas
MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Enophrys dicerca
Location: body cavity, stomach wall
Distribution: Pacific
KOROTAEVA, V.D., 1968a
Hippoglossoides elassodon
Distribution: Far Eastern seas
MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Icelus spiniger
Location: body cavity, stomach wall
Distribution: Pacific
KOROTAEVA, V.D., 1968a
Lepidopsetia bilineata (Ayres)
Distribution: Far Eastern seas
MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Limanda aspera (Pallas)
Distribution: Far Eastern seas
MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Limanda punctatissima
Distribution: Far Eastern seas
MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Oncorhynchus gorbuscha (Walbaum)
Location: body cavity
Distribution: Amgun River, Amur River
BOGDANOVA, E.A., 1963

Location: stomach, liver
Distribution: littoral zone, western Kamchatka,
Okhotsk Sea
TSIMBALYUK, E.M. AND SEMESHKO, N.N., 1971

Oncorhynchus keta (Walbaum)

Distribution: Amur
STRELKOV, YU A. AND SHULMAN, S.S.

Oncorhynchus masu (Brewoort)

STRELKOV, YU A. AND SHULMAN, S.S.

Oncorhynchus nerka (Walbaum)

Distribution: Bering Sea
SHIMAZU, T., 1975b

Reinhardius hippoglossoides

Distribution: Far Eastern seas
MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Salmon, pink

Location: stomach wall
Distribution: King Cove, Puget Sound, Central British
Columbia, Alaska Peninsula
MARGOLIS, L., 1956

Salvelinus alpinus (L.)

Distribution: Chaun River, Lake Rossypnoe, USSR,
north eastern
RUDMINAITENE, A.F. AND RUDMINAITIS, E.A., 1979
Location: musculature, body cavity
Distribution: Lake Kurilskoe
KONOVALOV, S.M., 1975

Sockeye salmon

Location: stomach wall
Distribution: Kodiak, Skeena River
MARGOLIS, L., 1956

Theragra chalcogramma (Pallas, 1811)

GUSEV, A.V., ZHUKOV, E.V. AND STRELKOV, YU.A., 1959
Distribution: Bering Sea
SHIMAZU, T., 1975b

Nybelinia surmenicola Okada in Dollfus, 1929 (adult)

Host: Vertebrata Selachii

Lamna ditropis Hubbs and Follett, 1947

Location: stomach
Distribution: Bering Sea
SHIMAZU, T., 1975b

Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

Host: Vertebrata Osteichthyes

Aprodon cortezianus Gilbert

Location: intestine
Distribution: Burke Channel, British Columbia
ARAI, H.P., 1969

Atheresthes evermanni Jordan et Starks

Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Careproctus sp.

Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Eleginus gracilis (Tilesius)

Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Gadus morhua macrocephalus (Tilesius)

Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Gymnacanthus detrisus Gilbert

Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Hemilepidotus jordani Bean
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Hexagrammos stelleri
 Location: body cavity
 Distribution: Kamchatka
 SKRIABINA, E.S., 1963

Hippoglossoides elassodon
 Location: body cavity
 Distribution: Kamchatka
 SKRIABINA, E.S., 1963

Hippoglossoides elassodon elassodon Jordan et Gilbert
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Hippoglossus hippoglossus stenolepsis Schmidt
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Lepidopsetia bilineata (Ayres)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Limanda aspera (Pallas)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Melletes papilio Bean
 Location: stomach wall
 Distribution: Barents Sea
 ZHUKOV, E.V., 1963

Myoxocephalus jaok Cuvier et Valenciennes
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Myoxocephalus verrucosus
 Location: stomach wall
 Distribution: Barents Sea
 ZHUKOV, E.V., 1963

Oncorhynchus gorbuscha (Walbaum)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Oncorhynchus keta (Walbaum)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968
 Location: body cavity
 Distribution: Amgun River, Amur River
 BOGDANOVA, E.A., 1963

Oncorhynchus kisutch (Walbaum)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Oncorhynchus nerka (Walbaum)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Oncorhynchus tshawytscha (Walbaum)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Ophiodon elongatus Girard
 Location: intestine, stomach
 Distribution: Burke Channel, British Columbia
 ARAI, H.P., 1969

Platessa quadrituberculata (Pallas)
 Distribution: Kamchatka, east
 STRELKOV, J.A., 1968

Pleurogrammus monopterigius (Pallas)

Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Pleuronectes stellatus Pallas
Distribution: Kamchatka, east
STRELKOV, J.A., 1968
Location: stomach wall and mesentery
Distribution: Barents Sea
ZHUKOV, E.V., 1963

Podothecus acipenserinus (Pallas)
Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Salvelinus leucomaenis (Pallas)
Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Salvelinus malma (Walbaum)
Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Sebastes aleutianus
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes alutus Gilbert, 1898
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977
Location: stomach wall, mesenteries
Distribution: Pacific, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1973

Sebastes borealis
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes brevispiris
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes caurinus
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes ciliatus
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes crameri
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes diploprora
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes elongatus
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes entomelas
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes flavidus
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes maliger
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes nigrocinctus
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes pinniger
Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes polyspinis

Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes proriger

Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes reedi

Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes ruberrimus

Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes variegatus

Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Sebastes zacentrus

Distribution: Pacific Ocean, north eastern
SEKERAK, A.D. AND ARAI, H.P., 1977

Theragra chalcogramma (Pallas, 1811)

Distribution: Kamchatka, Kuril Islands, Hokkaido
SASAKI, M., 1973

Distribution: Kamchatka, east
STRELKOV, J.A., 1968

Location: abdominal cavity, muscles

Distribution: USSR

GRABDA, J., 1977

Location: body cavity

Distribution: Kamchatka

SKRIABINA, E.S., 1963

Location: body cavity, muscles

Distribution: Far East

OSHMARIN, P.G., PARUKHIN, A.M., MAMAEV, Y.L. AND
BAEVA, O.M., 1961

Location: intestine, stomach

Distribution: Burke Channel, British Columbia
ARAI, H.P., 1969

Location: muscles of the abdominal wall

Distribution: Kamchatka

MAMAEV, Y.L. AND BAEVA, O.M., 1963

Trichodon trichodon (Tilesius)

Distribution: Kamchatka, east

STRELKOV, J.A., 1968

Triglopa pingeli Reinhardt

Distribution: Burke Channel, British Columbia
ARAI, H.P., 1969

Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

REMARKS: The man had been eating raw squid (Ommastrephes solani
pacificus).

Host: Vertebrata Mammalia

Homo sapiens

Location: left palatine tonsil

Distribution: Japan

KIKUCHI, Y., TAKENOUCHI, T., KAMIYA, M. AND OZAKI,
H., 1981

Nybelinia surmenicola Okada in Dollfus, 1929 (larva) syn. Nybelinia sp. of Wardle (1932) syn. Tetrarhynchus sp. of Hart (1936)

REMARKS: Dollfus (1942) considered Tetrarhynchus sp. of Hart (1936) to be Nybelinia surmenicola.

Host: Vertebrata Selachii
Hexanchus griseus (Bonnaterre, 1788)
Location: intestine, wall of
Distribution: Puget Sound, Alaskan waters
HART, J.F., 1936

Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)

Host: Invertebrata Crustacea
Euphausia pacifica Hansen
Distribution: Pacific Ocean, north northern
SHIMAZU, T., 1975c
Thysanoessa inermis Krøyer
Distribution: Pacific Ocean, north northern
SHIMAZU, T., 1975c
Thysanoessa longipes Brandt
Distribution: Pacific Ocean, north northern
SHIMAZU, T., 1975c
Thysanoessa raschii (Sars)
Distribution: Pacific Ocean, north northern
SHIMAZU, T., 1975c

Host: Vertebrata Osteichthyes
Clupea harengus pallasii Valenciennes, 1847
Location: encysted in the liver
Distribution: Alaska
ARTHUR, J.R. AND ARAI, H.P., 1980
Oncorhynchus gorbuscha (Walbaum)
Location: body cavity
Distribution: Amur River Region
AKHMEROV, A.K., 1963
Oncorhynchus keta (Walbaum)
Location: body cavity
Distribution: Amur River Region
AKHMEROV, A.K., 1963
Oncorhynchus tshawytscha (Walbaum)
KUPERMAN, B.I., 1980
Theragra chalcogramma (Pallas, 1811)
Location: body cavity, stomach wall, mesenteries,
musculature
Distribution: Strait of Georgia, British Columbia,
Pacific Ocean, north eastern, West Coast and Queen
Charlotte Sound, British Columbia, Pacific Ocean,
north eastern
ARTHUR, J.R., 1984
Location: body cavity and musculature
Distribution: British Columbia
ARTHUR, J.R., MARGOLIS, L., WHITAKER, D.J. AND
MCDONALD, T.E., 1982

Nybelinia (Syngenes) goreensis Dollfus, 1960 (adult)

Host: Vertebrata Selachii
Sphyrna diplana Springer
Location: intestine
Distribution: Atlantic, Gorée
DOLLFUS, R.P., 1960b

- Nybelinia (Syngenes) palliata (Linton, 1924)
 Host: Vertebrata Selachii
Lamna ditropis Hubbs and Follett, 1947
 Distribution: California, southern
 YOUNG, R.T., 1954a
- Nybelinia (Syngenes) sphyrnae Yamaguti, 1952 (adult)
 Host: Vertebrata Selachii
Sphyrna zygaena (L.)
 Location: pars pylorica
 Distribution: Nagasaki, Japan
 YAMAGUTI, S., 1952
- Nybelinia thyrsites (Leiper and Atkinson, 1915) Korotaeva, 1971
 Host: Vertebrata Osteichthyes
Thyrsites atun (Euphrasen, 1791)
 Distribution: New Zealand, Australia
 KOROTAEVA, V.D., 1971
- Nybelinia thyrsites (Leiper and Atkinson, 1915) Korotaeva, 1971 syn.
Nybelinia (? Syngenes) sp. Dollfus, 1942
 REMARKS: Korotaeva (1971) considered Nybelinia (?Syngenes) sp.
 Dollfus 1942 and N. (? Syngenes) sp. Robinson, 1959 to be
 synonyms of Nybelinia thyrsites (Leiper and Atkinson, 1915).
 Host: Vertebrata Osteichthyes
Lepidopus caudatus (Euphrasen)
 Distribution: New Zealand, Australia
 KOROTAEVA, V.D., 1971
- Nybelinia yamagutii Dollfus, 1960 (larva)
 Host: Invertebrata Cephalopoda
Sthenoteuthis pteropus (Steenstrup, 1855)
 Location: coelomic membrane, gills
 Distribution: Atlantic Ocean
 GAEVSKAYA, A.V., 1977
- Nybelinia yamagutii Dollfus, 1960 (plerocercus)
 Host: Invertebrata Cephalopoda
Loligo paeleii (LeSueur, 1821)
 Location: stomach washings
 Distribution: Cape Cod area
 STUNKARD, H.W., 1977
- Nybelinia yamagutii Dollfus, 1960 (post-larva)
 Host: Vertebrata Osteichthyes
Liosaccus cutaneus (Günther, 1870)
 Location: body cavity
 Distribution: Atlantic, Dakar
 DOLLFUS, R.P., 1960b
- Pleronybelinia sp. (plerocercoid) SEE: Nybelinia sp.
- Rhynchobothrium simile Linton, 1909 SEE: Tentacularia similis (Linton,
 1909) Shuler, 1938

"Scolex" sp. VIII SEE: Nybelinia sp. (larva)

Tentacularia arayae Woodland, 1934
Host: Vertebrata Selachii
Trygon sp.
DOLLFUS, R.P., 1975b

Tentacularia coryphaenae Bosc, 1802
Host: Invertebrata Cephalopoda
Sthenoteuthis pteropus (Steenstrup, 1855)
Location: hyperparasitic within the parenchyma of a
Phyllobothrium larva
Distribution: Atlantic
GAEVSKAYA, A.V., 1978
Host: Vertebrata Selachii
Carcharhinus limbatus (Valenciennes)
Distribution: California, southern
HEINZ, M.L. AND DAILEY, M.D., 1974
Carcharhinus longimanus (Poey, 1861)
Location: spiral valve
Distribution: Pacific Ocean, east
HEINZ, M.L. AND DAILEY, M.D., 1974
Osteichthyes
Coryphaena sp.
Location: peritoneum, adhering to
Distribution: Indian Ocean
JOYEUX, C. AND BAER, J.G., 1954
Gadus morhua L.
Location: mesentery
Distribution: New Brunswick, Atlantic, north west
APPY, R.G. AND BURT, M.D.B., 1982
Ruvettus tydemani Weber
Distribution: New Zealand, Australia
KORDTAEVA, V.D., 1971
Salmo salar L.
Distribution: Newfoundland
SANDEMAN, I.M. AND PIPPY, J.H.C., 1967
Location: free in body cavity, attached to or
partially embedded in viscera
Distribution: West Greenland, Miramichi River, New
Brunswick, River Philip, Nova Scotia, Saint John
River, New Brunswick, Bay of Fundy, Canada,
Chaleur Bay, Canada, Nova Scotia coast
PIPPY, J.H.C., 1969

Tentacularia coryphaenae Bosc, 1802 (adult)
Host: Vertebrata Selachii
Carcharhinus galapagensis (Snodgrass and Heller)
Location: spiral valve
Distribution: Hawaii
CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
Carcharhinus longimanus (Poey, 1861)
Location: spiral valve
Distribution: Recife Coast, Brazil
REGO, A.A., 1977
Carcharias sp.
Location: stomach
Distribution: Madras Coast, India
SUBHAPRADHA, C.K., 1955
Prionace glauca (Linnaeus, 1758)
Location: spiral intestine

Distribution: Japan
IWATA, S., 1939
Location: spiral valve
Distribution: Juan Fernandez Archipelago
CATTAN, P.E., CARVAJAL, J., TORRES, D. AND YANEZ,
J.L., 1979
Scoliodon walbeemi
Location: spiral intestine
Distribution: Japan
IWATA, S., 1939

Tentacularia coryphaenae Bosc, 1802 (adult) syn. Tentacularia rugosa
(Leuckhart, 1850)

Host: Vertebrata Selachii
Galeus glaucus Rondelet, 1554
Location: stomach mucosa
Distribution: Cape Verde Isles, Atlantic
GUIART, J., 1935a

Tentacularia coryphaenae Bosc, 1802 (larva)

Host: Invertebrata Cephalopoda
Cucoteuthis unguiculatus Molina (1782)
Distribution: Newfoundland
DOLLFUS, R.P., 1967b
Ommastrephes bartrami LeSueur
Distribution: tropical zone, Atlantic Ocean
GAEVSKAYA, A.V., 1976
Sthenoteuthis pteropus (Steenstrup, 1855)
Distribution: Atlantic Ocean
GAEVSKAYA, A.V. AND NIGMATULLIN, C.M., 1981
Location: ovary, coelomic, membrane, mantle, rectum
Distribution: Atlantic Ocean
GAEVSKAYA, A.V., 1977
Host: Vertebrata Osteichthyes
Euthynnus yaito Kishinouye
Location: abdominal cavity
Distribution: Japan
IWATA, S., 1939
Gymnosarda pelamys
Location: musculature, under peritoneum
Distribution: Gibraltar
GUIART, J., 1935a
Merluccius gayi peruanus Gingsburg, 1954
Location: mesenteries
Distribution: Callao, Peru
DURAN, L.E. AND OLIVA, M., 1980
Salmo salar L.
Distribution: Greenland, west
PIPPY, J.H.C., 1980
Scomber japonicus Houttuyn
Location: muscle
Distribution: Japan
IWATA, S., 1939

Tentacularia coryphaenae Bosc, 1802 (larva or post larva)

Host: Vertebrata Osteichthyes

Pelamys Bonapartei (Verany)

Location: capsule in muscles
Distribution: Azores, west of
GUIART, J., 1935a

Tetrapturus Lessonae Canestrini

Location: wall of body cavity
Distribution: Concarneau, Finistère, France
DOLLFUS, R.P., 1942

Tentacularia coryphaenae Bosc, 1802 (plerocercoid)

Host: Vertebrata Osteichthyes

Xiphias gladius Linnaeus, 1758

Distribution: Nova Scotia
NIGRELLI, R.F., 1938
Location: stomach

Distribution: Atlantic, north west
HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY,
P.C.F., 1983

Tentacularia coryphaenae Bosc, 1802 (plerocercus)

Host: Vertebrata Osteichthyes

Coryphaena hippurus Linnaeus

Location: body cavity
Distribution: Miami
WARD, H.L., 1954

Scomberomorus cavalla (Cuvier and Valenciennes)

Location: body cavity
Distribution: Miami
WARD, H.L., 1954

Trachurus murphyi Nichols, 1920

Distribution: Antofagaster, Chile
SOTO, J. AND CARVAJAL, J., 1979

Tentacularia coryphaenae Bosc, 1802 (post-larva)

Host: Invertebrata Cephalopoda

Illex illecebrosus (LeSueur, 1821)

Location: right oriduct
Distribution: Daytona Beach, Florida
THRELFALL, W., LU, C. AND ALDRICH, F.A., 1971

Ommastrephes caroli Furtado, 1887

Location: liver
Distribution: Grand Banks, Atlantic, north western
THRELFALL, W., LU, C. AND ALDRICH, F.A., 1971

Host: Vertebrata Osteichthyes

Acanthocybium solanderi (Cuvier and Valenciennes, 1831)

Location: alimentary canal
Distribution: Cape Verde Isles
DOLLFUS, R.P., 1960b

Coryphaena hippurus Linnaeus

Location: visceral cavity, wall of
Distribution: Concarneau
DOLLFUS, R.P., 1946b

Euthynnus alleteratus (Rafinesque, 1810)

Location: encysted on intestine
Distribution: Bermuda
REES, G., 1969

Katsuwonus pelamis (L.)

Location: musculature, peri-visceral
Distribution: Concarneau

DOLLFUS, R.P., 1946b
Location: peritoneum, muscular wall of abdomen
Distribution: Atlantic
BUSSIÈRES, J. AND BAUDIN-LAURENCIN, F., 1973

Polyprion oxygeneios

Location: peritoneal cavity
Distribution: Juan Fernandez Archipelago
CATTAN, P.E., CARVAJAL, J., TORRES, D. AND YANEZ,
J.L., 1979

Salmo salar L.

Location: body cavity
Distribution: Baie de Chaleur region, Canada
HELLER, A.F., 1949

Thunnus albacores

Location: viscera and muscle walls of the abdominal
cavity

Distribution: Gulf of Guinea
BAUDIN-LAURENCIN, F., 1971

Thunnus albacores (Bonnaterre, 1788)

Location: peritoneum, muscular wall of abdomen
Distribution: Atlantic
BUSSIÈRES, J. AND BAUDIN-LAURENCIN, F., 1973

Tentacularia macropora (Shipley and Hornell, 1906) (adult)

Host: Vertebrata Selachii

Stegostoma tigrinum

Location: spiral valve
SUBRAMANIAM, M.K., 1940

Tentacularia rugosa (Leuckhart, 1850) SEE: Tentacularia coryphaenae
Bosc, 1802 (adult)

Tentacularia similis (Linton, 1909) Shuler, 1938 syn. Rhynchobothrium
simile Linton, 1909

REMARKS: Yamaguti (1959) listed Rhynchobothrium simile under
incertae sedis.

Host: Vertebrata Selachii

Ginglymostoma cirratum

Distribution: Tortugas, Florida
SHULER, R.H., 1938
SHULER, R.H., 1938

Tentacularia sp. (adult)

Host: Vertebrata Selachii

Myrmillo manazo (Bik.)

Location: intestine
Distribution: Karachi Coast
BILQEES, F.M. AND MUSLEHUDDIN, R., 1976

Tentacularia sp. (larva)

Host: Vertebrata Osteichthyes

Barracuda

Location: muscle
Distribution: Jamaica
YEH, L.S., 1956

Beryx splendens

Location: body cavity
Distribution: Sagami Bay, Japan
ICHIHARA, A., 1968

Chirocentrus dorab

Location: encysted in body cavity
Distribution: Madras, India

ANANTARAMAN, S., 1963

Euthynnus pelamis

Location: cysts in abdominal muscles

MARKOWSKI, S., 1971

Trachurus trachurus capensis Castelnau

Distribution: Namibia, Coast of, Atlantic, South

GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b

Tentaculariidae sp.

Host: Vertebrata Osteichthyes

Trachurus trachurus (L.)

Distribution: Strait of Gibraltar

KOVALEVA, A.A., 1966

Tentaculariidae sp. (larva)

Host: Vertebrata Osteichthyes

Horse mackerel

Location: gall bladder, intestine

Distribution: Black Sea

NIKOLAEVA, V.M., 1963a

Trachurus mediterraneus ponticus Aleev

KOVALEVA, A.A., 1970

Distribution: Black Sea

NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966

Trachurus mediterraneus (Steindachner)

KOVALEVA, A.A., 1970

Location: body cavity

Distribution: Mediterranean Sea

NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966

Trachurus trachurus capensis Castelnau

Distribution: Africa, south west

KOVALEVA, A.A., 1968

Trachurus trachurus (L.)

KOVALEVA, A.A., 1970

KOVALEVA, A.A., 1970

KOVALEVA, A.A., 1970

Tetrarhynchobothrium setiense Dollfus, 1969 (larva)

- Host: Vertebrata Selachii
 Mustelus canis (Mitchell, 1815)
 Distribution: Mediterranean
 DOLLFUS, R.P., 1969a
 Mustelus mustelus (Linnaeus, 1758)
 Distribution: Mediterranean
 DOLLFUS, R.P., 1969a

Tetrarhynchobothrium setiense Dollfus, 1969 (larva, adult)

- Host: Vertebrata Selachii
 Myliobatis aquila (Linnaeus, 1758)
 Location: spiral valve
 Distribution: Mediterranean, Sete
 DOLLFUS, R.P., 1969a

Tetrarhynchobothrium sp.

- Host: Vertebrata Osteichthyes
 Gobius batrachocephalus Pallas
 NAIDENOVA, N.N., 1966
 Location: intestines
 NAIDENOVA, N.N., 1965
 Gobius niger L.
 NAIDENOVA, N.N., 1966
 Location: intestines
 NAIDENOVA, N.N., 1965
 Gobius ophiocephalus Pallas
 NAIDENOVA, N.N., 1966

Tetrarhynchobothrium sp. (larva)

- Host: Invertebrata Gastropoda
 Thais rudolphi (Lamarck)
 Distribution: Madras, India
 REIMER, L.W., 1975a
 Crustacea
 Euphausia similis Sars
 Distribution: Saruga Bay, Japan
 SHIMAZU, T., 1975a
 Host: Vertebrata Osteichthyes
 Scomber scombrus L.
 Location: body cavity
 Distribution: Nantucket
 RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N.,
 1972
 Trachurus tracae Cadenat
 Distribution: Cape Blanc, Mauritania
 RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N.,
 1972
 Zeus faber L.
 Location: intestine
 Distribution: Villa Cisneros, Mauritania
 RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N.,
 1972

Tetrarhynchobothrium tenuicolle Diesing, 1850 (adult)

REMARKS: Dollfus (1969a) examined Euzet's specimens and questioned whether they were T. tenuicolle.

Host: Vertebrata Selachii

Myliobatis aquila (Linnaeus, 1758)

Location: first tier of the spiral valve

Distribution: Sedte

EUZET, L., 1956

Clujia Racovitzai Guiart, 1935 (larva)

REMARKS: Dollfus (1942) was unable to decide on the position of

Clujia Racovitzai based on Guiart's (1935) description.

Host: Vertebrata Selachii
 Galeus glaucus Rondelet, 1554
 Location: stomach mucous
 Distribution: Cape Verde Isles
 GUIART, J., 1935a

Coenomorphys grossus

Host: Vertebrata Osteichthyes
 Oncorhynchus keta (Walbaum)
 Distribution: Amour Basin
 ZMEJEV, G.J., 1936

Dibothriorhynchus dinoi Mendes, 1944 (larva)

Host: Invertebrata Scyphozoa
 Lichnorhiza sp.
 Distribution: Brazil
 MENDES, M.V., 1944

Dibothriorhynchus dinoi Mendes, 1944 (larva)REMARKS: Dibothriorhynchus dinoi Mendes, 1944 probably belongs to the genus Bombycirhynchus.

Host: Invertebrata Scyphozoa
 Stomolophus meleagris Agassiz
 Distribution: Brazil
 MENDES, M.V., 1944

Dibothriorhynchus monticellii Moniez, 1940

Host: Vertebrata Osteichthyes
 Lophius piscatorius Linnaeus, 1758
 MONIEZ, R., 1940

Dibothriorhynchus typ. grossus

Host: Vertebrata Osteichthyes
 Gadus sp.
 Location: body cavity
 Distribution: Atlantic, north, Atlantic, south
 RADULESCU, I.I., 1969

Diesingella Monticelli (Moniez, 1892) (larva)

Host: Vertebrata Osteichthyes
 Lophius piscatorius Linnaeus, 1758
 Location: intestine
 Distribution: English Channel
 GUIART, J., 1935a

Mecistobothrium brevispine (Linton, 1897) Campbell and Carvajal, 1975(adult), Rhynchobothrium brevispine Linton, 1897, Rhynchobothrium agile Linton, 1897

Host: Vertebrata Selachii
 Rhinoptera bonasus (Mitchell, 1815)
 Distribution: Chesapeake Bay, Virginia
 CAMPBELL, R.A. AND CARVAJAL, J., 1975

Microbothriorhynchus coelorhynchi Yamaguti, 1952 (larva)

REMARKS: Yamaguti (1952) did not place the genus Microbothriorhynchus in a family. He later (1959) included it in the genera incertae sedis.

Host: Vertebrata Osteichthyes
Coelorhynchus sp.

Location: body cavity

Distribution: Maisaka, Sikuoka Prefecture, Japan
YAMAGUTI, S., 1952

Oncomegas wagneri (Linton, 1898) (larva)

REMARKS: Dollfus (1942), Wardle and McLeod (1952) and Yamaguti (1959) included Oncomegas in the genera incertae sedis.

Host: Vertebrata Osteichthyes
Cepola schlegeli (Bleeker)

Location: body cavity

Distribution: Sea of Japan
YAMAGUTI, S., 1952

Conger myriaster

Location: body cavity

Distribution: Sea of Japan
YAMAGUTI, S., 1952

Oncomegas wagneri (Linton, 1898) (plerocercoid)

REMARKS: Dollfus (1942), Wardle and McLeod (1952) and Yamaguti (1959) all listed Oncomegas under genera incertae sedis.

Host: Vertebrata Osteichthyes

Lutjanus aya Bloch

Location: intestinal tract

Distribution: Gulf of Mexico, near Grand Isle
THATCHER, V.E., 1961

Rhopalothylax gymnorhynchoides Guiart, 1935 (larva)

REMARKS: Dollfus (1942) was unable to decide on the position of Rhopalothylax gymnorhynchoides based on Guiart's (1935) description.

Host: Vertebrata Selachii

Centroscymnus coelolepis Bocage and Capello, 1864

Location: liver

Distribution: Azores, Atlantic
GUIART, J., 1935a

Rhynchobothrium sp. Linton, 1899 (larva)

Host: Vertebrata Osteichthyes

Mola mola (L.)

Location: intestine wall

Distribution: Newfoundland
THRELFALL, W., 1967

Rhynchobothrius spinuliferus (Southwell, 1911) SEE: Trigonolobom sp.
Dollfus, 1929 (adult)

Symbothriorhynchus uranoscopi Yamaguti, 1952 (larva)

REMARKS: Yamaguti (1959) included Symbothriorhynchus in genera incertae sedis.

Host: Vertebrata Osteichthyes

Uranoscopus oligolepis Bleeker

Location: body cavity

Distribution: Tosa Bay, Japan
YAMAGUTI, S., 1952

Syndesmobothrium filicolle

REMARKS: Saxena (1980) commented that Silondia silondia was a true freshwater fish.

Host: Vertebrata Osteichthyes
Silondia silondia
Location: mesentery
Distribution: Varanasi, fish market, India
SAXENA, S.K., 1980

Tettrarhynch sp. (larva)

Host: Vertebrata Selachii
Rhinobatos productus (Ayres)
Location: stomach
Distribution: California, southern
KUNNENKERI, J.K. AND MARTIN, W.E., 1962
Urobatis halleri (Cooper)
Location: spiral valve
Distribution: California, southern
KUNNENKERI, J.K. AND MARTIN, W.E., 1962
Osteichthyes
Atherinops californiensis
Location: mesentery, rectal
Distribution: California, southern
KUNNENKERI, J.K. AND MARTIN, W.E., 1962
Bagre marina
Distribution: Galveston Bay, Texas
CHANDLER, A.C., 1935a
Epiniphillus sp.
Location: muscle anterior to the caudal fin
Distribution: Mediterranean Sea
EL-AHWAL, A.A., 1970
Melanostigma pammelas Gilbert
Location: intestine, inside, stomach, outer surface
Distribution: California, southern, bathypelagic
waters off
NOBLE, E.R. AND ORIAS, J.D., 1975
Synodus foetens
Location: intestine, body cavity
Distribution: Biscayne Bay, Florida
OVERSTREET, R.M., 1968

Tettrarhynchid sp. (larva)

Host: Vertebrata Osteichthyes
Spicara smaris (L.)
Location: intestine
Distribution: Crimean coast and Caucasus coasts,
Black Sea
NIKOLAEVA, V.M., 1963b
Trachurus trachurus trachurus L.
Distribution: Atlantic
GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a

Tettrarhynchus brevibothria MacCallum 1921 (plerocercus)

Host: Vertebrata Osteichthyes
Lutianus sp.
Location: body cavity
Distribution: Burma, Delta area
KYAW-MYINT, 1968

Tetrarhynchus fragilis Diesing

Host: Vertebrata Osteichthyes
Micropogon undulatus (Linnaeus)
Location: mesenteries
Distribution: Uruguay
BARATTINI, L.P., 1948

Tetrarhynchus fragilis (Diesing, 1850) (larva)

Host: Vertebrata Osteichthyes
Cynoscion sp.
Location: musculature
Distribution: Venezuela, Coast of
VOGELSANG, E.G. AND MAYAUDON, T.H., 1959
Epinephelus sp.
Location: musculature
Distribution: Venezuela, Coast of
VOGELSANG, E.G. AND MAYAUDON, T.H., 1959

Tetrarhynchus fragilis (larva)

Host: Vertebrata Osteichthyes
Macrodon ancylodae
Location: fillets
Distribution: Brazil, coastal waters of
SANTOS, L. DOS AND ZOGBI, E.P.V., 1971

Tetrarhynchus palaeceus

Host: Vertebrata Osteichthyes
Oncorhynchus keta (Walbaum)
Distribution: Amour Basin
ZMEJEV, G.J., 1936

Tetrarhynchus palaeceus Rud.

Host: Vertebrata Osteichthyes
Oncorhynchus gorbuscha (Walbaum)
Distribution: Amour Basin
ZMEJEV, G.J., 1936

Tetrarhynchus sp.

Host: Vertebrata Osteichthyes
G. giuris (full name missing)
Location: muscle and ovary
Distribution: Chandpur, East Pakistan
ALI, M.Y., 1968
Thyrsites atun (Euphrasen, 1791)
Location: Trunk muscles, intestinal walls, mesentery
and peritoneum
Distribution: Australia
BLACKBURN, M., 1960

Trigonolobom sp. Dollfus, 1929 (adult) syn. Rhynchobothrius spinuliferus
(Southwell, 1911)

REMARKS: Dollfus (1942) listed Rhynchobothrius spinuliferus as
a member of the genus Trigonolobom, belonging to the incertae
sedis.

Host: Vertebrata Selachii
Synias manazo
Location: spiral intestine
Distribution: Japan
IWATA, S., 1939

Trypanorhynch larvae

REMARKS: Sey (1977) suggested that the larvae belong to genera Laciatorhynchus or Eutetrarhynchus on the basis of the larval anatomy.

Host: Vertebrata Reptilia

Caretta caretta (L.)

Location: encysted in stomach serosa and outer surface of lungs

Distribution: Egypt, coast of SEY, O., 1977

Trypanorhynch sp.

Host: Invertebrata Mollusca

Euclio pyramidata gen. sp.

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Cephalopoda

Lepidoteuthis grimaldi Joubin, 1895

Location: mantle cavity

Distribution: Madeira

CLARKE, M.R. AND MAUL, G.E., 1962

Crustacea

Crustacea sp.

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Euphausia brevis

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Euphausia diomedea

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Euphausia similis Sars

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Euphausia sp.

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Sergestees lucens

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Sergestees sp.

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Thysanopoda tricuspidata

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Host: Vertebrata

Thaliacea

Salpae gen. sp.

Distribution: Pacific, equatorial, western SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Selachii

Hexanchus griseus (Gmelin)

Location: intestine

Distribution: Porcupine Bank

REES, G. AND LLEWELLYN, J., 1941

Sphyrna tiburo Linnaeus

Location: spiral valve

Distribution: Texas

HENSON, R.N., 1975

Osteichthyes

- Clupea harengus pallasii Valenciennes, 1847
 Distribution: British Columbia
 ARTHUR, J.R. AND ARAI, H.P., 1980
- Lepidopus lex Phillips, 1932
 Distribution: New Zealand, Australia
 KOROTAEVA, V.D., 1971
- Ostorhinchus conwaii
 Location: body cavity
 Distribution: Great Australian Bight
 KOROTAEVA, V.D., 1974a
- Pleurogrammus azonus Jordan and Metz
 Location: stomach, intestine
 Distribution: Peter the Great Bay, Sea of Japan
 BAEVA, O.M., 1968
- Pomatomus saltatrix (L.)
 Location: body cavity
 Distribution: Rio de Janeiro
 REGO, A.A., VICENTE, J.J., SANTOS, C.P. AND WEKID,
 R.M., 1983
- Psettodes erumei (Bloch and Schneider)
 Distribution: South China Sea
 PARUKHIN, A.M., 1967a
- Rastrelliger kanagurta (Cuvier, 1829)
 Location: body cavity, pyloric caeca
 Distribution: Australia
 KOROTAEVA, V.D., 1974b
- Rexea solandri (Cuvier and Valenciennes, 1832)
 Distribution: New Zealand, Australia
 KOROTAEVA, V.D., 1971
- Ruvettus tydemani Weber
 Distribution: New Zealand, Australia
 KOROTAEVA, V.D., 1971
- Scomber australasicus (Cuvier et Valenciennes, 1832)
 Location: body cavity
 Distribution: Australia
 KOROTAEVA, V.D., 1974b
- Sebastodes alutus
 Distribution: Pacific, north eastern
 TKACHEV, V.A., 1976
- Thyrsites atun (Euphrasen, 1791)
 Distribution: New Zealand, Australia
 KOROTAEVA, V.D., 1971
- Trypanorhynch sp. (larva)
 Host: Invertebrata Crustacea
Branchiostoma lanceolatum
 Location: midgut
 Distribution: Madras coast
 AZARIAH, J., 1968
- Host: Vertebrata Agnatha
Petromyzon sp.
 REICHENBACH-KLINKE, H. AND ELKAN, E., 1965
- Osteichthyes
Antimora rostrata
 Distribution: New York Bight
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
- Clupea harengus L., 1758
 Distribution: Gulf of Mexico, southern
 SINDERMANN, C.J., 1961a
- Coryphaena equisetis Linnaeus, 1758
 Location: stomach
 Distribution: Atlantic Ocean

- GREER, J.K., 1976
Cymatogaster aggregata Gibbons
 Distribution: California
 ARAI, H.P., 1967
Dicrolene intronigra
 Distribution: New York Bight
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
Echeneis naucrates L. 1758
 Location: body cavity
 Distribution: South China Sea
 PARUKHIN, A.M., 1967b
Halosauropsis macrochir
 Distribution: New York Bight
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
Nezumia bairdii (Goode and Bean, 1877)
 Distribution: New York Bight
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
Pleuronectes platessa L.
 Location: visceral cavity, gut wall
 Distribution: Loch Ewe, Scotland
 MACKENZIE, K. AND GIBSON, D.I., 1970
Pomatomus saltatrix (L.)
 Location: intestine
 Distribution: Guanabara State
 GOMES GOMES, D., FABIO, S.P. DE AND TAYT-SON ROLAS,
 F., 1972
Sardinella sp.
 Location: intestine
 Distribution: Rio de Janeiro, Brazil
 FEIJO, L.M.F., OLIVEIRA RODRIGUEZ, H. DE AND SORDRE
 RODRIGUEZ, S., 1979
Sciæna aquilla (Loot)
 Location: abdominal cavity wall, muscle
 Distribution: Mediterranean
 EL-AHWAL, A.A. AND EL-SHERIF, A.F., 1970
Scomber colias Gmelin
 Location: intestine
 Distribution: Africa, south west coast
 SOLONCHENKO, A.I., 1968
Sebastes marinus (L.)
 Location: stomach wall, mesenteries, adjacent
 Distribution: Gulf of Maine, northern
 SINDERMANN, C.J., 1961b
 Snapper
 Distribution: Persian Gulf
 MOKHAYER, B., 1974
Stenobranchius leucopsarus Eigenman and Eigenman
 Distribution: California, Basins off, Santa Cruz,
 Santa Barbara
 COLLARD, S.B., 1970
Trachurus mediterraneus ponticus Aleev
 KOVALEVA, A.A., 1979
 Location: intestine, body cavity
 Distribution: Black Sea
 KOVALEVA, A.A., 1965
Trachurus trachurus trachurus L.
 Distribution: North Sea, Atlantic, north
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
 Mammalia
Alepisaurus aesculapius
 Distribution: Kurile Island region
 SKRYABIN, A.S., 1965

Balaenoptera acutorostrata

Distribution: Kurile Island region
SKRYABIN, A.S., 1965

Balaenoptera acutorostrata davidsoni

Distribution: Pacific, north
SKRYABIN, A.S., 1975

Balaenoptera borealis Lesson

Distribution: Kurile Island region
SKRYABIN, A.S., 1965

Eumetopias jubatus Schr.

Distribution: Kurile Island region
SKRYABIN, A.S., 1965

Homo sapiens

Location: coughed up or vomited
Distribution: Hong Kong
GRIMMO, A.E.P. AND BUCKLEY, J.J.C., 1961

Physeter catodon L.

Distribution: Kurile Island region
SKRYABIN, A.S., 1965

Trypanorhynch sp. (plerocercoid)

Host: Invertebrata Crustacea

Penaeus indicus (Milne Edwards)

Location: musculature
Distribution: Mangalore, India
NATARAJAN, P., 1979

Penaeus sp.

Location: cephalothorax and digestive gland
Distribution: Mexico, north west coast
CRUZ-REYES, A., 1974b

Host: Vertebrata

Osteichthyes

Clupea harengus pallasi Valenciennes, 1847

Location: encysted in liver and mesenteries
Distribution: California, Oregon
ARTHUR, J.R. AND ARAI, H.P., 1980

Cynoscion nebulosus (Cuvier)

Location: musculature
Distribution: Gulf of Mexico
OVERSTREET, R.M., 1977

Micropogonias undulatus (Linnaeus)

Location: musculature
Distribution: Gulf of Mexico
OVERSTREET, R.M., 1977

Pleuronectes platessa L.

Location: kidney, liver
Distribution: Loch Ewe, Scotland
MACKENZIE, K., 1968

Trypanorhynch sp. (plerocercoids)

Host: Vertebrata

Osteichthyes

Xiphias gladius Linnaeus, 1758

Location: muscles
Distribution: west coast of Africa
MUZYKOVSKII, A.M., 1972

Trypanorhynch sp. (plerocercus)

Host: Vertebrata Osteichthyes

Platichthys flesus (L.)

Location: visceral cavity, gut wall

Distribution: Ythan estuary, Loch Ewe, Aberdeen,
Scotland

MACKENZIE, K. AND GIBSON, D.I., 1970

Scomber japonicus Houttuyn

Location: stomach, body cavity

Distribution: Rio de Janeiro

REGO, A.A. AND SANTOS, C.P., 1983

Location: stomachs, intestines, caeca, abdominal,
cavities, mesenteries

DAILEY, M.D., 1969

Trypanorhynch spp. (plerocercus, two species)

Host: Vertebrata Osteichthyes

Cynoscion striatus (Cuvier)

Location: body cavity

Distribution: Rio de Janeiro

REGO, A.A., SANTOS, J.C. AND SILVA, P.P., 1974

Trypanorhyncha type 1 (plerocercoid)

Host: Vertebrata Osteichthyes

Theragra chalcogramma (Pallas, 1811)

Location: mesenteries

Distribution: West Coast, British Columbia, Pacific
Ocean, north eastern

ARTHUR, J.R., 1984

Trypanorhyncha type 2 (plerocercoid)

Host: Vertebrata Osteichthyes

Theragra chalcogramma (Pallas, 1811)

Location: headwash

Distribution: Strait of Georgia, British Columbia,
Pacific Ocean, north eastern

ARTHUR, J.R., 1984

HOST-PARASITE LIST

INVERTEBRATA

SCYPHOZOA

Lichnorhiza sp.

Dibothriorhynchus dinoi Mendes, 1944 (larva)
MENDES, M.V., 1944

Stomolophus meleagria Agassiz

Dibothriorhynchus dinoi Mendes, 1944 (larva)
MENDES, M.V., 1944

MOLLUSCA

Euclio pyramidata gen. sp.

Trypanorhynch sp.

SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

GASTROPODA

Bullia melanoides (Deshayes)

Christianella sp. (larva)

REIMER, L.W., 1975a

Busycon spiratum pyruloides (Say)

Eutetrarhynchus sp. (plerocercoid)

CAKE, E.W. JR., 1976

CAKE, E.W. JR., 1977

Parachristianella sp. (plerocercoid)

CAKE, E.W. JR., 1977

Cantharus cancellarius (Conrad)

Parachristianella sp. (plerocercoid)

CAKE, E.W. JR., 1976

CAKE, E.W. JR., 1977

Crepidula fornicata (Linné)

Eutetrarhynchus sp. (plerocercoid)

CAKE, E.W. JR., 1976

Parachristianella sp. (plerocercoid)

CAKE, E.W. JR., 1976

Crepidula sp.

Eutetrarhynchus sp. (plerocercoid)

CAKE, E.W. JR., 1977

Parachristianella sp. (plerocercoid)

CAKE, E.W. JR., 1977

Fasciolaria liliun hunteria (Perry)

Eutetrarhynchus sp. (plerocercoid)

CAKE, E.W. JR., 1976

CAKE, E.W. JR., 1977

Parachristianella sp. (plerocercoid)

CAKE, E.W. JR., 1976

CAKE, E.W. JR., 1977

Fasciolaria tulipa (Linné)

Eutetrarhynchus sp. (plerocercoid)

CAKE, E.W. JR., 1976

CAKE, E.W. JR., 1977

Parachristianella sp. (plerocercoid)

CAKE, E.W. JR., 1976

CAKE, E.W. JR., 1977

gastropod

Eutetrarhynchus sp. (post-larva)

CAKE, E.W. JR., 1975

Parachristianella sp. (post-larva)

CAKE, E.W. JR., 1975

Melongena corona (Gmelin)

Eutetrarhynchus sp. (plerocercoid)

CAKE, E.W. JR., 1977

- Pleuroploca gigantea (Kiener)
Eutetrarhynchus sp. (plerocercoid)
 CAKE, E.W. JR., 1977
- Pleuroploca gigantea (Kiener)
Eutetrarhynchus sp. (plerocercoid)
 CAKE, E.W. JR., 1976
- Polinices duplicatus (Say)
Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Thais haemastoma canaliculata (Gray)
Eutetrarhynchus sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Thais rudolphi (Lamarck)
Christianella sp. (larva)
 REIMER, L.W., 1975a
Tetrarhynchobothrium sp. (larva)
 REIMER, L.W., 1975a

CEPHALOPODA

- Architeuthis dux Steenstrup, 1857
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 PIPPY, J.H.C. AND ALDRICH, F.A., 1969
- Cucoteuthis unguiculatus Molina (1782)
Tentacularia coryphaenae Bosc, 1802 (larva)
 DOLLFUS, R.P., 1967b
- Eledone Aldrovandi Rafin.
Nybelinia lingualis (Cuvier, 1817) (larva or post larva)
 DOLLFUS, R.P., 1942
- Eledone moschata (Lamarck, 1799)
Nybelinia lingualis (Cuvier, 1817) (post-larva)
 DOLLFUS, R.P., 1958
- Illex illecebrosus illecebrosus (LeSueur, 1821)
Nybelinia sp. (post-larva)
 BROWN, E.L. AND THRELFALL, W., 1968
- Illex illecebrosus (LeSueur, 1821)
Tentacularia coryphaenae Bosc, 1802 (post-larva)
 THRELFALL, W., LU, C. AND ALDRICH, F.A., 1971
- Lepidoteuthis grimaldi Joubin, 1895
Nybelinia sp.
 CLARKE, M.R. AND MAUL, G.E., 1962
- Trypanorhynch sp.
 CLARKE, M.R. AND MAUL, G.E., 1962
- Loligo paeleii (LeSueur, 1821)
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus) syn.
Lacistorhynchus tenue (Van Beneden, 1858) Pintner, 1913
 STUNKARD, H.W., 1977
- Nybelinia bisulcata (Linton, 1889) Poche, 1926 (plerocercus)
 STUNKARD, H.W., 1977
- Nybelinia yamagutii Dollfus, 1960 (plerocercus)
 STUNKARD, H.W., 1977
- Otobothrium crenacolle Linton, 1890 (plerocercus)
 STUNKARD, H.W., 1977
- Octopus sp.
Nybelinia sp. (plerocercus)
 ADAM, W., 1938
- Ommastrephes bartrami LeSueur
Nybelinia lingualis (Cuvier, 1817) (larva)
 GAEVSKAYA, A.V., 1976
Tentacularia coryphaenae Bosc, 1802 (larva)
 GAEVSKAYA, A.V., 1976

- Ommastrephes caroli Furtado, 1887
Tentacularia coryphaenae Bosc, 1802 (post-larva)
 THRELFALL, W., LU, C. AND ALDRICH, F.A., 1971
- Sthenoteuthis pteropus (Steenstrup, 1855)
Nybelinia lingualis (Cuvier, 1817) f. typica (larva)
 GAEVSKAYA, A.V., 1977
- Nybelinia lingualis (Cuvier, 1817) var. 1 (larva)
 GAEVSKAYA, A.V., 1977
- Nybelinia sp. (larva)
 GAEVSKAYA, A.V., 1977
- Nybelinia yamagutii Dollfus, 1960 (larva)
 GAEVSKAYA, A.V., 1977
- Tentacularia coryphaenae Bosc, 1802
 GAEVSKAYA, A.V., 1978
- Tentacularia coryphaenae Bosc, 1802 (larva)
 GAEVSKAYA, A.V., 1977
 GAEVSKAYA, A.V. AND NIGMATULLIN, C.M., 1981
- Todarodes pacificus Steenstrup
Nybelinia surmenicola Okada in Dollfus, 1929
 KUROCHKIN, Y.V., 1972
 SHIMAZU, T., 1975b

PELECYPODA

- Anadara transversa (Say)
Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1976
- Argopecten irradians concentricus (Say)
Eutetrarhynchus sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Atrina rigida (Lightfoot)
Eutetrarhynchus sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Atrina seminuda (Lamarck)
Eutetrarhynchus sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Nybelinia sp. (larva)
 WARDLE, W.J., 1974
- Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977
- Chione cancellata (Linné)
Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1976
- Chione cancellata (Linné) (sp.1)
Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1977
- Donax variabilis (Say)
Nybelinia sp. (larva) syn. "Scolex" sp. VIII
 WARDLE, W.J., 1974
- Parachristianella sp. (plerocercoid)
 CAKE, E.W. JR., 1976
 CAKE, E.W. JR., 1977

Dosinia discus (Reeve)
Eutetrarhynchus sp. (plerocercoid)
CAKE, E.W. JR., 1976
Parachristianella sp. (plerocercoid)
CAKE, E.W. JR., 1977

Ensis spp.

Eutetrarhynchus sp. (plerocercoid)
CAKE, E.W. JR., 1977

Macrocallista maculata (Linne)

Parachristianella sp. (plerocercoid)
CAKE, E.W. JR., 1976
CAKE, E.W. JR., 1977

Macrocallista nebulosa (Lightfoot)

Parachristianella sp. (plerocercoid)
CAKE, E.W. JR., 1977

Macrocallista nimbose (Lightfoot)

Parachristianella sp. (plerocercoid)
CAKE, E.W. JR., 1976

Noetia ponderosa (Say)

Parachristianella sp. (plerocercoid)
CAKE, E.W. JR., 1976
CAKE, E.W. JR., 1977

pelecypod

Eutetrarhynchus sp. (post-larva)
CAKE, E.W. JR., 1975

Parachristianella sp. (post-larva)
CAKE, E.W. JR., 1975

Raeta plicatella (Lamarck)

Parachristianella sp. (plerocercoid)
CAKE, E.W. JR., 1976

Spisula solidissima similis (Say)

Parachristianella sp. (plerocercoid)
CAKE, E.W. JR., 1976
CAKE, E.W. JR., 1977

CRUSTACEA

Acartia tonsa

Lacistorhynchus tenuis (Van Beneden, 1858) syn. Lacistorhynchus
tenuis (Van Beneden, 1858)
STUNKARD, H.W., 1981

Branchiostoma lanceolatum

Trypanorhynch sp. (larva)
AZARIAH, J., 1968

Callianassa sp.

Christianella trygonis-bucconis (Wagener, 1854) (larva)
YOUNG, R.T., 1954a

Copepods (unspecified)

Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
1975 (oncosphere, proceroid, plerocercus)
OVERSTREET, R.M., 1983

Crustacea sp.

Trypanorhynch sp.

SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Dilocarcinus (Dilocarcinus) pagei Stimson, 1861

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (post-larva)
REGO, A.A., 1982

Euphausia brevis

Trypanorhynch sp.

SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Euphausia diomedea

Trypanorhynch sp.

SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

- Euphausia pacifica Hansen
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 SHIMAZU, T., 1975c
- Euphausia similis Sars
 Eutetrarhynchidae sp. (larva)
 SHIMAZU, T., 1975a
Tetrarhynchobothrium sp. (larva)
 SHIMAZU, T., 1975a
 Trypanorhynch sp.
 SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974
- Euphausia sp.
 Trypanorhynch sp.
 SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974
- Euphausiid sp.
Nybelinia surmenicola Okada in Dollfus, 1929
 SHIMAZU, T., 1975b
 SHIMAZU, T., 1975c
- Hemigrapsus
Christianella trygonis-bucconis (Wagener, 1854) (larva)
 YOUNG, R.T., 1954a
- Macropipus depurator (L.)
Eutetrarhynchus ruficollis (Eysenhardt, 1829) (larva)
 VIVARES, C.P., 1971
- Metapenaeus affini (Milne Edwards)
Eutetrarhynchus leucomelanus (Shiple and Hornell, 1906) (larva)
 CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981
- Metapenaeus brevisornis (Milne Edwards)
Eutetrarhynchus leucomelanus (Shiple and Hornell, 1906) (larva)
 CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981
- Metapenaeus monoceros (Fabricius, 1788)
Eutetrarhynchus leucomelanus (Shiple and Hornell, 1906) (larva)
 CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981
- Parachristianella sp. (plerocercoid)
 REIMER, L.W., 1984
- Prochristianella sp. (plerocercoid)
 REIMER, L.W., 1984
- Pachygrapsus sp.
Christianella trygonis-bucconis (Wagener, 1854) (larva)
 YOUNG, R.T., 1954a
- Parapenaeus stylifera Alcock
Eutetrarhynchus leucomelanus (Shiple and Hornell, 1906) (larva)
 CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981
- Penaeus aztecus Ives
Parachristianella dimegacantha (larva)
 CORKERN, C.C., 1978
Parachristianella monomegacantha (larva)
 CORKERN, C.C., 1978
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (plerocercus) syn. Prochristianella penaei Kruse, 1959
 ALDRICH, D.V., 1965
 KRUSE, D.N., 1959
 RAGAN, J.C. AND ALDRICH, D.V., 1972
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (plerocercus) syn. Prochristianella sp. in Hutton et al.
 (1959)
 HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B., INGLE, R.M.
 AND WOODBURN, K.D., 1959
Prochristianella penaei (larva)
 CORKERN, C.C., 1978

- Penaeus brasiliensis Latreille
Parachristianella heteromegacanthus Feigenbaum, 1975
 (plerocercoid)
 COUCH, J.A., 1978
Parachristianella heteromegacanthus Feigenbaum, 1975 (plerocercus)
 FEIGENBAUM, D.L., 1975
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Parachristianella monomegacantha Kruse, 1959 (plerocercus)
 FEIGENBAUM, D.L., 1975
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Prochristianella hispida (Linton, 1898) Campbell and Carvajal,
 1975 (plerocercus)
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Prochristianella hispida (Linton, 1898) Campbell and Carvajal,
 1975 (plerocercus) syn. Rhynchobothrium hispidum Linton, 1898
 syn. Prochristianella penaei Kruse, 1959
 FEIGENBAUM, D.L., 1975
Renibulbus penaeus Feigenbaum, 1975 (plerocercus)
 FEIGENBAUM, D.L., 1975
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
- Penaeus duorarum Burkenroad
Parachristianella dimegacantha Kruse, 1959
 KRUSE, D.N., 1959
Parachristianella heteromegacanthus Feigenbaum, 1975 (plerocercus)
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Parachristianella monomegacantha Kruse, 1959
 KRUSE, D.N., 1959
Parachristianella monomegacantha Kruse, 1959 (plerocercus)
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Parachristianella monomegacantha Kruse, 1959 (plerocercus) syn.
Prochristianella sp. of Villella, Iversen and Sindermann (1978)
 VILLELLA, J.B., IVERSEN, E.S. AND SINDERMAN, C.J., 1978
Prochristianella hispida (Linton, 1898) Campbell and Carvajal,
 1975 (plerocercoid) syn. Prochristianella penaei Kruse, 1959
 COUCH, J.A., 1978
Prochristianella hispida (Linton, 1898) Campbell and Carvajal,
 1975 (plerocercus)
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
Prochristianella hispida (Linton, 1898) Campbell and Carvajal,
 1975 (plerocercus) syn. Prochristianella penaei Kruse, 1959
 KRUSE, D.N., 1959
 VILLELLA, J.B., IVERSEN, E.S. AND SINDERMAN, C.J., 1978
Prochristianella hispida (Linton, 1898) Campbell and Carvajal,
 1975 (plerocercus) syn. Prochristianella sp. in Hutton et al.
 (1959)
 HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B., INGLE, R.M.
 AND WOODBURN, K.D., 1959
Renibulbus penaeus Feigenbaum, 1975 (plerocercus)
 FEIGENBAUM, D.L. AND CARNUCCIO, J., 1976
- Penaeus indicus Edwards, 1837
Parachristianella sp. (plerocercoid)
 REIMER, L.W., 1984
Prochristianella sp. (plerocercoid)
 REIMER, L.W., 1984
- Penaeus indicus (Milne Edwards)
Eutetrarhynchus leucomelanus (Shiple and Hornell, 1986) (larva)
 CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI, K., 1981
Gymnorhynchus malleus (larva)
 CHANDRA, K.J. AND RAO, K.H., 1982
 Trypanorhynch sp. (plerocercoid)
 NATARAJAN, P., 1979

- Penaeus japonicus Bate, 1888
Parachristianella sp. (plerocercoid)
 REIMER, L.W., 1984
Prochristianella sp. (plerocercoid)
 REIMER, L.W., 1984
- Penaeus merguensis de Man
Parachristianella monomegacantha Kruse, 1959 (plerocercus)
 OWENS, L., 1980
 OWENS, L., 1981
- Penaeus monodon Fabricius, 1798
Parachristianella sp. (plerocercoid)
 REIMER, L.W., 1984
Prochristianella sp. (plerocercoid)
 REIMER, L.W., 1984
- Penaeus semisulcatus (de Haan)
Eutetrarhynchus leucomelanus (Shiple and Hornell, 1906) (larva)
 CHANDRA, K.J., RAO, K.H. AND SHYAMASUNDARI. K., 1981
- Penaeus setiferus L.
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (plerocercus)
 OVERSTREET, R.M., 1983
 RAGAN, J.C. AND ALDRICH, D.V., 1972
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (plerocercus) syn. Prochristianella penaei Kruse, 1959
 ALDRICH, D.V., 1965
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (plerocercus) syn. Prochristianella sp. in Hutton et al.
 (1959)
 HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B., INGLE, R.M.
 AND WOODBURN, K.D., 1959
- Penaeus setiferus (L.)
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (larva) syn. Eutetrarhynchus sp. of Sparks and Mackin (1957)
 SPARKS, A.K. AND MACKIN, J.G., 1957
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (plerocercoid) syn. Prochristianella penaei Kruse, 1959
 SPARKS, A.K. AND FONTAINE, C.T., 1973
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (plerocercus) syn. Prochristianella penaei Kruse, 1959
 KRUSE, D.N., 1959
- Penaeus sp.
 Trypanorhynch sp. (plerocercoid)
 CRUZ-REYES, A., 1974b
- Penaeus trisulcatus Leach
Eutetrarhynchus ruficollis (Eysenhardt, 1829) (plerocercoid)
 HELDT, J.H., 1949
- Sergestes lucens
 Trypanorhynch sp.
 SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974
- Sergestes sp.
 Trypanorhynch sp.
 SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974
- Ithysanoessa inermis Krøyer
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 SHIMAZU, T., 1975c
- Ithysanoessa longipes Brandt
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 SHIMAZU, T., 1975c
- Ithysanoessa raschii (Sars)
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 SHIMAZU, T., 1975c

Thysanoessa sp.

Nybelinia sp.

TSIMBALYUK, E.M., 1980

Thysanopoda tricuspidata

Trypanorhynch sp.

SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

Tigriopus californicus

Lacistorhynchus tenuis (Van Beneden, 1858) (procercoïd)

MUDRY, D.R., DAILEY, M.D., 1971

SAKANARI, J. AND MOSER, M., 1985b

Parachristianella monomegacantha Kruse, 1959 (procercoïd)

MUDRY, D.R., DAILEY, M.D., 1971

Tigriopus fulvus (Fisher)

Lacistorhynchus tenuis (Van Beneden, 1858) (procercoïd)

RISER, N.W., 1951

RISER, N.W., 1956

Trachypenaeus constrictus (Stimpson)

Prochistianella hispida (Linton, 1890) Campbell and Carvajal,

1975 (plerocercus) syn. Prochistianella sp. in Hutton et al.
(1959)

HUTTON, R.F., SOGANDARES-BERNAL, F., ELDRED, B., INGLE, R.M.

AND WOODBURN, K.D., 1959

Upogebia gracilipes De Man 1927

Eutetrarhynchus carayoni Dollfus, 1942 (plerocercus-tentative
identification)

DOLLFUS, R.P., 1946b

Upogebia stellata (Montagu, 1808)

Parachristianella trygonis Dollfus, 1946 (plerocercus)

DOLLFUS, R.P., 1946b

Prochistianella trygonicola Dollfus, 1946 (plerocercus)

DOLLFUS, R.P., 1946b

Valdivia serrata Bott, 1969

Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (post-larva)

REGO, A.A., 1982

VERTEBRATA

THALIACEA

Salpae gen. sp.

Trypanorhynch sp.

SLANKIS, A.Y. AND SHEVCHENKO, G.G., 1974

AGNATHA

Geotria australis Gray

Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)

LETHBRIDGE, R.C., POTTER, I.C., BRAY, R.A. AND HILLIARD, R.W.,
1983

Lampetra japonica (Martens)

Nybelinia sp.

STRELKOV, YU A. AND SHULMAN, S.S.

Petromyzon sp.

Trypanorhynch sp. (larva)

REICHENBACH-KLINKE, H. AND ELKAN, E., 1965

SELACHII

Acanthias vulgaris Risso, 1826 SEE: Squalus acanthias (Rondelet,
1554) L.1754

Aetobatis tenuicaudatus (Hector)

Prochistianella aetobatis Robinson, 1959

ROBINSON, E.S., 1959b

Alopias superciliosus (Lowe)

Sphyricephalus pelorosoma Heinz and Dailey, 1974 (adult)

HEINZ, M.L. AND DAILEY, M.D., 1974

Sphyricephalus viridis (Wagener, 1854) Pintner, 1913

- HEINZ, M.L. AND DAILEY, M.D., 1974
Alopias vulpinus (Bonnaterre)
Hepatoxylon trichiuri (Holten, 1802) syn. Hepatoxylon squali
(Martin, 1797) in Heinz and Dailey, 1974
HEINZ, M.L. AND DAILEY, M.D., 1974
Molicola uncinatus (Linton, 1924)
HEINZ, M.L. AND DAILEY, M.D., 1974
Bathyraja richardsoni (Garrick, 1961)
Grillotia (Paragrillotia) rowei Campbell, 1977 (immature adult)
CAMPBELL, R.A., 1977
Carcarodon lamia
Gymnorhynchus gigas (Cuvier, 1817) (adult)
LOPEZ-NEYRA, C.R., 1947
Carcharhinus amblyrhynchos Bleeker
Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (immature
adult)
CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
Pseudogrillotia basipunctata Carvajal, Campbell and Cornford, 1976
(adult)
CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
Carcharhinus galapagensis (Snodgrass and Heller)
Tentacularia coryphaenae Bosc, 1802 (adult)
CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
Carcharhinus japonicus
Floriceps saccatus Cuvier, 1817 (adult) syn. Dasyrhynchus ingens
(Linton, 1921) (adult)
IWATA, S., 1939
Carcharhinus leucas (Müller and Henle, 1841)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
WATSON, D.E. AND THORSON, T.B., 1976
Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (adult)
BUTEAU, JR., G.H., SIMMONS, J.E., FAIRBAIRN, D., 1969
Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928
WATSON, D.E. AND THORSON, T.B., 1976
Eutetrarhynchid sp.
HENSON, R.N., 1975
Nybelinia bisulcata (Linton, 1889) Poche, 1926
WATSON, D.E. AND THORSON, T.B., 1976
Nybelinia lingualis (Cuvier, 1817)
HENSON, R.N., 1975
Otobothrium penetrans Linton, 1907
WATSON, D.E. AND THORSON, T.B., 1976
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
(adult)
BUTEAU, JR., G.H., SIMMONS, J.E., FAIRBAIRN, D., 1969
GOLDSTEIN, R.J., 1963
Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942 (adult)
GOLDSTEIN, R.J., 1962
Carcharhinus leucas (Müller and Henle, 1841) syn. Prionodon platydon
(Poey, 1861) syn. Carcharhinus commersoni Blainville, 1816
Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (adult)
DOLLFUS, R.P., 1969b
Carcharhinus limbatus (Müller and Henle)
Otobothrium minutum Subhapradha, 1955 (adult)
SUBHAPRADHA, C.K., 1955
Otobothrium penetrans Linton, 1907
SHULER, R.H., 1938
Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942 (adult)
THATCHER, V.E., 1961

- Carcharhinus limbatus (Valenciennes)
Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (immature adult)
 CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
Floriceps saccatus Cuvier, 1817
 HEINZ, M.L. AND DAILEY, M.D., 1974
Tentacularia coryphaenae Bosc, 1802
 HEINZ, M.L. AND DAILEY, M.D., 1974
Carcharhinus longimanus (Poey, 1861)
Dasyrhynchus talismani Dollfus, 1935
 HEINZ, M.L. AND DAILEY, M.D., 1974
Tentacularia coryphaenae Bosc, 1802
 HEINZ, M.L. AND DAILEY, M.D., 1974
Tentacularia coryphaenae Bosc, 1802 (adult)
 REGO, A.A., 1977
Carcharhinus platyodon (Poey)
Grillotia perelica (Shuler, 1938) Dollfus, 1942 (adult)
 REES, G., 1969
Carcharias acutus Muller and Henle
Nybelinia pintneri Yamaguti, 1934 (adult)
 DESHMUKH, R.A., 1980
Carcharias (Galeus) glaucus (Rond., 1554) Rafinesque, 1810
Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn.
Dibothriohynchus carchariae (Welch, 1876)
 GUIART, J., 1935a
Carcharias platyodon (Poey)
Dasyrhynchus insigne (Linton, 1924)
 CHANDLER, A.C., 1942
Carcharias (Prionodon) glaucus (L.) Müller and Henle SEE: Galeus glaucus Rondelet, 1554
Carcharias sp.
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (adult)
 syn. Tentacularia macfieii Southwell, 1929
 SUBHAPRADHA, C.K., 1955
Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928
 SUBHAPRADHA, C.K., 1955
Floriceps saccatus Cuvier, 1817
 SUBHAPRADHA, C.K., 1955
Grillotia perelica (Shuler, 1938) Dollfus, 1942
 SUBHAPRADHA, C.K., 1955
Tentacularia coryphaenae Bosc, 1802 (adult)
 SUBHAPRADHA, C.K., 1955
Carcharias walbeehmi Bleeker
Otobothrium minutum Subhapradha, 1955 (adult)
 SUBHAPRADHA, C.K., 1955
Carcharias walbeemhi Bleeker
Nybelinia sp. (adult)
 SUBHAPRADHA, C.K., 1955
Carcharhinus melanopterus (Quoy and Gaimard)
Nybelinia perideraëus (Shiple and Hornell, 1906) (adult)
 DOLLFUS, R.P., 1942
Otobothrium cysticum (Mayer, 1842) (plerocercus)
 DOLLFUS, R.P., 1942
Carcharodon carcharias (Linnaeus)
Hepatoxylon megacephalum (Rudolphi, 1819) (adult)
 ROBINSON, E.S., 1959a
Centrophorus squamosus (Gmelin)
Grillotia erinaceus (Van Beneden, 1858) (larva)
 REES, G. AND LLEWELLYN, J., 1941

- Centroscyllum granulatus Günther, 1880
Gilquinia squali (Fabricius, 1794) (immature adult)
 CARVAJAL, J., 1974
- Centroscymnus coelolepis Bocage and Capello, 1864
Grillotia dolichocephala (Guiart, 1935) (larva)
 GUIART, J., 1935a
Grillotia scolecina (Rudolphi, 1819) (larva)
 GUIART, J., 1935a
Rhopalothylax gymnorhynchoides Guiart, 1935 (larva)
 GUIART, J., 1935a
Sphyriocephalus viridis (Wagener, 1854) Pintner, 1913 (post-larva)
 syn. Sphyriocephalus Alberti Guiart, 1935
 GUIART, J., 1935a
Sphyriocephalus viridis (Wagener, 1854) (post-larva) syn.
Sphyriocephalus alberti Guiart, 1935
 BUSSIÉRAS, J., 1970
- Cetrina vulpecula Cuv
Gymnorhynchus gigas (Cuvier, 1817) (adult)
 LÓPEZ-NEYRA, C.R., 1947
- Chiloscyllium griseum Müller and Henle
Eulacistorhynchus chiloscyllius Subhapradha, 1955 (adult)
 SUBHAPRADHA, C.K., 1955
- Daenia kiakourae Whitley
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 ROBINSON, E.S., 1959a
- Dalatius licha (Bonnaterre)
Hepatoxylon megacephalum (Rudolphi, 1819) (post-larva)
 ROBINSON, E.S., 1959a
- Dasyatis akajei
Pterobothrium malleum (Linton, 1924) (adult)
 IWATA, S., 1939
- Dasyatis americana Hildebrand and Schroeder
Parachristianella monomegacantha Kruse, 1959 (adult)
 CAMPBELL, R.A. AND CARVAJAL, J., 1975
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (adult) syn. Rhynchobothrium hispidum Linton, 1890 syn.
Prochristianella penaei Kruse, 1959
 CAMPBELL, R.A. AND CARVAJAL, J., 1975
- Dasyatis centrura
Pterobothrium lintoni (MacCallum, 1916)
 SIMMONS, J.E., 1961
- Dasyatis lata (Garman)
Parachristianella monomegacantha Kruse, 1959 (adult)
 CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
Prochristianella micracantha Carvajal, Campbell and Cornford, 1976
 (immature adult)
 CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
Pterobothrium hawaiiensis Carvajal, Campbell and Cornford, 1976
 (adult)
 CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
- Dasyatis pastinaca L.
Christianella minuta (Van Beneden, 1849) (adult)
 KORNÝUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Eutetrarhynchus sp. (adult)
 CHOUDHURY, A. AND ROY, A., 1982
- Dasyatis sabina LeSueur
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 (pre adult and adult) syn. Prochristianella penaei Kruse,
 1959
 ALDRICH, D.V., 1965
Prochristianella hispida (Linton, 1890) Campbell and Carvajal,
 1975 syn. Prochristianella penaei Kruse, 1959

- HENSON, R.N., 1975
Prochristianella tenuispine (Linton, 1890)
- HENSON, R.N., 1975
Dasyatis uarnak
Eutetrarhynchus sp. (adult)
 CHOUDHURY, A. AND ROY, A., 1982
Pterobothrium sp. (plerocercus)
 TANDON, R.S., 1972
- Dasyatis violacea Bonaparte
Nybelinia sp.
 DOLLFUS, R.P., 1969a
Progrillotia louiseuzeti Dollfus, 1969 (immature adult)
 DOLLFUS, R.P., 1969a
- Dasybatus sp.
Otobothrium cysticum (Mayer, 1842)
 DOLLFUS, R.P., 1942
- Elasmobranch sp.
Otobothrium conglobatus Khambata and Bal, 1953
 KHAMBATA, F.S. AND BAL, D.V., 1953
Otobothrium septemspinigerens Khambata and Bal, 1953
 KHAMBATA, F.S. AND BAL, D.V., 1953
Otobothrium vermicularis Khambata and Bal, 1953
 KHAMBATA, F.S. AND BAL, D.V., 1953
- Eugaleus galeus (L., 1758) Gill, 1864
Lacistorhynchus tenuis (Van Beneden, 1858) (adult) syn.
Lacistorhynchus bulbifer (Linton, 1889)
 GUIART, J., 1935a
- Euprotomicrus bispinatus (Quoy and Gaimard, 1842)
Sphyriocephalus tergestinus Pintner, 1913 (adult)
 DOLLFUS, R.P., 1967a
- Galaeorhinus australis Macleay
Hepatoxylon megacephalum (Rudolphi, 1819) (post-larva)
 ROBINSON, E.S., 1959a
Lacistorhynchus tenuis (Van Beneden, 1858) (adult)
 ROBINSON, E.S., 1959a
- Galeoides polydactylus
Nybelinia africana Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
- Galeus canis (Rondelet, 1554) syn. Squalus galeus L., 1758 syn.
Eugaleus galeus (L., 1758) Gill, 1864 syn. Galaeorhinus galeus
 (L., 1758) Blainville, 1816
Lacistorhynchus tenuis (Van Beneden, 1858) (adult)
 DOLLFUS, R.P., 1942
- Galeus glaucus Rondelet, 1554
Clujia Racovitzai Guiart, 1935 (larva)
 GUIART, J., 1935a
Tentacularia coryphaenae Bosc, 1802 (adult) syn. Tentacularia
rugosa (Leuckhart, 1850)
 GUIART, J., 1935a
- Galeus glaucus Rondelet, 1554 syn. Carcharias (Prionodon) glaucus
 (L.) Müller and Henle
Dasyrhynchus talismani Dollfus, 1935 (adult)
 DOLLFUS, R.P., 1942
- Galeus glaucus Rondelet, 1554 syn. Squalus glaucus L. 1758
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 DOLLFUS, R.P., 1942
- Ginglymostoma cirratum
Eutetrarhynchus lineatus (Linton, 1909) syn. Tentacularia lineata
 (Linton, 1909) Shuler, 1938
 SHULER, R.H., 1938
Grillotia (Paragrillotia) simmonsii Dollfus, 1969 (adult)
 BUTEAU, JR., G.H., SIMMONS, J.E., FAIRBAIRN, D., 1969

- Tentacularia similis (Linton, 1909) Shuler, 1938 syn.
Rhynchobothrium simile Linton, 1909
 SHULER, R.H., 1938
- Ginglymostoma cirratum (Bonnaterre)
Eutetrarhynchus lineatus (Linton, 1909) syn. Tentacularia lineata
 (Linton, 1909) (adult)
 DOLLFUS, R.P., 1942
- Ginglymostoma cirratum (Gmelin, 1788)
Grillotia (Paragrillotia) simmonsi Dollfus, 1969 (adult)
 DOLLFUS, R.P., 1969b
- Heterodontus francisci (Girard)
Nybelinia anthicosum Heinz and Dailey, 1974 (adult)
 HEINZ, M.L. AND DAILEY, M.D., 1974
- Hexanchus griseus (Bonnaterre, 1788)
Grillotia heptanchi (Vaullegeard, 1899) (adult)
 CARVAJAL, J., 1971
 CARVAJAL, J., 1974
Grillotia megabothridia (Hart, 1936) (adult) syn. Tentacularia megabothridia Hart, 1936 syn. Grillotia heptanchi (Vaullegeard, 1899)
 HART, J.F., 1936
Grillotia spinosissima Dollfus, 1969 (larva, immature adult, adult)
 DOLLFUS, R.P., 1969a
Nybelinia sp.
 DOLLFUS, R.P., 1969a
Nybelinia surmenicola Okada in Dollfus, 1929 (larva) syn.
Nybelinia sp. of Wardle (1932) syn. Tetrarhynchus sp. of Hart (1936)
 HART, J.F., 1936
- Hexanchus griseus (Gmelin)
Grillotia acanthoscolex Rees, 1944 (adult)
 REES, G., 1944
Trypanorhynch sp.
 REES, G. AND LLEWELLYN, J., 1941
- Hypoprion brevirostris Poey
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 syn.
Tentacularia pseudodera Shuler, 1938
 SHULER, R.H., 1938
Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928 syn.
Tentacularia insignis (Linton, 1819) Shuler, 1938
 SHULER, R.H., 1938
Grillotia perelica (Shuler, 1938) Dollfus, 1942 (adult) syn.
Tentacularia perelica Shuler, 1938
 SHULER, R.H., 1938
- Hypoprion brevirostris Poey SEE: Negaprion brevirostris (Poey, 1868)
- Isoropsis glauca
Gymnorhynchus (Molicola) horridus Goodsir, 1841 (adult)
 IWATA, S., 1939
Hepatoxylon trichiuri (Holten, 1802) (adult) syn.
Dibothriorhynchus squali La Martinère, 1797
 IWATA, S., 1939
Sphyricephalus viridis (Wagener, 1854) Pintner, 1913 (adult)
 IWATA, S., 1939
- Isurus glaucus (Müller and Henle)
Gymnorhynchus isuri Robinson, 1959 (adult)
 ROBINSON, E.S., 1959b
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 ROBINSON, E.S., 1959a

- Isurus nasus (Bonnaterre, 1788) Lamna cornubica (Gmelin, 1789)
 Cuvier, 1817
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 DOLLFUS, R.P., 1942
- Isurus oxyrinchus Rafinesque, 1810
Gymnorhynchus gigas (Cuvier, 1817)
 HEINZ, M.L. AND DAILEY, M.D., 1974
Molicola horridus (Goodsir, 1841)
 HEINZ, M.L. AND DAILEY, M.D., 1974
Nybelinia pintneri Yamaguti, 1934
 HEINZ, M.L. AND DAILEY, M.D., 1974
Nybelinia sp.
 DOLLFUS, R.P., 1969a
- Isurus oxyrinchus Rafinesque, 1810 syn. Oxyrhina Spallanzanii
 (Rafinesque, 1810) Bonaparte, 1841
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 DOLLFUS, R.P., 1942
- Lamna cornubica (Gmelin)
Hepatoxylon trichiuri (Holten, 1802)
 WILLIAMS, H.H., 1960
- Lamna ditropis Hubbs and Follett, 1947
Nybelinia surmenicola Okada in Dollfus, 1929 (adult)
 SHIMAZU, T., 1975b
Nybelinia (Syngenes) palliata (Linton, 1924)
 YOUNG, R.T., 1954a
- "Megamouth"
Mixodigma leptaleum Dailey and Vogelbein, 1982 (adult)
 DAILEY, M.D. AND VOGELBEIN, W., 1982
- Mustelus antarcticus Günther
Eutetrarhynchus australis Prudhoe, 1969 (adult)
 PRUDHOE, S., 1969
- Mustelus asterias (Rondolet)
Nybelinia lingualis (Cuvier, 1817) (larva or post larva)
 DOLLFUS, R.P., 1942
- Mustelus californicus
Eutetrarhynchus litocephalus Heinz and Dailey, 1974 (adult)
 HEINZ, M.L. AND DAILEY, M.D., 1974
Eutetrarhynchus macrotrachelus Heinz and Dailey, 1974 (adult)
 HEINZ, M.L. AND DAILEY, M.D., 1974
Lacistorhynchus tenuis (Van Beneden, 1858)
 HEINZ, M.L. AND DAILEY, M.D., 1974
- Mustelus canis (Mitchell, 1815)
Eutetrarhynchus ruficollis (Eysenhardt, 1829) (adult)
 DOLLFUS, R.P., 1969a
Lacistorhynchus sp. syn. Lacystorhynchus sp. of Kilejian and
 MacInnis, 1976
 KILEJIAN, A. AND MACINNIS, A.J., 1976
Lacistorhynchus tenuis (Van Beneden, 1858)
 BUTEAU, JR., G.H., SIMMONS, J.E., BEACH, D.H., HOLTZ, JR.,
 G.G., AND SHERMAN, I.W., 1971
 LAURIE, J.S., 1961
 LUMSDEN, R.D. AND BYRAM, J., III., 1967
 LUMSDEN, R.D., OAKS, J.A. AND ALWORTH, W.L., 1970
 PAPPAS, P.W., 1978
 READ, C.P., 1957
 SIMMONS, J.E., 1961
 SIMMONS, J.E., 1969
Lacistorhynchus tenuis (Van Beneden, 1858) (adult)
 CAMPBELL, J.W., 1960
 CAMPBELL, J.W. AND LEE, T.W., 1963
 DOLLFUS, R.P., 1969a
 LACEY, R.J. AND SPATZ, E.M., 1969

- LUMSDEN, R.D., 1965
 LUMSDEN, R.D., 1966a
 LUMSDEN, R.D., 1966b
 LUMSDEN, R.D., 1967
 OAKS, J.A. AND LUMSDEN, R.D., 1971
- Lacistorhynchus tenuis (Van Beneden, 1858) (adult) syn.
Lacistorhynchus tenue (Van Beneden, 1858)
 STUNKARD, H.W., 1981
- Mustelicola woodsholei Dollfus, 1969 (adult)
 DOLLFUS, R.P., 1969b
- Nybelinia eureia Dollfus, 1968 (post-larva)
 DOLLFUS, R.P., 1968b
- Tetrarhynchobothrium setiense Dollfus, 1969 (larva)
 DOLLFUS, R.P., 1969a
- Mustelus henlei (Gill)
Lacistorhynchus tenuis (Van Beneden, 1858)
 HEINZ, M.L. AND DAILEY, M.D., 1974
- Mustelus manazo Bleeker
Nybelinia manazo Yamaguti, 1952 (adult)
 YAMAGUTI, S., 1952
- Mustelus mento Cope, 1877
Prochristianella musteli Carvajal, 1974 (adult)
 CARVAJAL, J., 1974
- Mustelus mustelus (Linnaeus, 1758)
Eutetrarhynchus ruficollis (Eysenhardt, 1829) (adult)
 DOLLFUS, R.P., 1969a
Lacistorhynchus tenuis (Van Beneden, 1858) (adult)
 DOLLFUS, R.P., 1969a
Tetrarhynchobothrium setiense Dollfus, 1969 (larva)
 DOLLFUS, R.P., 1969a
- Myliobatis aquila (Linnaeus, 1758)
Eutetrarhynchus glaber Dollfus, 1969 (adult)
 DOLLFUS, R.P., 1969a
Eutetrarhynchus spinifer Dollfus, 1969 (larva, adult)
 DOLLFUS, R.P., 1969a
Parachristianella trygonis Dollfus, 1946 (adult) syn.
Christianella trygon-brucco of Euzet, 1956
 EUZET, L., 1956
Parachristianella trygonis Dollfus, 1946 (immature adult)
 DOLLFUS, R.P., 1969a
Tetrarhynchobothrium setiense Dollfus, 1969 (larva, adult)
 DOLLFUS, R.P., 1969a
Tetrarhynchobothrium tenuicolle Diesing, 1858 (adult)
 EUZET, L., 1956
- Myliobatis californica
Mecistobothrium myliobati Heinz and Dailey, 1974 (adult)
 HEINZ, M.L. AND DAILEY, M.D., 1974
- Myrmillo manazo (Bik.)
Myrmillorhynchus pearsoni (Southwell, 1929) Bilqees, 1988 (adult)
 syn. Tetrarhynchus pearsoni Southwell, 1929
 BILQEES, F.M., 1988
Otobothrium karachiensis Bilqees and Muslehuddin, 1976 (adult)
 BILQEES, F.M. AND MUSLEHUDDIN, R., 1976
Tentacularia sp. (adult)
 BILQEES, F.M. AND MUSLEHUDDIN, R., 1976
- Negaprion brevirostris (Poey, 1868)
Floriceps caballeroi Cruz-Reyes, 1977 (adult)
 CRUZ-REYES, A., 1977
Floriceps saccatus Cuvier, 1817 (adult)
 CRUZ-REYES, A., 1974b
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (adult)

- GOLDSTEIN, R.J., 1963
Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942 (adult)
 GOLDSTEIN, R.J., 1962
Negaprion brevisrostris (Poey, 1868) syn. Hypoprion brevisrostris Poey
Dasyrhynchus giganteus (Diesing, 1850) Pintner, 1928 (adult)
 DOLLFUS, R.P., 1969b
Notorhynchus maculatus Ayres, 1855
Floriceps saccatus Cuvier, 1817
 HEINZ, M.L. AND DAILEY, M.D., 1974
Nybelinia sp.
 PAPPAS, P.W., 1970
Notorhynchus pectorosus (Garman)
Grillotia heptanchi (Vaulleopard, 1899) (adult)
 ROBINSON, E.S., 1959a
Hepatoxylon megacephalum (Rudolphi, 1819) (post-larva)
 ROBINSON, E.S., 1959a
Oxyrhina Spallanzanii (Rafinesque, 1810) Bonaparte, 1841 SEE:
Isurus oxyrinchus Rafinesque, 1810
Oxyrina pallananii Bonaterre
Gymnorhynchus gigas (Cuvier, 1817) (adult)
 LOPEZ-NEYRA, C.R., 1947
Paratrygon hystrix (Müller and Henle)
Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959
 REGO, A.A., 1979
Paratrygon motoro (Müller and Henle)
Eutetrarhynchus araya (Woodland, 1934) Rego and Dias, 1976
 REGO, A.A., 1979
Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult) syn.
Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958
 REGO, A.A. AND DIAS, A.P.L., 1976
Platyrrhinoidis triseriata (Gordon and Gilbert)
Prochristianella minima Heinz and Dailey, 1974 (adult)
 HEINZ, M.L. AND DAILEY, M.D., 1974
Platysqualus tudes (Cuvier)
Diplootobothrium springeri Chandler, 1942 (adult)
 CHANDLER, A.C., 1942
Potamotrygon falkneri
Eutetrarhynchus araya (Woodland, 1934) Rego and Dias, 1976 (adult)
 syn. Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958
 BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981
Potamotrygon hystrix (Müller and Troschel)
Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult)
 LOPEZ-NEYRA, C.R. AND DIAZ-UNGRIA, C., 1958
Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult) syn.
Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958
 BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981
Potamotrygon motoro (Müller and Henle)
Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult) syn.
Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958
 BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981
Potamotrygon reticulatus (Gunther)
Eutetrarhynchus araya (Woodland, 1934) Yamaguti, 1959 (adult) syn.
Eutetrarhynchus baeri López-Neyra and Diaz-Ungria, 1958
 BROOKS, D.R., MAYES, M.A. AND THORSON, T.B., 1981
Prionace glauca (Linnaeus, 1758)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 HEINZ, M.L. AND DAILEY, M.D., 1974
Floriceps saccatus Cuvier, 1817 (adult) syn. Dasyrhynchus ingens
 (Linton, 1921) (adult)
 IWATA, S., 1939
Hepatoxylon trichiuri (Holten, 1802) (larva) syn.
Dibothriorhynchus squali (La Martinère, 1797)

- IWATA, S., 1939
Hepatoxylon trichiuri (Holten, 1802) (plerocercoid) syn.
Dibothriorhynchus grossum (Rudolphi, 1819)
 YANEZ, A.P., 1950
Hepatoxylon trichiuri (Holten, 1802) (plerocercus)
 CARVAJAL, J., 1974
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 CATTAN, P.E., CARVAJAL, J., TORRES, D. AND YANEZ, J.L., 1979
 ROBINSON, E.S., 1959a
Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Hepatoxylon squali (? Martiniere, 1797)
 THRELFALL, W., 1969
Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Hepatoxylon squali Bosc, 1811
 PAPPAS, P.W., 1970
Nybelinia pintneri Yamaguti, 1934 (adult)
 IWATA, S., 1939
Tentacularia coryphaenae Bosc, 1802 (adult)
 CATTAN, P.E., CARVAJAL, J., TORRES, D. AND YANEZ, J.L., 1979
 IWATA, S., 1939
Prionodon platydon (Poey, 1861) syn. Carcharinus commersoni
 Blainville, 1816 SEE: Carcharhinus leucas (Müller and Henle, 1841)
Pseudotriakis microdon Capello, 1867
Grillotia dolichocephala (Guiart, 1935) (larva)
 GUIART, J., 1935a
Sphyriocephalus viridis (Wagener, 1854) Pintner, 1913 (post-larva)
 syn. Sphyriocephalus Alberti Guiart, 1935
 GUIART, J., 1935a
Pteroplatea micrura Day
Halysiorhynchus macrocephalus (Shiple and Hornell, 1906) (adult)
 ZAIDI, D.A. AND KHAN, D., 1976
Raja batis L.
Grillotia erinaceus (Van Beneden, 1858)
 WILLIAMS, H.H., 1960
Raja binoculata
Gilquinia squali (Fabricius, 1794) (adult)
 RIGBY, D.W. AND MARX, R.A., 1962
Nybelinia riseri Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
Raja brachyura Lafont
Grillotia erinaceus (Van Beneden, 1858)
 WILLIAMS, H.H., 1960
Raja chilensis Guichenot, 1848
Grillotia dollfusi Carvajal, 1971
 WHITTAKER, F.H., CARVAJAL, J.G. AND APKARIAN, R., 1982
Grillotia dollfusi Carvajal, 1971 (adult)
 CARVAJAL, J., 1971
Raja clavata L.
Christianella minuta (Van Beneden, 1849) (adult)
 KORNUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Grillotia erinaceus (Van Beneden, 1858)
 REES, G. AND LLEWELLYN, J., 1941
 WILLIAMS, H.H., 1960
Grillotia erinaceus (Van Beneden, 1858) (adult)
 BAYLIS, H.A., 1939
 KORNUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
Grillotia recurvispinis Dollfus, 1969 (immature adult)
 DOLLFUS, R.P., 1969a
Grillotia sp.

- LAVERRACK, M.S. AND BLACKLER, M., 1974
- Raja diaphanes Garman, 1913 SEE: Raja ocellata Mitchell, 1815
- Raja fullonica L.
- Grillotia erinaceus (Van Beneden, 1858)
WILLIAMS, H.H., 196Ø
- Raja kincaidii
Dasyrhynchus sp. (adult)
DOUGLAS, L.T., 1959
- Raja laevis Mitchell, 1817 syn. Raja stabuliformis Garman, 1913
Grillotia erinaceus (Van Beneden, 1858)
MYERS, B.J., 1959
- Raja maculata Montagu 1815 Raja montagui Fowler 191Ø
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
DOLLFUS, R.P., 1942
- Raja micro-ocellata Montagu
Grillotia erinaceus (Van Beneden, 1858)
WILLIAMS, H.H., 196Ø
- Raja miraletus L. 1758
Grillotia erinaceus (Van Beneden, 1858)
DOLLFUS, R.P., 1946b
- Raja naevus Müller and Henle
Grillotia erinaceus (Van Beneden, 1858) (larva)
REES, G. AND LLEWELLYN, J., 1941
- Raja naevus Müller and Henle, 1841
Grillotia erinaceus (Van Beneden, 1858)
MCVICAR, A.H., 1977
MCVICAR, A.H., 1979
WILLIAMS, H.H., 196Ø
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
DOLLFUS, R.P., 1942
Grillotia sp.
WILLIAMS, H.H., 1968
- Raja ocellata Mitchell, 1815
Grillotia erinaceus (Van Beneden, 1858)
SIMMONS, J.E., 1961
- Raja ocellata Mitchell, 1815 syn. Raja diaphanes Garman, 1913
Grillotia erinaceus (Van Beneden, 1858)
MYERS, B.J., 1959
- Raja oxyrhynchus L.
Grillotia erinaceus (Van Beneden, 1858)
REES, G. AND LLEWELLYN, J., 1941
WILLIAMS, H.H., 196Ø
Grillotia pseuderinaceus Dollfus, 1969 (immature adult)
DOLLFUS, R.P., 1969a
- Raja radiata Donovan
Grillotia erinaceus (Van Beneden, 1858)
BAER, J.G., 1962
Grillotia sp. (adult)
WILLIAMS, H.H., MCVICAR, A.H. AND RALPH, R., 197Ø
- Raja rhina (Jordan and Gilbert)
Grillotia musculara (Hart, 1936) Dollfus, 1942 (adult) syn.
Tentacularia musculara Hart, 1936
HART, J.F., 1936
- Raja scabrata
Grillotia sp.
HELLER, A.F., 1949
- Raja sp.
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
DOLLFUS, R.P., 1942

- Raja stabuliformis Garman, 1913 SEE: Raja laevis Mitchell, 1817
- Ray
- Grillotia erinaceus (Van Beneden, 1858)
HALTON, D.W. AND MCKERR, G., 1979
- Ray sp.
- Pterobothrium sp. (plerocercus)
REGO, A.A., SANTOS, J.C. AND SILVA, P.P., 1974
- Rhina squatina (L.) SEE: Squatina squatina (L.)
- Rhinobatos planiceps Garman, 1880
- Parachristianella monomegacantha Kruse, 1959
DAILEY, M.D. AND CARVAJAL, J., 1976
- Prochristianella heteracantha Dailey and Carvajal, 1976 (adult)
DAILEY, M.D. AND CARVAJAL, J., 1976
- Rhinobatos productus (Ayres)
- Eutetrarhynchus schmidtii Heinz and Dailey, 1974 (adult)
HEINZ, M.L. AND DAILEY, M.D., 1974
- Lacistorhynchus tenuis (Van Beneden, 1858)
HEINZ, M.L. AND DAILEY, M.D., 1974
- Parachristianella monomegacantha Kruse, 1959
HEINZ, M.L. AND DAILEY, M.D., 1974
- Parachristianella monomegacantha Kruse, 1959 (adult)
MUDRY, D.R., DAILEY, M.D., 1971
- Prochristianella fragilis Heinz and Dailey, 1974 (adult)
HEINZ, M.L. AND DAILEY, M.D., 1974
- sp. (larva)
KUNNENKERI, J.K. AND MARTIN, W.E., 1962
- Rhinobatus granulatus
- Eutetrarhynchus sp. (adult)
CHOUDHURY, A. AND ROY, A., 1982
- Rhinobatus halavi (Forsk)
- Christianella minuta (Van Beneden, 1849) (adult)
SUBHAPRADHA, C.K., 1955
- Rhinoptera bonasus (Mitchell, 1815)
- Mecistobothrium brevispine (Linton, 1897) Campbell and Carvajal, 1975 (adult), Rhynchobothrium brevispine Linton, 1897,
Rhynchobothrium agile Linton, 1897
CAMPBELL, R.A. AND CARVAJAL, J., 1975
- Rhinoptericola megacantha Carvajal and Campbell, 1975 (adult)
CARVAJAL, J. AND CAMPBELL, R.A., 1975
- Rhinotriakis henlei
- Lacistorhynchus tenuis (Van Beneden, 1858)
BUTEAU, JR., G.H., SIMMONS, J.E., BEACH, D.H., HOLTZ, JR., G.G., AND SHERMAN, I.W., 1971
- Lacistorhynchus tenuis (Van Beneden, 1858) (adult)
VOGE, M., EDMONDS, H., 1969
- Rhynchobatus djeddensis (Forsk) Bleeker
- Otobothrium linstowi Southwell, 1912 (adult)
SUBHAPRADHA, C.K., 1955
- Scoliodon palasoora (Cuvier)
- Hornelliella palasoorahi Zaidi and Khan, 1976 (adult)
ZAIDI, D.A. AND KHAN, D., 1976
- Scoliodon sorrakowah
- Nybelinia robusta (Linton, 1890) (adult)
KYAW-MYINT, 1968
- Scoliodon terrae-novae (Richardson)
- Otobothrium penetrans Linton, 1907
SHULER, R.H., 1938
- Scoliodon walbeemi
- Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (adult)
NAKAJIMA, K. AND EGUSA, S., 1972a
- Tentacularia coryphaenae Bosc, 1802 (adult)
IWATA, S., 1939

- Scyliorhinus canicula (L.)
Nybelinia sp.
 DOLLFUS, R.P., 1969a
- Scymnorhinus licha (Bonnaterre)
Sphyricephalus viridis (Wagener, 1854) Pintner, 1913
 WILLIAMS, H.H., 196 β
Sphyricephalus viridis (Wagener, 1854) Pintner, 1913 (adult)
 DOLLFUS, R.P., 1946b
- Somniosus pacificus
Hepatoxylon trichiuri (Holten, 18 β 2) (post-larva)
 REYES PIRIANO, X, 1982
- Sphyrna diplana Springer
Nybelinia edwinlintoni Dollfus, 196 β (post-larva)
 DOLLFUS, R.P., 196 β b
Nybelinia (Syngenes) goreensis Dollfus, 196 β (adult)
 DOLLFUS, R.P., 196 β b
- Sphyrna lewini
Otobothrium kurisi Shields, 1985 (adult)
 SHIELDS, J.D., 1985
- Sphyrna tiburo Linnaeus
 Trypanorhynch sp.
 HENSON, R.N., 1975
- Sphyrna zygaena (L.)
Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (adult)
 NAKAJIMA, K. AND EGUSA, S., 1972a
Nybelinia palliata (Linton, 1924) (adult)
 CHANDLER, A.C., 1942
Nybelinia (Syngenes) sphyrnae Yamaguti, 1952 (adult)
 YAMAGUTI, S., 1952
Otobothrium pephrikos Dollfus, 1969 (adult)
 DOLLFUS, R.P., 1969a
Otobothrium propectysticum Dollfus, 1969 (adult)
 DOLLFUS, R.P., 1969a
- Spinax spinax (L.)
Aporhynchus norvegicum (Olssen, 1868) Nybelin, 1918
 REES, G. AND LLEWELLYN, J., 1941
Aporhynchus norvegicum (Olssen, 1868) Nybelin, 1918 (adult)
 REES, G., 1941b
- Squalus acanthias (L.)
Christianella minuta (Van Beneden, 1849) (adult)
 KORNUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
Gilquinia squali (Fabricius, 1794)
 DOLLFUS, R.P., 1969a
 HEINZ, M.L. AND DAILEY, M.D., 1974
 MANGER, B.R., 1972
 PAPPAS, P.W., 197 β
 WILLEMSE, J.J., 1968
 WILLIAMS, H.H., 196 β
Gilquinia squali (Fabricius, 1794) (adult)
 MCCULLOUGH, J.S. AND FAIRWEATHER, I., 1983
 ORLOWSKA, K., 1979
 THRELFALL, W., 1969
Hepatoxylon trichiuri (Holten, 18 β 2) (post-larva)
 GOTTO, R.V., 1955
- Squalus acanthias (Rondelet, 1554) L.1754 syn. Acanthias vulgaris
 Risso, 1826
Hepatoxylon trichiuri (Holten, 18 β 2) (post-larva)
 DOLLFUS, R.P., 1942
- Squalus ferdinandinus Molina
Gilquinia squali (Fabricius, 1794)
 DOLLFUS, R.P., 1969a

Squalus galeus L., 1758 syn. Eugaleus galeus (L., 1758) Gill, 1864
 syn. Galeorhinus galeus (L., 1758) Blainville, 1816 SEE:
Galeus canis (Rondelet, 1554)

Squalus glaucus L. 1758 SEE: Galeus glaucus Rondelet, 1554

Squalus lebruni (Vaillant)
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 ROBINSON, E.S., 1959a

Squalus suckleyi
Gilquinia squali (Fabricius, 1794) (adult)
 RIGBY, D.W. AND MARX, R.A., 1962

Squalus suckleyi (Girard)
Gilquinia anteropus (Hart, 1936) (adult) syn. Tetrarhynchus
anteropus Hart, 1936 syn. Gilquinia squali (Fabricius, 1794) syn.
Gilquinia tetraboethrium (Van Beneden, 1894) in Wardle (1933) syn.
Gilquinia squali (Fabricius, 1793) in Wardle (1933)
 HART, J.F., 1936

Squatina californica Ayres
Grillotia smarigora (Wagener, 1854)
 HEINZ, M.L. AND DAILEY, M.D., 1974

Squatina squatina (L.)
Christianella minuta (Van Beneden, 1849) (adult)
 DOLLFUS, R.P., 1942
Grillotia angeli Dollfus, 1969 (immature adult)
 DOLLFUS, R.P., 1969a
Grillotia smarigora (Wagener, 1854) Dollfus, 1946 (adult)
 DOLLFUS, R.P., 1946b

Squatina squatina (L.) syn. Rhina squatina (L.)
Christianella minuta (Van Beneden, 1849) (adult) syn.
Tetrarhynchus minutus Van Beneden, 1849 (in Nybelin, 1940) syn.
Wageneria porrecta Lühe, 1902
 NYBELIN, O., 1940

Stegostoma tigrinum
Hornelliella annandalei (Hornell, 1912) Yamaguti, 1954 (adult)
 syn. Tetrarhynchus annandalei, Hornell, 1912
 YAMAGUTI, S., 1954
Tentacularia macropora (Shiple and Hornell, 1906) (adult)
 SUBRAMANIAM, M.K., 1940

Synias manazo
Trigonolobom sp. Dollfus, 1929 (adult) syn. Rhynchobothrius
spinuliferus (Southwell, 1911)
 IWATA, S., 1939

Torpedo fairchildi Hutton
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 ROBINSON, E.S., 1959a

Torpedo nobiliana Bonaparte
Grillotia microthrix Dollfus, 1969 (plerocercus)
 DOLLFUS, R.P., 1969a

Iriakis henlei (Gill, 1862)
Lacistorhynchus tenuis (Van Beneden, 1858)
 PAPPAS, P.W., 1970

Iriakis maculata Kner and Steindachner, 1867
Lacistorhynchus tenuis (Van Beneden, 1858) (adult)
 CARVAJAL, J., 1974

Iriakis scyllia Müller and Henle
Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (adult)
 NAKAJIMA, K. AND EGUSA, S., 1972d
 NAKAJIMA, K. AND EGUSA, S., 1973
Callitetrarhynchus nipponica Nakajima and Egusa, 1973
 (plerocercus)
 NAKAJIMA, K. AND EGUSA, S., 1972b
Callitetrarhynchus nipponica Nakajima and Egusa, 1973
 (plerocercus, adult)

- NAKAJIMA, K. AND EGUSA, S., 1972c
- Triakis semifasciata Girard, 1854
- Eutetrarhynchus litocephalus Heinz and Dailey, 1974 (adult)
HEINZ, M.L. AND DAILEY, M.D., 1974
- Lacistorhynchus tenuis (Van Beneden, 1858)
BUTEAU, JR., G.H., SIMMONS, J.E., BEACH, D.H., HOLTZ, JR.,
G.G., AND SHERMAN, I.W., 1971
HEINZ, M.L. AND DAILEY, M.D., 1974
PAPPAS, P.W., 1970
- Lacistorhynchus tenuis (Van Beneden, 1858) (adult)
MUDRY, D.R., DAILEY, M.D., 1971
RISER, N.W., 1956
SAKANARI, J. AND MOSER, M., 1985b
VOGE, M., EDMONDS, H., 1969
YOUNG, R.T., 1954a
- Lacistorhynchus tenuis (Van Beneden, 1858) (immature adult)
SAKANARI, J. AND MOSER, M., 1985b
- Lacistorhynchus tenuis (Van Beneden, 1858) (immature adult)
(experimental infection)
YOUNG, R.T., 1954b
- Nybelinia anthicosum Heinz and Dailey, 1974 (adult)
HEINZ, M.L. AND DAILEY, M.D., 1974
- Trygon imbricata (Bloch and Schneider)
- Christianella minuta (Van Beneden, 1849) (adult)
SUBHAPRADHA, C.K., 1955
- Trygon pastinaca (L.)
- Grillotia (Progrillotia) pastinacae Dollfus, 1946 (adult)
DOLLFUS, R.P., 1946b
- Parachristianella trygonis Dollfus, 1946 (adult)
DOLLFUS, R.P., 1946b
- Prochristianella trygonicola Dollfus, 1946 (adult)
DOLLFUS, R.P., 1946b
- Trygon sp.
- Tentacularia arayae Woodland, 1934
DOLLFUS, R.P., 1975b
- Urobatis halleri (Cooper)
- Christianella sp. (adult)
YOUNG, R.T., 1954a
- Parachristianella trygonis Dollfus, 1946 (adult)
YOUNG, R.T., 1954a
- sp. (larva)
KUNNENKERI, J.K. AND MARTIN, W.E., 1962
- Urobatis halleri (Cooper) (?)
- Christianella trygonis-bucconis (Wagener, 1854) adult
YOUNG, R.T., 1954a
- Urolophus halleri
- Eutetrarhynchus schmidti Heinz and Dailey, 1974 (adult)
HEINZ, M.L. AND DAILEY, M.D., 1974
- Mecistobothrium myliobati Heinz and Dailey, 1974 (adult)
HEINZ, M.L. AND DAILEY, M.D., 1974
- Prochristianella minima Heinz and Dailey, 1974 (adult)
HEINZ, M.L. AND DAILEY, M.D., 1974
- Urolophus jamaicensis (Cuvier, 1817)
- Eutetrarhynchus caribbensis Kovacs and Schmidt, 1980 (adult)
KOVACS, K.J. AND SCHMIDT, G.D., 1980
- Eutetrarhynchus thalassius Kovacs and Schmidt, 1980 (adult)
KOVACS, K.J. AND SCHMIDT, G.D., 1980
- Urolophus testaceus (Müller and Henle)
- Eutetrarhynchus geraschmidti Dollfus, 1974 (pre-adult)
DOLLFUS, R.P., 1974a

Vulpecula marina Valmont

Molicola uncinatus (Linton, 1924) (adult) syn. Rhynchobothrium uncinatum Linton, 1924 syn. Floriceps uncinatus (Linton, 1924) Yamaguti, 1952
YAMAGUTI, S., 1952

OSTEICHTHYES

Acanthocybium solanderi (Cuvier and Valenciennes, 1831)

Tentacularia coryphaenae Bosc, 1802 (post-larva)

DOLLFUS, R.P., 1960b

Acanthopsettia nadeshnyi

Nybelinia surmenicola Okada in Dollfus, 1929

MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963

Acanthurus caeruleus Bloch and Schneider

Otobothrium crenacolle Linton, 1890 (plerocercus)

REES, G., 1969

Agnostomus forsteri (Cuvier and Valenciennes)

Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)

ROBINSON, E.S., 1959a

Alohestes afer

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (plerocercus)

REES, G., 1969

Anguilla japonica

Nybelinia anguillicola Yamaguti, 1952 (larva)

YAMAGUTI, S., 1952

Antimora rostrata

Trypanorhynch sp. (larva)

CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980

Aprodon cortezianus Gilbert

Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

ARAI, H.P., 1969

Argentina elongata

Hepatoxylon trichiuri (Holten, 1802) (larva)

POIS, N.V., 1975

Argentina kagoshimae Jordan and Snyder

Nybelinia nipponica Yamaguti, 1952 (larva)

YAMAGUTI, S., 1952

Arius gagora

Pterobothrium lintoni (MacCallum, 1916)

KYAW-MYINT, 1968

Arius platystomus

Pterobothrium lintoni (MacCallum, 1916) (larva)

KYAW-MYINT, 1968

Arius serratus (Day)

Otobothrium arii Bilqees and Shaukat, 1976 (plerocercoid)

BILQEES, F.M. AND SHAUKAT, N., 1976

Arripis trutta (Bloch and Schneider)

Nybelinia sp. (larva)

BAKER, A.N., 1971

Atheresthes evermanni Jordan et Starks

Nybelinia surmenicola Okada in Dollfus, 1929

MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963

Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

STRELKOV, J.A., 1960

Atherinops californiensis

sp. (larva)

KUNNENKERI, J.K. AND MARTIN, W.E., 1962

Bagre bahiensis

Otobothrium crenacolle Linton, 1890 (larva)

PALACIOS, N.M., 1963

PALACIOS, N.M. AND BARROETA, L.F., 1967

- Bagre marina
Callitetrarhynchus lepidus (Chandler, 1935) Chandler, 1942 (larva)
 syn. Tentacularia lepida Chandler, 1935
 CHANDLER, A.C., 1935a
 sp. (larva)
 CHANDLER, A.C., 1935a
- Bairdiella chrysur (Lacépède)
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (plerocercoid)
 OVERSTREET, R.M., 1977
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
- Balistes capriscus L.
Nybelinia lingualis (Cuvier, 1817) (larva or post larva)
 DOLLFUS, R.P., 1942
- Balistes polylepia Steindachner, 1876
Otobothrium (Pseudotobothrium) dipsacum (Linton, 1897) Dollfus,
 1942 syn. Otobothrium (Pseudotobothrium) insigne (Linton, 1985)
 Dollfus, 1942
 CRUZ-REYES, A., 1974a
- Barracuda
Tentacularia sp. (larva)
 YEH, L.S., 1956
- Belone belone (L.)
Lacistorhynchus tenuis (Van Beneden, 1858)
 WILLEMSE, J.J., 1968
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1969a
 GRABDA, J., 1981
- Belone belone (L.) syn. Belone vulgaris Flem.
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
- Belone vulgaris Flem. SEE: Belone belone (L.)
- Beryx splendens
Tentacularia sp. (larva)
 ICHIHARA, A., 1968
- Box boops (L. 1758)
Nybelinia estigmana Dollfus, 1968 (var. 2) (post-larva)
 DOLLFUS, R.P., 1968b
- Brama rai (Bloch, 1791)
Gymnorhynchus gigas (Cuvier, 1817)
 LÓPEZ-NEYRA, C.R., 1947
 WILLIAMS, H.H., 1968
Gymnorhynchus gigas (Cuvier, 1817) (plerocercus)
 SEYDA, M., 1976
- Brama rayi Schneid.
Gymnorhynchus gigas (Cuvier, 1817) (plerocercus)
 BRIAN, A., 1952
- Caranx sp.
Dasyrhynchus varioucinatus (Pintner, 1913) Pintner, 1928
 (plerocercus)
 DOLLFUS, R.P., 1942
- Caranx affinis
Pterobothrium sp. (plerocercoid)
 JENSEN, L.A., SCHMIDT, G.D. AND KUNTZ, K.E., 1983
- Caranx armatus (Forsk.)
Dasyrhynchus varioucinatus (Pintner, 1913) Pintner, 1928
 (plerocercus)
 DOLLFUS, R.P., 1942
- Caranx crysos (Mitchill)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969

- Caranx rhonchus Saint-Hilaire, 1809
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942
Nybelinia senegalensis Dollfus, 1960
 DOLLFUS, R.P., 1960b
- Caranx ruber
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969
- Caranx sp.
Pterobothrium sp. (plerocercus)
 MIRZAYANS, A., 1970
- Caranx trachurus (L.)
Grillotia bothridiopunctata Dollfus, 1969 (larva)
 DOLLFUS, R.P., 1969a
- Careproctus sp.
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
- Centropomus undecimalis Lacépède
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942
- Cephalopholis fulvus
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969
- Cepola schlegeli (Bleeker)
Oncomegas wagneri (Linton, 1890) (larva)
 YAMAGUTI, S., 1952
- Ceratoscopelus maderensis (Lowe, 1839)
Gilquinia sp. (plerocercoid)
 REIMER, L.W., 1975b
- Cerberus rhynchops
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercoid)
 JENSEN, L.A., SCHMIDT, G.D. AND KUNTZ, K.E., 1983
- Chaeturichthys hexanemus (Bleeker)
Pterobothrium chaeturichthydis Yamaguti, 1952 (larva)
 YAMAGUTI, S., 1952
- Chascanopsetta lugubris Alcock
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 REIMER, L.W., 1984
Nybelinia sp. (larva)
 REIMER, L.W., 1984
Parachristianella sp. (larva)
 REIMER, L.W., 1984
- Cheilodactylus macropterus (Bloch and Schneider)
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 VOOREN, C.M. AND TRACEY, D., 1976
Nybelinia sp. (post-larva)
 VOOREN, C.M. AND TRACEY, D., 1976
- Chelidonichthys kumu Lesson and Garnot
Otobothrium (Pseudotobothrium) dipsacum Linton, 1897 syn.
Otobothrium dipsacum Linton, 1897
 YAMAGUTI, S., 1952
- Chirocentrus dorab
Tentacularia sp. (larva)
 ANANTARAMAN, S., 1963

- Chlorophthalmus agassizi Bonaparte
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 REIMER, L.W., 1984
- Clevelandia ios (Jordan and Gilbert)
Callitetrarhynchus sp. (larva)
 BROOKS, D.R. AND BROTHERS, E.B., 1974
- Clibanarius misanthropus Risso
Eutetrarhynchus carayoni Dollfus, 1942 (plerocercus)
 DOLLFUS, R.P., 1942
- Clupea harengus L., 1758
Grillotia erinaceus (Van Beneden, 1858) (larva)
 SINDERMANN, C.J., 1957
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1956
Lacistorhynchus sp.
 MACKENZIE, K., 1985
Lacistorhynchus tenuis (Van Beneden, 1858)
 MACKENZIE, K., 1978
Lacistorhynchus tenuis (Van Beneden, 1858) (larva)
 SINDERMANN, C.J., 1957
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1956
 Trypanorhynch sp. (larva)
 SINDERMANN, C.J., 1961a
- Clupea harengus pallasii Valenciennes, 1847
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercoid)
 SAKANARI, J. AND MOSER, M., 1985a
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 ARTHUR, J.R. AND ARAI, H.P., 1980
 Trypanorhynch sp.
 ARTHUR, J.R. AND ARAI, H.P., 1980
 Trypanorhynch sp. (plerocercoid)
 ARTHUR, J.R. AND ARAI, H.P., 1980
- Coelorhynchus parallelus (Gunther)
Nybelinia sp. (larva)
 REIMER, L.W., 1984
Pseudoqrillotia sp. (larva)
 REIMER, L.W., 1984
- Coelorhynchus sp.
Microbothriorhynchus coelorhynchi Yamaguti, 1952 (larva)
 YAMAGUTI, S., 1952
- Conger conger
Grillotia erinaceus (Van Beneden, 1858) (larva)
 BAYLIS, H.A., 1939
- Conger myriaster
Oncomegas wageneri (Linton, 1890) (larva)
 YAMAGUTI, S., 1952
- Congrid sp.
Nybelinia eureia Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
- Coridodax pullax (Bloch and Schneider, 1801)
Gymnorhynchus sp.
 RITCHIE, L.D., 1969
Lacistorhynchus tenuis (Van Beneden, 1858)
 RITCHIE, L.D., 1969
- Coris julis
Floriceps oxneri Guiart, 1938 (larva)
 GUIART, J., 1938
- Corvina nigrata Cuvier
Otobothrium cysticum (Mayer, 1842) (plerocercus)
 DOLLFUS, R.P., 1942

- Coryphaena equisetis Linnaeus, 1758
Nybelinia alloiotica Dollfus, 1960 (var.) (post-larva)
 DOLLFUS, R.P., 1960b
Trypanorhynch sp. (larva)
 GREER, J.K., 1976
- Coryphaena hippurus Linnaeus
Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn.
Dibothriorhynchus attenuatus (Rudolphi, 1819)
 GUIART, J., 1935a
Nybelinia bisulcata (Linton, 1889) Poche, 1926 (plerocercus)
 WARD, H.L., 1954
Tentacularia coryphaenae Bosc, 1802 (plerocercus)
 WARD, H.L., 1954
Tentacularia coryphaenae Bosc, 1802 (post-larva)
 DOLLFUS, R.P., 1946b
- Coryphaena sp.
Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn.
Dibothriorhynchus attenuatus (Rudolphi, 1819)
 GUIART, J., 1935a
Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn.
Dibothriorhynchus claviger (Leuckart, 1819)
 GUIART, J., 1935a
Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn.
Dibothriorhynchus stenocephala Guiart, 1935
 GUIART, J., 1935a
Tentacularia coryphaenae Bosc, 1802
 JOYEUX, C. AND BAER, J.G., 1954
- Coryphaenoides (Chalinura) carapinus (Goode and Bean, 1883)
Grillotia (Paragrillotia) rowei Campbell, 1977 (larva)
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
- Coryphaenoides (Chalinura) leptolepsis Gunther, 1877
Grillotia (Paragrillotia) rowei Campbell, 1977 (plerocercus)
 CAMPBELL, R.A., 1977
- Coryphaenoides (Coryphaenoides) rupestris Gunnerus, 1765
Nybelinia sp. (larva)
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
- Coryphaenoides hippurus
Floriceps saccatus Cuvier, 1817 (plerocercus)
 DOLLFUS, R.P., 1946b
- Coryphaenoides (Lionurus) carapinus Goode and Bean, 1883
Grillotia (Paragrillotia) rowei Campbell, 1977 (plerocercus)
 CAMPBELL, R.A., 1977
- Coryphaenoides (Nematonurus) armatus (Hector, 1875)
Grillotia (Paragrillotia) rowei Campbell, 1977 (larva)
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
Grillotia (Paragrillotia) rowei Campbell, 1977 (plerocercus)
 CAMPBELL, R.A., 1977
- Coryphaesopia cornuta (Kaup)
Otobothrium (Pseudotobothrium) linstowi (Southwell, 1912)
 (plerocercoid)
 REIMER, L.W., 1980
- Cottus bubalis Euphrasen
Grillotia erinaceus (Van Beneden, 1858) (larva)
 REES, G., 1945
- Cubiceps natalensis Gilchrist and Von Bonde
Christianella sp. (larva)
 REIMER, L.W., 1984
- Cybius guttatum
Gymnorhynchus cybiumi Chincholikar and Shinde, 1977 (larva)
 CHINCHOLIKAR, L.N. AND SHINDE, G.B., 1977

- Cymatogaster aggregata Gibbons
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercoid)
 YOUNG, R.T., 1954a
 YOUNG, R.T., 1954b
 Trypanorhynch sp. (larva)
 ARAI, H.P., 1967
- Cynoglossus macrolepidotus (Bleeker)
Nybelinia bengalensis Reimer, 1980 (plerocercoid)
 REIMER, L.W., 1980
- Cynoglossus sp.
Nybelinia bengalensis Reimer, 1980 (plerocercoid)
 REIMER, L.W., 1980
Nybelinia jayapaulazariahi Reimer, 1980 (plerocercoid)
 REIMER, L.W., 1980
- Cynoglossus sunus-arabici Chabanaud
Nybelinia erythraea Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
- Cynoscion arenarius Ginsberg
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
 (plerocercoid)
 OVERSTREET, R.M., 1977
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
- Cynoscion leiarchus (Cuvier and Valenciennes)
Pterobothrium sp. (plerocercus)
 REGO, A.A., SANTOS, J.C. AND SILVA, P.P., 1974
- Cynoscion nebulosus (Cuvier)
Grillotia sp. (identified as G. heptanchi group by Dollfus, 1942)
 CHANDLER, A.C., 1954
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
 (plerocercoid)
 COLLINS, M.R., MARSHALL, M.J. AND LANCIANI, C.A., 1984
 OVERSTREET, R.M., 1977
 OVERSTREET, R.M., 1978b
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
 (plerocercus)
 GOLDSTEIN, R.J., 1963
Poecilancistrum robustum
 GUEST, W.C. AND GUNTER, G., 1958
 Trypanorhynch sp. (plerocercoid)
 OVERSTREET, R.M., 1977
- Cynoscion nebulosus (Cuvier and Valenciennes)
Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942
 (plerocercoid)
 BOERTJE, S.B., 1976
- Cynoscion nothus
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
 (plerocercoid)
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
- Cynoscion regalis
Nybelinia sp. (encysted plerocercoid)
 MEYERS, T.R., 1978
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
 (plerocercus)
 GOLDSTEIN, R.J., 1963
- Cynoscion sp.
Tetrarhynchus fragilis (Diesing, 1850) (larva)
 VOGELANG, E.G. AND MAYAUDON, T.H., 1959
- Cynoscion striatus (Cuvier)
Progrillotia dollfusi Carvajal and Rego, 1983
 CARVAJAL, J. AND REGO, A.A., 1983
 Trypanorhynch spp. (plerocercus, two species)

- REGO, A.A., SANTOS, J.C. AND SILVA, P.P., 1974
- Cyttus novae-zealandiae (Arthur)
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 ROBINSON, E.S., 1959a
- Damalichthys vacca (Girard, 1855)
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercoid)
 SAKANARI, J. AND MOSER, M., 1985a
- Dentex macrophthalmus Cuvier and Valenciennes
Otobothrium cysticum (Mayer, 1842) (plerocercus)
 DOLLFUS, R.P., 1942
- Dicrolene intronigra
 Trypanorhynch sp. (larva)
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
- Diodon holacanthus Linnaeus, 1758
Floriceps saccatus Cuvier, 1817 (plerocercus)
 DOLLFUS, R.P., 1975
- Diodon hystrix L.
Gymnorhynchus gigas (Cuvier, 1817) (plerocercoid)
 RADHAKRISHNAN, S. AND NAIR, N.B., 1980
Nybelinia sp. (plerocercoid)
 RADHAKRISHNAN, S. AND NAIR, N.B., 1981
Pseudogrillotia basipunctata Carvajal, Campbell and Cornford, 1976
 (plerocercus)
 CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
- Echeneis naucrates L. 1758
Nybelinia punctatissima Dollfus, 1960 (var.) (post-larva)
 DOLLFUS, R.P., 1960b
 Trypanorhynch sp. (larva)
 PARUKHIN, A.M., 1967b
- Eleginus gracilis (Tilesius)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
- Engraulis japonica (Houttuyn)
Callitetrarhynchus nipponica Nakajima and Egusa, 1973 (proceroid)
 NAKAJIMA, K. AND EGUSA, S., 1969a
 NAKAJIMA, K. AND EGUSA, S., 1969b
 NAKAJIMA, K. AND EGUSA, S., 1971a
 NAKAJIMA, K. AND EGUSA, S., 1971b
 NAKAJIMA, K. AND EGUSA, S., 1972b
- Enophrys diceraus
Nybelinia surmenicola Okada in Dollfus, 1929
 KOROTAEVA, V.D., 1968a
- Epinephelus adscensionis
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969
- Epinephelus aenus (Et. Geoff. St-Hil)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942
- Epinephelus akaara
Grillotia musculicola (Yamaguti, 1934) (larva) syn. Pintneriella musculicola Yamaguti, 1934
 YAMAGUTI, S., 1952
- Epinephelus alexandrinus (Cuvier and Valenciennes, 1828)
Nybelinia cadenati Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
- Epinephelus guttatus
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969

- Epinephelus morio Valenciennes, 1824
Callitetrarhynchus sp. (plerocercoid)
 FEJER, E., VALDES, R. AND BARRERA, M., 1979
- Epinephelus sp.
Tetrarhynchus fragilis (Düssing, 1858) (larva)
 VOGELSSANG, E.G. AND MAYAUDON, T.H., 1959
- Epinephelus striatus (Bloch)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969
- Epiniphillus sp.
 sp. (larva)
 EL-AHWAL, A.A., 1978
- Erethetis elongata
Nybelinia elongata Shah and Bilqees, 1979 (plerocercoid)
 BILQEES, F.M., 1981
- Eriscion nebulosus
Otobothrium robustum Chandler, 1935 (larva)
 CHANDLER, A.C., 1935b
- Euthynnus alleteratus (Rafinesque, 1818)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 BUSSIERAS, J. AND BAUDIN-LAURENCIN, F., 1973
- Otobothrium crenacolle Linton, 1898 (plerocercus)
 REES, G., 1969
- Tentacularia coryphaenae Bosc, 1882 (post-larva)
 REES, G., 1969
- Euthynnus pelamis
Tentacularia sp. (larva)
 MARKOWSKI, S., 1971
- Euthynnus pelamys (Linne)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952
- Euthynnus sp. (Cuvier and Valenciennes)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 WARD, H.L., 1954
- Euthynnus yaito Kishinouye
Dasyrhynchus varioucinatus (Pintner, 1913) Pintner, 1928
 (plerocercus)
 DOLLFUS, R.P., 1942
- Tentacularia coryphaenae Bosc, 1882 (larva)
 IWATA, S., 1939
- Fishballs
Nybelinia sp. (plerocercoid)
 KOYAMA, I. AND KOMIYA, Y., 1964
- Fistularia tabaccaria L. 1758
Nybelinia cadenati Dollfus, 1968
 DOLLFUS, R.P., 1968b
- G. giuris (full name missing)
Tetrarhynchus sp.
 ALI, M.Y., 1968
- Gadus aeglefinus L.
Hepatoxylon trichiuri (Holten, 1882) (larva)
 BAER, J.G., 1962
- Gadus callarias L.
Hepatoxylon trichiuri (Holten, 1882) (larva)
 BAER, J.G., 1962
- Hepatoxylon trichiuri (Holten, 1882) (plerocercoid)
 REES, G., 1953

- Gadus luscus L.
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
- Gadus merlangus L.
Gilquinia squali (Fabricius, 1794) (plerocercoid)
 MACKENZIE, K., 1965
Grillotia erinaceus (Van Beneden, 1858) (larva)
 BAYLIS, H.A., 1939
 REES, G. AND LLEWELLYN, J., 1941
- Gadus morhua L.
Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)
 LUBIENIECKI, B., 1976
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
 APPY, R.G. AND BURT, M.D.B., 1982
Tentacularia coryphaenae Bosc, 1802
 APPY, R.G. AND BURT, M.D.B., 1982
- Gadus morhua macrocephalus (Tilesius)
Nybelinia sp.
 TKACHEV, V.A., 1976
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
- Gadus pollachius L.
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
- Gadus (Pollachius) virens L.
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 DOLLFUS, R.P., 1942
- Gadus sp.
Dibothriorhynchus typ. grossus
 RADULESCU, I.I., 1969
- Gadus virens L.
Hepatoxylon trichiuri (Holten, 1802)
 WILLIAMS, H.H., 1960
Hepatoxylon trichiuri (Holten, 1802) (larva)
 BAER, J.G., 1962
Hepatoxylon trichiuri (Holten, 1802) (larva) syn.
Dibothriorhynchus grossum (Rudolphi, 1819)
 REES, G. AND LLEWELLYN, J., 1941
Hepatoxylon trichiuri (Holten, 1802) (plerocercoid) syn.
Dibothriorhynchus grossum (Rudolphi, 1819)
 REES, G., 1941a
- Gadus virens SEE: Pollachius virens (L.)
- Galeichthys felis
Callitetrarhynchus lepidus (Chandler, 1935) Chandler 1942 (larva)
 CHANDLER, A.C., 1935a
Pterobothrium filicolle (Linton, 1889) (larva) syn. Gymnorhynchus
gigas (Cuvier, 1817) of Chandler (1935a)
 CHANDLER, A.C., 1935a
Pterobothrium lintoni (MacCallum, 1916) (larva) syn. Pterobothrium
malleum (Linton, 1924) syn. Gymnorhynchus malleus (Linton, 1924)
 of Chandler, 1942
 CHANDLER, A.C., 1935a
- Gambusia affinis
Lacistorhynchus tenuis (Van Beneden, 1858) (metacestode)
 SAKANARI, J. AND MOSER, M., 1985b
- Gazza minuta
Pterobothrium hira Yamaguti, 1952 (plerocercoid)
 JENSEN, L.A., SCHMIDT, G.D. AND KUNTZ, K.E., 1983
- Genyonemus lineatus Ayres, 1855
Lacistorhynchus tenuis (Van Beneden, 1858) (metacestode)
 SAKANARI, J. AND MOSER, M., 1985b
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercoid)

SAKANARI, J. AND MOSER, M., 1985a

Genypterus blacodes

Grillotia sp. (larva)

GRABDA, J. AND SLOSARCZYK, W., 1981

Hepatoxylon trichiuri (Holten, 1802) (larva)

POIS, N.V., 1975

Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)

GRABDA, J. AND SLOSARCZYK, W., 1981

Genypterus blacodes (Bloch and Schneider)

Hepatoxylon trichiuri (Holten, 1802) (post-larva)

ROBINSON, E.S., 1959a

Genypterus blacodes Schneider

Hepatoxylon trichiuri (Holten, 1802) (post-larva)

CATTAN, P.E., 1977

Genypterus chilensis (Guichenot, 1848)

Grillotia heptanchi (Vaullegeard, 1899) (plerocercus)

CARVAJAL, J. AND CAMPBELL, R.A., 1979

Hepatoxylon trichiuri (Holten, 1802)

VERGARA, L.A. AND GEORGE-NASCIMENTO, M., 1982

Germo alalonga (Gmelin)

Hepatoxylon trichiuri (Holten, 1802) (post-larva)

DOLLFUS, R.P., 1942

Glyptocephalus cynoglossus (L.)

Grillotia erinaceus (Van Beneden, 1858) (larva)

REES, G. AND LLEWELLYN, J., 1941

Glyptocephalus stelleri (Schmidt)

Floriceps saccatus Cuvier, 1817 (larva)

TSIMBALYUK, E.M., 1978a

TSIMBALYUK, E.M., 1978b

Nybelinia sp. (larva)

TSIMBALYUK, E.M., 1978a

Glyptocephalus zachirus

Nybelinia sp.

TKACHEV, V.A., 1976

Gobius batrachocephalus Pallas

Tetrarhynchobothrium sp.

NAIDENOVA, N.N., 1965

NAIDENOVA, N.N., 1966

Gobius niger L.

Tetrarhynchobothrium sp.

NAIDENOVA, N.N., 1965

NAIDENOVA, N.N., 1966

Gobius ophiocephalus Pallas

Tetrarhynchobothrium sp.

NAIDENOVA, N.N., 1966

Gonorhynchus gonorrhynchus (L.)

Nybelinia sp. (larva)

REIMER, L.W., 1984

Gymnacanthus detrius Gilbert

Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

STRELKOV, J.A., 1960

Gymnosarda pelamys

Tentacularia coryphaenae Bosc, 1802 (larva)

GUIART, J., 1935a

H. ilisha (full name missing)

Gymnorhynchus sp.

ALI, M.Y., 1968

Halosauropsis macrochir

Trypanorhynch sp. (larva)

CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980

- Harpodon nehereus (Ham-Buch)
Otobothrium harpodoni Kotwal and Masurekar, 1978 (encysted larva)
 KOTWAL, V.P. AND MASUREKAR, V.B., 1978
- Hemilepidotus jordani Bean
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- herring
Laciatorhynchus sp. (larva)
 MACKENZIE, K., 1982
- Hexagrammos stelleri
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SKRIABINA, E.S., 1963
- Hilsa hilsa
Otobothrium ilisha (Southwell and Prashad, 1918) Goldstein, 1963
 (plerocercus) syn. Poecilancistrum ilisha (Southwell and Prashad, 1918) Dollfus, 1942
 GOLDSTEIN, R.J., 1963
- Hilsa ilisha (Hamilton)
Otobothrium mugilis Hiscock, 1954
 RIZVI, S.S.H., 1971
Poecilancistrum ilisha (Southwell and Prashad, 1918) Dollfus, 1942
 RIZVI, S.S.H., 1971
Pterobothrium heteracanthum Diesing, 1858
 RIZVI, S.S.H., 1971
Pterobothrium heteracanthum Diesing, 1858 (plerocercoid) syn.
Syndesmobothrium filicolle Linton, 1898
 PAL, R.N., 1963
Pterobothrium heteracanthum Diesing, 1858 syn. Syndesmobothrium filicolle Linton, 1898
 GOPALAKRISHNAN, V. AND PAL, R.N., 1964
Syndesmobothrium filicolle
 PAL, R.N., 1988
- Hippoglossoides elassodon
Nybelinia sp.
 TKACHEV, V.A., 1976
Nybelinia surmenicola Okada in Dollfus, 1929
 MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SKRIABINA, E.S., 1963
- Hippoglossoides elassodon elassodon Jordan et Gilbert
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Hippoglossus hippoglossus (L.)
Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)
 RAE, B.B., 1958
Hepatoxylon trichiuri (Holten, 1882)
 WILLIAMS, H.H., 1968
Hepatoxylon trichiuri (Holten, 1882) (plerocercoid)
 RAE, B.B., 1958
- Hippoglossus hippoglossus stenolepsis Schmidt
Nybelinia sp.
 TKACHEV, V.A., 1976
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Hippoglossus maximus Nilss.
Hepatoxylon trichiuri (Holten, 1882) (larva)
 BAER, J.G., 1962
- Hoplostethus
Nybelinia sp.
 REIMER, L.W., 1974

- Hoplostethus mediterraneus (Val., 1928)
Nybelinia rougetcampanae Dollfus, 1968 (plerocercoid)
 REIMER, L.W., 1975b
- Horse mackerel
 Tentaculariidae sp. (larva)
 NIKOLAEVA, V.M., 1963a
- Hynnias goreensis (Valenciennes, 1846)
Nybelinia cadenati Dollfus, 1968
 DOLLFUS, R.P., 1968b
Nybelinia estigmana Dollfus, 1968 (var. 1) (post-larva)
 DOLLFUS, R.P., 1968b
Nybelinia punctatissima Dollfus, 1968
 DOLLFUS, R.P., 1968b
Nybelinia senegalensis Dollfus, 1968 (post-larva)
 DOLLFUS, R.P., 1968b
- Icelus spiniger
Nybelinia surmenicola Okada in Dollfus, 1929
 KOROTAEVA, V.D., 1968a
- Ilisha elongata (Bennett)
Pterobothrium hira Yamaguti, 1952 (larva)
 YAMAGUTI, S., 1952
- Illyonus gilberti (Eigenmann and Eigenmann)
Callitetrarhynchus sp. (larva)
 BROOKS, D.R. AND BROTHERS, E.B., 1974
- Johnius ruber (Bloch-Schn)
Otobothrium harpodoni Kotwal and Masurekar, 1978 (encysted larva)
 KOTWAL, V.P. AND MASUREKAR, V.B., 1978
- Katsuwonus pelamis (L.)
Hepatoxylon trichiuri (Holten, 1882) (post-larva)
 BUSSIÈRES, J. AND BAUDIN-LAURENCIN, F., 1973
Tentacularia coryphaenae Bosc, 1882 (post-larva)
 BUSSIÈRES, J. AND BAUDIN-LAURENCIN, F., 1973
 DOLLFUS, R.P., 1946b
- Labrax lupus Cuvier SEE: Morone labrax (L.)
- Leiotomus xanthurus Lacépède
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (plerocercoid)
 COLLINS, M.R., MARSHALL, M.J. AND LANCIANI, C.A., 1984
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929 syn.
Poecilancistrum gangeticum (Shiple and Hornell, 1906) syn.
Otobothrium robustum (Chandler, 1935)
 GOLDSTEIN, R.J., 1963
- Lepidopsetta bilineata (Ayres)
Nybelinia surmenicola Okada in Dollfus, 1929
 MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Lepidopus caudatus (Euphrasen)
Hepatoxylon trichiuri (Holten, 1882) (post-larva)
 ROBINSON, E.S., 1959a
Nybelinia thyrsitee (Leiper and Atkinson, 1915) Korotaeva, 1971
 syn. Nybelinia (? Syngenes) sp. Dollfus, 1942
 KOROTAEVA, V.D., 1971
- Lepidopus lex Phillips, 1932
Hepatoxylon trichiuri (Holten, 1882)
 KOROTAEVA, V.D., 1971
- Trypanorhynch sp.
 KOROTAEVA, V.D., 1971

- Lepidorhinus squamosus (Bonnaterre, 1788)
Grillotia minor Guiart, 1935 (larva)
 GUIART, J., 1935a
- Lepidorhynchus denticulatus
Hepatoxylon trichiuri (Holten, 1802) (larva)
 POIS, N.V., 1975
- Lepidotrigla natalensis Gilchrist and Thompson
Otobothrium crenacolle Linton, 1890 (larva)
 REIMER, L.W., 1984
- Limanda aspera (Pallas)
Grillotia erinaceus (Van Beneden, 1858)
 MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Nybelinia sp. (larva)
 TSIMBALYUK, E.M., 1978a
 TSIMBALYUK, E.M., 1978b
Nybelinia surmenicola Okada in Dollfus, 1929
 MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
- Limanda punctatissima
Nybelinia surmenicola Okada in Dollfus, 1929
 MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963
- Limanda yokohamae (Günther)
Nybelinia sp. (larva)
 TSIMBALYUK, E.M., 1978a
 TSIMBALYUK, E.M., 1978b
- Liosaccus cutaneus (Günther, 1870)
Nybelinia rougetcampanae Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
Nybelinia strongyla Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
Nybelinia yamaeutii Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
- "Loche saumonée"
Dasyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928
 (plerocercus)
 DOLLFUS, R.P., 1942
- Lophius piscatorius Linnaeus, 1758
Dibothriorhynchus monticellii Moniez, 1940
 MONIEZ, R., 1940
Diesingella Monticelli (Moniez, 1892) (larva)
 GUIART, J., 1935a
Grillotia erinaceus (Van Beneden, 1858) (larva) syn. Tetrarhynchus erinaceus
 TESTI, F., 1960
Grillotia sp. (plerocercus)
 DOLLFUS, R.P., 1942
- Lutianus griseus (L.)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969
- Lutianus sp.
Tetrarhynchus brevibothria MacCallum 1921 (plerocercus)
 KYAW-MYINT, 1968
- Lutjanus aya Bloch
Oncomegas wagneri (Linton, 1890) (plerocercoid)
 THATCHER, V.E., 1961
- Lutjanus guineensis Bleeker
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942

- Macrodon ancylodae
Tetrarhynchus fragilis (larva)
 SANTOS, L. DOS AND ZOGBI, E.P.V., 1971
- Macruronus magellanicus
Grillotia heptanchi (Vaullegeard, 1899) (plerocercus)
 CARVAJAL, J. AND CAMPBELL, R.A., 1979
- Macruronus novae-zealandiae (Hector)
Grillotia sp. (larva)
 GRABDA, J. AND SLOSARCZYK, W., 1981
Hepatoxylon trichiuri (Holten, 1882) (plerocercoid)
 GRABDA, J. AND SLOSARCZYK, W., 1981
Hepatoxylon trichiuri (Holten, 1882) (post-larva)
 ROBINSON, E.S., 1959a
- Macrurus australis
Hepatoxylon trichiuri (Holten, 1882) (larva)
 POIS, N.V., 1975
- Maena smaris
Nybelinia lingualis (Cuvier, 1817)
 PAPOUTSOGLOU, S.E., 1976
- Malacocephalus laevis (Lowe)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 REIMER, L.W., 1984
Nybelinia sp. (larva)
 REIMER, L.W., 1984
- Maaturus oxyuropterus (Bleeker)
Molicola horridus (Goodsir, 1841)
 DEVARAJ, M., NAMMALWAR, P. AND THIAGARAJAN, T., 1976 [1981]
- Megalaspis cordyla (L.)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercoid)
 REIMER, L.W., 1988
- Melanoglaea ventralis Barnard, 1941
Grillotia erinaceus (Van Beneden, 1858) (plerocercus) tentative
 identification
 DOLLFUS, R.P., 1968a
- Melanogrammus aeglefinus (L.)
Grillotia erinaceus (Van Beneden, 1858)
 SCOTT, J.S., 1981
Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)
 LUBIENIECKI, B., 1976
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
 LUBIENIECKI, B., 1977
Nybelinia sp. (larva)
 RADULESCU, I.I., 1969
- Melanostigma pammelae Gilbert
 sp. (larva)
 NOBLE, E.R. AND ORIAS, J.D., 1975
- Melletes papilio Bean
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 ZHUKOV, E.V., 1963
- Menticirrhus americanus (Linnaeus)
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (plerocercoid)
 OVERSTREET, R.M., 1977
Pterobothrium lintoni (MacCallum, 1916) (plerocercoid)
 OVERSTREET, R.M., 1977
Pterobothrium sp. (plerocercoid)
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
- Merlangius merlangus (L.)
Gilquinia squali (Fabricius, 1794) (plerocercoid)
 MACKENZIE, K., 1975
Gilquinia squali (Fabricius 1794) (plerocercus)

- HISLOP, J.R.G. AND MACKENZIE, K., 1976
Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)
 SHOTTER, R.A., 1976
- Merluccius australis
Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)
 GRABDA, J. AND SLOSARCZYK, W., 1981
- Merluccius bilinearis
Grillotia erinaceus (Van Beneden, 1858) (larva)
 GAEVSKAYA, A.V. AND UMNOVA, B.A., 1977
Grillotia sp. (encysted plerocercoid)
 MEYERS, T.R., 1978
Nybelinia lingualis (Cuvier, 1817) (larva)
 GAEVSKAYA, A.V. AND UMNOVA, B.A., 1977
- Merluccius capensis Castelnau
Hepatoxylon trichiuri (Holten, 1802) (larva)
 KRZEPTOWSKI, M., 1980 [1982]
- Merluccius gayi (Guichenot, 1848)
Grillotia dollfusi Carvajal, 1971 (plerocercus)
 CARVAJAL, J. AND CATTAN, P.E., 1978
 CARVAJAL, J., CATTAN, P.E., CASTILLO, C. AND SCHATTE, P., 1979
- Merluccius gayi peruanus Gingsburg, 1954
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 DURAN, L.E. AND OLIVA, M., 1980
Lacistorhynchus tenuis (Van Beneden, 1858) (larva)
 DURAN, L.E. AND OLIVA, M., 1980
Nybelinia sp. (larva)
 DURAN, L.E. AND OLIVA, M., 1980
Tentacularia coryphaenae Bosc, 1802 (larva)
 DURAN, L.E. AND OLIVA, M., 1980
- Merluccius merluccius capensis Castelnau
Nybelinia sp. (larva)
 REIMER, L.W., 1984
- Merluccius merluccius (L.)
Grillotia heptanchi (Vaulleopard, 1899) (plerocercoid)
 REES, G., 1950
Hepatoxylon trichiuri (Holten, 1802)
 WILLIAMS, H.H., 1960
- Merluccius merluccius parasoxus (Franca, 1960)
Nybelinia sp. (larva)
 REIMER, L.W., 1984
- Merluccius polylepsis
Grillotia heptanchi (Vaulleopard, 1899) (plerocercus)
 CARVAJAL, J. AND CAMPBELL, R.A., 1979
- "merluza"
Grillotia heptanchi (Vaulleopard, 1899) (larva)
 TAGLE, I., 1951
Hepatoxylon trichiuri (Holten, 1802) (larva)
 TAGLE, I., 1951
- Micromesistius australis
Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)
 GRABDA, J. AND SLOSARCZYK, W., 1981
- Micromesistius poutassou (Risso)
Grillotia sp. (plerocercoid)
 MACKENZIE, K., 1979
- Micropogon opercularis (Desmarest)
Gilquinia sp. (larva)
 SURIANO, D.M., 1966
- Micropogon undulatus (Linnaeus)
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
 (plerocercoid)
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929

- (plerocercus)
 GOLDSTEIN, R.J., 1963
Pterobothrium filicolle (Linton, 1889) (larva) syn. Gymnorhynchus gigas (Cuvier, 1817) of Chandler (1935a)
 CHANDLER, A.C., 1935a
Tetrarhynchus fragilis Diesing
 BARATTINI, L.P., 1948
Microgonias undulatus (Linnaeus)
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (plerocercoid)
 OVERSTREET, R.M., 1977
Pterobothrium lintoni (MacCallum, 1916) (plerocercoid)
 OVERSTREET, R.M., 1977
Trypanorhynch sp. (plerocercoid)
 OVERSTREET, R.M., 1977
Mola mola (L.)
Floriceps saccatus Cuvier, 1817 (larva)
 GUIART, J., 1935c
Floriceps saccatus Cuvier, 1817 (plerocercoid)
 HILLIS, J.P. AND O'RIORDAN, C.E., 1961
Floriceps saccatus Cuvier, 1817 (plerocercus)
 DOLLFUS, R.P., 1942
 DOLLFUS, R.P., 1969a
Gymnorhynchus (Molicola) horridus Goodsir, 1841 (larva)
 GUIART, J., 1935a
 IWATA, S., 1939
Gymnorhynchus (Molicola) horridus Goodsir, 1841 (larva) syn.
Tetrarhynchus elongatus Wagener, 1901
 THRELFALL, W., 1967
Gymnorhynchus (Molicola) horridus Goodsir, 1841 (plerocercus)
 DOLLFUS, R.P., 1942
 DOLLFUS, R.P., 1969a
 ROBINSON, E.S., 1959a
Gymnorhynchus (Molicola) horridus Goodsir, 1841 (plerocercus) syn.
Tetrarhynchus elongatus Wagener, 1901
 THRELFALL, W., 1967
Rhynchobothrium sp. Linton, 1899 (larva)
 THRELFALL, W., 1967
Mola mola (L.) syn. Orthagoriscus mola (L.)
Floriceps saccatus Cuvier, 1817 (plerocercus)
 DOLLFUS, R.P., 1946a
Gymnorhynchus (Molicola) horridus Goodsir, 1841 (plerocercus)
 DOLLFUS, R.P., 1946a
Molva dipterygia (Pennant, 1784)
Grillotia heptanchi (Vaulleopard, 1899) (larva)
 DOLLFUS, R.P., 1975b
Morone labrax
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942
Morone labrax (L.) syn. Labrax lupus Cuvier
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
Morone saxatilis (Walbaum, 1792)
Lacistorhynchus sp.
 HENSLEY, G.H. AND NAHHAS, F.M., 1975
Lacistorhynchus tenuis (Van Beneden, 1858) (metacestode)
 MOSER, M., SAKANARI, J., WELLINGS, S. AND LINDSTROM, K., 1984
 SAKANARI, J.A., MOSER, M. AND SIMMONS, J.E., 1983
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercoid)
 SAKANARI, J. AND MOSER, M., 1985a

- Mugil cephalus L.
Otobothrium mugilis Hiscock, 1954 (plerocercus)
HISCOCK, I.D., 1954
- Mullus barbatus L.
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)
DOLLFUS, R.P., 1942
Nybelinia africana Dollfus, 1968 (plerocercus, post-larva)
DOLLFUS, R.P., 1968b
Nybelinia sp. syn. Pleronybelinia sp. (plerocercoid)
SEZEN, Y. AND PRICE, C.E., 1969
- Mullus barbatus ponticus Essipov
Christianella minuta (Van Beneden, 1849) (larva)
KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
- Mullus barbatus Rondelet
Nybelinia lingualis (Cuvier, 1817) (larva or post larva)
DOLLFUS, R.P., 1942
- Mullus surmuletus L.
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
DOLLFUS, R.P., 1942
Nybelinia lingualis (Cuvier, 1817)
PAPOUTSOGLU, S.E., 1976
- Muranesox cinereus (Forsk.)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
YAMAGUTI, S., 1952
- Mycteroperca bonaci (Poey)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)
REES, G., 1969
- Mycteroperca falcata
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)
REES, G., 1969
- Mycteroperca tigris
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)
REES, G., 1969
- Mycteroperca venenosa (L.)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)
REES, G., 1969
- Myoxocephalus jaok Cuvier et Valenciennes
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
STRELKOV, J.A., 1968
- Myoxocephalus verrucosus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
ZHUKOV, E.V., 1963
- Naucrates ductor Linnaeus
Nybelinia sp. (larva)
RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N., 1972
- Neobythites macrops Günther
Nybelinia nipponica Yamaguti, 1952 (larva)
YAMAGUTI, S., 1952
- Neoscombrops annectens Gilchrist
Otobothrium crenacolle Linton, 1898
REIMER, L.W., 1984
- Netuma australis (Günther)
Otobothrium mugilis Hiscock, 1954 (plerocercus)
HISCOCK, I.D., 1954

- Nezumia bairdii (Goode and Bean, 1877)
 Trypanorhynch sp. (larva)
 CAMPBELL, R.A., HAEDRICH, R.L. AND MUNROE, T.A., 1980
- Ocyurus chrysurus Bloch
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 REES, G., 1969
- Odontogadus merlangus euxinus (Nordman)
Grillotia erinaceus (Van Beneden, 1858) (larva)
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
- Odontogadus merlangus L.
Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)
 SHOTTER, R.A., 1972
 SHOTTER, R.A., 1973
- Oncorhynchus gorbuscha (Walbaum)
Nybelinia surmenicola Okada in Dollfus, 1929
 BOGDANOVA, E.A., 1963
 TSIMBALYUK, E.M. AND SEMESHKO, N.N., 1971
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 AKHMEROV, A.K., 1963
Tetrarhynchus palaeceus Rud.
 ZMEJEV, G.J., 1936
- Oncorhynchus keta (Walbaum)
Coenomorphys grossus
 ZMEJEV, G.J., 1936
Nybelinia surmenicola Okada in Dollfus, 1929
 STRELKOV, YU A. AND SHULMAN, S.S.
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 BOGDANOVA, E.A., 1963
 STRELKOV, J.A., 1960
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 AKHMEROV, A.K., 1963
Tetrarhynchus palaeceus
 ZMEJEV, G.J., 1936
- Oncorhynchus kisutch (Walbaum)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
- Oncorhynchus masu (Brevoort)
Nybelinia surmenicola Okada in Dollfus, 1929
 STRELKOV, YU A. AND SHULMAN, S.S.
- Oncorhynchus nerka (Walbaum)
Nybelinia surmenicola Okada in Dollfus, 1929
 SHIMAZU, T., 1975b
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
- Oncorhynchus tachawytscha (Walbaum)
Hepatoxylon trichiuri (Holten, 1802) (post-larva)
 REYES PIRIANO, X, 1982
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)
 KUPERMAN, B.I., 1980
- Ophidium rochei Müller
Christianella minuta (Van Beneden, 1849) (larva)
 KORNYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
- Ophiodon elongatus Girard
Grillotia erinaceus (Van Beneden, 1858) (larva) syn. Tentacularia
 sp. of Hart 1936
 HART, J.F., 1936
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

ARAI, H.P., 1969

- Orthogoriscus mola (L.) SEE: Mola mola (L.)
- Osteolaemus tetraspis Cope
Otobothrium cysticum (Mayer, 1842) (plerocercus)
DOLLFUS, R.P., 1942
- Ostorhinchus conwaii
Hepatoxylon trichiuri (Holten, 1802)
KOROTAEVA, V.D., 1974a
Trypanorhynch sp.
KOROTAEVA, V.D., 1974a
- Otolithus argenteus (C.V.)
Gymnorhynchus gigas (Cuvier, 1817) (larva)
BILQEES, F.M. AND KAZMI, F.S., 1974
Myrmillorhynchus pearsoni (Southwell, 1929) Bilqeess, 1980 (larva)
syn. Tetrarhynchus pearsoni Southwell, 1929
BILQEES, F.M. AND KAZMI, F.S., 1974
- Otolithus senegalensis Valenciennes
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)
DOLLFUS, R.P., 1942
- Otoperca aurita (Valenciennes)
Otobothrium (Pseudotobothrium) dipsacum Linton, 1897 (plerocercus)
DOLLFUS, R.P., 1942
- P. pangasius (full name missing)
Gymnorhynchus sp.
ALI, M.Y., 1968
- Palameton
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)
DOLLFUS, R.P., 1942
- Pama pama
Gymnorhynchus sp. (larva)
RAHMAN, A.K.A., 1971
- Paralepis elongata (Brauer, 1906)
Gilquinia sp. (plerocercoid)
REIMER, L.W., 1975b
- Paralichthys dentatus
Dasyrhynchus sp. (encysted plerocercoid)
MEYERS, T.R., 1978
Nybelinia sp. (encysted plerocercoid)
MEYERS, T.R., 1978
- Paralichthys olivaceus
Nybelinia pintneri Yamaguti, 1934 (larva)
IWATA, S., 1939
- Parapeneus multifasciatus Quoy and Gaimard
Nybelinia basimegacantha Carvajal, Campbell and Cornford, 1976
(post-larva)
CARVAJAL, J., CAMPBELL, R.A. AND CORNFORD, E.M., 1976
- Pelamys Bonapartei (Verany)
Tentacularia coryphaenae Bosc, 1802 (larva or post larva)
GUIART, J., 1935a
- Pellona elongata
Nybelinia elongata Shah and Bilqeess, 1979 (plerocercoid)
SHAH, M. AND BILQEES, F.M., 1979
- Peristedion adeni (Lloyd)
Nybelinia sp. (larva)
REIMER, L.W., 1984
- Peristedion cataphractum
Nybelinia sp. (larva)
RADULESCU, I.I., 1969

- Phycis blennioides
Nybelinia lingualis (Cuvier, 1817)
 PAPOUTSOGLOU, S.E., 1976
- Physiculus bacchus
Nybelinia sp. (larva)
 POIS, N.V., 1975
- Platessa quadrituberculata (Pallas)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Platichthys flesus (L.)
Grillotia sp. (larva)
 GIBSON, D.I., 1972
 Trypanorhynch sp. (plerocercus)
 MACKENZIE, K. AND GIBSON, D.I., 1978
- Platichthys flesus luscus (Pallas)
Christianella minuta (Van Beneden, 1849) (larva)
 KORYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
- Platichthys stellatus (Pallas)
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercoid)
 ORCUTT, H.G., 1958
- Platycephalus bassensis
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 PRUDHOE, S., 1969
- Platycephalus indicus (Linné)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952
- Platycephalus punctatus Cuvier and Valenciennes
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952.
- Platycephalus scaber (L.)
Neogymnorhynchus platycephali Bilqees and Shah, 1982 (plerocercus)
 BILQEES, F.M. AND SHAH, M., 1982
- Pleurogrammus azonus Jordan and Metz
 Trypanorhynch sp.
 BAEVA, O.M., 1968
- Pleurogrammus monoapterigiis (Pallas)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Pleuronectes platessa L.
Grillotia erinaceus (Van Beneden, 1858) (larva)
 REES, G. AND LLEWELLYN, J., 1941
 Trypanorhynch sp. (larva)
 MACKENZIE, K. AND GIBSON, D.I., 1978
 Trypanorhynch sp. (plerocercoid)
 MACKENZIE, K., 1968
- Pleuronectes stellatus Pallas
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
 ZHUKOV, E.V., 1963
- Podothecus acipenserinus (Pallas)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Pogonias cromis (L., 1766)
Pseudogrillotia pleistacantha Dollfus, 1969 (post-larva)
 DOLLFUS, R.P., 1969b
- Pogonias cromis (Linnaeus)
Diplootobothrium springeri Chandler, 1942 (plerocercoid)
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (plerocercoid)
 OVERSTREET, R.M., 1977

Poecilancistrum robustum (Chandler, 1935) Dollfus, 1942
 CHANDLER, A.C., 1954
Pseudogrillotia pleistacantha Dollfus, 1969 (plerocercoid)
 OVERSTREET, R.M., 1977
Pollachius virens (L.)
Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)
 LUBIENIECKI, B., 1976
Pollachius virens (L.) syn. Gadus virens
Hepatoxylon trichiuri (Holten, 1802) (plerocercoid)
 HEINRICH, L., 1975
Polymixia nobilis (Lowe)
Nybelinia sp. (larva)
 REIMER, L.W., 1984
Polynemus quadrifiliis Cuvier
Dasyrhynchus varioucinatus (Pintner, 1913) Pintner, 1928
 (plerocercus)
 DOLLFUS, R.P., 1942
Otobothrium (Pseudotobothrium) dipseacum Linton, 1897 (plerocercus)
 DOLLFUS, R.P., 1942
Polyprion oxygeneios
Tentacularia coryphaenae Bosc, 1802 (post-larva)
 CATTAN, P.E., CARVAJAL, J., TORRES, D. AND YANEZ, J.L., 1979
Pomadasy s olivaceus Day
Pseudogilquinia karachiense Bilqees and Khatoon, 1980
 (plerocercus)
 BILQEES, F.M. AND KHATOON, A., 1980
Pomatomus saltatrix (L.)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (encysted plerocercoid)
 MEYERS, T.R., 1978
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 CARVAJAL, J. AND REGO, A.A., 1985
Callitetrarhynchus speciosus (Linton, 1897) Carvajal and Rego,
 1985 (larva)
 CARVAJAL, J. AND REGO, A.A., 1985
Dasyrhynchus sp. (encysted plerocercoid)
 MEYERS, T.R., 1978
Nybelinia sp. (encysted plerocercoid)
 MEYERS, T.R., 1978
Trypanorhynch sp.
 REGO, A.A., VICENTE, J.J., SANTOS, C.P. AND WEKID, R.M., 1983
Trypanorhynch sp. (larva)
 GOMES GOMES, D., FABIO, S.P. DE AND TAYT-SON ROLAS, F., 1972
Pristipoma bennetti Lowe, 1837
Nybelinia oodes Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
Promethichthys prometheus
Nybelinia sp. (larva)
 ICHIHARA, A., 1968
Psenes rotundatus Smith
Nybelinia sp. (larva)
 REIMER, L.W., 1984
Psettodes erumei (Bloch and Schneider)
Dasyrhynchus pillersi (Southwell, 1929) (larva)
 REIMER, L.W., 1984
Trypanorhynch sp.
 PARUKHIN, A.M., 1967a
Pseudorhombus pentophthalmus Günther
Nybelinia nipponica Yamaguti, 1952 (larva)
 YAMAGUTI, S., 1952

Pteroplatea micrura
Pterobothrium sp. (larva)
 ANANTARAMAN, S., 1963

Quietula y-cauda (Jenkins and Evermann)
Callitetrarhynchus sp. (larva)
 BROOKS, D.R. AND BROTHERS, E.B., 1974

Rachycentron canadum (L.)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942

Rastrelliger kanagurta (Cuvier, 1829)
 Trypanorhynch sp.
 KOROTAEVA, V.D., 1974b

Rastrelliger kanagurta (Russell)
Pterobothrium rubromaculatum (Diesing, 1863) (plerocercoid)
 REIMER, L.W., 1980

Reinhardius hippoglossoides
Nybelinia surmenicola Okada in Dollfus, 1929
 MAMAEV, Y.L., PARUKHIN, A.M. AND BAEVA, O.M., 1963

Rexea solandri (Cuvier and Valenciennes, 1832)
 Trypanorhynch sp.
 KOROTAEVA, V.D., 1971

Ruvettus tydemani Weber
Tentacularia coryphaenae Bosc, 1802
 KOROTAEVA, V.D., 1971
 Trypanorhynch sp.
 KOROTAEVA, V.D., 1971

S. pama (full name missing)
Gymnorhynchus sp.
 ALI, M.Y., 1968

S. silondia (full name missing)
Gymnorhynchus sp.
 ALI, M.Y., 1968

Salmo salar L.
Hepatoxylon trichiuri
 PIPPY, J.H.C., 1969
Hepatoxylon trichiuri (Holten, 1802)
 HICKS, F.J. AND THRELFALL, W., 1973
 KANE, M.B., 1966
Hepatoxylon trichiuri (Holten, 1802) (metacestode)
 CHUBB, J.C., 1965
Nybelinia sp. (larva)
 ALVAREZ, PELLITERO, M.P., 1973
Tentacularia coryphaenae Bosc, 1802
 PIPPY, J.H.C., 1969
 SANDEMAN, I.M. AND PIPPY, J.H.C., 1967
Tentacularia coryphaenae Bosc, 1802 (larva)
 PIPPY, J.H.C., 1980
Tentacularia coryphaenae Bosc, 1802 (post-larva)
 HELLER, A.F., 1949

Salmo sp.
Hepatoxylon trichiuri (Holten, 1802) (plerocercus)
 HEALY, A., 1956

Salmon
Hepatoxylon trichiuri (Holten, 1802) (plerocercus)
 HALE, P.A., 1959

Salmon, pink
Nybelinia surmenicola Okada in Dollfus, 1929
 MARGOLIS, L., 1956

- Salvelinus alpinus (L.)
Nybelinia surmenicola Okada in Dollfus, 1929
 KONOVALOV, S.M., 1975
 RUDMINAITENE, A.F. AND RUDMINAITIS, E.A., 1979
- Salvelinus leucomaenis (Pallas)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Salvelinus malma (Walbaum)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1968
- Sarda sarda (Bloch)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942
- Sardinella sp.
 Trypanorhynch sp. (larva)
 FEIJO, L.M.F., OLIVEIRA RODRIGUEZ, H. DE AND SORDRE RODRIGUEZ, S., 1979
- Saurida undosquamis (Richardson)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 REIMER, L.W., 1984
Dasyrhynchus pillersi (Southwell, 1929)
 REIMER, L.W., 1984
Nybelinia sp. (plerocercoid)
 REIMER, L.W., 1984
- Sciaena albiflora (Richardson)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952
- Sciaena antarctica Castelnau
Dasyrhynchus pacificus Robinson, 1965 (larva)
 ROBINSON, E.S., 1965
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (larva)
 ROBINSON, E.S., 1965
- Sciaena aquila (Lacépède)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942
- Sciaena coiter
Grillotia heptanchi (Vaullegeard, 1899) (larva)
 KYAW-MYINT, 1968
Nybelinia robusta (Linton, 1898) (larva)
 KYAW-MYINT, 1968
Pterobothrium lintoni (MacCallum, 1916) (larva)
 KYAW-MYINT, 1968
- Sciaenops ocellata (Linnaeus)
Poecilancistrum caryophyllum (Diesing, 1858) Dollfus, 1929
 (plerocercoid)
 OVERSTREET, R.M., 1977
 SCHLICHT, F.G. AND MCFARLAND, W.N., 1967
- Sciena aquilla (Loot)
 Trypanorhynch sp. (larva)
 EL-AHWAL, A.A. AND EL-SHERIF, A.F., 1978
- Scomber australasicus (Cuvier et Valenciennes, 1832)
Nybelinia sp.
 KOROTAEVA, V.D., 1974b
 Trypanorhynch sp.
 KOROTAEVA, V.D., 1974b
- Scomber colias Gmelin
Nybelinia sp. (larva)
 SOLONCHENKO, A.I., 1968
 Trypanorhynch sp. (larva)

- SOLONCHENKO, A.I., 1968
- Scomber japonicus Houttuyn
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952
- Tentacularia coryphaenae Bosc, 1802 (larva)
 IWATA, S., 1939
- Trypanorhynch sp. (plerocercus)
 DAILEY, M.D., 1969
 REGO, A.A. AND SANTOS, C.P., 1983
- Scomber scomber (L.)
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
- Scomber scombrus L.
Grillotia angeli Dollfus, 1969 (larva)
 MACKENZIE, K., 1982
Grillotia angeli Dollfus, 1969 (plerocercus)
 MACKENZIE, K., 1980
- Lacistorhynchus sp.
 DOLLFUS, R.P., 1969a
- Tetrarhynchobothrium sp. (larva)
 RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N., 1972
- Scomberesox saurus (W.)
Nybelinia sp. (larva)
 REIMER, L.W., 1982
- Scomberoides guttatum Bloch and Schneider
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952
- Scomberomorus cavalla (Cuvier and Valenciennes)
Tentacularia coryphaenae Bosc, 1802 (plerocercus)
 WARD, H.L., 1954
- Scomberomorus commersoni (Lacépède)
Grillotia branchii Shahaarom and Lester, 1982 (metacestode)
 SHAHAROM, F.M. AND LESTER, R.J.G., 1982
- Scophthalmus aquosus
Dasyrhynchus sp. (encysted plerocercoid)
 MEYERS, T.R., 1978
- Scophthalmus rhombus
Grillotia erinaceus (Van Beneden, 1858) (larva)
 BAYLIS, H.A., 1939
- Scorpaena porcus L.
Christianella minuta (Van Beneden, 1849) (larva)
 KORNUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
- Sebastes aleutianus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes alutus Gilbert, 1890
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1973
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes borealis
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes brevispiris
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes caurinus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes ciliatus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977

- Sebastes crameri
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes diploprora
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes elongatus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes entomelas
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes flavidus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes maliger
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes marinus (L.)
Grillotia erinaceus (Van Beneden, 1858) (?) (tentative
 identification) syn. Tetrarhynchus erinaceus Van Beneden
 KAHL, W., 1937
Grillotia erinaceus (Van Beneden, 1858) (larva) syn. Tetrarhynchus
erinaceus
 LÜLING, K.H., 1951
 LÜLING, K.H., 1952
 Trypanorhynch sp. (larva)
 SINDERMANN, C.J., 1961b
- Sebastes mentella Travin
Grillotia erinaceus (Van Beneden, 1858) (larva ; tentative
 identification)
 JONES, D.H., 1970
- Sebastes nigrocinctus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes pinniger
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes polyspinis
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes proriger
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes reedi
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes ruberrimus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes variegatus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastes zacentrus
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 SEKERAK, A.D. AND ARAI, H.P., 1977
- Sebastodes alutus
Nybelinia sp.
 TKACHEV, V.A., 1976
 Trypanorhynch sp.
 TKACHEV, V.A., 1976

- Sebastodes brevispinis
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes crameri
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes diplopros
Lacistorhynchus sp.
 TKACHEV, V.A., 1976
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes flavidus
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes goodei
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes jordani
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes melanops
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes mystenus
Nybelinia sp.
 TKACHEV, V.A., 1976
- Sebastodes proriger
Nybelinia sp.
 TKACHEV, V.A., 1976
- Secutor ruconius Buchanan-Hamilton
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercoid)
 REIMER, L.W., 1980
Diplootobothrium tamilnadensis Reimer, 1980 (plerocercoid)
 REIMER, L.W., 1980
Nybelinia dakari Dollfus, 1960 (plerocercoid)
 REIMER, L.W., 1980
- Selar kalla (Cuvier and Valenciennes)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercoid)
 REIMER, L.W., 1980
- Sercola mazatlana Steindachner, 1876
Floriceps saccatus Cuvier, 1817 (plerocercus)
 SOTO, J. AND CARVAJAL, J., 1979
- Seriola dumerili Risso, 1810
Dasyrhynchus variouuncinatus (Pintner, 1913) Pintner, 1928
 (plerocercus)
 WARD, H.L., 1954
Nybelinia punctatissima Dollfus, 1960
 DOLLFUS, R.P., 1960b
- Seriola purpurascens Temmick and Schlegel
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952
- Seriola quinqueradiata Temmick and Schlegel
Callitetrarhynchus nipponica Nakajima and Egusa, 1973
 (plerocercus)
 NAKAJIMA, K. AND EGUSA, S., 1969c
 NAKAJIMA, K. AND EGUSA, S., 1972b
 NAKAJIMA, K. AND EGUSA, S., 1972c
 NAKAJIMA, K. AND EGUSA, S., 1973
Callitetrarhynchus nipponica Nakajima and Egusa, 1973
 (plerocercus) syn. Callitetrarhynchus sp. Nakajima and Egusa,

- 1968
 NAKAJIMA, K. AND EGUSA, S., 1968
- Serranus cabrilla L. 1758
Nybelinia africana Dollfus, 1968 (post-larva)
 DOLLFUS, R.P., 1968b
- Sillago sp.
Pterobothrium lintoni (MacCallum, 1916)
 KYAW-MYINT, 1968
- Silondia silondia
Syndesmobothrium filicolle
 SAXENA, S.K., 1988
- Smaris sp.
Christianella minuta (Van Beneden, 1849) (plerocercus) syn.
Lacistorhynchus sp. in Pintner, 1893 syn. Grillotia sp. in
 Dollfus, 1942
 NYBELIN, O., 1948
- Snapper
Trypanorhynch sp. (larva)
 MOKHAYER, B., 1974
- Sockeye salmon
Nybelinia surmenicola Okada in Dollfus, 1929
 MARGOLIS, L., 1956
- Solea lascaris nasutan (Pallas)
Christianella minuta (Van Beneden, 1849) (larva)
 KORNYYUSHIN, V.V. AND SOLONCHENKO, A.I., 1978
- Solea solea
Grillotia erinaceus (Van Beneden, 1858)
 PAPOUTSOGLU, S.E. AND PAPAPARASKEVA-PAPOUTSOGLU, E.G., 1977
- Sparidae gen. spec.
Nybelinia anantaramanorum Reimer, 1988 (plerocercoid)
 REIMER, L.W., 1988
- Spheroides borealis
Floriceps saccatus Cuvier, 1817 (larva)
 TSIMBALYUK, E.M., 1978b
- Sphyraena barracuda (Walbaum)
Otobothrium (Pseudotobothrium) dipsacum (Linton, 1897)
 (plerocercus) syn. Pseudotobothrium dipsacum (Linton, 1897) in
 Ward (1954)
 WARD, H.L., 1954
- Sphyraena quachancho Cuvier, 1829
Nybelinia alloiotica Dollfus, 1968 (forma typica) (post-larva)
 DOLLFUS, R.P., 1968b
Nybelinia punctatissima Dollfus, 1968 (forma typica) (post-larva)
 DOLLFUS, R.P., 1968b
- Spicara smaris (L.)
 sp. (larva)
 NIKOLAEVA, V.M., 1963b
- Stenobranchius leucopsarus Eigenman and Eigenman
Trypanorhynch sp. (larva)
 COLLARD, S.B., 1978
- Synaphobranchus pinnatus (Gronnovius) (tentative identification)
Nybelinia congrui Guiart, 1935 (larva)
 GUIART, J., 1935a
- Synaphobranchus sp.
Sphyriocephalus viridis (Wagener, 1854) Pintner, 1913 (post-larva)
 syn. Sphyriocephalus Richardi Guiart, 1935
 GUIART, J., 1935a
- Synodus foetens
 sp. (larva)
 OVERSTREET, R.M., 1968

Synodus lucioceps

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercoid)

JENSEN, L.A., MOSER, M. AND HECKMANN, R.A., 1979

Grillotia smaris-gora (Wagener, 1854) (plerocercoid)

JENSEN, L.A., MOSER, M. AND HECKMANN, R.A., 1979

Laciatorhynchus tenuis (Van Beneden, 1858) (plerocercoid)

JENSEN, L.A., MOSER, M. AND HECKMANN, R.A., 1979

Temnodon saltator (L.)

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)

DOLLFUS, R.P., 1942

Tetrapturus Lessonae Canestrini

Tentacularia coryphaenae Bosc, 1802 (larva or post larva)

DOLLFUS, R.P., 1942

Theraqra chalcogramma (Pallas, 1811)

Grillotia erinaceus (Van Beneden, 1858) (larva)

MAMAEV, Y.L. AND BAEVA, O.M., 1963

Grillotia heptanchi (Vaullegeard, 1899) (plerocercoid)

ARTHUR, J.R., 1984

Nybelinia surmenicola Okada in Dollfus, 1929

GUSEV, A.V., ZHUKOV, E.V. AND STRELKOV, YU.A., 1959

SHIMAZU, T., 1975b

Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

ARAI, H.P., 1969

GRABDA, J., 1977

MAMAEV, Y.L. AND BAEVA, O.M., 1963

OSHMARIN, P.G., PARUKHIN, A.M., MAMAEV, Y.L. AND BAEVA, O.M.,
1961

SASAKI, M., 1973

SKRIABINA, E.S., 1963

STRELKOV, J.A., 1960

Nybelinia surmenicola Okada in Dollfus, 1929 (plerocercoid)

ARTHUR, J.R., 1984

ARTHUR, J.R., MARGOLIS, L., WHITAKER, D.J. AND MCDONALD, T.E.,
1982

Trypanorhyncha type 1 (plerocercoid)

ARTHUR, J.R., 1984

Trypanorhyncha type 2 (plerocercoid)

ARTHUR, J.R., 1984

Thunnus albacares

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (?)
(cysts) (tentative identification)

BANE, G.W., 1969

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(post-larva)

BAUDIN-LAURENCIN, F., 1971

Dasyrhynchus talismani Dollfus, 1935 (post-larva)

BAUDIN-LAURENCIN, F., 1971

Thunnus albacores

Tentacularia coryphaenae Bosc, 1802 (post-larva)

BAUDIN-LAURENCIN, F., 1971

Thunnus albacores (Bonnaterre, 1788)

Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
(plerocercus)

BUSSIERAS, J. AND BAUDIN-LAURENCIN, F., 1973

Dasyrhynchus talismani Dollfus, 1935 (plerocercus)

BUSSIERAS, J. AND ALDRIN, J.F., 1965

BUSSIERAS, J. AND BAUDIN-LAURENCIN, F., 1973

Hepatoxylon trichiuri (Holten, 1802) (post-larva)

BUSSIERAS, J. AND BAUDIN-LAURENCIN, F., 1973

Tentacularia coryphaenae Bosc, 1802 (post-larva)

- BUSSIÉRAS, J. AND BAUDIN-LAURENCIN, F., 1973
- Thunnus obesus (Lowe, 1839)
- Dasyrhynchus talismani Dollfus, 1935 (plerocercus)
- BUSSIÉRAS, J. AND ALDRIN, J.F., 1965
- BUSSIÉRAS, J. AND BAUDIN-LAURENCIN, F., 1973
- Sphyricephalus dollfusi Bussi ras and Aldrin, 1968 (post-larva)
- BUSSI RAS, J. AND ALDRIN, J.F., 1968
- BUSSI RAS, J. AND BAUDIN-LAURENCIN, F., 1973
- Thunnus thynnus
- Grillotia sp. (plerocercus)
- TIGARI, M., RADHAKRISHNAN, C.V. AND HOWARD, B.R., 1975
- Thyrsites atun (Euphrasen, 1791)
- Dasyrhynchus sp.
- KOROTAEVA, V.D., 1971
- Gymnorhynchus (Molicola) thyrsitae Robinson, 1959
- KOROTAEVA, V.D., 1971
- MEHL, J.A.P., 197 
- ROBINSON, E.S., 1959b
- VALOVA, V.N., 1976
- Gymnorhynchus (Molicola) thyrsitae Robinson, 1959 (plerocercus)
- KAGEI, N., KIHATA, M. AND ASANO, K., 1977
- Hepatoxylon trichiuri (Holten, 18 2) (post-larva)
- KAGEI, N., KIHATA, M. AND ASANO, K., 1977
- Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
- ROBINSON, E.S., 1959a
- Nybelinia (? Syngenes sp.) (post-larva)
- ROBINSON, E.S., 1959a
- Nybelinia thyrsites (Leiper and Atkinson, 1915) Korotaeva, 1971
- KOROTAEVA, V.D., 1971
- Tetrarhynchus sp.
- BLACKBURN, M., 196 
- Trypanorhynch sp.
- KOROTAEVA, V.D., 1971
- Thyrsites sp.
- Gymnorhynchus (Molicola) horridus Goodsir, 1841
- JOYEUX, C. AND BAER, J.G., 1954
- Thyrsitoides marlayi Fowler
- Nybelinia sp. (larva)
- REIMER, L.W., 1984
- Torpedo marmorata Risso
- Grillotia erinaceus (Van Beneden, 1858) (adult)
- DOLLFUS, R.P., 1942
- Trachinotus goodes
- Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
- (plerocercus)
- REES, G., 1969
- Trachurus mediterraneus ponticus Aleev
- Nybelinia sp. (larva)
- NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966
- Tentaculariidae sp. (larva)
- KOVALEVA, A.A., 197 
- NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966
- Trypanorhynch sp. (larva)
- KOVALEVA, A.A., 1965
- KOVALEVA, A.A., 1979
- Trachurus mediterraneus (Steindachner)
- Nybelinia sp. (larva)
- KOVALEVA, A.A., 197 
- NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966
- Tentaculariidae sp. (larva)
- KOVALEVA, A.A., 197 
- NIKOLAEVA, V.M. AND KOVALEVA, A.A., 1966

- Trachurus murphyi Nichols, 1920
Nybelinia sp. (plerocercus)
 SOTO, J. AND CARVAJAL, J., 1979
Tentacularia coryphaenae Bosc, 1802 (plerocercus)
 SOTO, J. AND CARVAJAL, J., 1979
- Trachurus novae-zealandiae Richardson
Nybelinia (? Syngenes sp.) (post-larva)
 ROBINSON, E.S., 1959a
- Trachurus symmetricus (Ayres)
Dasyrhynchus sp. (plerocercus)
 DAILEY, M.D., 1969
- Trachurus tracae
Nybelinia sp. (larva)
 KOVALEVA, A.A., 1970
- Trachurus tracae Cadenat
Tetrarhynchobothrium sp. (larva)
 RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N., 1972
- Trachurus trachurus capensis Castelnau
Gilquinia sp. (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
 KOVALEVA, A.A., 1970
Gilquinia sp. (larvae)
 KOVALEVA, A.A., 1968
Nybelinia lingualis (Cuvier, 1817) (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
Nybelinia sp. (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
 KOVALEVA, A.A., 1970
Nybelinia sp. (larvae)
 KOVALEVA, A.A., 1968
Tentacularia sp. (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
Tentaculariidae sp. (larva)
 KOVALEVA, A.A., 1968
- Trachurus trachurus (L.)
Grillotia sp. (plerocercus)
 DOLLFUS, R.P., 1942
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
Nybelinia lingualis (Cuvier, 1817)
 PAPOUTSOGLOU, S.E., 1976
Nybelinia sp.
 KOVALEVA, A.A., 1966
Nybelinia sp. (larva)
 KOVALEVA, A.A., 1970
Tentaculariidae sp.
 KOVALEVA, A.A., 1966
Tentaculariidae sp. (larva)
 KOVALEVA, A.A., 1970
- Trachurus trachurus trachurus L.
Christianella minuta (Van Beneden, 1849)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a
Christianella minuta (Van Beneden, 1849) larva
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
Grillotia erinaceus (Van Beneden, 1858)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a
Grillotia erinaceus (Van Beneden, 1858) (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
Lacistorhynchus tenuis (Van Beneden, 1858)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a
Lacistorhynchus tenuis (Van Beneden, 1858) (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b

- Nybelinia lingualis (Cuvier, 1817)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a
- Nybelinia lingualis (Cuvier, 1817) (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
 sp. (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980a
 Trypanorhynch sp. (larva)
 GAEVSKAYA, A.V. AND KOVALEVA, A.A., 1980b
- Trachynotus sp.
Otobothrium sp. (larva)
 ANANTARAMAN, S., 1963
- Trichiuris haumela
Nybelinia sp. (larva)
 ANANTARAMAN, S., 1963
- Trichiurus japonicus
Floriceps saccatus Cuvier, 1817 (larva)
 TSIMBALYUK, E.M., 1978b
- Trichiurus japonicus (Temmick and Schlegel)
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931 (larva)
 YAMAGUTI, S., 1952
- Trichodon trichodon (Tilesius)
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 STRELKOV, J.A., 1960
- Trigla gurnardus (L.)
Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)
 DUNIEC, H., 1980
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
Nybelinia lingualis (Cuvier, 1817) (larva or post larva)
 DOLLFUS, R.P., 1942
- Trigla lucerna L.
Callitetrarhynchus gracilis (Rudolphi, 1819) Pintner, 1931
 (plerocercus)
 DOLLFUS, R.P., 1942
- Trigla lyra L.
Nybelinia lingualis (Cuvier, 1817) (larva or post larva)
 DOLLFUS, R.P., 1942
- Trigla sp.
Grillotia erinaceus (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
Grillotia sp. (plerocercus)
 DOLLFUS, R.P., 1942
Nybelinia africana Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
- Triglops pingeli Reinhardt
Nybelinia surmenicola Okada in Dollfus, 1929 (larva)
 ARAI, H.P., 1969
- Umbrina coroides (Cuvier)
Poecilancistrum caryophyllum (Diesing, 1850) Dollfus, 1929
 (plerocercoid)
 COLLINS, M.R., MARSHALL, M.J. AND LANCIANI, C.A., 1984
- Undetermined gadoid
Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)
 DOLLFUS, R.P., 1942
- Uranoscopus oligolepis Bleeker
Symbothriorhynchus uranoscopi Yamaguti, 1952 (larva)
 YAMAGUTI, S., 1952
- Vorner (Argyreosus) setipinnus (Mitchell, 1815)
Nybelinia dakari Dollfus, 1960 (post-larva)
 DOLLFUS, R.P., 1960b
Nybelinia estigmans Dollfus, 1960 (post-larva) (forma typica)
 DOLLFUS, R.P., 1960b

Wallagonia attu

Otobothrium crenacolle Linton, 1898 (larva)

KYAW-MYINT, 1968

whiting

Grillotia erinaceus (Van Beneden, 1858) (plerocercoid)

MCKERR, G., 1978

Xiphias gladius Linnaeus, 1758

Daelyrhynchus variouncinatus (Pintner, 1913) Pintner, 1928

(plerocercoid)

HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY, P.C.F.,
1983

Hepatoxylon attenuatus (Rudolphi, 1819) (plerocercoid)

HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY, P.C.F.,
1983

Hepatoxylon trichiuri (Holten, 1802) (plerocercoid) syn.

Dibothriorhynchus attenuatus (Rudolphi, 1819)

NIGRELLI, R.F., 1938

Hepatoxylon trichiuri (Holten, 1802) (post-larva) syn. Hepatoxylon

grossum (Rudolphi)

RASMUSSEN, E., 1973

Nybelinia lamonteeae Nigrelli, 1938

NIGRELLI, R.F., 1938

Nybelinia lamonteeae Nigrelli, 1938 (plerocercoid)

HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY, P.C.F.,
1983

Tentacularia coryphaenae Bosc, 1802 (plerocercoid)

HOGANS, W.E., BRATTEY, J., UHAZY, L.S. AND HURLEY, P.C.F.,
1983

NIGRELLI, R.F., 1938

Trypanorhynch sp. (plerocercoids)

MUZYKOVSKII, A.M., 1972

Xytriae grigorjewi (Herzenstein)

Nybelinia nipponica Yamaguti, 1952 (larva)

YAMAGUTI, S., 1952

Zenopsis nebulosus (Schlegel)

Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)

ROBINSON, E.S., 1959a

Zeus faber L.

Lacistorhynchus tenuis (Van Beneden, 1858) (plerocercus)

DOLLFUS, R.P., 1942

Nybelinia (? Syngenes sp.) (post-larva)

ROBINSON, E.S., 1959a

Tetrarhynchobothrium sp. (larva)

RADULESCU, I.I., NALBANT, T.T. AND ANGELESCU, N., 1972

OSTEICHTHYES FOOD FISHES INCLUDING

Cynoscion regalis, Micropogon undulatus and Leiostomus xanthurus

Nybelinia bisulcata (Linton, 1899) Poche, 1926 (larva)

O'ROURKE, A.E., 1949

Otobothrium crenacolle Linton, 1898 (larva)

O'ROURKE, A.E., 1949

REPTILIA

Caretta caretta (L.)

Trypanorhynch larvae

SEY, O., 1977

Chelone mydas L.

Otobothrium cysticum (Mayer, 1842) (plerocercus)

DOLLFUS, R.P., 1942

Hydrodynastes bicinctus bicinctus

Pterobothrium sp. (plerocercus)

REGO, A.A., 1988

MAMMALIA

Alepisaurus aesculapius

Trypanorhynch sp. (larva)
SKRYABIN, A.S., 1965

Balaenoptera acutorostrata

Trypanorhynch sp. (larva)
SKRYABIN, A.S., 1965

Balaenoptera acutorostrata davidsoni

Trypanorhynch sp. (larva)
SKRYABIN, A.S., 1975

Balaenoptera borealis Lesson

Trypanorhynch sp. (larva)
SKRYABIN, A.S., 1965

Eumetopias jubatus Schr.

Trypanorhynch sp. (larva)
SKRYABIN, A.S., 1965

Homo sapiens

Hepatoxylon trichiuri (Holten, 1802) (larva) syn.

Dibothriorhynchus grossum (Rudolphi, 1819)
HEINZ, H.J., 1954

Hepatoxylon trichiuri (Holten, 1802) (post-larva)

FRIPP, P.J. AND MASON, P.R., 1983

Nybelinia surmenicola Okada in Dollfus, 1929 (larva)

KIKUCHI, Y., TAKENOUCI, T., KAMIYA, M. AND OZAKI, H., 1981
Trypanorhynch sp. (larva)
GRIMMO, A.E.P. AND BUCKLEY, J.J.C., 1961

Phoca vitulina largha Pallas

Nybelinia sp. (larva)
POPOV, V.N. AND GOL'TSEV, V.N., 1975

Physeter catodon L.

Trypanorhynch sp. (larva)
SKRYABIN, A.S., 1965

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REFERENCES

- ADAM, W., 1938, Notes sur les céphalopodes. IX. Sur la présence d'une larve de cestode (Tetrarhynchidae) dans la cavité palléale d'un Octopus des Iles Andamans. (In French), Bulletin du Musée Royal d'Histoire Naturelle de Belgique, 14, 1-4.
- AKHMEROV, A.K., 1963, [Helminths as biological indicators of local populations of Amur migratory salmon (Oncorhynchus)]. (In Russian), Voprosy Ikhtiologii, 3, 536-555
- ALDRICH, D.V., 1965, Observations on the ecology and life cycle of Prochristianella penaei Kruse (Cestoda : Trypanorhyncha). Journal of Parasitology, 51, 370-376.
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APPENDIX 1 : REFERENCES - GENERAL TRYPANORHYNCHAN INFORMATION

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SECTION TWO**TAXONOMIC STUDIES ON LITTLE-KNOWN TRYPANORHYNCHS**

According to Schmidt (1986) about 60,000 species of vertebrate exist, and each species that has been examined has been shown to host one or more cestode species. Fewer than 4,000 species of tapeworm have been recorded, so a large number of species remain to be found. The cestodes (with the exception of Archigetes, which matures in the coelom of annelids) all inhabit the gut of their vertebrate definitive hosts. There are twelve main orders of Eucestoda, including the Trypanorhyncha Diesing 1863, which mature in elasmobranchs. Clearly much work remains to be done on this order, as less than 200 species have been recorded from the 3-4,000 species of elasmobranch known to exist.

The terminology associated with the Trypanorhyncha is complex, involving a number of specialised terms (Yamaguti, 1959; Schmidt 1986). Here I shall briefly summarise the main characters used to distinguish species of trypanorhynch.

The trypanorhynchs are divided into two suborders. In the Acystidea Guiart 1927, the blastocyst of larval trypanorhynchs is either missing or greatly reduced, and the scolex has a pars bothridialis that extends to cover the pars vaginalis (i.e. the bothridia reach down past the sheaths to the bulbs). This suborder contains the homeoacanthous families (Hepatoxylidae Dollfus 1940; Tentaculariidae Poche 1926; Sphyricephalidae Pintner 1913) whose tentacle armature consists of hooks of similar shape and size distributed in continuous spiral rows or quincunxes over the metabasal portion of the tentacle e.g. Hepatoxylon trichiuri (Holten, 1802) (Plate 1, Figs. 1-2).

In the Cystidea the plerocerci possess well developed blastocysts, and

Plate 1: Tentacle armatures of homeoacanth, poeciloacanth and heteroacanth trypanorhynch

Hepatoxylon trichiuri (Holten, 1802)

Fig. 1 external face

Fig. 2 internal face (scale bar Figs. 1-2: 0.4 mm)

Grillotia erinaceus (van Beneden, 1858)

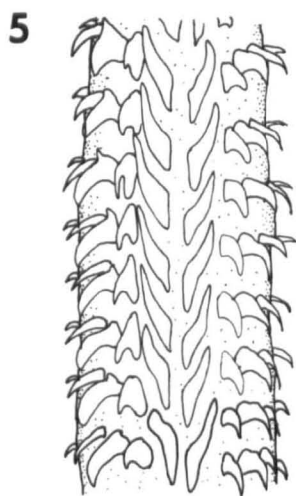
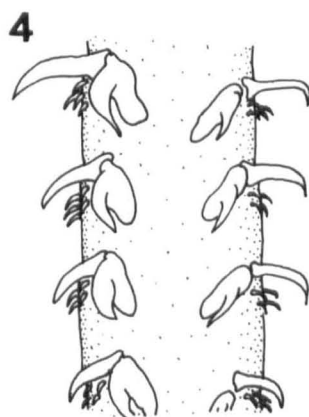
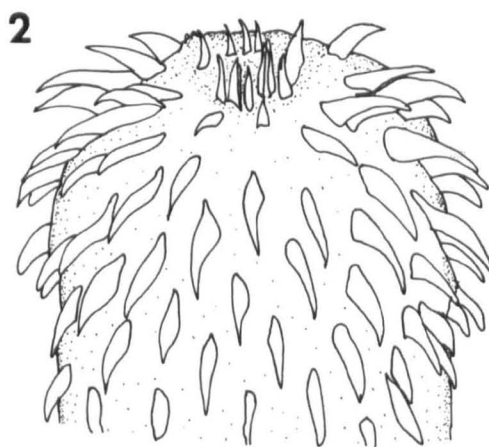
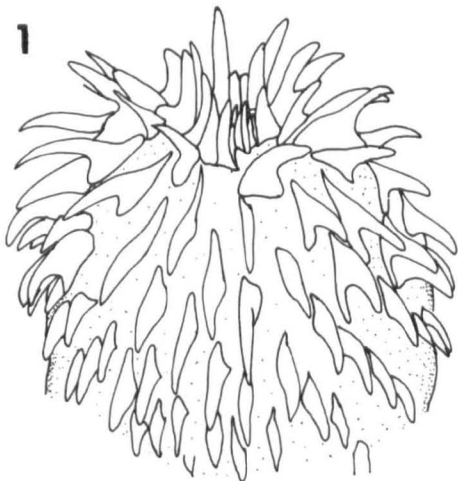
Fig. 3 external face

Fig. 4 internal face (scale bar Figs. 3-4: 50 μm)

Gilquinia squali Fabricius, 1794

Fig. 5 external face

Fig. 6 internal face (scale bar Figs. 5-6: 25 μm)



the pars vaginalis extends well below the pars bothridialis. The poeciloacanthous families (Dasyrhyndidae Dollfus, 1942; Gymnorhyndidae Dollfus, 1942; Lacistorhyndidae Guiart, 1927; Pterobothriidae Pintner, 1931) have several hook types. Oblique lines of hooks run from the middle of the internal face (nearest the scolex) of the tentacle across the bothridial and antbothridial surfaces to end on the external face (furthest away from the scolex), with subsidiary or satellite groups of hooks between them. The middle of the external face is occupied either by a "chainette"- a single or double row of large hooks, or a band of small hooks (e.g. Grillotia erinaceus (van Beneden, 1858) (Plate 1, Figs. 3-4). The heteroacanthous families (Eutetrarhyndidae Guiart, 1927; Gilquiniidae Dollfus, 1942; Hornelliellidae Yamaguti, 1959; Otobothriidae Dollfus, 1942; Rhinoptericolidae Carvajal and Campbell, 1975) possess hooks of varying size and shape, forming oblique rows that run from the internal face alternately over the bothridial and antbothridial surfaces to meet on the external face where they form an inverted V, without a chainette, e.g. Gilquinia squali Fabricius, 1794 (Plate 1, Figs. 5-6). One family, the Mixodigmatidae Dailey and Vogelbein, 1982, from a deep sea planktivorous shark, appears to contain both poeciloacanthous and heteroacanthous elements in its tentacle armature.

Features of the reproductive system may be used to identify detached proglottids as trypanorhynchans: (1) the sleeve-like distribution of the vitellaria, breaking only at the genital atrium and ovary; (2) the extension of the testes into the post-ovarian space; (3) the position of the vagina ventral to the uterus and vas deferens and opening ventral to or slightly behind that of the cirrus; (4) the vas deferens penetrating the cirrus pouch without crossing the vagina; (5) the muscular genital atrium; (6) the delayed development of the eggs, which do not reach the oncosphere stage within the uterus.)

(i) A Redescription of Grillotia smaris-gora and an Assessment of the Taxonomy of Trypanorhynchs Found in Monkfish, Squatina squatina (L.) and Mackerel, Scomber scombrus L.

Introduction

Plerocerci of Grillotia angeli Dollfus, 1969 were first described by MacKenzie (1980) from mackerel Scomber scombrus L. landed at Mevagissey Bay, Cornwall and compared well with Dollfus' (1969) original description of adults of this species from a monkfish, Squatina squatina (L.) caught at Sète. Subsequently MacKenzie (1981) and MacKenzie and Mehl (1984) investigated the potential of G. angeli as a biological tag for mackerel and at the same time drew attention to the need for a reassessment of the taxonomy of the trypanorhynchs found in the spiral valves of monkfish, and also in the visceral cavities of mackerel. I, therefore, carried out this research, partly under the guidance of Dr. K. MacKenzie, who was recognised during the 6th International Congress of Parasitology, Queensland, Australia 1986, as one of the world's leading experts on the use of parasites, especially tapeworms, as biological indicators.

My aims were to provide the first good description of the species and to ensure that in future it would not be identified as or confused with Grillotia angeli, Christianella minuta or any other parasite recorded as C. minuta or one of its synonyms.

Materials

The type specimens of Grillotia angeli Dollfus 1969, and adult trypanorhynchs identified by Dollfus as G. smarigora (Wagener, 1854) Dollfus, 1946 from monkfish, Squatina squatina were borrowed from the Museum National d'Histoire Naturelle, Paris, and examined. Further adult trypanorhynchs from S. squatina were obtained from west of the British Isles for comparison. Plerocerci of G. smarigora (Wagener, 1854) recovered from the California lizardfish, Synodus lucioceps, by Jensen, Moser and Heckmann, (1979) were borrowed from the U.S. National Helminthological Collection, Beltsville, USA and compared with plerocerci of G. angeli from Scomber scombrus described by MacKenzie (1980). Further plerocerci were examined from scad, Trachurus trachurus L. and red sea bream, Pagellus bogaraveo (Brünnich, 1768) from British waters. Specimen preparation and examination followed the procedures described in the methodology section (pp. 3-15).

Results

General Features

Trypanorhynchs belonging to the family Lacistorhynchidae, sub-family Grillotiinae, up to 5 mm long with two bothridia. Pars vaginalis region longer than pars bothridialis. Tentacles armed with transverse half rows of 4-6 hooks. No hooks along the middle of the internal surface. Groups of small hooks interpolated between half row of major hooks, and a band of small hooks along the middle of external surface. Distinctive basal armature found. Body euapolytic, genital atria marginal and post equatorial.

Description of adult *G. smarigora* from *S. squatina* (measurements from ten specimens).

1. General Appearance

Total length 2.3-4.5 mm for specimens with immature proglottids (Plate 2; Fig. 1A). The acraspedote scolex, from the anterior end of the bothridia to the posterior end of the pars bulbosa, measures 0.94-1.5 mm. The two unnotched bothridia are 0.23-0.29 mm long and 0.19-0.24 mm wide. The pars vaginalis containing the sinuous tentacle sheaths is 0.53-0.59 mm long and 0.138-0.149 mm wide, the pars bulbosa is 0.43-0.52 mm long and 0.138-0.149 mm wide. The bulbs taper posteriorly, and are 0.045 mm wide at their widest point with the tentacle retractor muscle inserted into the base of the bulb cavity. There is no pars post-bulbosa, the tentacle bulbs appearing to extend into the proliferation zone of the proglottids (Plate 2; Fig. 2). The pars bothridialis : pars vaginalis : pars bulbosa ratio is 1:2:2.

2. Tentacle armature

Each tentacle measures 0.8-0.9 mm long when fully extended, with a diameter of about 0.025 mm. The metabasal tentacle armature (Plate 3; Figs. 2 and 3; Plate 4; Figs. 1A, 1B) is poeciloacanthous and consists of a repeating pattern of two transverse half-turns of four large hooks. Following the conventional numbering system (Dollfus, 1942) hooks 1(1') are set in the internal face of the tentacles, are rose-thorn shaped and 9-10 μ m long. Hooks 2(2') are more slender and

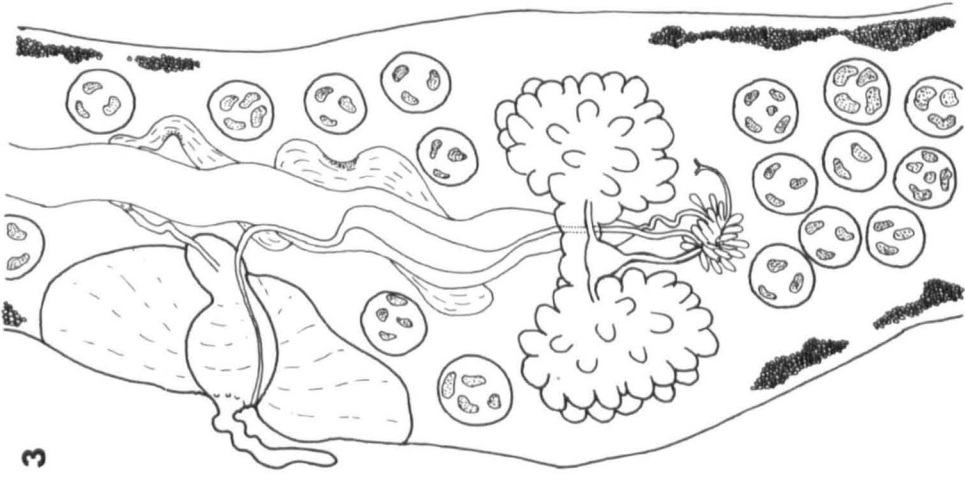
Plate 2: Grillotia smaris-gora (Wagener, 1854) from Squatina
squatina

Fig. 1A Whole adult specimen (scale bar = 0.2 mm)

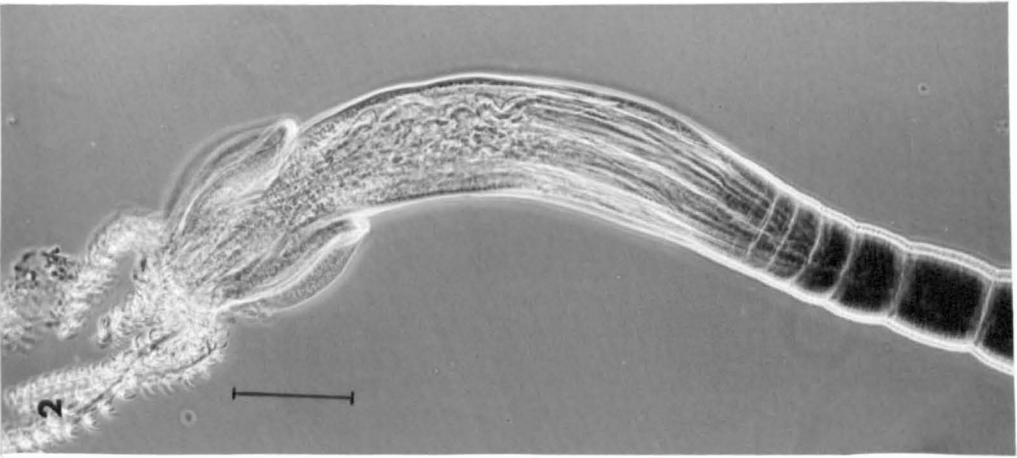
Fig. 1B Detached mature proglottid (scale bar =
0.4 mm)

Fig. 2 Zone of proliferation (scale bar = 0.2 mm)

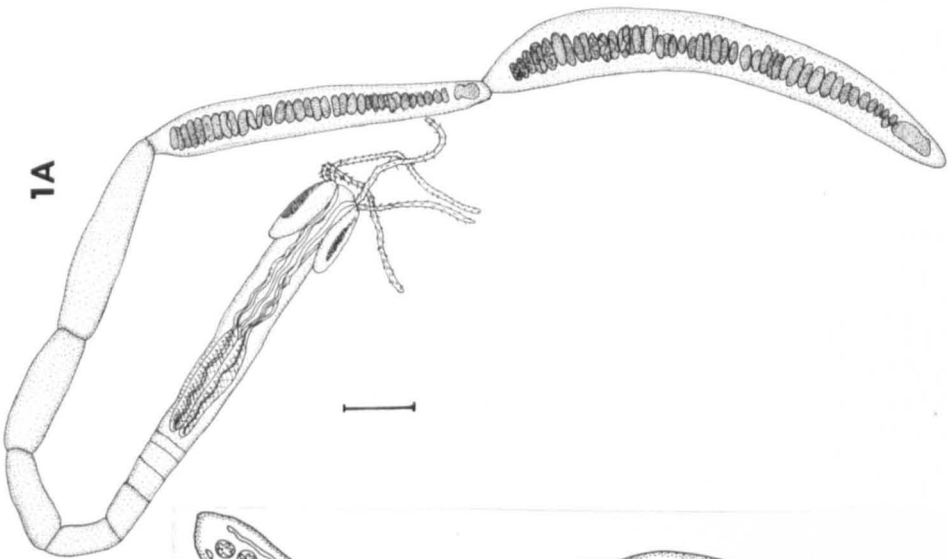
Fig. 3 Schematic diagram of the reproductive system of
G. smaris-gora



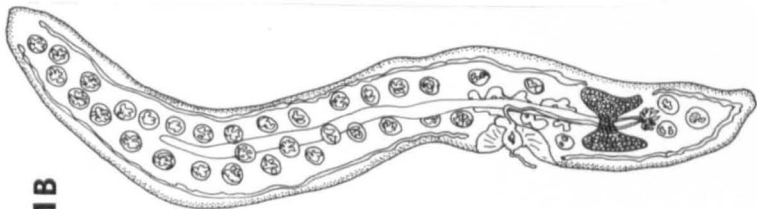
3



2



1A



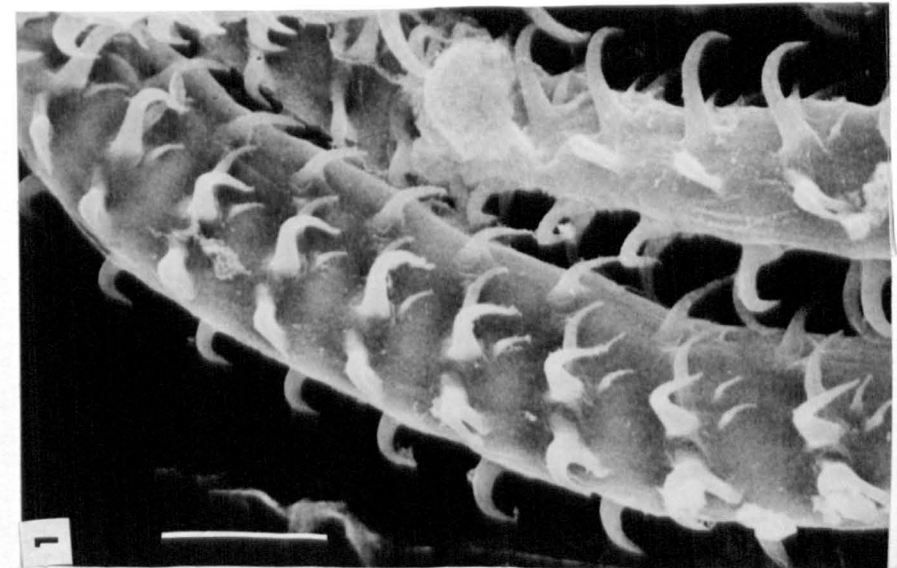
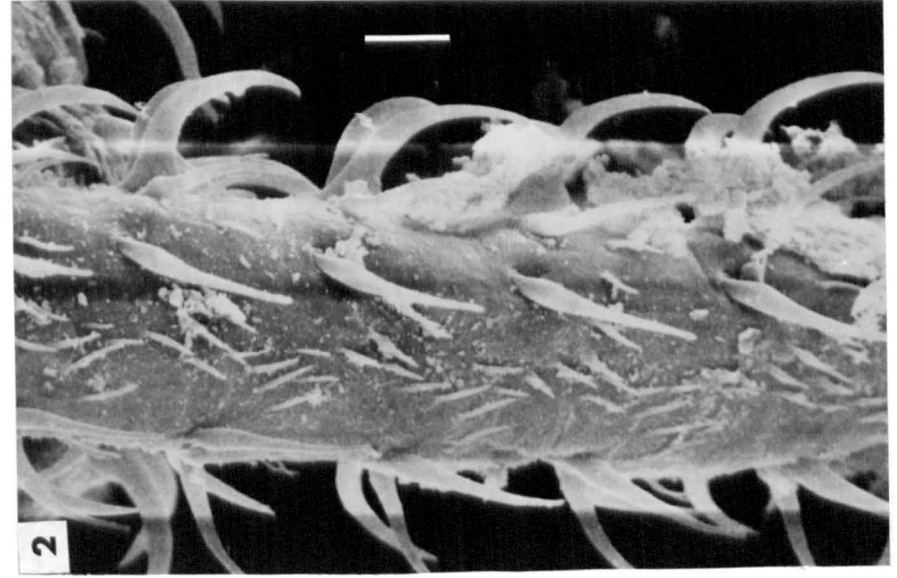
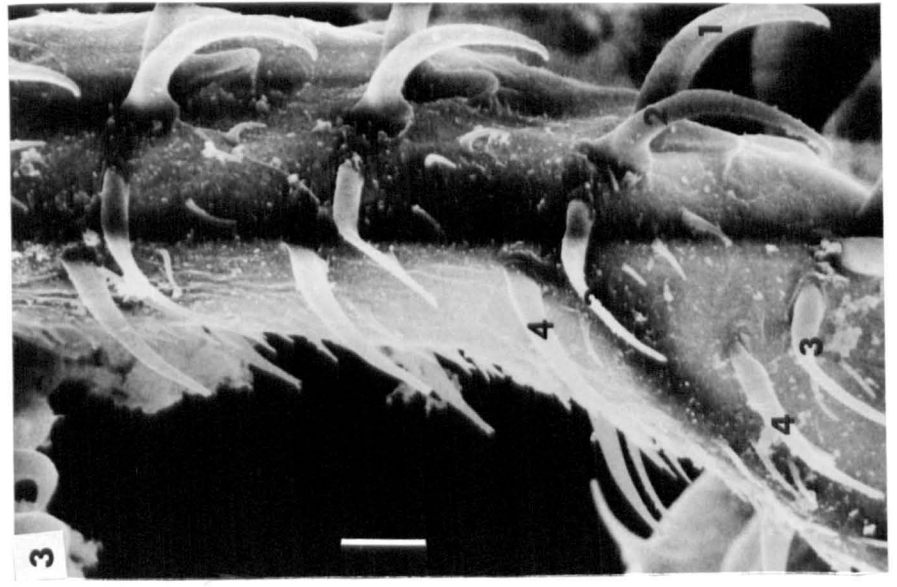
1B

Plate 3: Scanning electron micrographs of the tentacle armature of
Grillotia smaris-gora from Squatina squatina

Fig. 1 Tip of tentacle (scale bar = 100 μm)

Fig. 2 Metabasal armature, external face (scale bar =
10 μm)

Fig. 3 Metabasal armature, antibothridial face (scale
bar = 10 μm)



taller (10-11 μm long). Hooks 3(3') and 4(4') cross over the anti-bothridial (bothridial) sides of the tentacle to reach the external face, which is occupied by a thin band or chainette of small hooks (4-5 μm long). Interpolated between consecutive rows of the large, major hooks are groups of smaller hooks (3-7 μm long), varying in number along the length of the tentacle, from five to seven at the metabasal region, gradually reducing in size and number towards the tentacle apex, where only one small subsidiary hook is found. The size and shape of the major hooks alters markedly towards the tentacle apex, where they are smaller and more similar in shape (Plate 3; Fig. 1).

The distinctive basal armature is composed (Plate 4; Figs 2a, 2b) of several rows of large hooks, measuring up to 30 μm long, and a wide band of small hooks 5-10 μm long, which quickly decreases in number from 7 to 3 hooks wide with increasing distance from the tentacle base.

3. Strobila

The acraspedote strobila is characterised by a small number of proglottids, up to a maximum of eight to ten. The strobila is hyperapolytic, with only the most rudimentary development of the reproductive system in any of the attached proglottids. In a typical specimen the smallest proglottid found posterior to the pars bulbosa measured 0.0450 mm long and 0.108 mm wide, the second 0.0585 by 0.108 mm, third 0.103 by 0.112 mm, fourth 0.166 by 0.117 mm, fifth 0.234 by 0.130 mm, sixth 0.370 by 0.148 mm and the seventh and last proglottid 0.606 by 0.171 mm.

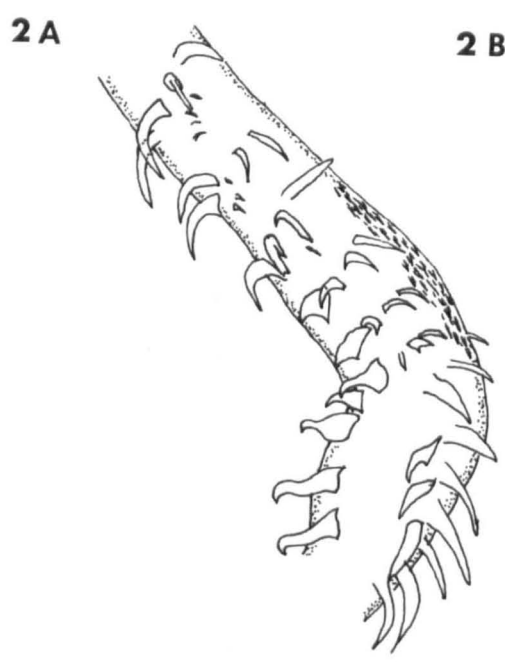
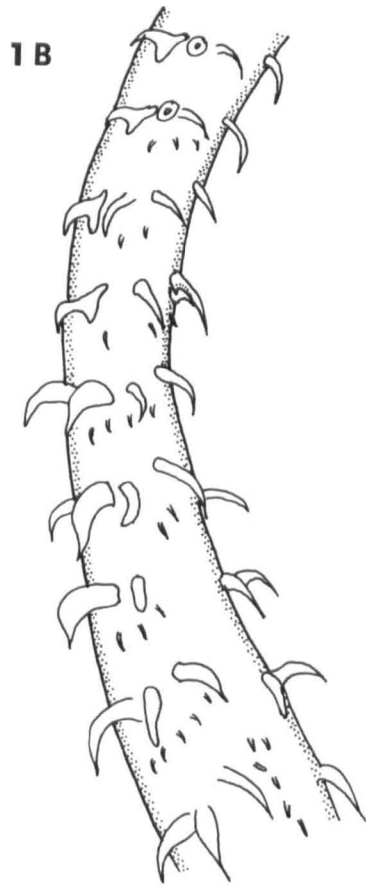
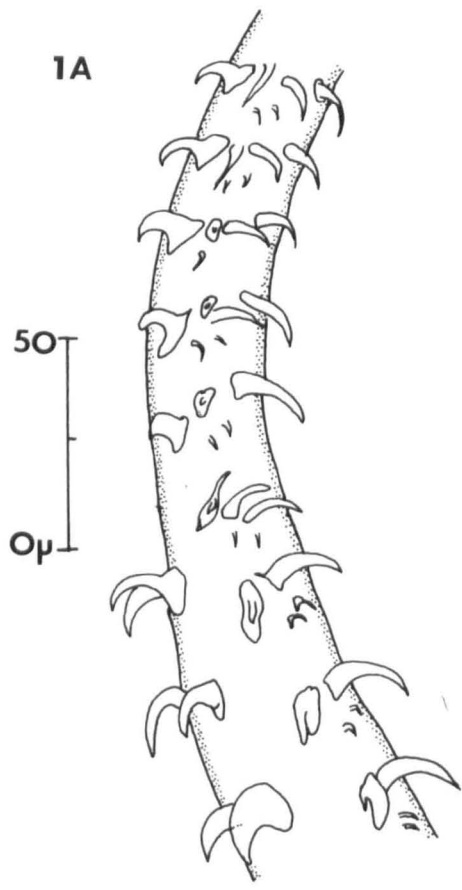
Plate 4: Tentacle armature of adult G. smarigora from S. squatina

Fig. 1A Metabasal armature, bothridial face

Fig. 1B Metabasal armature, antibothridial face

Fig. 2A Basal armature, bothridial face

Fig. 2B Basal armature, antibothridial face



Detached gravid proglottids measuring up to 5.5 mm long and 1.5 mm wide were found in the most anterior tier of the valve in two monkfish caught in Cardigan Bay in August (Plate 2; Fig. 1b). The proglottids show typical trypanorhynchan organisation, with a muscular genital atrium opening at the lateral margin in the posterior third of the segment (Plate 2; Fig. 3). The testes number between 80 and 120 and are found throughout the proglottid, extending posterior to the ovary. The vitellaria are circumcortical and almost continually distributed, with gaps occurring only around the biwinged ovary. The vagina opens ventrally to the cirrus pouch. The uterus occupies about three quarters of the *proglottid*, with no visible preformed uterine pore.

Description of Plerocercus (Measurements from Ten Specimens from Mackerel)

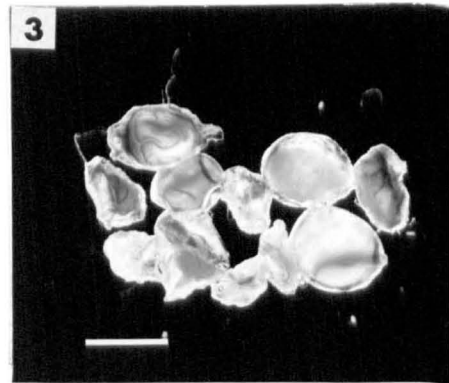
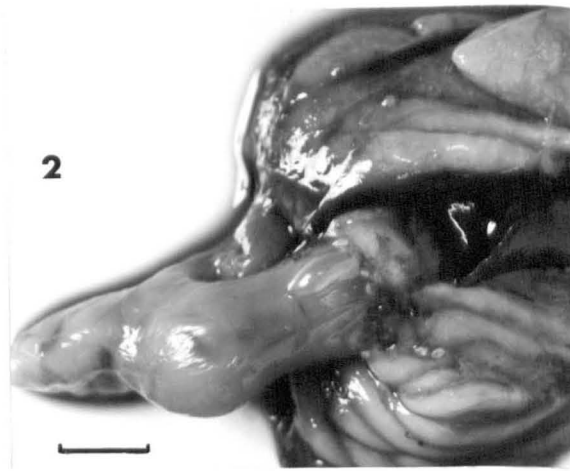
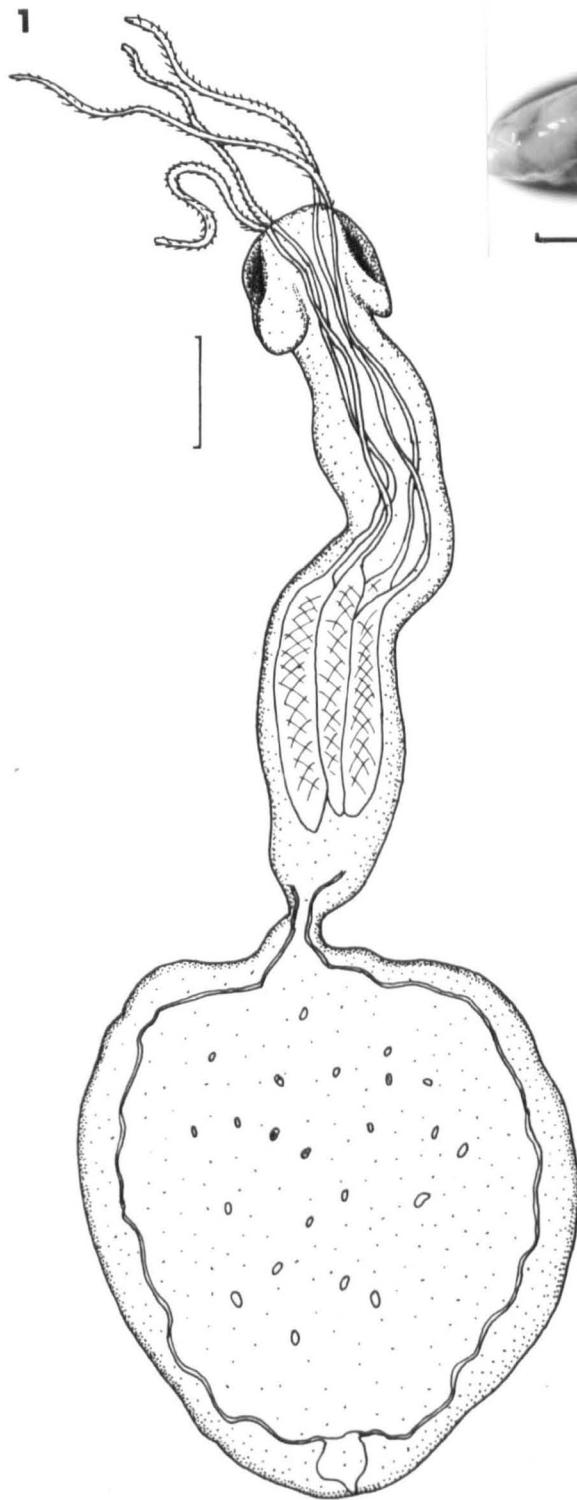
Plerocerci were found encysted within mackerel, horse mackerel and red sea bream, most frequently on the outer surfaces of the pyloric caeca (Plate 5; Fig. 2) and in the stomach wall. The encysted plerocerci (Plate 5; Fig. 3) were in white or faintly yellow oval capsules measuring 1-2.5 mm long by 0.7-1.3 mm wide. When dissected out plerocerci with fully developed scoleces could extend their tentacles under coverslip pressure (Plate 5; Fig. 1). The scolex measures 1.1-1.6 mm long. The bothridia are 225-310 μm long, and the pars bothridialis measures 230-300 μm across at its widest points. The pars vaginalis containing sinuous tentacle sheaths is 590-630 μm long and up to 195 μm wide, depending on the state of contraction. The pars bulbosa measures 450-475 μm long and up to 250 μm wide. There is a pars post-bulbosa measuring up to 150 μm long. The blastocyst measures

Plate 5: The plerocercus of G. smaris-gora from Scomber scombrus
(L.) and Trachurus trachurus (L.)

Fig. 1 Plerocercus dissected out from a cyst on the
 pyloric caeca of S. scombrus (scale bar =
 0.2 mm)

Fig. 2 Encysted plerocerci on the pyloric caeca of T.
 trachurus (scale bar = 2 mm)

Fig. 3 Encysted plerocerci from T. trachurus (scale
 bar = 0.2 mm)



approximately 1.1-1.25 mm long by 0.85-0.95 mm wide and is easily detached during dissection. Encysted plerocerci from horse mackerel and red sea bream had measurements which were amongst the range displayed by specimens from mackerel.

The tentacle armature (Plate 6; Figs. 1-2b) was very similar to that described above for adult G. smarigora, consisting of oblique transverse half turns of 4 major hooks, interpolated with 1-5 small hooks depending upon the distance along the tentacle and a band of small hooks occupying the middle of the external face.

Discussion

The Status of Grillotia spp. from Squatina squatina

My literature survey relative to the foregoing description revealed many references to adult trypanorhynch from the monkfish Squatina squatina, with larval forms occurring in a variety of teleosts in European waters. Unfortunately, I was unable to obtain many of the original specimens because they had been either lost or destroyed, and the descriptions available are often brief and generalised and accompanied by ambiguous drawings, which give little information about the parasites.

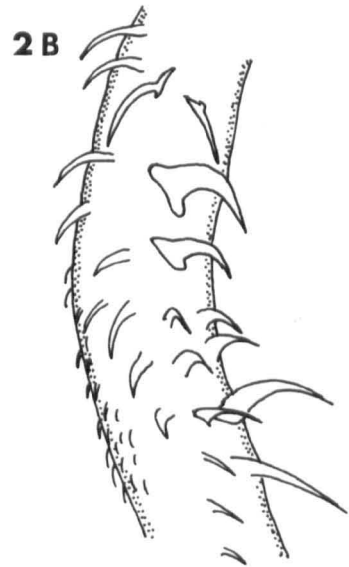
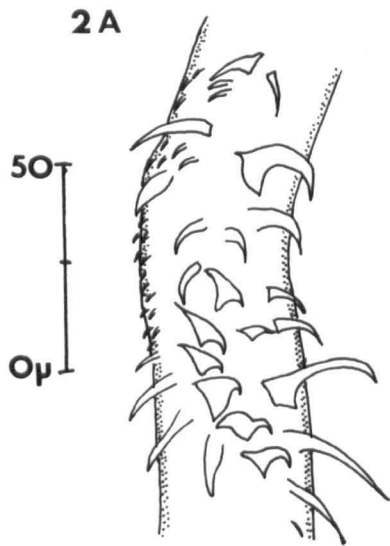
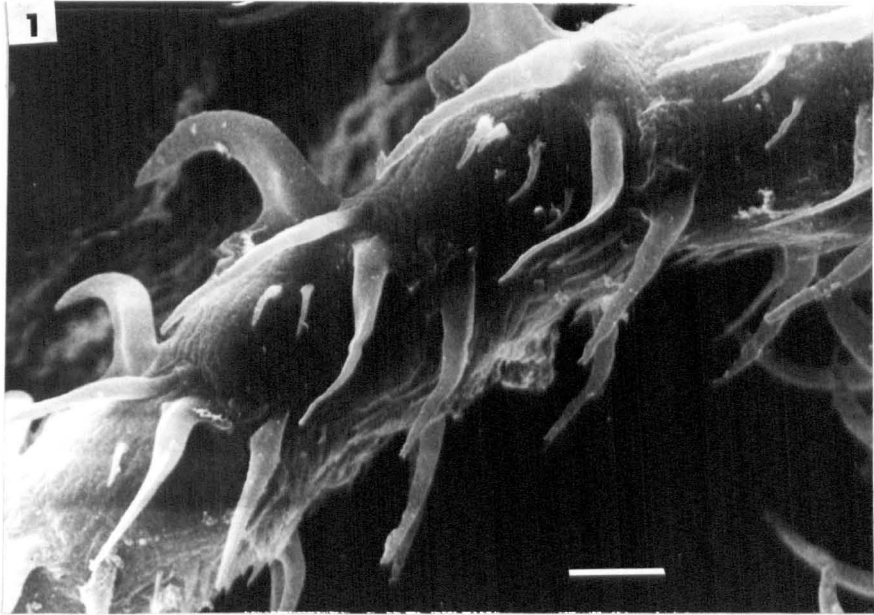
From the descriptions alone, however, the specimens could be

Plate 6: Tentacle armature of G. smarigora from S. scombrus

Fig. 1 Scanning electron micrograph of metabasal
tentacle armature (scale bar = 10 μ m)

Fig. 2A Basal armature : bothridial face

Fig. 2B Basal armature : antibothridial face



allocated to either Grillotia smaris-gora (Wagener, 1854) Dollfus, 1946, belonging to the poeciloacanthous family, the Lacistorhynchidae, or to the heteroacanthous family, the Eutetrarhynchidae, distinguished principally by the scolex length, tentacle armature and, in adult specimens, the anatomy of the proglottids.

Grillotia smaris-gora

Table 4: Records of Grillotia smaris-gora (Wagener, 1854) Dollfus, 1946

Specimen	Host and Locality	Reference
<u>Tetrarhynchus smaris-gora</u> Wagener (plerocercus)	<u>Spicara smaris</u> (= <u>Smaris gora</u> Risso) <u>Spicara maena</u> (= <u>Maena vulgaris</u> C.V.)	Wagener (1854)
<u>Tetrarhynchus smaridis</u> <u>Gorae</u> Wagener	Previous record	Diesing (1863)
<u>Tetrarhynchus smaridis</u> <u>Maenae</u> Wagener	Previous record	Diesing (1863)
<u>Tetrarhynchus smaridium</u> Pintner (plerocercus)	<u>Smaris</u> sp. <u>Maena</u> sp. Trieste I-V,	Pintner (1893)
<u>Wageneria porrecta</u> Lühe (free proglottid)	<u>Rhina squatina</u> L. Trieste	Lühe (1902)
<u>Tetrarhynchus minutus</u> van Beneden (adult)	<u>Squatina angelus</u> Scotland	Scott (1909),
<u>Tetrarhynchus smaridium</u> (Pintner, 1893) (plerocercus)	<u>Maena vulgaris</u> C.V. and <u>Smaris vulgaris</u> C.V. Nice	Joyeux and Baer (1936)

contd.

Specimen	Host and Locality	Reference
<u>Christianella minuta</u> (van Beneden) (adult)	<u>Squatina squatina</u> L. Roscoff, France, Skagerack	Nybelin (1940)
<u>Grillotia smaris-gora</u> (Wagener, 1854) (adult)	<u>Squatina squatina</u> L. Arcachon, France	Dollfus (1946)
<u>Grillotia angeli</u> Dollfus 1969 (adult)	<u>Squatina squatina</u> L. Sète, France	Dollfus (1969)
<u>Grillotia smaris-gora</u> Wagener, 1854 (adult)	<u>Squatina californica</u> Ayres, Catalina Island, California	Heinz and Dailey (1974)
<u>Grillotia smaris-gora</u> (Wagener, 1854) Dollfus, 1947 (plerocercus)	<u>Cynoscion nobilis</u> <u>Sebastes paucispinis</u> <u>Synodus lucioceps</u> Southern California	Jensen, 1977
<u>Grillotia angeli</u> Dollfus 1969 (plerocercus)	<u>Scomber scombrus</u> L. Mevagissey Bay, England	MacKenzie (1980)
<u>Grillotia smaris-gora</u>	<u>Synodus lucioceps</u> Los Angeles, California	Jensen, Moser and Heckman (1979)

The poeciloacanthous specimens (Table 4) all agreed with the detailed description of Tetrarhynchus smaridum by Pintner (1893) from plerocerci encysted in the body cavities of Smaris and Maena from Naples and Trieste. Wagener (1854), however, had already briefly described and illustrated these plerocerci from Smaris Gora Risso and Maena vulgaris C.V. from Nice as Tetrarhynchus Smaris Gora. Wagener's figures showed a plerocercus with many calcareous corpuscles.

Lühe (1902) described a proglottid from the spiral valve of

Squatina squatina at Trieste as Wageneria porrecta Lühe, without recognising it as the detached proglottid of a trypanorhynch. This was later identified by Nybelin (1940) as a trypanorhynch proglottid.

The adult of G. smarigora was first described by Scott (1909) from Squatina angelus in the Firth of Clyde, although he identified it as a heteroacanth, Tetrarhynchus minutus van Beneden, it is clearly a poeciloacanth. Scott quoted van Beneden's description of 1850, but showed, in his illustrations, a band of small hooks running one to two longitudinally along the tentacle, and small, subsidiary hooks beneath the half turns of four large hooks. Scott did not give any measurements of the parasite beyond mentioning that it was a small species, and easily overlooked. The tentacle sheaths are depicted as convoluted, and the tentacle bulbs appear to occupy over half the scolex length.

Gravid trypanorhynchs from Squatina squatina were described in great detail by Nybelin (1940) as Christianella minuta (van Beneden, 1849). Nybelin compared the specimens with the original specimens of Tetrarhynchus smaridum Pintner, and recognised them as belonging to the same species, but considered T. smaridum to be a synonym of the heteroacanth T. minutus (van Beneden, 1849). Nybelin's description and figures leave no doubt that his specimens were Grillotia smarigora. Nybelin based his descriptions on several specimens from Roscoff, France, and the Skagerack, mature specimens being found only at Roscoff.

The worm measured up to 5 mm long, with the scolex measuring 1.0-1.3 mm in length. The tentacle armature is well illustrated, beginning with a metabasal portion consisting chiefly of very large hooks on the internal face and a scattering of small hooks on the external face. These soon form a longitudinal band of hooks running along the external face rapidly decreasing in number with height of tentacle. The metabasal armature thus consists of two rows of four, similarly shaped hooks running diagonally upwards from the external face alternately crossing the bothridial and antibothridial faces. The internal surface is occupied by a sparse scattering of the small 5 μ m hooks. Groups of five small hooks are interpolated between the rows of principal hooks. Nybelin notes that towards the tip of the tentacle the hooks become smaller.

The bothridia show a small notch in their posterior part, measuring 0.22-0.27 mm long. The tentacle sheaths are sinuous, and measure from 0.55-0.74 mm depending on the state of contraction. The tentacle bulbs measure 0.41-.054 mm and appear to extend within the zone of proliferation, with the retractor muscle inserted near their base.

Nybelin noted that 5-6 proglottids could be easily distinguished externally, but on staining a further 1-2 segments could be found in the portion nearest to the scolex. The strobila was acraspedote, and the final segment only just beginning to develop signs of the genital organs. Consequently, the strobila was considered as hyperapolytic.

The testes were found both anterior and posterior to the ovary and numbered 69-115. The genital atrium was approximately three quarters down the length of the mature proglottid. The rest of the description of the proglottid anatomy closely agreed with that given by Johnstone (1911) and Dollfus (1942) for Grillotia erinaceus (van Beneden, 1858).

Dollfus (1946) described G. smaris-gora from S. squatina from France, referring to Nybelin for much of the descriptions of anatomy and tentacle armature.

Dollfus noted that in his specimens the fifth of the group of small hooks was often difficult to see, as it merged into the band of longitudinal hooks running along the external surface. His diagrams show only the metabasal armature and the first four rows of principal hooks, while his specimens from the Muséum National d'Histoire Naturelle, Paris, do not show fully extended tentacles.

A new species of trypanorhynch, G. angeli, was later described from S. squatina by Dollfus (1969) from three greatly flattened and distorted immature specimens from Sète. Dollfus gave the length of the least deformed specimens as 1.6 mm, but the other two measured far less, 1.1-1.25 mm. The tentacle armature consisted of half turns of four principal hooks, which varied greatly in size with the height of the tentacle. The longitudinal band of spines occupying the middle of the external face also varied in number according to the level examined, but the distinguishing feature of this species was the reduction to one or two small hooks of the group of small hooks

interpolated between two rows of principal hooks. However, on examining Dollfus' original specimens it became apparent that this group of small hooks varied greatly in number along the length of the tentacles, with 3-5 small hooks being clearly visible in portions lower than those depicted by Dollfus (Plate 7: Figs. 1A-3).

The bothridia were described as "Deux bothridies orbiculaires, à bord posterior non échancré", but the bothridia can vary so greatly in appearance, and the specimens were distorted, that this cannot be held as critical to the distinction of a species. The tentacle sheaths were sinuous, together with the bothridia they measured 0.5-1 mm, with the bulbs measuring about 0.63 mm.

The only other record of G. angeli was made by MacKenzie (1980) from the pyloric caeca and intestine of mackerel Scomber scombrus from Mevagissey Bay, Cornwall, U.K. The cyst measured 1.2-2.5 mm long by 0.8-1.2 mm wide, with the enclosed blastocyst 1.0-1.6 mm long by 0.7-1.0 mm wide. The scolex, 1.1-1.5 mm long possessed two plain, unnotched bothridia, and the tentacle armature consisted of a repeating pattern of two similar transverse half turns of four hooks each with one or two small hooks lying between consecutive rows of large hooks.

A close examination of these plerocerci again revealed variation in the number of small hooks from one to five depending on the level examined. A close comparison of plerocerci of G. smarigora (from Trachurus trachurus caught north of Scotland) with these specimens revealed no significant differences.

Plate 7

Tentacle armature of Grillotia angeli Dollfus, 1969 from
Squatina squatina Type specimen

Fig. 1A Metabasal armature, internal face

Fig. 1B Metabasal armature, external face

Fig. 2A Basal armature, bothridial face

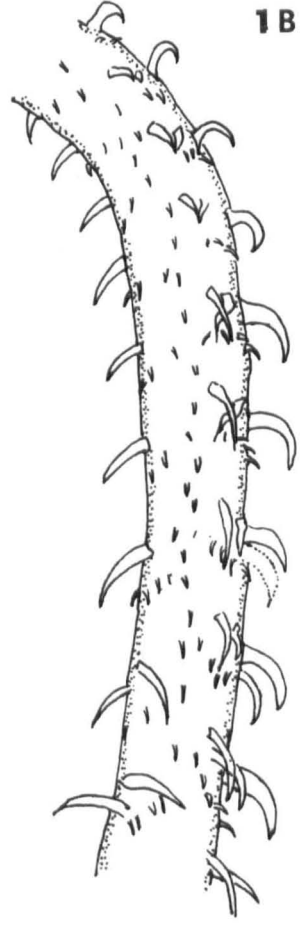
Fig. 2B Basal armature, antibothridial face

Fig. 3 Tip of tentacle

1A



1B

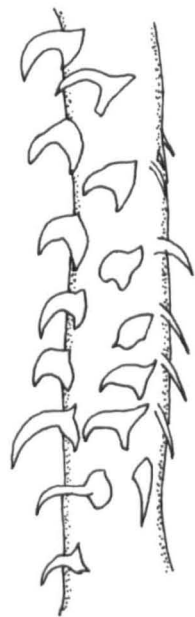


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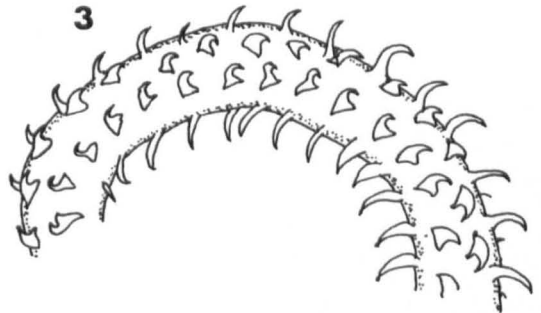
2A



2B



3



I, therefore, tentatively conclude that the parasites I have examined from S. squatina, mackerel, horse mackerel and red sea bream all belong to the species Grillotia smaris-gora of which G. angeli Dollfus, 1969 is a junior synonym.

The Status of Christianella spp.

Many of the remaining records of trypanorhynchs recorded from Squatina can be assigned to a different genus, Christianella, belonging to the family Eutetrarhynchidae.

1. Christianella minuta (van Beneden, 1849) Guiart, 1831

Table 5: Records of Christianella minuta

Specimen	Host and Locality	Reference
<u>Rhynchobothrius minutus</u> (adult)	<u>Squatina angelus</u> Belgium coast	van Beneden (1849)
<u>Tetrarhynchus minutus</u> van Beneden (adult)	<u>Squatina angelus</u>	van Beneden (1850)
<u>Rhynchobothrium minutum</u> Beneden (adult)	from van Beneden 1849	Diesing (1854)
<u>Tetrarhynchus minutus</u> (adult)	<u>Squatina angelus</u> Belgium coast	van Beneden (1861)
<u>Rhynchobothrium minutum</u> (adult)	from van Beneden 1849	Diesing (1863)

contd.

Specimen	Host and Locality	Reference
<u>Tetrarhynchus minutus</u> van Beneden (adult)	<u>Squatina angelus</u> Cuv. Belgium coast	van Beneden (1870)
<u>Tetrarhynchus minutus</u> van Beneden (adult) (larvae)	<u>Squatina angelus</u> Risso Luc-sur-Mer, Calvados, France <u>Merlangus merlangus</u> (L.) <u>Cantharus cantharus</u> (L.) <u>Trachurus trachurus</u> (L.)	Vaullegeard (1899)
<u>Armandia minuta</u> (van Beneden 1849)	<u>Squatina angelus</u>	Guiart (1927)
<u>Armandia minuta</u> (van Beneden) (adult)	<u>Squatina angelus</u>	Dollfus (1929)
<u>Armandia minuta</u> (van Beneden, 1849) Guiart, 1927	<u>Squatina angelus</u>	Dollfus (1930)
<u>Christianella minuta</u> (van Beneden 1849) Guiart, 1931	from van Beneden 1849	Guiart (1931)
<u>Christianella minuta</u> (van Beneden, 1849) (adult) (larvae)	<u>Squatina angelus</u> Dum. France Various teleosts, France	Joyeux and Baer (1936)
<u>Christinaella minuta</u> (P.J. van Beneden, 1849) (adult)	<u>Squatina squatina</u> (L.) (= <u>Squatina angelus</u> Valenciennes) Coast of Mauritania	Dollfus (1942)
<u>Christianella minuta</u> (Beneden, 1849) (adult)	<u>Squatina</u> sp. Belgian waters	Wardle and McLeod (1952)
<u>Christianella minuta</u> (Beneden, 1849) (adult)	<u>Squatina angelus</u> Belgium	Yamaguti (1959)

Van Beneden (1849) briefly mentioned a new species of trypanorhynch tapeworm Rhynchobothrius minutus from Squatina angelus, which was distinguished by its tiny size, and the small number of proglottids in the strobila.

Van Beneden (1850) gave a more detailed description of the species as Tetrarhynchus minutus Van Bened. Its total length was given as 5-6 mm long, the scolex measured approximately 2.5 mm with two strongly notched bothridia giving the appearance of four distinct fossettes. The tentacles were described as being "couvertes de crochets recourbés" but from his figures it is uncertain whether there are tiny subsidiary hooks between the large, stout, regularly repeated hooks of similar size and shape. The spiral tentacle sheaths occupied 30- 50% the scolex length, and the tentacle bulbs about 30% with a large post bulbosa. The number of proglottids never exceeded 6, the 5-6 proglottids being gravid. Van Beneden regarded the length of the proglottids, being several times longer than wide, as being characteristic of this species, but this feature is found throughout the Trypanorhyncha.

Van Beneden (1870) described T. minutus from S. angelus Cuv. from the Belgium coast, but the scolex differed markedly from his earlier description. The 2 bothridia do not appear to be notched at their posterior edges although the shape and size of bothridia can vary greatly according to their position when fixed. The tentacle armature consisted of rosethorn-shaped hooks of varying sizes, some of which, in relation to the width of the tentacle, are twice as large as the short,

stocky hooks figured in 1850. The hooks also appear to be distributed in distinctly separated diagonal rows rather than regularly spaced over all the tentacle. The thick tentacle sheaths were sinuous rather than spiral, and occupy 75% of the scolex length, the bulbs occupying only 25% with no post-bulbosa. The seven attached proglottids shown are similar to those illustrated by van Beneden in 1850.

Vaullegeard (1899) recorded T. minutus van Beneden from one specimen of S. angelus Risso, caught at Luc-sur-Mer, France, with a total length of 3.1-3.5 mm, the scolex being 2.1-2.5 mm long, and noted that the two bothridia could appear as four fossettes. The tentacle armature was described from the larval forms. The proglottids were recorded as few in number, with the testes arranged in two rows in the first proglottids, and the genital orifice appearing lateral and towards the middle of the last segments.

Vaullegeard was the first author to describe larval trypanorhynch as Tetrarhynchus minutus van Beneden. He recorded specimens encysted in the liver or mesentery of "Merlangus vulgaris L.", "Cantharus griseus" Cuv. et Val. and Trachurus trachurus L. From Vaullegeard's drawings it is clear that his specimens belonged to Christianella and not Grillotia, as no subsidiary hooks were indicated. He also regarded several records, including those of Drummond (1838) of Anthocephalus paradoxus from "Pleuronectes maximus", "Merlangus carbonarius", "Trigla pini" and "Trigla gurnadus", Bellingham (1844) of Anthocephalus paradoxus (Drummond) from Pleuronectes maximus and Cobbold (1864) of Tetrarhynchus sp. from the abdomen of a whiting Merlangus vulgaris, as

specimens of Tetrarhynchus minutus, although the parasites were described briefly, often without any figures of the tentacle armature.

The cysts were described by Vaulleopard as rounded, ovoid or piriform, measuring from 1.15-0.9 mm for specimens from M. vulgaris to 1.4 x 1.1 mm from C. griseus, containing a vesicle possessing numerous calcareous corpuscles. The scolex measured 1.5-2.0 mm in length, with two bothridia. The tentacles, just under 1 mm long, and 29 μ m (without hooks) or 55 μ m (with hooks) in diameter were described as possessing an armature of "crochets disposés avec régularité" and figured a mixture of rosethorn or plain, simple hooks 25-45 μ m long. It is difficult to determine their arrangement from one diagram of a portion of one side of a single tentacle, possibly they are arranged in spiral half turns.

In 1927 Guiart created a new genus, Armandia, placing it in the heteroacanthous family of the Eutetrarhynchidae with Armandia minuta (van Beneden, 1849) as the genotype.

Guiart (1931) later discovered that Armandia was pre-occupied by a polychaete described by De Filippi in 1801, and so renamed the genus Christianella.

Joyeux and Baer (1936) described Christianella minuta (van Beneden, 1849) as 10 mm long, with a scolex 2.5 mm long, and two strongly notched bothridia. The tentacles were a little under

1 mm long and (p. 20) "elles sont armées de nombreuses rangées de crochets de forme semblable". The illustration showed hooks of similar shape and size, even though the hooks are stated to vary from 25-45 μm . Joyeux and Baer did not state whether the hooks of different sizes occupied distinct regions of the tentacle. The retractor muscles were described as inserted into the base of the tentacle bulbs, but this is not illustrated by the accompanying figures.

Dollfus (1942) critically reviewed the literature on Christianella minuta (van Beneden, 1849) but although he commented on the summary state of knowledge of the parasites external morphology and anatomy he did not redescribe the species, because his own specimens had been destroyed. In Dollfus' definition of the genus Christianella he stated that the hooks were inserted in half-turns, leaving the middle of the internal and crossing over alternate faces of the tentacle and suggested that the hooks were not all of similar size, those of the internal side being smaller. Dollfus agreed with Guiarts' (1931) positioning of this species in the Eutetrarhynchidae which he redescribed. Dollfus' diagnosis of the Eutetrarhynchidae includes the restriction of the testes to the pre-ovarian region of the proglottid, although he did not comment on the distribution of the testes in C. minuta.

Wardle and McLeod (1952) and Yamaguti (1959) gave brief descriptions of C. minuta based on Dollfus (1942). Yamaguti, however, regarded Wageneria porrecta Lühe as a synonym, and included dubious host records based on Southwell (1929). Records of C. minuta which

suggest misidentification are summarised in Table 6.

2. Trypanorhynchs Incorrectly Recorded as C. minuta or One of its Synonyms

Scott (1909) figured Tetrarhynchus minutus van Beneden from a Squatina angelus caught in the Firth of Clyde, but as previously discussed (p. 34) this is a record of a poeciloacanth species, Grillotia smaris-gora.

In 1929 Southwell recorded Tentacularia minuta (van Beneden, 1858) syn. Tetrarhynchus minutus van Ben. 1858 from Carcharias sp. from Negapatam and Ceylon Pearl Banks, and Rhina halavi from Negapatam, and noted that it had previously been recorded from Squatina angelicus and Urolophos testacus in Europe. Dollfus (1942) commented however, that Urolophus (Trygonoptera) testacus was an Australian dasybatid. Southwell's specimens were about 4 mm long, with a scolex 1.2 mm long, about half the length of other recorded specimens. The tentacle armature is figured as typically heteroacanthous and consists of large hooks gradually decreasing in size, arranged in obliquely ascending half turns of 9-10 hooks and terminating in hooks approximately one third of the length of the largest hooks. Southwell suggested that Scott's (1909) figures appeared different because he had confused the anatomy of the hooks on the dorsal surface with those on the ventral surface, but this does not explain Scott's drawing of a typical poeciloacanth.

Table 6: Incorrect citations of trypanorhynchs as *Christianella minuta* or one of its synonyms.

Specimen	Host and Locality	Reference
<u>Tettrarhynchus minutus</u> (van Beneden, 1850) (adult)	<u>Squatina angelus</u> Firth of Clyde, Scotland	Scott (1909)
<u>Tentacularia minuta</u> (van Beneden, 1858) (adult)	<u>Carcharias</u> sp. Negapatam, India, and Ceylon Pearl Banks <u>Rhina halavi</u> Negapatam, India	Southwell (1929)
<u>Christianella minuta</u> (van Beneden, 1849)	<u>Rhina squatina</u> (L.) Roscoff, France, Skagerak	Nybelin (1940)
<u>Christianella minuta</u> van Beneden (adult)	<u>Rhinobatus halavi</u> (Forsk.) and <u>Trygon imbricata</u> (Bl. Schn.) Madras Coast	Subhapradha (1955)
<u>Christianella minuta</u> (Beneden, 1849) (adult) (larvae)	<u>Raja clavata</u> L. <u>Dasyatis pastinaca</u> L. and <u>Squalus acanthias</u> <u>Mullus barbatus</u> <u>ponticus</u> Essipov <u>Ophidium rochei</u> Muller, <u>Scorpaena porcus</u> L., <u>Platichthys flesus</u> <u>luscus</u> (Pallas) and <u>Solea lascaris nasuta</u>	Kornyushin and Solonchenko (1978)
<u>Christianella minuta</u> (Beneden, 1849) syn. <u>Wageneria porrecta</u> Lühe, 1902	<u>Carcharias</u> sp. and <u>Rhina halavi</u> , India	Yamaguti (1959)

Southwell's diagrams show spiral tentacle sheaths leading into tentacle bulbs 0.63 mm long, over half the length of the scolex. The proglottids number three to six, with the testes being restricted to the pre-ovarian field, and the genital pore appearing in the last quarter of the proglottid. Southwell's description of T. minuta places his specimens in the Eutetrarhynchidae, but probably in the genus Parachristianella.

Nybelin (1940) recorded cestodes from Squatina that he considered identical with Tetrarhynchus minutus van Beneden. This excellent description clearly refers to a poeciloacanthous species, and was discussed under Grillotia smarigora.

Subhadrappa (1955) recorded Christianella minuta van Beneden from Rhinobatus halari (Forsk.) and Trygon imbricata (Bl. Schn.), and gave a description which closely agreed with that of Southwell. The largest tapeworms measured 3.167 mm long, with a scolex 1.117 mm long. The tentacle armature consisted of spiral half turns of 11 hooks, beginning with the largest on the internal side and decreasing in size to the internal surface where the hooks meet to form inverted Vs. The tentacles were illustrated as sinuous rather than spiral, and the tentacle bulbs, 0.53 mm long, occupied just over half the scolex length. The strobila consisting of three to five segments possessed testes arranged in two lateral rows and restricted to the pre-ovarian field. The genital pore was lateral and appeared in the last quarter of the proglottid. These specimens may also be tentatively regarded as Parachristianella specimens rather than Christianella.

Kornyushin and Solonchenko (1978) recorded Christianella minuta (Beneden, 1849) as adults from Raja clavata L., Dasyatis pastinaca L. and Squalus acanthias, and as larvae from Mullus barbatus panticus Essipar, Ophidium cochei Muller, Scorpaena porcus L., Platichthys flesus luscus (Pallas) and Solea lascaris nasuta (Pallas) from the Black Sea, Sea of Azor, Mediterranean and Atlantic Ocean, but only described the adult worm. The total length was up to 6.0 mm, the scolex 0.76-1.1 mm with the tentacle bulbs occupying 0.43-0.65 mm. The tentacle armature consisted of half turns of hooks decreasing in size from the internal face (0.12-0.13 mm high) to a zone of sparsely distributed hooks on the external face 5 μ m high. All the hooks gradually decreased in size with increasing height of the tentacle, to 5 μ m at the tip of the tentacle. Unfortunately the tentacle armature is neither illustrated or designated as poeciloacanth or heteroacanth type. The testes are restricted to the pre-ovarian field, suggesting that this is again a member of the Eutetrarhynchidae, possibly belonging to the genus Parachristianella. Previous records of trypanorhynchs from these elasmobranch hosts include Parachristianella trygonis-brucconis Dollfus, 1946.

I, therefore, conclude from the research described above that Grillotia angeli is a synonym of G. smaris-gora, occurring as an adult in S. squatina and S. californica, and as a plerocercus in mackerel, horse mackerel and red sea bream. The great variation in tentacle armature, depending upon the point on the tentacle at which it is examined, emphasises the necessity of examining specimens with fully everted tentacles.

It is perhaps surprising that no trypanorhynchs resembling Christianella were obtained from Squatina or teleosts, when this genus has been frequently recorded in the northeast Atlantic (Dollfus, 1942). Prevalences of trypanorhynchs are, however, known to vary greatly (pp. 108-110) (MacKenzie and Mehl, 1984) within this area.

- (ii) A Comparison of *Aporhynchus norvegicum* (Olssen, 1866) Nybelin, 1918, a Trypanorhynch Without Tentacles, and *Gilquinia squali* Fabricius, 1797

Introduction

Aporhynchus norvegicus, recorded solely from the smallest of all known sharks, the green-bellied shark, *Etmopterus spinax*, is unique amongst almost 200 species of trypanorhynch in that it does not have four armed eversible tentacles. Together with *Haplobothrium*, a pseudophyllidean which has four hookless tentacles, and is found in the freshwater fish *Amia calva*, *Aporhynchus* was referred to as an aberrant genus of trypanorhynch by Hyman (1951). Historically and more recently controversy has surrounded this tapeworm, usually regarded as belonging to the Gilquiniidae: e.g. Rees (1941b) gave a detailed description of the scolex and observed neither tentacles nor sheaths yet Wardle and McLeod (1952) and Schmidt (1986) refer respectively to "vestigial rhyncheal apparatus" and "tentacle sheaths and bulbs present". My aim, therefore, was to describe and compare this aberrant and little known trypanorhynch with *Gilquinia squali*, a typical member of the Gilquiniidae, and to try and establish where *Aporhynchus* should be placed within a classification of the Trypanorhyncha. The opportunity also arose to observe aspects of the ecology of *Aporhynchus*, and the results are used to comment on trypanorhynchan ecology generally.

Materials and methods

Two samples of *Etmopterus spinax* were taken from the Norwegian Sea

northwest of Tromsø, Norway. The first sample of twelve fish was caught in May 1984, and the spiral valves immediately preserved (as described in Materials and Methods pp. 3-15). One spiral valve was completely sectioned. The second sample, consisting of 72 fish, was refrigerated for 24 hours before examination, when some Aporhynchus were found to have migrated out of the spiral valve, both in an anterior direction into the stomach, and in a posterior direction into the cloaca. The records from these fish were not used in investigating the sites occupied by Aporhynchus. Sixty-two Squalus acanthias (Linnaeus, 1758) caught in the North Sea during May and June 1983 were examined. Specimens of A. norvegicus and G. squali were sectioned transversely and longitudinally while others were prepared for scanning electron microscopy. Measurements are given from ten specimens of each species.

Results

In the first sample (eleven dissected specimens of E. spinax) the prevalence of infection was 72.7%, with a mean intensity of infection of 3.8 worms per infected fish, and a range of 1-6 worms per host. A total of 31 worms was found, of which 9.7% were in the first tier, 12.9% in the second, 3.2% in the third, 29.0% in the fourth, 22.5% in the fifth and 22.5% in the sixth, with none in the more posterior tiers. The second sample had a prevalence of 46% with a mean intensity of infection of 2.17 worms per infected fish, and a range of 1-7 worms. In both samples the stomach contents consisted of remains of the shrimp, Pandalus, sp., and all size classes of sharks examined ranging from 11.0 cm to 60 cm in length were infected.

Gilquinia squali were found in 46.7% of the 62 S. acanthias, with a mean intensity of infection of 1.89 worms per infected fish, and a range of 1-4 worms per host. The 55 worms recovered were distributed 23.6% in the first tier, 26.8% in the second, 21.3% in the third and 18.1% in the fourth, with none in the more posterior tiers. Infected S. acanthias spiral valves recovered from the North Sea in 1981 (National Museum of Wales collection) contained up to 11 G. squali. The stomach contents of the sharks consisted mainly of teleost fish, with some crustacean material. All size classes of shark ranging from 60-90 cm in length were infected.

Taxonomic results

Aporhynchus norvegicus (Olssen, 1866) Nybelin 1918

1. General Appearance

The dorso-ventrally flattened adult worm (Plate 8; Fig. 1) measures 30-40 mm long and consists of a scolex 1.4-1.9 mm long with up to 28 proglottids.

2. Scolex

The scolex (Plate 8; Fig. 2; Plate 9; Fig. 1) has four distinct separated bothridia, two ventral and two dorsal, measuring 0.50-0.61 mm long and 0.34-0.38 mm wide. The ratio pars bothridialis:total scolex length is about 1-1.5:3. The scolex is completely covered with small,

Plate 8: Aporhynchus norvegicus (Olssen, 1866) Nybelin 1918 from
Etmopterus spinax

Fig. 1 Whole adult specimen (scale bar = 1 mm)

Fig. 2 Scolex (Scale bar = 0.25 mm)

Fig. 3 Immature proglottids (scale bar = 0.1 mm)

Fig. 4 Gravid proglottids (scale bar = 1 mm)

Fig. 5A Mature proglottid (scale bar = 0.5 mm)

5B Diagram of female reproductive system

Key to Fig. 5B: o = oviduct; v = vagina; v.d. =
vitelline duct

Fig. 6 Egg (scale bar = 50 μ m)

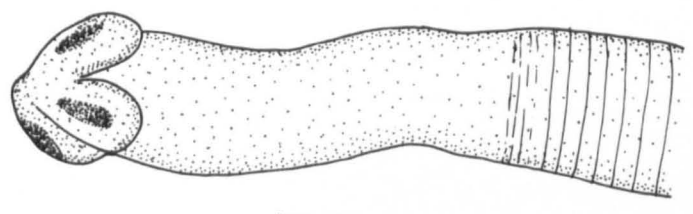
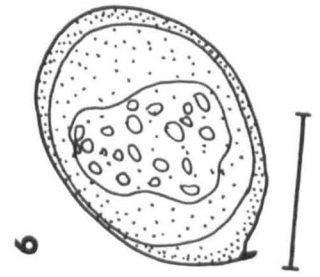
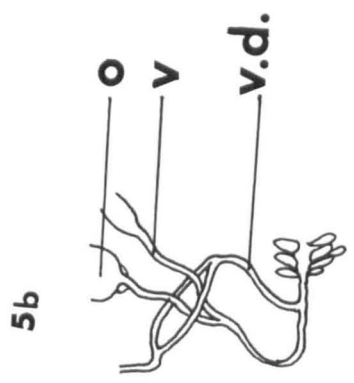
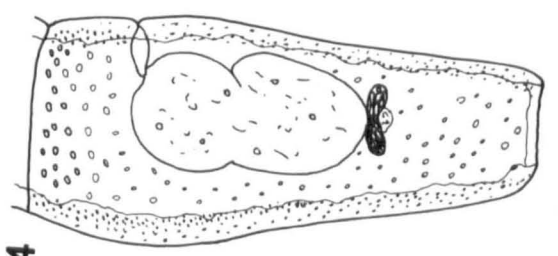
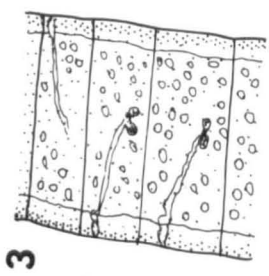
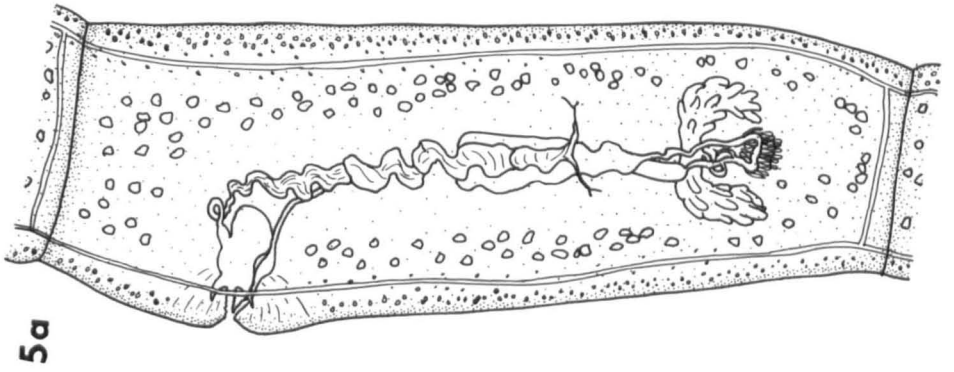
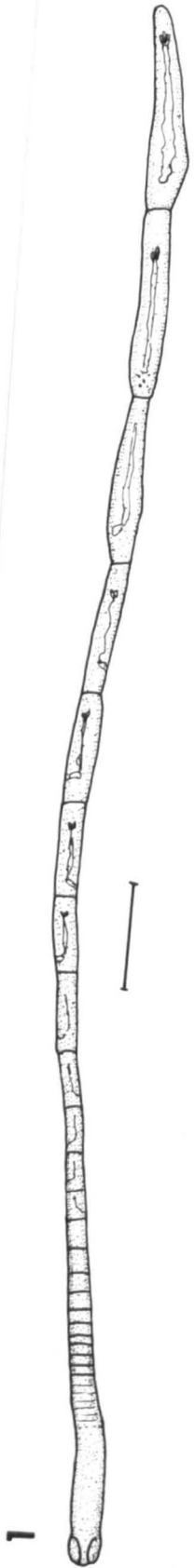
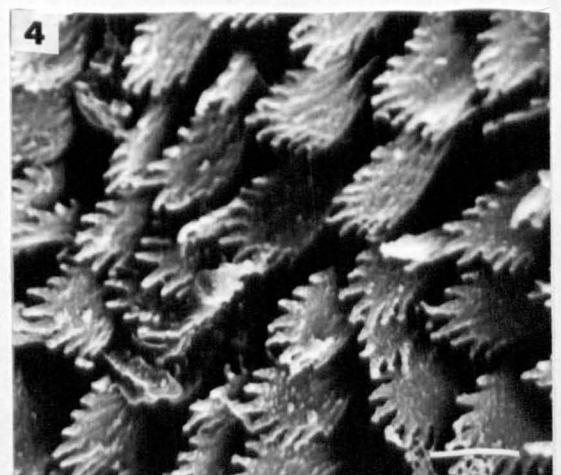
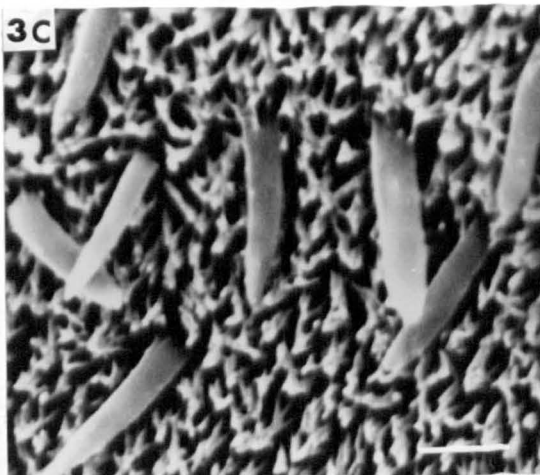
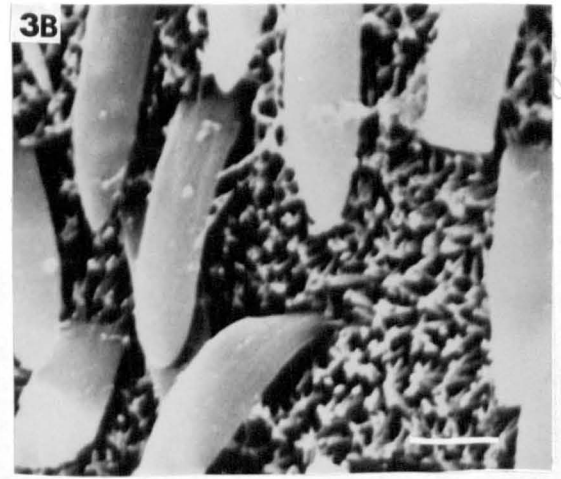
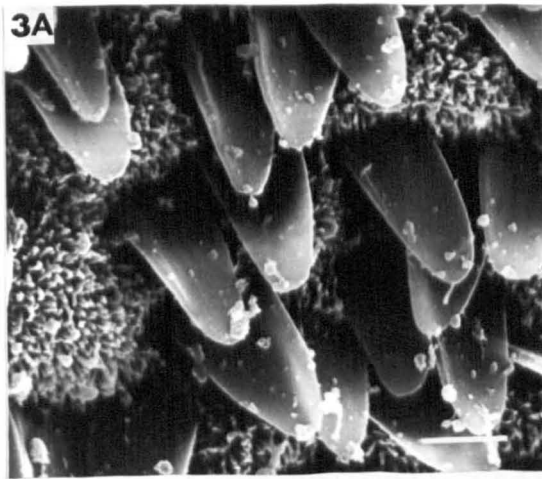
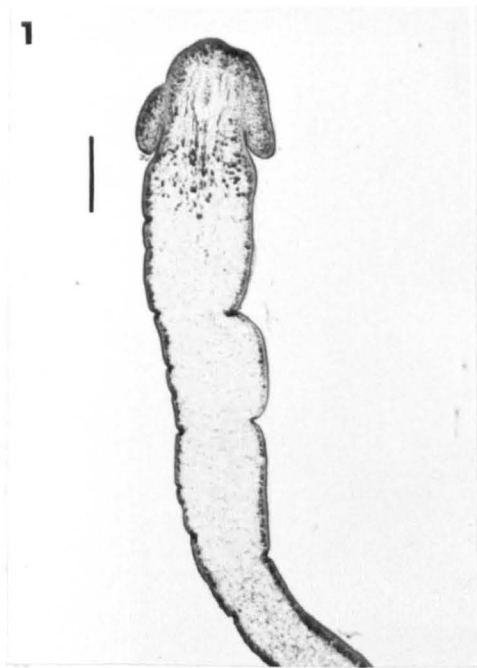


Plate 9: The scoleces of A. norvegicus and G. squali

- Fig. 1 Scolex of A. norvegicus l.s. (scale bar = 0.3 mm)
- Fig. 2 Scolex of G. squali l.s. (scale bar = 0.3 mm)
- Fig. 3 SEM of the scolex of A. norvegicus
- Fig. 3A Bothridia (scale bar = 1 μm)
- Fig. 3B Behind bothridia (scale bar = 2 μm)
- Fig. 3C Base of scolex (scale bar = 2 μm)
- Fig. 4 SEM of the bothridial region of G. squali (scale bar = 2 μm)



backwardly directed spines which are more closely packed and smaller on the bothridia (Plate 9; Fig. 3a). Towards the base of the scolex the spines become sparser, larger and more pointed (Plate 9; Fig. 3b-3c). Interspersed between the spines are small, rod shaped microtriche-like structures (Plate 9; Fig. 3a) similar to those reported from the scolex of Parachristianella monomegacantha (Whittaker et al, 1985). The internal musculature, nervous and excretory systems have been previously described in detail by Rees (1941b). The musculature consists of circular and longitudinal muscle fibres including four bundles of longitudinal muscle fibres which are comparable to those associated with the tentacle apparatus in other trypanorhynchs. The nervous system is made up of four apical ganglia, two lateral nerve cords and anterior and bothridial nerves leading to the anterior portion of the scolex and to the bothridia. The excretory system corresponds to the usual arrangement in trypanorhynchs of a pair of dorsal and a pair of ventral excretory vessels which continue down the strobila. The anatomy of the scolex corresponds closely to that described for Grillotia erinaceus (Johnstone, 1911) and Hepatoxylon trichiuri (Rees, 1941a) except for a reduced longitudinal musculature and the absence of proboscis nerves. A longitudinal section of the scolex (Plate 9; Fig. 1) shows the presence of numerous gland cells at the level of and extending posterior to the bothridia. Ducts run from the gland cells to the apex of the scolex where they open to the exterior.

3. Strobila

Immediately posterior to the scolex is an unsegmented neck

0.78-0.81 mm long (the "Kopfstiel" of Pintner). Rudiments of the male genital system can be seen in proglottids 13-15 (Plate 8; Fig. 3) while mature proglottids appear from about numbers 19-20 onwards. The last one or two proglottids may be gravid (Plate 8; Fig. 4).

The testes number 200-250 and are round, measuring 0.04-0.07 mm in diameter. They occur in two or three dorso-ventral layers, and occupy most of the proglottid, extending to behind the ovary but not occurring outside the longitudinal excretory canals. The vas efferens unite to form the single, much convoluted vas deferens which runs dorsally and anteriorly to the level of the genital atrium. At this point it constricts to form a small, twisted duct which runs over the dorsal surface of the cirrus sac, and dilates to form an external seminal vesicle. This enters the cirrus sac, which, at this point, is expanded to form a large accessory vesicle, frequently found containing sperm. The cirrus is short. The genital atrium is muscular, lateral and irregularly alternating, with papillae surrounding the genital pore.

The vagina opens into the genital atrium ventral to the cirrus and runs laterally towards the mid-line of the proglottid where it descends posteriorly ventral to the uterus and vas deferens. When it reaches the ovary it expands considerably to form the seminal receptacle which then joins with the oviduct. The ovary consists of two wings up to 0.32 mm long connected in the centre by a broad bridge where the oviduct begins with a well developed ovicapt.

The vitellaria (Plate 8; Fig 5a) lie outside the testes, and form a hollow tube interrupted only by the genital atrium and dorsally and

ventrally by the ovary. The vitelline ducts leading from the follicles join to form a single duct which then splits into two. One of the paired ducts runs dorsally and one ventrally to the oviduct and vagina after which the two ducts again join to form one, which opens into the distal oviduct. Mehlis' glands are well developed.

The uterus runs anteriorly, lies between the vagina and vas deferens and extends to near the level of the genital atrium, nearly filling the proglottid when gravid.

When gravid proglottids were placed in fresh seawater streams of eggs (Plate 8; Fig. 6) were released. No uterine opening could be seen before placing the proglottids in seawater, but the tear in the uterine wall always seemed to occur at the ventral surface. Nybelin (1918) suggested that this was a pseudouterine type opening according to the classification proposed by Pintner (1913).

4. Eggs

The oval eggs measured about 100 μm long with a small filament at one end. Dollfus (1942) described the eggs as 150 μm long with a distinct elongated shape, and containing up to six distinct dividing cells. The specimens available to me appeared to be less well developed, and no further development nor tanning occurred when they were kept in seawater for a month.

Taxonomic Description of *Gilquinia squali* Fabricius, 1794 for Comparison with *A. norvegicus*

1. General Appearance

Adult *G. squali* (Plate 10; Fig. 1) measure up to 65 mm in length, consisting of a scolex 2.1-2.25 mm long and 0.75-0.85 mm wide , and a strobila of up to 60 proglottids.

2. Scolex

The scolex (Plate 9; Fig. 2; Plate 10; Fig. 2) consists of a pars bothridialis 0.34-0.40 mm long, pars vaginalis 1.41-1.55 mm long and pars bulbosa 0.41-0.46 mm with a small pars post-bulbosa of 0.05-0.10 mm. The four bothridia are distinct and kidney shaped with the proboscides opening on their anterior margin. The proboscides are up to 1.6 mm long, and their armature is typically heteroacanthous (Plate 1; Figs 1-2) with a repeating pattern of two half-turns of six hooks of varying shapes and sizes. The tentacle sheaths are highly twisted, and the tentacle bulbs small and wide. SEM studies show that the bothridia possess numerous flat, palmate structures (Plate 10; Fig. 4) 2.0-2.5 mm long by 1.5-2.0 μ m wide on their adhering surfaces. Similar structures have been reported on the bothridia of *Grillotia dollfusi* (Whittaker, Carvajal and Apkarian, 1982), *Otobothrium kurisi* (Shields, 1985) and *Parachristianella monomegacantha* (Whittaker et al, 1985) usually with smaller, microtriche-like structures similar to those illustrated for *Aporhynchus norvegicus* (Plate 10; Fig. 3A) obscured beneath the larger, palmate processes. The scolex musculature and nervous and excretory

Plate 10: Gilquinia squali Fabricius, 1794 from Squalus acanthias.

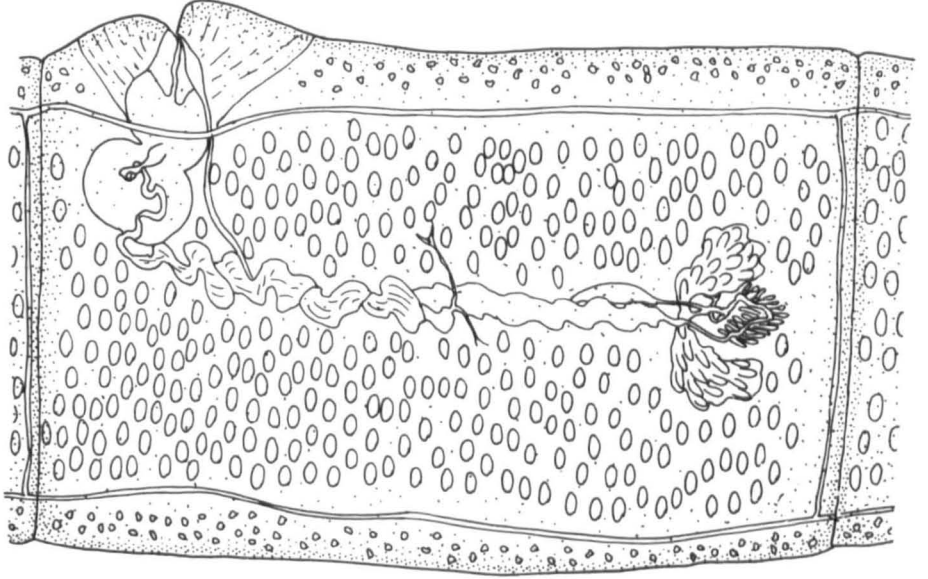
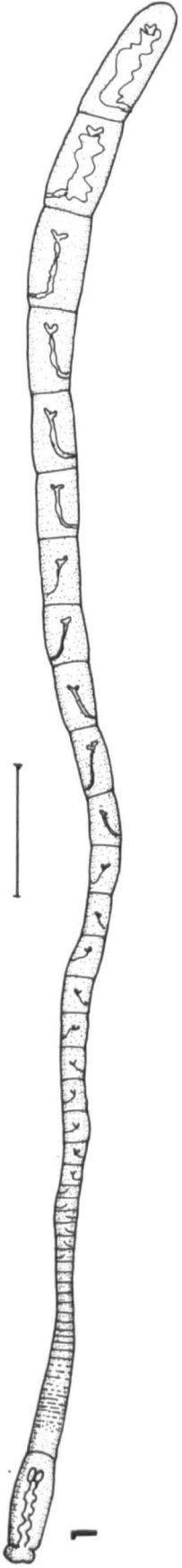
Fig. 1 Whole adult specimen (scale bar = 2.5 mm)

Fig. 2 Scolex (scale bar = 0.75 mm)

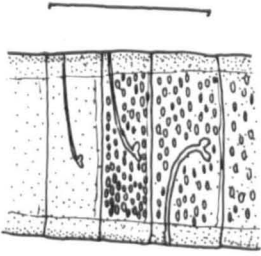
Fig. 3 Immature proglottids (scale bar = 0.75 mm)

Fig. 4 Gravid proglottids (scale bar = 2 mm)

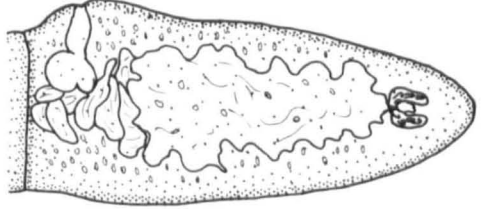
Fig. 5 Mature proglottid (scale bar = 0.2 mm)



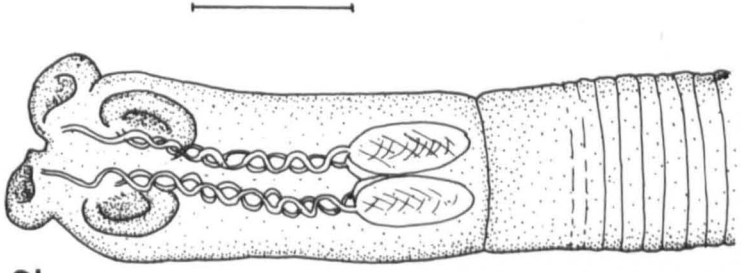
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systems of G. squali were described by MacKenzie (1965) for the plerocercus stage from whiting. The description agreed well with those given by Lönnberg (1889) and Zerny (1912) for adult specimens and is characteristic of trypanorhynchs. The musculature consists of the retractor muscle of the proboscis and the muscle of the bulb wall in addition to the longitudinal and circular muscle fibres described for A. norvegicus.

3. Strobila

The unsegmented portion of the strobila in G. squali measures about 0.7-0.9 mm between the pars post-bulbosa and the beginning of the zone of proliferation. The most anterior proglottids are 5-6 times as wide as long, rapidly increasing in length along the strobila. The male reproductive system begins to appear at proglottids 18-20 (Plate 10; Fig. 3), mature male and female systems are present in proglottids 27-29 onwards (Plate 10; Fig. 5) and the last 1-3 proglottids are gravid and measure up to 2.5 cm long (Plate 10; Fig. 4).

The testes number 295-320 and are ovoid, measuring 0.18-0.21 mm by 0.04-0.06 mm, and are distributed throughout the proglottid, extending beyond the ovary but within the well defined lateral excretory canals. The vas deferens is highly convoluted and runs dorsally up the centre of the anterior half of the proglottid until it reaches the level of the genital atrium. It then becomes constricted to a small duct which dilates forming a small, muscular seminal vesicle which enters the cirrus sac, which possesses a large contractile accessory vesicle (Cirromotionsblase of Zerny) and a short, unarmed cirrus. The genital

atrium is muscular with a series of papillae surrounding the genital pore on its external face, and irregularly alternating. It always occurs in the first quarter of the proglottid.

The vagina opens ventral to the cirrus, and runs posteriorly down the mid-line of the proglottid. Anterior to the ovary it expands, forming a seminal receptacle which crosses the ovarian bridge dorsally and joins the oviduct. The oviduct emerges from the two-winged ovary via an ovicapt. The vitelline follicles are linked by vitelline ducts which join to produce one unpaired vitelline duct which joins the oviduct posterior to the vagina: the vitellaria are distributed as a hollow tube around the proglottid, with gaps appearing around the genital atrium and dorsally and ventrally to the ovary. The Mehlis' gland is well developed. The uterine duct is sinuous and crosses the ovarian bridge and seminal receptacle dorsally, after which it increases in diameter and continues as a thin-walled tube.

The eggs, which measure 67-70 μm by 49-54 μm , were released rapidly when the gravid proglottids were placed in fresh seawater. They tanned in about an hour, but no developmental studies were carried out. No trace of a proformed uterine opening could be found before placing the cestodes in seawater.

Discussion

An examination of the strobila of A. norvegicus clearly classifies it as a trypanorhynch, with the characteristic sleeve-like distribution of the vitellaria, the position of the vagina ventral to the uterus and

vas deferens, and the vaginal opening slightly behind the cirrus opening, surrounded by a genital atrium which is strongly muscular. A comparison between A. norvegicus and G. squali shows a number of further similarities which may be used to distinguish the family Gilquiniidae from other trypanorhynchs: the testes extend beyond the ovary and are distributed in two or three layers; there are both an external seminal vesicle and a well developed accessory vesicle; the ovary is biwinged and the uterus is comparatively short, reaching only to the level of the genital pore. The differences between these two species appear minor with slight differences in the number and size of the testes and proglottids, and the vitelline duct of A. norvegicus splitting into two and running either side of the oviduct and vagina. This feature has not been reported for any other species of trypanorhynch. It is in the scoleces of these species that the most important differences are apparent. Both A. norvegicus and G. squali possess four well developed mobile bothridia, but Aporhynchus appears unique in having lost tentacles, sheaths and bulbs, with only weakly developed longitudinal muscle fibres remaining of the rhynceal apparatus. The well developed gland cells are also atypical.

Nybelin (1918) suggested that the reason for the tentacle reduction in A. norvegicus could be linked to the host's diet. Etmopterus spinax, the sole recorded host, feeds almost entirely on shrimps. Nybelin considered that this diet would result in far softer spiral valve contents, which would not be able to dislodge the parasites. In contrast the varied diet of other sharks would produce large quantities of hard skeletal material in the spiral valve, so more

Plate 11: The spiral valve of E. spinax

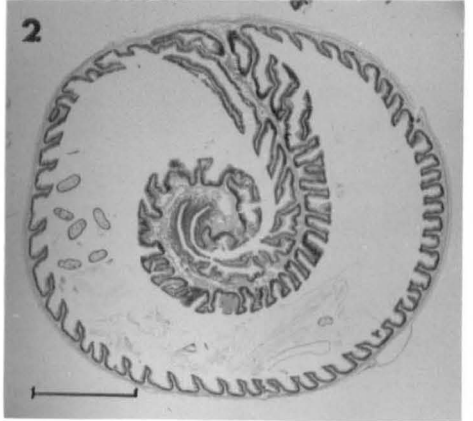
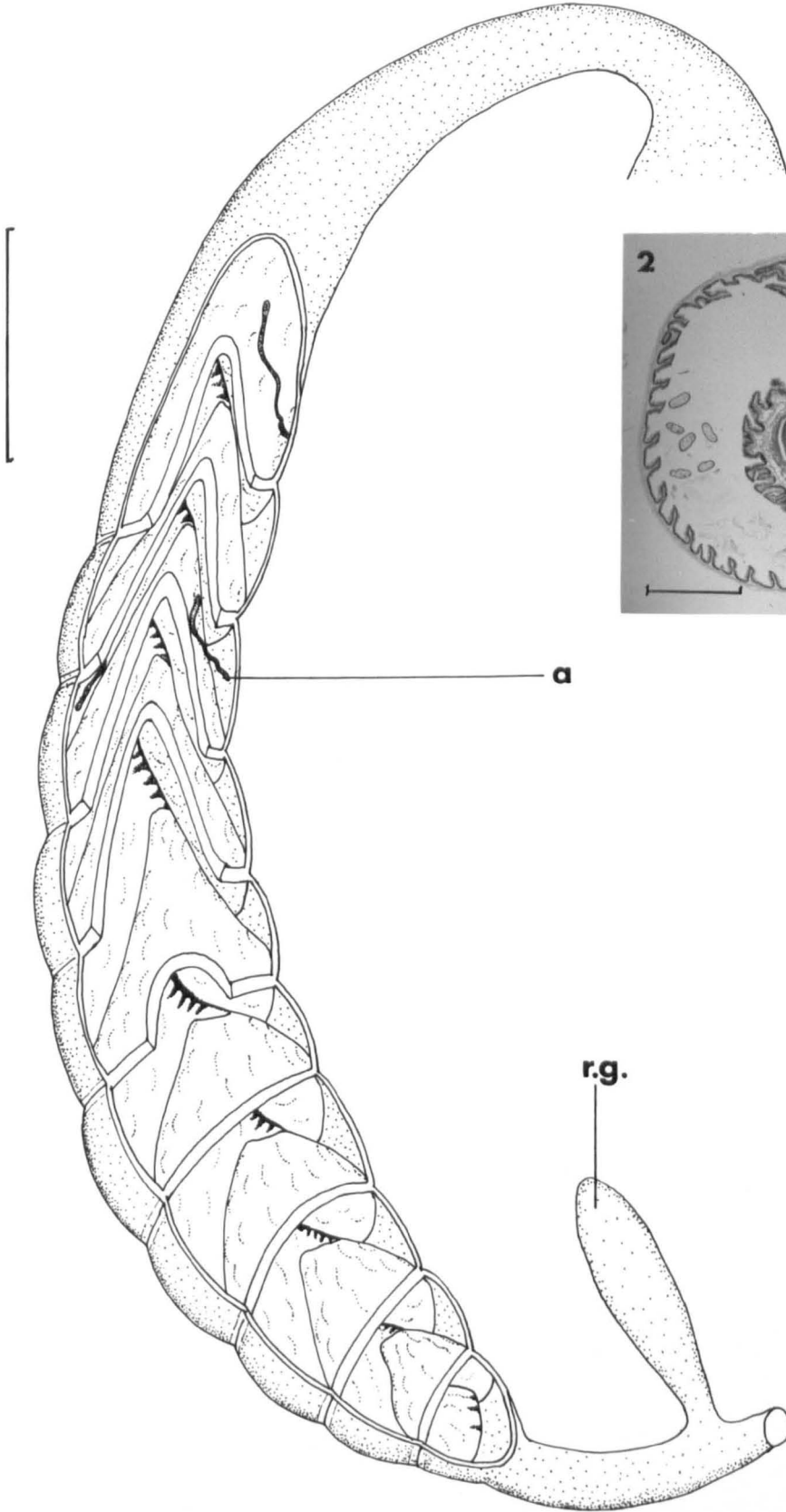
Fig. 1 Diagram of spiral valve (scale bar = 15 mm)

Key to Fig. 1. a = attached Aporhynchus;

 r.g. = rectal gland

Fig. 2 Spiral valve t.s. (scale bar = 2.5 mm)

1



2

r.g.

efficient attachment organs would be necessary. When, however, the wide range of elasmobranch hosts is considered, several other species feed almost exclusively on shrimp. Dasybatis sabina LeSueur recorded by Aldrich (1964) as the definitive host for Prochristianella hispida also feeds on large numbers of shrimp, yet the trypanorhynch has well developed tentacles.

Gilquinia squali has been recorded from a variety of hosts, including Squalus ferdinandus, S. sucklei, Raja binoculata, Centroscyllium granulatus and Mustelus vulgaris, but has been most frequently recorded from the cosmopolitan host Squalus acanthias. In this host G. squali occupies only the anterior portion of the spiral valve, as A. norvegicus does in E. spinax (Plate 11; Fig. 1). When the sites of the two cestodes are compared, however, several striking differences are apparent. In E. spinax the outer wall of the spiral valve is thin (Plate 11; Figs. 2-3) and the scolex of A. norvegicus fits tightly in between the ridges of the mucosa, up to the posterior border of the bothridia. In contrast the mucosal surface of the spiral valve in S. acanthias is comparatively flat and uneven (Williams, 1968) with "threadlike, short and collapsible villi" providing a far less secure surface for bothridial attachment. Williams (1968) suggested that in the Tetrphyllidea the comparatively larger and leaflike bothridia of Crossobothrium (? Phyllobothrium sp.) found in S. acanthias compared to the smaller scolex and bothridia of Crossobothrium (? Phyllobothrium sp.) found in E. spinax could be related to these differences in the surface morphology of the spiral valve.

It is possible that the gland cells which empty their contents out of the apex of the scolex in A. norvegicus could have some adhesive function, while the backwardly directed spines on the exterior of the scolex might also increase the strength of attachment of this unusual trypanorhynch.

Aporhynchus does not appear to be an aberrant genus to the same extent as Haplobothrium, which is the solitary genus in the family Haplobothriidae (Schmidt, 1986). The shared characteristics between A. norvegicus and G. squali (pp. 52-61) clearly indicate that they belong to the same family. As I have previously stated (Smith, 1985), there is known to be a high degree of specificity among elasmobranch tapeworms, with related species being found in related hosts. If this should be the case for the Trypanorhyncha then studies on the parasite fauna of other squaloid sharks might result in the discovery of other species of Aporhynchus. Compagno (1984) listed 17 species of Etmopterus, yet trypanorhynchs have been recorded only from E. spinax. Investigations into the spiral valve morphology and parasite fauna of the other species could indicate possible reasons why Aporhynchus is a trypanorhynch without tentacles.

A Redescription of Parachristianella monomegacantha Kruse, 1959 from a New Host and Locality

Introduction

Spiral valves and stomachs of Raja hollandi Jordan and Richardson were kindly collected for me by Dr. P.G. Oliver of the National Museum of Wales during a visit to the South China Sea. All the specimens were found to contain cestodes which resembled the species Parachristianella monomegacantha, never before reported from this area or host. My aim was to describe these specimens, identify them, and review the known geographic and host distribution of this species.

Materials and Methods (see pp. 3-15)

Seven spiral valves of Raja hollandi were opened and examined for parasites. One spiral valve was sectioned from the first to the third tier.

All eight spiral valves were infected, containing between 21 and 47 adult trypanorhynch with an average intensity of infection of 23.2 (range and intensity based on the seven dissected spiral valves). No trypanorhynch were found in the stomachs, which contained remnants of various invertebrates including shrimps.

Previous recordsPlerocercus

Kruse (1959) described plerocerci of P. monomegacantha from the digestive gland of Penaeus duorarum Burkenroad from the northern Gulf Coast of Florida, giving a detailed description of the tentacle armature, and Feigenbaum (1975) reported this species from the hepatopancreas of Penaeus brasiliensis Latreille from Sinaloa, Mexico. Feigenbaum and Carnuccio (1976) recorded high prevalences of infection of P. monomegacantha in P. duorarum (91-96%) and P. brasiliensis (100%) from Biscayne Bay, Florida, and identified trypanorhynch reported as Prochristianella sp. from P. duorarum, Biscayne Bay by Villella, Iversen and Sindermann (1970) as specimens of Parachristianella monomegacantha. Penaeus aztecus in the northwestern Gulf coast of Mexico was reported by Corkern (1978) as being parasitized by this trypanorhynch. Owens (1980, 1981) found during field studies in the Norman River, Queensland, Australia that juvenile Penaeus merguensis de Man with a carapace length of under 13 mm were uninfected with trypanorhynchs, but that P. monomegacantha infections were observed at 13 mm carapace length, and their prevalence increased with the size of the shrimp. Mudry and Dailey (1971) managed to experimentally infect the splash-pool copepod Tigriopus californicus with eggs of P. monomegacantha, but this is not regarded as a natural host for this parasite (pp. 75-87 this thesis).

Adult

The first recorded adult specimens of P. monomegacantha were those recovered by Mudry and Dailey (1971) from the spiral valve of Rhinobatos productus (Ayres) caught at Seal Beach, California. No description of the adult worms was given. Heinz and Dailey (1974) also reported adult specimens in the same host species in south California, and again gave no description. Campbell and Carvajal (1975) found adult P. monomegacantha in the spiral valve of Dasyatis americana Hildebrand and Schroeder, Chesapeake Bay, Virginia. The adult tentacle armature was described as being similar to that given by Kruse (1959) for the plerocercus. No information was given about the structure of the proglottids, except that the terminal proglottid of one specimen "measures 0.57-1.49 mm by 130 to 180 μ and contains 75 to 80 testes forming two longitudinal rows." Dailey and Carvajal (1976) recorded adult P. monomegacantha from the spiral valve and stomach of Rhinobatos planiceps Garman, 1880 from Antofagaster, Chile, and Carvajal, Campbell and Cornford (1976) found adult specimens in the spiral valve of Dasyatis lata (Garman) in Hawaii. Whittaker, Apkarian, Curless and Carvajal (1985) studied the microtopography of P. monomegacantha scoleces found in Dasyatis americana at Palm Beach, Florida. No detailed description of the adult trypanorhynch has yet been published.

Description (Measurements based on ten specimens)

The adult worm (Plate 12; Fig. 1) varies in length from 1.35 mm for specimens with one or two developing proglottids to 4.5 mm for

those with five proglottids and is anapolytic and acraspedote. The scolex is 0.89-1.16 μm long and has two bothridia. The pars bothridialis measures 150-190 μm long and 0.22-0.37 μm wide, the pars vaginalis 280-510 μm depending upon state of contraction, and the pars bulbosa 445-575 μm . There is a small pars post-bulbosa measuring 10-15 μm .

The tentacle sheaths are convoluted. The retractor muscles are attached to the bottom of the tentacle bulbs, where they may be obscured by a mass of red granules.

The metabasal tentacle armature (Plate 13: Figs. 1-4) consists of a repeating pattern of oblique ascending half-turn spiral rows of 11-14 hooks. The rows begin on the internal surface of the tentacle (Plate 13; Fig. 1) with large (19-24.2 μm long, base 13.2-17.1 μm) broad recurved hooks 1 and 1'. The hooks spiralling around the tentacle are long and slender and gradually diminish in size as they cross over to the external side of the tentacle (Plate 13; Fig. 2) where they are spinous and measure about 2.5 μm long. Tentacle rows which have crossed alternately over the bothridial and antibothridial sides (Plate 13; Figs. 3-4) meet on the external face in an inverted V. A similar arrangement of hooks occurs throughout the tentacle length although hooks are less numerous, smaller and closer together at the tip of the tentacle (Plate 14; Fig. 2) and more numerous, larger and further apart towards the tentacle base (Plate 14; Fig. 1).

The proglottids contain up to 82 testes arranged in two

Plate 12: Parachristianella monomegacantha Kruse, 1959 from
Raja hollandi Jordan and Richardson

Fig. 1 Adult specimen of P. monomegacantha
(scale bar = 0.25 mm)

Fig. 2 Mature proglottid (scale bar = 0.2 mm)

Key to Plate 12: g.p. = genital pore; o = ovary

r.g. = red granules; t = testis; u = uterus;

v. = vitellaria

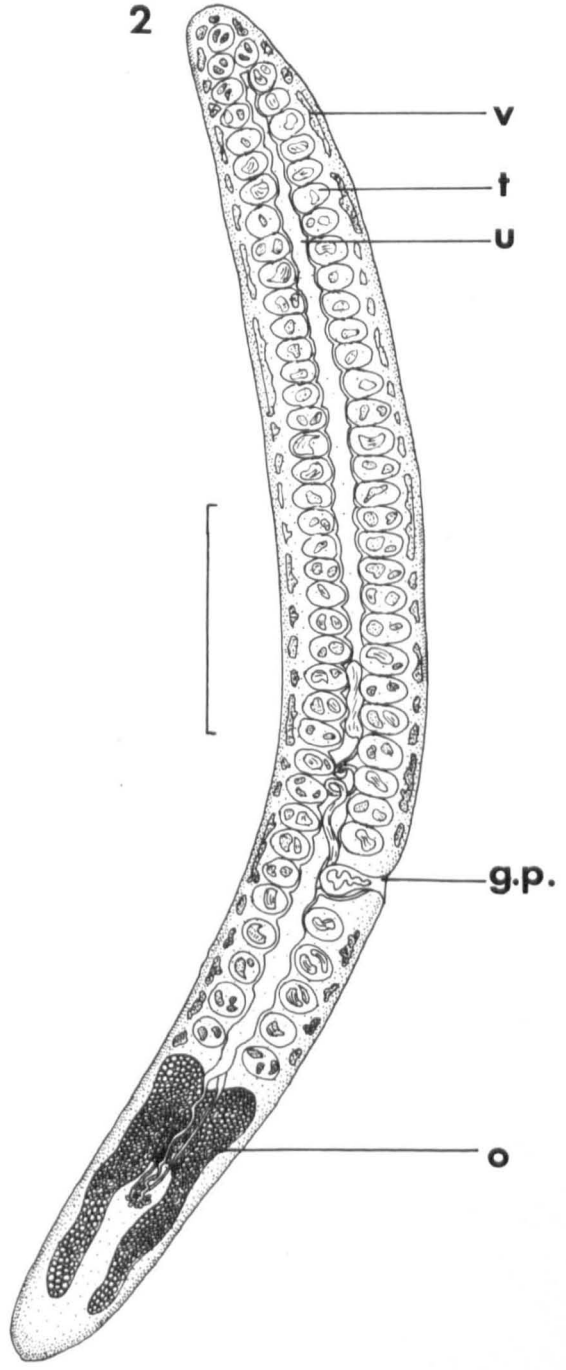
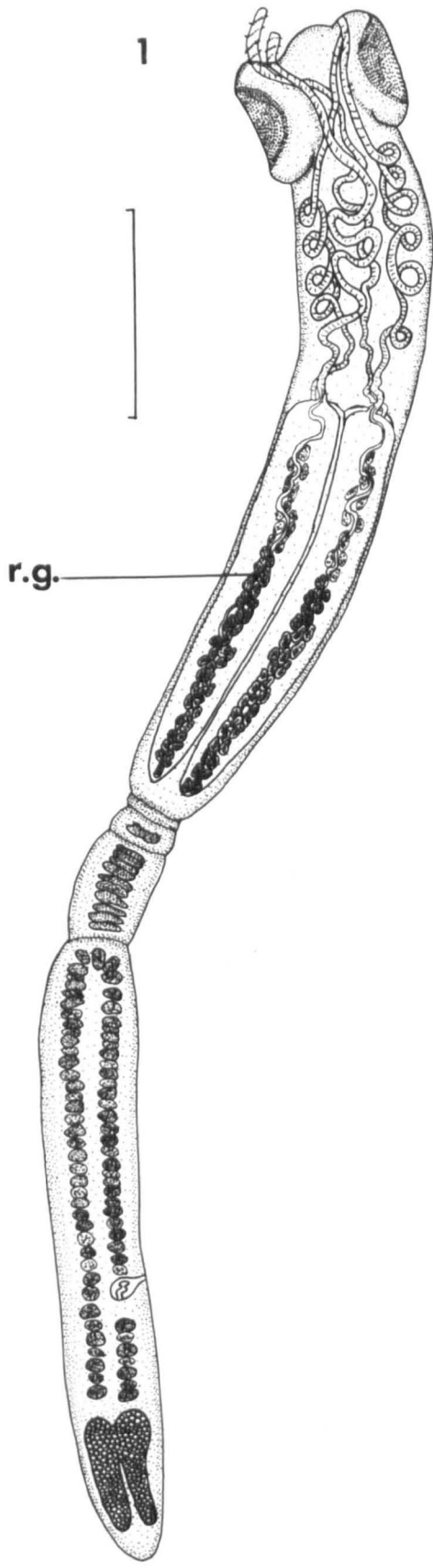


Plate 13: The metabasal tentacle armature of P. monomegacantha

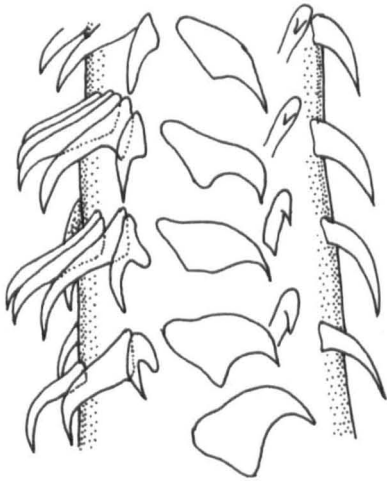
Fig. 1 Internal face

Fig. 2 External face

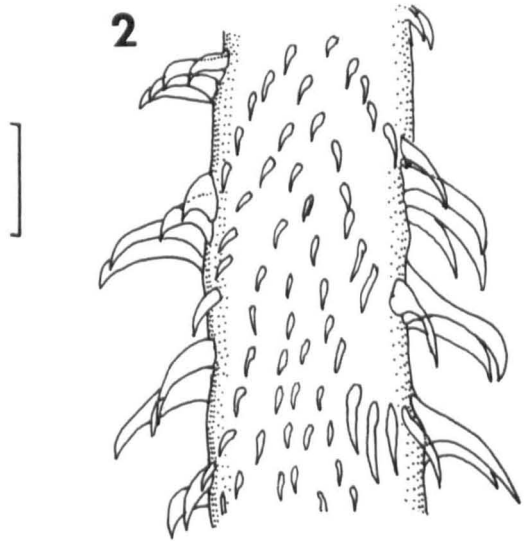
Fig. 3 Bothridial face

Fig. 4 Antibothridial face (scale bar Figs. 1-4 =
10 μm)

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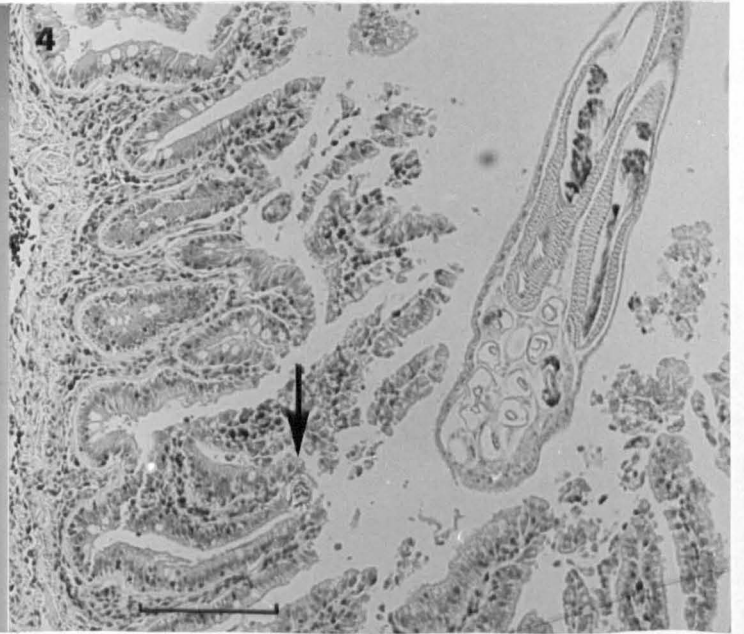
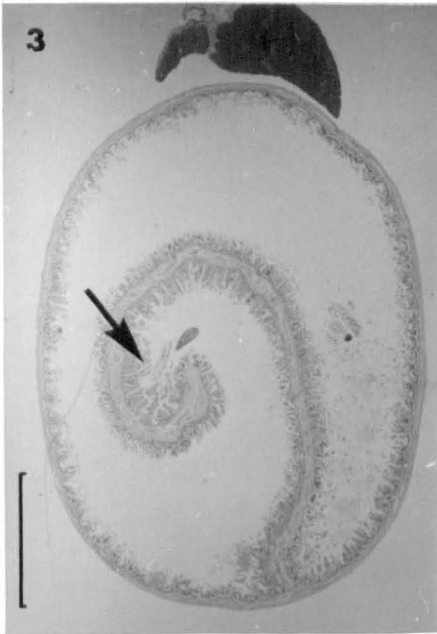
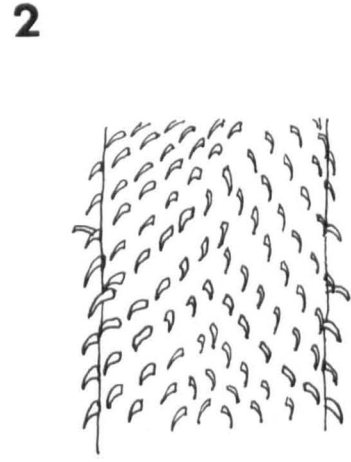


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Plate 14: The tentacle armature of P. monomegacantha, and its attachment within the spiral valve of R. hollandi

- Fig. 1 P. monomegacantha metabasal armature (scale bar = 10 μm)
- Fig. 2 P. monomegacantha tip of tentacle armature (scale bar = 10 μm)
- Fig. 3 Spiral valve of R. hollandi t.s. (scale bar = 0.25 mm)
- Fig. 4 Enlargement of arrowed region in Fig. 3 (scale bar = 0.2 mm)



longitudinal rows extending from the ovary to the anterior end of the segment. Eight to ten of these testes occur between the genital atrium and the ovary. The genital atrium is not surrounded by a large, muscular area, and is marginal, post-equatorial and irregularly alternating. The ovary is four-winged with a central isthmus, the ovarian lobes surrounding the Mehlis' gland vitelline ducts and oviduct. The uterus extends almost the full length of the segment.

Distribution Within the Spiral Valve of *R. hollandi*

The spiral valve of *R. hollandi* consists of seven tiers. The majority of attached trypanorhynchs were found in the first four tiers: 37.7% in tier one; 33.3% in tier two; 17.4% in tier three and 11.6% in tier four. Forty-two per cent of the total number of trypanorhynchs found were unattached. Sections of the spiral valve (Plate 14; Fig. 3) showed densely packed, finger-like villi on the anterior and posterior faces of the tiers, with shallower villi on the outer wall. The trypanorhynchs were found on the anterior and posterior faces and the outer wall of the spiral valve, where they were attached by their extended tentacles (Plate 14, Fig. 4). Gravid proglottids were found towards the anterior end of the spiral valve.

Discussion

The description of the heteroacanthous trypanorhynchs from *R. hollandi* corresponds well with that given by Kruse (1959) for the plerocercus, and Campbell and Carvajal (1975) for the adults of the

species Parachristianella monomegacantha. This record extends the known distribution of this cestode to the South China Sea, and to a new family, the Rajiidae. Little is known about the ecology, diets, or mucosal topography of the spiral valves of the elasmobranchs Rhinobatos productus, R. planiceps, Dasyatis americana and D. lata, previously reported as definitive hosts for this species, but penaeid shrimp infected with P. monomegacantha plerocerci have been caught within the distribution areas of these hosts. Shrimp remains were found within the stomach contents of Raja hollandi, indicating that they might also be the intermediate host for P. monomegacantha in the South China Sea. The distribution of the parasite may reflect similarities in the diets and ecology of these geographically widely separated elasmobranch species. Close comparisons of the hosts' morphology, with, perhaps, the biochemical examination of parasite specimens from different host species might provide explanations for the unusual geographic distribution of this parasite.

SECTION THREE

LIFE CYCLE STUDIES ON GRILLOTIA ERINACEUS (VAN BENEDEN, 1858)

Life Cycle Studies on Grillotia erinaceus (van Beneden), 1858

Introduction

Many descriptions and records exist of almost 200 species of adult trypanorhynchs from elasmobranchs, and of larval stages from teleost fish (Dollfus, 1942; Yamaguti, 1959; Love and Moser, 1983; Bates, in press). Comparatively few records of the early developmental stages from egg to early plerocercoid exist, however, and life cycle studies have been reported from only six species, with no complete life cycle from egg to mature adult having been accomplished in the laboratory. The scarcity of these studies encouraged me to investigate the life cycles of the trypanorhynchs available to me during a five-week visit to the University of New Brunswick in June-July 1984.

Background

Ruszkowski (1932, 1934) carried out the first reported studies on the development of a trypanorhynch, Grillotia erinaceus (van Beneden, 1858). Adult worms obtained from Raia oxyrhynchus Linnaeus, 1758, in Norway released eggs when placed in seawater. Coracidia escaped from the operculate eggs after eight days, and were eaten by four species of copepod, Acartia longiremis, Lilljeborg, Pseudocalanus elongatus Boeck, Paracalanus parvus, Claus and Temora longicornis Müller. He observed development of the proceroid within the copepods over 11 days, but observed that "Le manque de temps et les autres circonstances ne m'ont pas permis d'étudier plus en détail la structure des oeufs et des

larves de G. erinaceus". The most advanced proceroid described and figured by Ruzkowski had greatly enlarged in size from the oncosphere released from the coracidium, but showed little internal differentiation. Riser (1951, 1956) described the operculate egg, coracidium, oncosphere and proceroid of Lacistorhynchus tenuis (van Beneden, 1858) and infection of a splash-pool copepod Tigriopus fulvus (Fisher). Riser commented that this species could not be a natural intermediate host because when infected copepods were fed to known second intermediate hosts Clevelandia ios (Jordan and Gilbert), no break or tear occurred in the exoskeleton, and the infected copepods were shed, intact, in the faeces. The most advanced proceroid (26 days p.i.) possessed excretory vessels and a zone of invagination had appeared at the anterior end of the worm, corresponding to the invaginated scolex of plerocercoids.

Voge and Edmonds (1969) observed the effects of varying dilutions of seawater on the hatching of L. tenuis coracidia in vitro. Hatching appeared to consist of two processes: first the coracidium stopped moving, and the cilia became immobilised; secondly the oncosphere became very active, causing the coracidial membrane to break in the region of the embryonic hooks and the emergence of the oncosphere. Mudry and Dailey (1971) also investigated the development of L. tenuis, and described the formation of an apical sucker in Tigriopus californicus. Stunkard (1981) successfully infected Acartia tonsa Dana, 1849, with this species. Sakanari and Moser (1985a) observed the effects of salinity and temperature on the eggs, coracidia and proceroids of L. tenuis, again in T. californicus. Eggs were not

viable at low salinities (8.5 and 17.0 parts per thousand salinity), while coracidial and proceroid development and survivorship times were reduced at higher temperatures. In further experiments (Sakanari and Moser 1985b) copepods harbouring proceroids were fed to mosquito fish Gambusia affinis, and plerocercoids with active bothridia and protrusible tentacles were recovered twelve weeks later. Sticklebacks, Gasterosteus aculeatus Linnaeus, 1758 and striped bass, Morone saxatilis (Walbaum, 1792) were also infected. Naive leopard sharks Triakis semifasciata Girard were force-fed experimentally infected mosquito fish and naturally infected white croaker, Genyonemus lineatus Ayres, 1855, and immature adults of L. tenuis were recovered after four months. Young (1954) had previously injected T. semifasciata with infected Cymatogaster aggregata Gibbons and recovered immature adults after four to six weeks.

Coracidia of Callotetrarhynchus nipponica Nakajima and Egusa, 1973, were released from operculate eggs recovered from infected Triakis scyllia (Müller and Henle) in Japan, and described by Nakajima and Egusa (1972d). Surveys of over 10,000 invertebrate specimens failed to identify any naturally infected species (Nakajima and Egusa, 1972e) while attempts to infect ten species of copepod were unsuccessful. Nakajima and Egusa (1969a, 1969b) described what appeared to be early pre-plerocercoids of C. nipponica from anchovy Engraulis japonica Houttuyn which, when force-fed to yellowtail Seriola quinqueradiata Temminck and Schlegel, developed into plerocercoids. Triakis scyllia fed infected yellowtail were found to contain mature adults (Nakajima and Egusa 1972; 1972b) after 15 days, with gravid

proglottids produced after 40 days. Nakajima and Egusa (1972c) observed that immature proglottids became detached from adult worms which had established themselves around the middle portion of the spiral valve. The proglottids then migrated towards the anterior end of the spiral valve where they matured, and then passed towards the posterior end where they were expelled from the anus, ejecting eggs on contact with seawater.

Overstreet (1978) reported that operculate eggs of Poecilancistrum caryophyllum (Diesing, 1850) from adults in carcharhinid sharks produced coracidia which could infect T. californicus, where they developed into procercoids.

Mudry and Dailey (1971) investigated the development of Parachristianella monomegacantha Kruse, 1959 found in Rhinobatos productus (Ayres). No free-swimming coracidial stage was found in this species, instead the egg, containing a well-developed oncosphere was infective to T. californicus. Development within the copepod resulted in a metacestode which contained rudimentary tentacles with spine-like hooks which had not yet formed the characteristic shapes found in plerocercoids and adults of this species.

Overstreet (1978) reported that Prochristianella hispidia (Linton, 1890) Campbell and Carvajal, 1975 from Dasyatis sabina and Dasyatis sayi shed eggs with long filaments which became directly infective to copepods. Procercoids containing the beginnings of tentacles were found in both copepods and penaeid shrimps. The metacestodes were

larger in shrimps and there appeared to be less of a host response against the parasite. It is not known whether the shrimp became infected by eating eggs or infected copepods.

Materials and Methods

Ten Raja ocellata (Mitchill), 46 R. erinacea Mitchill, 1825 and 10 R. radiata Donovan, 1806 were trawled in Passamaquoddy Bay, New Brunswick, Canada, and examined for trypanorhynchs. Three R. ocellata and six R. erinacea were found to be infected with Grillotia erinaceus (van Beneden, 1858). Each trypanorhynch was carefully removed from the spiral valve and placed in fresh seawater where eggs were released from gravid proglottids.

The eggs were maintained in seawater at 4°C and between 10-16°C and their development observed. When coracidia were released from the operculate eggs they were presented to a variety of invertebrate fauna from Passamaquoddy Bay including annelids, shrimps and both shallow water and planktonic copepods.

Infected copepods were then exposed to small fish from Passamaquoddy Bay. Drawings were made from photographs.

Results

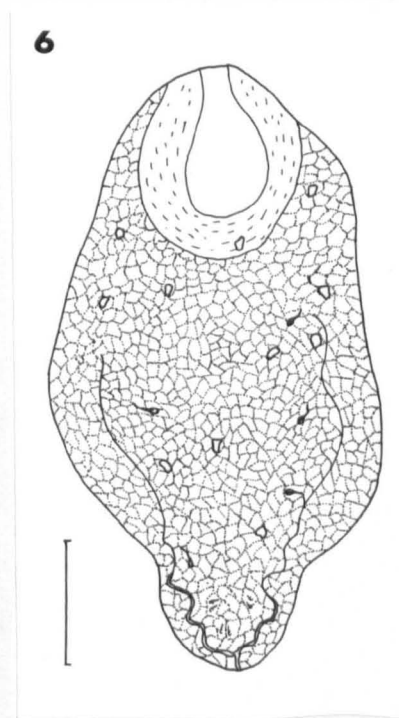
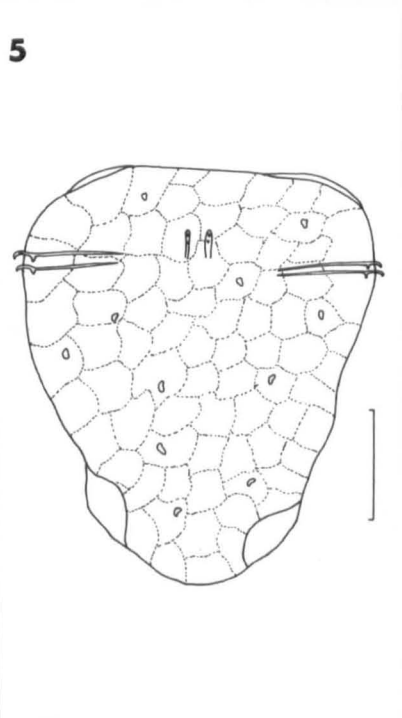
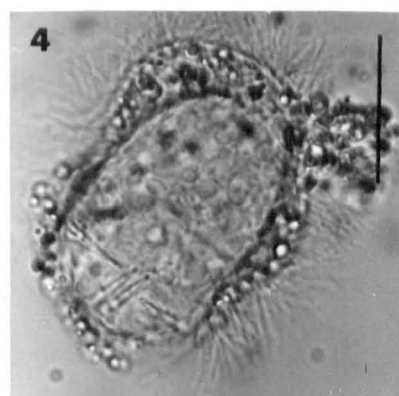
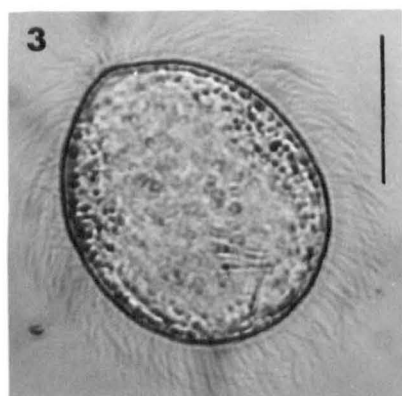
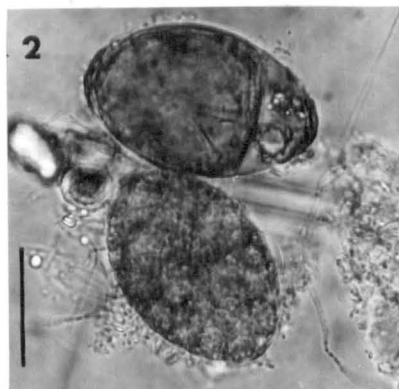
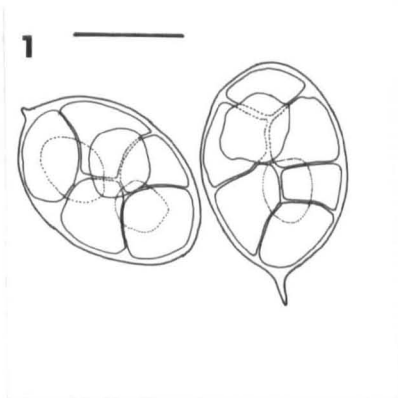
Eggs

The oval, white eggs were laid while segmenting with eight dividing cells being visible. Tanning of the eggs took about an hour in 100% seawater. G. erinaceus eggs from R. ocellata (measured from 20 specimens) were 45-52 μm long by 26-38 μm greatest width, while those from R. erinaceus were 50-67 μm long by 31-37 μm greatest width. No differences were observed in the appearance and subsequent development of the eggs from the two hosts. No operculum was visible in freshly released eggs, but a short filament 4-10 μm long was found at one end of the egg (Plate 15; Fig. 1). Occasionally eggs would cluster together, adhering to each other by their filaments.

Two days after release of the eggs their internal structure consisted of a mass of dividing cells. No further development was observed until four to five days after release when larval hooks 9-12 μm long were visible. After some four to six days some eggs remained in the dividing cell stage (Plate 15; Fig. 1), but most eggs contained actively moving coracidia occupying approximately two thirds of the egg volume (Plate 15; Fig. 2). Groups of exhausted vitelline cells could be seen outside the coracidium. No operculum was visible.

Plate 15: Development of Grillotia erinaceus (van Beneden, 1858)
eggs, coracidia and proceroids

- Fig. 1 Freshly released eggs (scale bar = 25 μm)
- Fig. 2 Egg containing dividing cells (scale bar
= 25 μm)
- Fig. 3 Ciliated coracidium (scale bar = 20 μm)
- Fig. 4 Oncosphere beginning to emerge through the
coradicial membrane (scale bar = 20 μm)
- Fig. 5 Newly emerged oncosphere in Tortanus
discaudatus (scale bar = 10 μm)
- Fig. 6 Proceroid in T. discaudatus 20 days p.i.
(scale bar = 50 μm)



Coracidia

After six to eight days at 10-16°C and ten days at 4°C coracidia were released from the operculate egg. At rest the coracidia (Plate 15; Fig. 3) appeared spherical, measuring 38-41 μm in diameter excluding the cilia; when moving they appeared slightly ovoid, and always moved with the larval hooks in the posterior half of the coracidium. The actively beating cilia were shortest (7-9 μm) around the larval hooks and longest opposite this area (9-11 μm). Two membranes surrounding the oncosphere could be seen; between the ciliated outer membrane and the inner membrane various granular bodies could be seen. The coracidia were capable of surviving in filtered seawater for at least two weeks, after which they had all been exposed to and eaten by potential intermediate hosts.

Oncosphere

Coracidia were offered to harpacticoid and calanoid copepods, shrimps and annelids. All invertebrates ingested coracidia, but in shrimps and annelids the coracidia were observed to be gradually digested. In harpacticoid copepods oncospheres failed to emerge and were assumed to have been digested. Hatching of the oncosphere occurred only in two calanoid copepods, Acartia clausii Giesbrecht 1889 and Tortanus discaudatus (Thompson and Scott, 1897).

The hatching of oncospheres began after the coracidia had ceased both forward movement and cilia beating. The oncosphere inside the

coracidium then became very active, and the larval hooks tore the outer ciliated membrane (Plate 15; Fig. 4). Emergence of the oncosphere occurred approximately three to five minutes after the cilia had ceased moving. The larva (Plate 15; Fig. 5) measured 40-55 μm long and 14-17 μm wide and began to move rapidly, with many changes in shape.

Twenty-four hours after introducing the coracidia to the copepods all parasite larvae were found in the copepods' haemocoels, with up to four parasites per host. Seven days after injection the proceroid was oval and measured approximately 110 μm long and 40 μm wide with no observed morphological differentiation.

The rudiments of an excretory system began to appear 15 days after injection. At 20 days p.i. the most advanced proceroid possessed a well developed excretory system (Plate 15; Fig. 6) consisting of two small canals which extended from midway along the proceroid to the region of the larval hooks where they joined to form a bladder and posterior pore. Calcareous corpuscles were distributed around the larva. The proceroid measured about 300 μm long by 90 μm wide. Occasionally a cercomer-like structure would appear posteriorly as the larva moved and a constriction appeared anterior to the larval hooks. This was a transient feature, however, and it appears possible that some trypanorhynch proceroids, at least, do not develop true cercomers. At the anterior end of the proceroid a large apical sucker had formed.

No further development was noted in proceroids which had infected copepods for 35 days.

Infection of teleosts

Twenty Tortanus discaudatus and ten Acartia clausii, each containing one or more procercoids, were presented to four unidentified small fish netted in Passamaquoddy Bay. The copepods were eaten, but no trypanorhynch were recovered when the fish were sacrificed five to ten days later.

Discussion

The development of G. erinaceus from Raja erinacea and R. ocellata caught in Passamaquoddy Bay is similar to that recorded by Ruzskowski (1934) for this trypanorhynch from R. oxyrhynchus caught off Norway, with additional observations on the manner in which the oncosphere emerged, and the development of the excretory system and anterior sucker of the more advanced procercoid. Pintner (1893, 1896) described in detail the excretory bladder and posterior end of plerocercoids in fish and Riser (1956) noted that there was no apparent difference between the bladder regions of L. tenuis in copepods and plerocercoids in fish. Similarly the bladder region of G. erinaceus advanced procercoids in this study showed close similarities with those described by Pintner (1893) from plerocercoids in fish, strongly suggesting that teleosts become infected with G. erinaceus by eating infected copepods. Grilotia erinaceus is, therefore, an oviparous cestode with a free-swimming coracidial stage which infects copepods, where it develops into a procercoid. This pattern is similar to that reported for certain other poeciloacanth trypanorhynchs: L. tenuis by Riser (1956) and by Mudry and Dailey (1971); Poecilancistrum

caryophyllum by Overstreet (1978) and also for pseudophyllideans by Burt and Jarecka (1982) e.g. Bothriocephalus scorpii (personal observation). In contrast to this group of tapeworms another poeciloacanth, Callotetrarhynchus nipponica, described by Nakajima and Egusa (1969a) involves a pre-plerocercus stage in the anchovy, which then develops into a normal plerocercus when another teleost, Seriola quinqueradiata feeds on the anchovy. It, therefore, appears that two life-cycle strategies have been described from the poeciloacanthous trypanorhynchs, involving either a three-host life-cycle (crustacean, teleost and elasmobranch) or a possible four-host life-cycle in the case of C. nipponica (unknown host, teleost, teleost, elasmobranch).

The life-cycle strategies that have been described from the heteroacanth differ from those of the poeciloacanth. The heteroacanth Prochristianella hispida and Parachristianella monomegacantha were reported by Overstreet (1978) and by Mudry and Dailey (1971) to be viviparous cestodes, as the adults produced infective eggs rather than coracidia. Procercoids with distinct cercomers then developed, within the intermediate hosts. Burt and Jarecka (1982) concluded that this resembled the proteocephalan rather than the pseudophyllidean situation. The procercoids possessed rudimentary tentacles and were suggested by Overstreet (1978) to be capable of being directly infective to the definitive host, omitting the need for a teleost intermediate host. All reports of procercoids developing tentacles within an invertebrate host are of heteroacanthous trypanorhynchs e.g. Parachristianella sp. and eutetrarhynchids (Coke 1976, 1977), Renibulbus penaeus in shrimp (Feigenbaum and Carnuccio, 1976), Prochristianella hispida in penaeid shrimp (Overstreet, 1978)

and Eutetrarhynchus sp. in euphausiids (Shimazu, 1975). It is, therefore, possible that a two-host life-cycle may exist within the heteroacanth. Another intriguing finding is that all records of trypanorhynch larvae developing (rather than references to larvae passing through the gut) in molluscan intermediate hosts are restricted to the heteroacanth e.g. Parachristianella sp. and Eutetrarhynchus sp. (Cake, 1976) and Tetrarhynchobothrium sp. and Christianella sp. (Reimer, 1975). Too few records exist to draw any conclusions from this, but it would be of great interest to investigate the numbers and ranges of intermediate hosts used by the heteroacanthous trypanorhynchs, as it appears that the same genus may develop in both molluscan and crustacean intermediate hosts.

No homeoacanth life-cycle has yet been examined. Frequent records of post-larvae exist e.g. Hepatoxylon trichiuri in Xiphias gladius by Rasmussen (1973), and Thunnus albacores by Bussieras and Baudin-Laurencin (1973), Nybelinia yamaguti in Liosaccus cutaneus by Dolfus (1960), but nothing is known of their earlier life histories.

The summary of life-cycle studies carried out on trypanorhynchs is based on only six species, yet suggests that several types of life-cycle involving crustaceans, mollusc and/or teleost intermediate hosts may exist within the Trypanorhyncha. Further life-cycle studies of trypanorhynchs are necessary, both to increase our knowledge of this group of cestodes and to understand the manner in which commercially important intermediate hosts become infected.

SECTION FOUR

TRYPANORHYNCHS AS FISH POPULATION INDICATORS

Trypanorhynchs as Fish Population Indicators

Introduction

A pre-requisite for this section of my work was to research all published papers on parasites as biological indicators, with the view of selecting one species of trypanorhynch for original work on its use as an indicator, and so gaining experience in this rapidly expanding area of fisheries biology. Section Four thus consists of two parts, the first a critical analysis of the literature and the second a study of Grillotia smaris-gora as a biological tag for mackerel.

(1) (a) A Review of the Recent Use of Parasites as Fish Population Indicators

The parasite fauna of any animal can provide information about the host because the acquisition of a parasite depends partly upon the host's susceptibility, the degree of which is affected by host age, diet, sex, movement, behaviour and other factors. The study of parasitic organisms can thus give indications about the host's biology including its feeding habits, immune response and, because related parasite genera and species are often restricted to related host genera and species, their phylogenetic relationships.

The susceptibility of hosts varies within the host population, and within a host population the parasite distribution tends to be overdispersed (Crofton, 1971; Evans, Whitfield and Dobson, 1981; Kennedy, 1978; Shotter, 1976), with a large proportion of the total

parasite population occurring in relatively few hosts.

It is sometimes possible to distinguish different host populations by the presence or absence of parasites or because of a significant difference in the parasite distribution, either in their prevalence (percentage of hosts examined that are infected) or intensity of infection (average number of parasites per infected host). The use of terms prevalence and intensity of infection follow the recommendations made by Margolis, Esch, Holmes, Kuris and Schad (1982).

Parasites have been used as natural markers, or biological tags, to separate populations of terrestrial hosts, especially birds, for over a hundred years, but the first efforts to use them as biological tags for marine fish were those of Dogiel and Bykhovsky 1939, who distinguished between two sturgeon stocks in the Caspian Sea using several tags including the capsalid monogenean Nitzschia sturionis (Abildgaard) and the pseudophyllidean cestode, Eubothrium acipenserinum Kholodkovski. Herrington, Bearnse and Firth (1939) also used a parasite, the copepod Sphyrion lumpi Krøyer to separate stocks of redfish (Sebastes spp.) in the Northwest Atlantic. Since 1939 the use of parasites as biological tags for marine fish has greatly expanded. MacKenzie (1983) recorded well over a hundred species of parasite including fungi, protozoa, helminths and crustaceans, which have been successfully used to provide information about stocks of commercially important fish.

The number of parasites that could potentially be used as biological tags for fish is vast, e.g. Manter (1969) calculated on the basis of eleven large surveys that of an estimated 10,000 species of

marine digeneans only 15% had been described. Most parasites that have been studied are, however, unsuitable for use as biological tags. If a parasite is to be used as a biological tag then it is important to understand as many aspects of its biology and life cycle as is feasible, especially the range of possible intermediate and final hosts, the method by which tagged species become infected, and to be aware of how the parasite affects its host. The more information available on a parasite species the greater the possibility of being able to refine its use and importance. Many parasite life cycles have not yet been elucidated, or are imperfectly known. Sindermann (1961a) was the first to attempt a listing of criteria by which potential tag parasites for marine fish could be selected. These were added to by Kabata (1963) and modified by Konovalov (1975) for use with anadromous fish. K ie (1983) concentrated on selection of digeneans as useful biological indicators. Sindermann (1983) reviewed the attributes necessary for successful marine biological tags and MacKenzie (1983, 1986) comprehensively assessed the selection of fish parasites for marine, freshwater and anadromous studies. The following criteria are now regarded as the most helpful in assessing the merits of any parasite as a tag.

1. The parasite species should be distributed at significantly different levels in different parts of the study area. This requirement was given by all the above authors when listing the characteristics of successful biological tags, although MacKenzie (1983) commented that it was not applicable when genetic differences between populations of a parasite species were being studied e.g. Beverley-Burton (1978) used protein polymorphisms of Anisakis simplex

larvae to distinguish salmon taken from different areas within Britain and along the Canadian Atlantic coast.

Sindermann (1961a, 1983), Kabata (1963) and Fréchet, Dodson and Powles (1983b) thought that the prevalences of the parasite should remain relatively stable from season to season. MacKenzie (1983), however, pointed out that most fish parasite populations were regarded as unstable and that large fluctuations in parasite prevalences could be expected. This problem can be overcome by ageing the fish examined, and examining and comparing data from separate year classes.

2. The parasite should persist in the host for at least the duration of the study period. Kóie (1983) and MacKenzie (1983) both discussed the relatively short life span of adult digeneans which restricted their application to studies of less than one year. The timescale of the study period may be small when investigating seasonal migrations, or extend to cover several years when following recruitment migrations, thus affecting the selection of suitable tags which can range from transitory infections to parasites which remain alive or in a recognisable form throughout the host's life after infection. A disadvantage of any parasite with a brief life span is that the proportion of infected hosts steadily decreases once the population has left the area of infection. This is especially important when selecting suitable parasites for anadromous studies when parasites are frequently lost rapidly as the host migrates through changing salinities.

3. The host's survival should be minimally affected by the parasite. Although any parasite may be recognised as diminishing its host's chances of surviving, parasites which are regarded as highly pathogenic should not be used as biological tags since they cannot be regarded as infecting a reasonably constant proportion of the population. The copepod Lernaecera branchialis (L.), which uses a number of gadoid definitive hosts, has been used in a number of tag studies on various fish including whiting (Shotter, 1973) and cod (Sherman and Wise, 1961). MacKenzie (1983) commented on its high pathogenicity to some of its definitive hosts and on the fact that it has been shown to affect the behaviour of whiting and pollack, Pollachius pollachius (L.). Infected individuals tended to remain in inshore waters instead of migrating offshore. The intermediate hosts, principally flatfish, have been found to vary between areas providing another reason why the use of this parasite as a biological tag should only be undertaken with great care.

4. The parasite should be easily detected, preferably with a minimum of dissection, allowing many fish to be examined quickly and so reducing costs. A high degree of site specificity would be advantageous, although the possibility of seasonal variation (MacKenzie and Gibson (1970) noted an anterior shift in distribution of the nematode Cucullanus heterochorous in the alimentary canal in winter) should be investigated.

5. MacKenzie (1983) recommended that ectoparasites which were easily detached should not be used, but many ectoparasites leave distinct marks of their past presence. The embedded cephalothorax of Sphyrion

lumpi remains in the host long after the parasite dies.

Hare and Burt (1976) noted that although Discocotyle sagittata (Leuckhart, 1842) was recorded on 18.5% of a sample of Salmo salar taken in 1971, none were recorded in 1970 from the same part of the Miramichi River. It was suggested that this difference might be a result of using electrofishing as a method of capture.

6. The parasite should be easy to identify. Sindermann (1961a, 1961b) used trypanorhynchian larvae as one of the tags for redfish and herring, but merely commented on their resemblance to Grillotia erinaceus and Lacistorhynchus tenuis. If each plerocercus had been identified then possibly more details of the host migration might have emerged.

Kabata (1963) and Sindermann (1983) suggested that the life cycle of tag parasites should preferably involve only a single host, while Kóie (1983) maintained that for the successful use of a digenean biological tag the life cycle and distribution of all infected intermediate hosts must be known. Many parasites have been successfully used, including the cestode Syndesmobothrium filicolle in Hilsa ilisha by Gopalakrishnan and Pal (1964), whose life cycles are incompletely known.

In fish population studies involving seasonal recruitment or adult age-dependent migrations it is advantageous for a tag to have an indirect life cycle and not to be spread by direct contact with other members of the host population.

Kabata (1963) and Campbell (1983) considered that the entire study area should have environmental conditions within the physiological range of the parasite tag. In anadromous fish studies however, a decrease in prevalence or intensity of infection when freshwater parasites are unable to survive in the sea may be used to distinguish sea-run and non-migrating fish.

MacKenzie (1983, 1986) and Sindermann (1983) divided parasite tag studies into four categories. Sindermann distinguished four types of study of increasing complexity:

1. Studies based on the regional prevalences of a single parasite species.
2. Surveys involving the prevalences of two parasite species.
3. Surveys of parasite prevalences accompanied by a wide range of supplementary work such as artificial tagging, age and growth studies, and biochemical, serological, morphometric and meristic studies.
4. Studies involving two host populations that possess genetically rather than numerically different parasites, detected by biochemical or immunological methods.

These categories of parasite study simply reflect the amount of effort involved. In contrast, MacKenzie (1983) based his tag studies upon the particular type of migration being investigated, resulting in four categories: stock separation, seasonal migration, recruitment migrations and adult age-dependent migrations. After comparing these two sets of guidelines I consider that those suggested by MacKenzie

(1983, 1986) result in a more useful division of parasite tag studies.

Criteria will vary in importance and additional criteria may be involved depending upon which of the five main types of population study is being considered.

1. Stock Separation

This is the simplest form of population study directed at defining the geographical boundaries of separate populations or stocks of fish. It is not essential, although recommended, to age the fish so programmes can be carried out comparatively quickly.

Parasites with direct or complicated life cycles can be used in stock separation studies. It is not possible to distinguish two populations of fish simply because the prevalence of a tag is different in two separate areas - enough must be known about the parasite's biology to ensure that the parasite is acting as a tag and not merely sampled at a time when it is spreading through a single population. This means that parasites with direct life cycles are initially easier to incorporate into this type of tag programme, while parasites which utilise intermediate or final hosts in addition to the fish species being studied will require a much larger amount of biological information if they are to be used to their fullest extent.

Table 7: Parasites used for fish stock separation

Host	Parasite	Area	Reference
<u>Atherina boyeri</u>	<u>Glugea atherinae</u>	French Mediterranean	Berrebi and Britton- Davidian (1980)
<u>Gadus morhua</u>	<u>Trypanosoma murmanensis</u>	Newfoundland	Khan, Murphy and Taylor (1980)
<u>Reinhardtius hippoglossoides</u>	<u>T. murmanensis</u> <u>Haemohormidium terraenovae</u>	N.W. Atlantic	Khan et al (1982)
<u>Clupea harengus pallasii</u>	<u>Thynnascaris adunca</u> Bucephalidae spp. <u>Anisakis simplex</u>	British Columbia	Arthur and Arai (1980a, 1980b)
<u>Fundulus heteroclotus</u>	<u>Eustrongyloides salmonis</u>	Patuvent River Maryland	Hirschfield et al (1983)
<u>Atherina presbyter</u>	<u>Neodiplostomum sp.</u>	The Fleet, Dorset, Southampton Water	Turnpenny et al (1981); Bamber et al (1983); Bamber and Henderson (1985)
<u>Osmerus mordax</u>	<u>Echinorhynchus salmonis</u> <u>Diphyllbothrium sebago</u> <u>Glugea hertwigi</u>	Quebec	Fréchet, Dodson and Powles (1983a) (1983b)
<u>Podonema longipes</u>	<u>Nybelinia surmenicola</u> <u>Diphyllbothrium sp.</u>	Kurils, Japan	Avdeev (1981)

contd

Host	Parasite	Area	Reference
<u>Melanogrammus aeglefinus</u>	19 species including <u>Lepidapedon rachion</u> <u>Myxidium bergense</u>	Scotian Shelf	Scott (1981)
4 spp. flat fish	13 spp. digeneans	Scotian Shelf	Scott (1982)
<u>Pollachius virens</u>	<u>Derogenes varicus</u> <u>Hemiurus levinseni</u> <u>Echinorhynchus gadi</u> <u>Anisakis</u> sp.	Scotian Shelf	Scott (1985a)
<u>Limanda limanda</u>	Digeneans	Danish and adjacent waters	Køie (1983)
<u>Liopsetta putnami</u>	<u>Myxobilatus</u> sp. <u>Cryptocotyle lingua</u>	New Hampshire	Burn (1980)
Four spp. Channichthyid	<u>Eubrachiella antarctica</u> <u>Contracecum</u> sp.	Antarctic Shelf	Siegel (1980)
<u>Theragra chalcogramma</u>	13 spp. parasite	N.E. Pacific	Arthur (1984)
<u>Oncorhynchus nerka</u>	<u>Anisakis</u> sp.	Kamchatka River Basin	Bourgeois and Ni (1984)

2. Seasonal Migrations

Many fish make seasonal migrations to feeding or spawning grounds or simply follow prey concentrations. To be a successful tag in seasonal migration studies the parasite must infect the fish in one area and be carried to the other migratory area, where the fish cannot pick up any further infections. Seasonal migrations allow the use of transient infections and so can use the greatest variety of potential

Table 8: Parasites used to study seasonal migrations of fish

Host	Parasite	Area	Reference
<u>Vimba vimba</u>	Entire parasite fauna	Baltic	Rautskis (1983)
<u>Hilsa ilisha</u>	Entire parasite fauna	Hooghly River, India	Pal (1980)
<u>Salvelinus alpinus</u>	<u>Cystidicola cristivomeri</u>		Eddy and Lankester (1978); Black and Lankester 1981
<u>Salvelinus alpinus</u>	<u>Diphyllobothrium</u> spp. <u>Eubothrium salvelini</u> <u>Proteocephalus longicollis</u> <u>Brachyphallus crenatus</u> <u>Bothrimonus sturionis</u> <u>Prosorhynchus squamosus</u>	Baffin Island	Dick and Belosevic (1981)
<u>Salvelinus alpinus</u>	<u>B. crenatus</u> <u>Salmincola edwardsii</u>	Mosie River system	Black (1981) Black, Montgomery and Whoriskey (1983)
<u>Oncorhynchus nerka</u>	<u>E. salvelini</u>		Boyce and Clarke (1983)
<u>Gadus morhua</u>	<u>Trypanosoma murmanensis</u>	Labrador coastal region	Khan et al (1980)
<u>Pseudopleuronectes americanus</u>	Digenean spp.	Passamaquoddy Bay, Canada	Scott (1985b)
<u>Clupea harengus</u>	<u>Eimeria sardinae</u> <u>Scolex pleuronectis</u> <u>Anisakis simplex</u> <u>Hysterothylacium aduncum</u> <u>Cryptocotyle lingua</u>	Northwest Atlantic	McGladdery and Burt (1985)

tags, as all other studies require parasites to live for at least a year. MacKenzie (1983) noted that short-lived infections of adult helminths within the alimentary tract of the fish are possibly the most useful tags.

Recent work (Table 8) includes studies on several species of anadromous fish. Marine and freshwater parasites have been successfully used to characterise fish from these ecologically distinct areas. Many ectoparasitic monogeneans and digeneans are, however, unsuitable because they are rapidly lost on leaving their zone of infection.

3. Recruitment Migrations

Recruitment migrations are the journeys made by young fish, often over great distances, from nursery grounds to the adult feeding and spawning grounds. In these studies a successful biological tag that infects fish on only some of the nursery grounds, can provide information about the origin of fish and the connection between different juvenile and adult fish populations (Table 9). This is of great value to fisheries management, but the tag must satisfy two criteria in addition to the ones discussed earlier.

Firstly the fish should be susceptible to infection only on the nursery grounds, and subsequently lose its susceptibility, preferably becoming resistant when it migrates away from these areas. If this is not the case then infections picked up when adult could easily incorrectly identify the fish as coming from a particular nursery ground.

Table 9: Parasites used for the study of fish recruitment migrations

Host	Parasite	Area	Reference
<u>Belone belone</u>	<u>Lacistorhynchus tenuis</u> <u>Anisakis simplex</u>	Baltic Sea	Grabda (1981)
<u>Scomber scombrus</u>	<u>Grillotia smarigora</u>	Eastern North Atlantic	MacKenzie (1978), MacKenzie and Mehl (1984), MacKenzie, Smith and Williams (1984)
<u>Clupea harengus</u>	<u>Lacistorhynchus</u> sp. <u>Cercaria pythionike</u>	Eastern North Atlantic	MacKenzie (1985)
<u>Salmo salar</u>	43 parasite species	Open Atlantic and Greenland coastal waters	Pippy (1980)

Secondly the parasite must remain, either alive or in an identifiable form within the fish for the rest of the host's life - a far longer life span than is necessary in stock separation or seasonal migration studies. These additional requirements severely limit the types and numbers of suitable parasites. Transient adult helminth infections can be excluded, and directly-transmissible infections are often unsuitable, because of the possibility of cross infection on adult feeding and spawning grounds. Usually parasites with indirect life cycles are most promising, with the intermediate infected hosts distributed on some nursery grounds and not others. Fish on nursery

grounds may have diets which include intermediate hosts, and may take different prey items, resulting in an altered susceptibility when they grow and migrate away from the nursery grounds.

4. Adult Age-dependent Migrations

As fish grow older there is a general tendency towards moving to different areas for feeding, overwintering and possibly spawning. This type of study requires the same tag characteristics as the study recruitment migrations, except that infection should take place by the time the fish is a young adult, rather than a juvenile.

Hislop and MacKenzie (1976) used the plerocercus of the trypanorhynch Gilquinia squali (Fabricius) as a biological tag to distinguish coastal and offshore stocks of whiting Merlangius merlangus in the North Sea.

Avdeev (1981) reported on the use of Nybelinia sp. and diphyllbothriid larvae as indicators of two separate stocks of Podonema longipes in the northwest Pacific, and also commented on the age-related infection of Nybelinia sp.

5. Changing patterns in stock migration

Although boundaries of stock areas, seasonal, recruitment and adult age-dependent migrations all have the potential of varying markedly from year to year, this final category includes parasites used

to chart distinct changes in migration patterns over long periods of time.

Table 10: Parasites used to study changing patterns in stock migration

Host	Parasite	Area	Reference
<u>Clupea harengus</u>	<u>Anisakis</u> larvae	North Sea	Van Banning and Becker (1978)
<u>Clupea harengus</u>	<u>Anisakis</u> larvae	Northwest Atlantic	McGladdery and Burt (1985)
<u>Clupea harengus</u>	<u>Cercaria pythionike</u> <u>C. doricha</u> <u>Lacistorhynchus</u> sp.	North Sea	MacKenzie (1985)
<u>Oncorhynchus nerka</u>	<u>Myxobolus neurobius</u> <u>Myxidium</u> sp. <u>Diphyllobothrium</u> sp. (1984) <u>Diplostomum</u> sp. <u>Tetracotyle</u> sp. <u>Philonema</u> sp. <u>Salmincola californiensis</u>	North Pacific	Groot, Margolis and Bailey (1984)

Long term studies of migration patterns require the greatest amount of effort, but the effort involved in any biological tag programme is considerable, with the collection and examination of many fish from different areas. In an exceptional study, MacKenzie (1985) examined more than 23,000 herring during the course of his

investigations. In contrast to conventional tagging programmes biological tags do not allow the estimation of natural mortality, population size and growth rates, in addition to the monitoring of fish movements. Biological tags programmes, however, have several intrinsic advantages although whenever possible the use of biological tags will be greatly enhanced by host serological, biochemical, morphometric and meristic studies, and the concurrent use of conventional tags. Biological tags can be used to track a large porportion of a population rather than the individuals in mechanical tagging. The fish need to be caught only once, thus avoiding handling mortalities. Redfish, Sebastes spp., were one of the first fish to be examined using biological tags (Herrington et al, 1939). Redfish are usually caught in deepwater by bottom trawling, and the rapid reduction in pressure as they are brought to the surface commonly results in injury or death. Similarly many delicate species of fish that would be damaged by handling are prime candidates for biological tag investigations. Abnormal behaviour of tagged fish may also be avoided, as major trauma associated with the process of catching and tagging is involved. This is dependent on the third criterion used in selecting parasites as tags - that the host's survival is minimally affected by the parasite. Results may be further enhanced by parasite biochemical speciation shown by Beverley-Burton (1978) to enable further discrimination between separate stocks of fish. Finally, because research ships are costly to run, biological tag programmes may eventually prove cheaper than an investigation dependent upon just mechanical tagging.

(i) (b) Trypanorhynchs as Biological Tags

Trypanorhynch larvae have been used in a variety of fish population studies, including: stock separation, e.g. Sindermann (1957, 1961a, 1961b) used unspecified trypanorhynch larvae to distinguish stocks of Sebastes marinus in the north-west Atlantic, Lubieniecki (1977) separated stocks of haddock in the North Sea using Grillotia erinaceus; seasonal migrations, e.g. Gopalakrishnan and Pal (1964) followed the seasonal migrations of Hilsa ilisha in the Hooghly estuary, India, and Rautskis (1983) used Lacistorhynchus tenuis to follow Vimba vimba in the Baltic; recruitment migrations, e.g. Grillotia smarigora in studies of Scomber scombrus in the northwest Atlantic (present study); and adult age-dependent migrations, e.g. Gilquinia squali in Merlangius merlangus in the North Sea (Hislop and MacKenzie, 1976).

The greatest potential for trypanorhynch tags appears to be in the study of recruitment migrations, which have more stringent criteria than other studies. Trypanorhynch larvae are suitable because their fully developed tentacles make identification possible, although great care is needed in making the initial identification, and they appear to live or survive in a recognisable form throughout the life of their host. Within individual hosts they appear to inflict little pathological damage when they encyst on the surface of organs rather than inside them. The occurrence of the early developmental stages in a variety of invertebrates may also mean fish are exposed to infection solely at an early age, after which diet changes greatly reduce the possibility of infection.

The potential of using trypanorhynch as tags for the definitive, elasmobranch hosts and the invertebrate first intermediate hosts has been largely unexplored, although Owens (1980) used Parachristianella monomegacantha to distinguish stocks of prawns in northern Australia. These remain further areas of research in which trypanorhynch could play an important role.

(ii) Grillotia smarigora (Wagener, 1854) Dollfus, 1946 and its Value as a Biological Tag

Introduction

In recent years mackerel fishing in the northeast Atlantic has steadily increased. U.K. catches in 1971-75 averaged 23,055 tonnes per year, while over 220,000 tonnes were landed in 1985 (Anon, 1986). Reasons for this increase include the discovery of large, overwintering shoals close inshore, changes in catching and distribution techniques (Lockwood and Johnson, 1976) and a transfer of fishing effort to mackerel after the decline in herring stocks. Some mackerel stocks, however, are already showing signs of overfishing. North Sea returns for all countries showed catches of 20,000 tons in 1945 rising to 930,000 in 1967, then dropping to 318,000 in 1973 and 49,000 in 1985 (Lockwood and Johnson, 1976; Anon, 1986). The remaining stocks are therefore being closely monitored.

MacKenzie and Mehl (1984) reported on a biological tag programme aimed at tracing movements made by stocks of mackerel, Scomber

scombrus, in the eastern North Atlantic. They recorded the occurrence of a trypanorhynch plerocercus which appeared to infect mackerel up to the age of two years and then to survive throughout the life of the mackerel (MacKenzie, 1983; MacKenzie and Mehl, 1982). The trypanorhynch was identified (MacKenzie, 1980) as Grillotia angeli Dollfus, 1969, but my close examination of the holotype and a range of both adult specimens and plerocerci have shown me that Grillotia angeli is a junior synonym of Grillotia smaris-gora (Section Two, pp. 21-49).

The life cycle of Grillotia smaris-gora is still unknown, but all trypanorhynchs whose life-cycles have been investigated are known to use crustaceans as first intermediate hosts (Ruszkowski, 1932; Riser, 1956; Mudry and Dailey, 1971; Sakanari and Moser 1985a, 1985b).

Adults of G. smaris-gora in the eastern North Atlantic have been recovered solely from the monkfish Squatina squatina L. Monkfish are common in and to the south of I.C.E.S. sub-area VII (i.e. to the south and west of Britain (see Fig. 16), but are regarded as rare to the north of Ireland and throughout the North Sea.

The spawning season for mackerel in the northeastern Atlantic is spring and early summer, sometimes continuing until September (Hamre, 1980). Kennedy (1954) and Wheeler (1969) record that mackerel fry and adult fish prior to spawning feed on plankton, later turning to a mainly piscivorous diet including rockling fry, sand eels, herring, pilchards and young sprats, although a certain amount of crustacean food (including shrimps and mysids) may be taken in summer, while in winter mackerel fast on the bottom in deep water. Kennedy remarked

that in the English Channel shoaling mackerel fed chiefly on zooplankton, including Calanus finmarckius, Pseudocalanus elongatus and Temora longicornis. Mehl and Westgard (1983) noted that the most important prey items in wet weight were copepods, euphausiids and fish.

As only young mackerel become infected with G. smaris-gora, presence of the plerocercus indicates that the mackerel fed on infected crustaceans at an early age, and thus originated from I.C.E.S. areas VII and VIII.

The monkfish is usually found at depths of from five to fifty metres, concealed or partially buried in sand or gravel. (Wheeler, 1969). Wheeler lists its food as consisting of mainly benthic organisms, including flatfishes (plaice, dabs and soles) Raja sp., other fishes, molluscs, whelks and crustaceans, including the crab Cancer pagurus. In northern European waters the young are thought to be born during June and July. Wheeler suggested that, because monkfish become much more common in summer, there might be a summertime northerly migration, supplementing a shoreward movement from deeper waters.

Fitzmaurice (1982) investigated the migration of monkfish using Jumbo and Petersen tags to record their movements. Four hundred and thirty five monkfish were tagged over a period of 13 years on the West coast of Ireland. Thirty fish (6.9%) were recaptured, showing general movements north and south. Few returns were received from any tagging location other than Tralee Bay so no migration pattern could be predicted. It is difficult to imagine how the fast-moving pelagic

mackerel could regularly be taken by the bottom-dwelling monkfish, unless this occurred in winter when the mackerel move to deeper water and settle near the bottom.

MacKenzie and Mehl (1984) examined a total of 9,639 mackerel aged from 0-ring to 18 winter rings. In samples taken from the North Sea and I.C.E.S. areas IIa or IVa, where mixing of stocks is known to occur, the proportion of mackerel originating from the southwest was calculated. The prevalence of the sample was divided by the mean prevalence in area VII, where it was assumed that all the mackerel examined were of southwestern origin. Ninety-five per cent confidence limits were also calculated.

Results showed that the mackerel appeared to fall into two groups. In mackerel of year classes 1977 and earlier the overall mean prevalence was 6.9%, but in year classes 1978-82 the overall mean prevalence dropped to 0.9%. Year classes 1977 and earlier showed the highest prevalences in areas VII and IVc. There was no statistically significant difference between the areas, suggesting that all the mackerel in the southern North Sea might have originated from the southwest. The monkfish is also common in area VIII, but mackerel from the southern part of this area showed a significantly lower prevalence than those from area VII, suggesting that they were of different origin. Similarly, mackerel recovered from area IX probably had a different origin, as none were infected.

Results from Division VIa north of 58°N, IIa and IVa indicated that just over half the mackerel caught off the northwest coast of

Scotland and 30% of those in the Norwegian Sea and northern North Sea originated in nursery grounds in the southwest.

Seasonal variations in Division VIa north of 58°N showed a decrease in the proportion of southwestern mackerel from 50% in September to under 10% in January, increasing again to over 50% in March and April.

Later records from year classes 1978 onwards showed no variations between areas and age groups that were statistically significant. Infected mackerel were spread fairly evenly over all areas. In view of the low overall prevalence of G. smarigora, MacKenzie and Mehl suggested that younger fish may have been migrating into northern areas at younger ages and in greater numbers than before. If previous patterns of distribution had been maintained infected S. scombrus should have been very rare in areas north of VII.

Walsh and Martin (1986) recorded changes in the overwintering areas for adult mackerel, which shifted northwards at about the same time as the drop in the prevalence of G. smarigora. MacKenzie and Mehl (1984) questioned whether these changes in mackerel distribution could be associated with hydrographic changes recorded in the North Sea. MacKenzie (1987) also noted a sharp decrease in the prevalence of the trypanorhynch Lacistorhynchus sp. in herring, Clupea harengus, at about the same time as the decrease in prevalence of G. smarigora in mackerel. MacKenzie suggested that these abrupt changes could have resulted from a number of factors including a change in host diet and herring year class strength.

Studies were made on Grillotia smarigora in an effort to find out more of its biology, and its potential as a biological tag. Although its value as a tag has decreased somewhat since the drop in prevalence, it could well increase again.

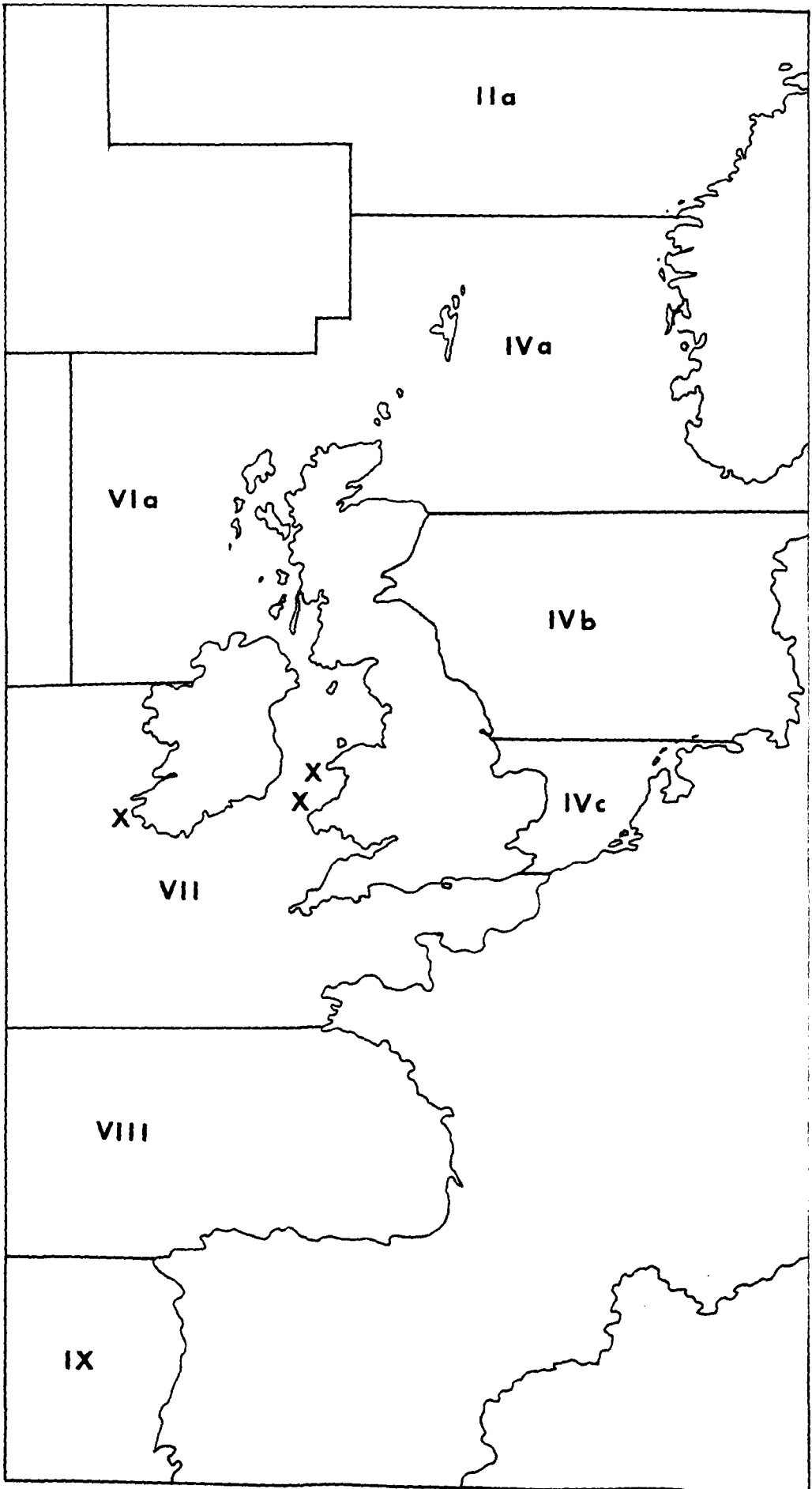
Materials and Methods (See methodology section (pp 2-15) for details)

A variety of elasmobranchs including monkfish, Squatina squatina, were trawled in Cardigan Bay, and examined for Grillotia smarigora. Only Squatina was found to be infected by this trypanorhynch, and unfortunately no living gravid specimens were found for life-cycle studies. More adult G. smarigora were recovered from monkfish that had been caught off southwest Ireland and in Cardigan Bay, and preserved in 4% formalin.

Selected teleosts were examined for plerocerci. Mackerel, Scomber scombrus (L.), had been previously recorded (MacKenzie, 1980) as a host for Grillotia smarigora. Encysted plerocerci from mackerel were dissected out, examined and measured. Further teleosts examined were scad, Trachurus trachurus (Linnaeus, 1758), red sea bream, Pagellus bogaraveo (Brünnich, 1768), greater weaver, Trachinus draco Linnaeus, 1758, common dab, Limanda limanda (Linnaeus, 1758) and grey gurnard, Eutrigla gurnardus (Linnaeus, 1758).

Plate 16: Map of the British Isles showing I.C.E.S. areas and regions where S. squatina were caught.

Key to map x = position of capture of monkfish examined



Results

Twelve Squatina (prevalence 48%) were found to be infected with an intensity of 1-23 trypanorhynch per infected fish (Table 11). Twelve trypanorhynch (15.4%) were recovered from the first tier of the spiral valve, 19 (24.4%) from the second tier, and 4 (5.1%) from the third. The rest were recovered from the washings of the spiral valve. The four smallest fish (31-56 cm long) were uninfected with trypanorhynch.

Examination of the stomach contents showed many food items including whole, small rays (Raja clavata), unidentified remains of teleost fish, and fragments of shells.

Scad, Trachurus trachurus, caught to the southwest of Ireland and aged between 6 and 20 years showed the highest prevalence of infection of G. smarigora in any teleosts examined. Prevalence increased with size (and presumably age) from 10% in the smallest scad to 57% in the largest length group at 33-38 cm fork length. The mean intensity varied between 1 and 2.7 parasites per infected fish. Both prevalence and intensity of infection of the plerocerci were higher than values recorded from mackerel (MacKenzie, Smith and Williams, 1984).

A sample of red sea bream, Pagellus bogaraveo, from the Bay of Biscay had a prevalence of 8.1%, with up to 32 plerocerci found in one fish. Unfortunately many of the scad and red sea bream were received frozen so that the tentacles of the dissected plerocercus could not be extended. Sufficient details could be distinguished for identification when compared with excysted trypanorhynch found in fresh fish.

Table 11: Monkfish, *Squatina squatina*, examined for *Grillotia smarigora*

Date and area of capture	Length (cm)	Sex	Number of <u><i>G. smarigora</i></u>	
26.08.1983	Aberystwyth, Cardigan Bay	91	♀	1
12.09.1983	Cardigan Bay	124	♂	7
12.09.1983	Cardigan Bay	125	♂	4
12.09.1983	Cardigan Bay	126	♂	23
12.09.1983	Cardigan Bay	123	♀	6
12.09.1983	Cardigan Bay	99	♂	18
09.1984	Cardigan Bay	61	♀	3
09.1984	Cardigan Bay	51	♀	0
09.1984	Cardigan Bay	132	♀	9
09.1984	Cardigan Bay	131	♂	0
09.1984	Cardigan Bay	51	♀	0
09.1984	Cardigan Bay	125	♂	2
09.1984	Cardigan Bay	127	♀	0
09.1984	Cardigan Bay	127	♂	0
09.1984	Cardigan Bay	123	♂	0
09.1984	Cardigan Bay	105	♀	1
09.1984	Cardigan Bay	95	♂	3
09.1984	Cardigan Bay	86	♂	0
09.1984	Cardigan Bay	56	♂	0
27.04.1986	Cardigan Bay	36		0
20.12.1983	Portoyageef, Southwest Ireland	97	♀	0
04.1984	Brandon Head, Southwest Ireland	31	♂	0
04.1984	Dingle Bay, Southwest Ireland	121	♂	0
04.1984	Dingle Bay, Southwest Ireland	125	♂	2

No other teleosts, including a sample of 1-ring mackerel examined in Cornwall (September 1983), were found to be infected.

Discussion

The prevalence of Grillotia smaris-gora in monkfish is high, nearly 50%. This suggests that either the intermediate host, through which the monkfish becomes infected, is a common item in the monkfish's diet, or that any plerocercus ingested by the monkfish has a high probability of survival and development. There is little data on the survival and longevity of trypanorhynchids within their definitive hosts, although the initial establishment of adults from plerocerci appears high (Nakajima and Egusa, 1972a,b; Sakanari and Moser, 1985b). Although small monkfish under 61 cm long were uninfected by G. smaris-gora, insufficient hosts were available to test whether infection levels were significantly lower in smaller, and presumably younger, monkfish, which would have taken smaller prey items.

Previous records of Grillotia smaris-gora from Squatina describe the presence of detached, gravid proglottids in fish caught in the Firth of Clyde in May (Scott, 1909), Norway in August (Nybelin, 1940) and from Arcachon, France in September (Dollfus, 1946). Life cycle studies carried out by Sakanari and Moser (1985a), Nakajima and Egusa (1972e) and by myself (Section Three, this thesis) show periods of up to two weeks for trypanorhynchid eggs to produce coracidia which then develop into infective proceroids within the first intermediate hosts. Infection of teleosts could thus take place in summer and autumn. It

is interesting to note that two of the zooplankton copepod species, Pseudocalanus elongatus and Temora longicornis, recorded by Kennedy (1954) as constituting a major part of the diet of shoaling mackerel in the English Channel, had been successfully infected with plerocerci of Grillotia erinaceus, a species closely related to G. smarigora, by Ruszkowski (1932).

Infection of the teleost hosts in the eastern Atlantic appears, at present, to involve two midwater pelagic species, Trachurus trachurus and Scomber scombrus, and one bottom-dwelling species, Pagellus bogaraveo. Other midwater and benthic fishes examined did not appear to maintain this parasite, although only small numbers of fish were examined.

Some species of trypanorhynch have been recorded (Dollfus, 1942) as surviving when taken from one teleost host and presented to another. This has only been recorded, however, in species such as Nybelinia or Tentacularia when a post-larva is involved. No attempted transfer of encysted Grillotia plerocerci from one teleost to another has been successful, so all teleost hosts found to be infected with G. smarigora plerocerci are assumed to have fed on infected crustaceans.

Pagellus bogaraveo spawns in September to October around the British Isles, young fish feeding close inshore on copepods, amphipods, shrimps and siphonophores, larger bream taking decapod crustaceans and young fish and being found at greater depths of 50 m or more (Wheeler, 1969).

It is possible that mackerel and scad, rather than providing a common route of infection for monkfish, represent a dead-end for the G. smarigora plerocerci, and that most infection of the final host is via the red sea bream, which is commonly found on sandy bottoms in the same type of area as Squatina. As both demersal and pelagic fish are infected with this parasite, it is possible that euphausiids, which undergo regular vertical migrations, could be the first intermediate host (MacKenzie, pers. comm.). Exposure to infection with the cestode eggs could occur on the sea bed, and predation by demersal and pelagic fish during the euphausiid's migrations. Mehl and Westgard (1983) record that euphausiids are an important part of the mackerel's diet.

Heinz and Dailey (1974) recorded Grillotia smarigora from Squatina californica in the eastern Pacific. Larval G. smarigora were found in the Californian lizard-fish, Synodus lucioceps, by Jensen, Moser and Heckmann (1979). Synodus lucioceps spends much of its time buried in sand, presumably in the same regions as S. californica. This would appear to be very similar to the situation involving S. squatina and P. bogoraveo in the eastern Atlantic. It would be advisable to investigate the life cycle of G. smarigora and discover which crustaceans act as intermediate hosts, how the recorded teleost intermediate hosts become infected, and whether any other fish species are involved. Although G. smarigora has been successfully used as a biological tag for mackerel, and could, potentially, be of use in the future, a better understanding of the parasite's biology, particularly its ecology and life-cycle would enhance its application and possibly that of other trypanorhynch as population indicators.

SECTION FIVE
GENERAL DISCUSSION AND CONCLUSIONS

General Discussion

The order Trypanorhyncha was, according to Wardle and McLeod (1952), "one of the most chaotic and confused of the tapeworm groups" until Dollfus (1942) conducted a major survey of all the trypanorhynch species known to him at that time, and introduced some order into the group. Dollfus also produced the first comprehensible key, which has remained the basis for all subsequent keys to the Trypanorhyncha, e.g. Wardle and McLeod (1952), Yamaguti (1959) and Schmidt (1970, 1986). The host-parasite checklist (Bates, in press) compiled after studying over 400 papers, draws together recent publications that include records of the Trypanorhyncha into a manageable form, and emphasizes the continuing neglect of this Order. An example of this neglect is the restriction of the vast majority of trypanorhynch records to within the northern hemisphere, concentrating around the European centres with historical interests in marine parasitology. It is only comparatively recently that a series of studies have been carried out in South America, while very little work has arisen from Australia. Clearly much basic survey work needs to be done since no trypanorhynchs are recorded for the majority of elasmobranch species currently known to exist, presumably because comparatively little effort has been made to examine elasmobranchs in comparison to teleosts commonly used as food fish. When considering the Tetracystida, Schmidt (1986) commented that "only about 17% of the known elasmobranch species have been examined for cestodes". There is clearly a vast amount of work which needs to be carried out in this fundamental area of research. This applies to a greater extent to the Trypanorhyncha than to the Tetracystida

Another area of neglect which is highlighted by the checklist is the small number of records originating from invertebrates. Species recently described, moreover, do not all fit into existing categories, e.g. the family Rhinoptericolidae, containing the single species Rhinoptericola megacantha Carvajal and Campbell, 1975, shows closest similarities to the families Obothriidae and Mustelicolidae on the basis of the tentacle ontotaxy, but has several unusual internal features, including the presence of an ooreceptacle and an ovary consisting of four lobes but lacking a central isthmus, which differ markedly from the other families in this group. A similar situation exists in the family Mixodigmatidae, which also contains one species, Mixodigma leptaleum Dailey and Vogelbein, 1982. In this case the arrangement of the hooks on the tentacles and the internal structure of the proglottid appear to contain elements typical of both a poeciloacanthous family, the Dasyrhynchidae, and the heteroacanthous family, the Eutetrarhynchidae. Considering the relatively small number of new species (60-70) described during 1935-1985, based on the checklist, the problems encountered in assigning species positions within the existing taxonomic structure may well become more difficult to solve as new geographic areas are investigated. Many problems still remain, therefore, both in the allocation of species to a systematic position within the Trypanorhyncha, and also in the identification of parasites. Examples of recent confused identifications may be identified from the host-parasite checklist. Sparks and Mackin (1957) identified a larval parasite found within Penaeus setiferus as Eutetrarhynchus sp., later reidentified as Prochristianella penaei Kruse, 1959, by Sparks and Fontaine (1973). Campbell and Carvajal

(1975) recognised this as a synonym of Prochristianella (= Rhynchobothrium) hispidum originally described by Linton in 1890. It became clear during the compilation of the checklist that, except for systematics, hardly any area of the biology of the trypanorhynchs had been the subject of sustained research. This group of tapeworms should, therefore, be a fruitful area of research for many years.

Section Two of this thesis emphasises both the historical and recent existence of numerous synonyms and misidentifications of five species of trypanorhynch. For example, Grillotia smaris-gora (Wagener, 1854) Dollfus, 1946, has been recorded as belonging to five separate genera, while Gilquinia squali and Aporhynchus norvegicus have also been assigned several synonyms, suggesting that the taxonomy of this group is still in a state of turmoil.

In addition to the problems of species identification, Section Two of this work highlights the flimsy evidence on which many species have been erected. For example, the species Grillotia angeli Dollfus, 1969, was based on three specimens which Dollfus himself recognised as being distorted. In the same paper Dollfus described another "new" species, Grillotia microthrix, from one immature specimen whose tentacles were only partly evaginated. Further difficulties were encountered when attempting to find type specimens. It was found that the majority were unavailable, having been mislaid or destroyed over the years.

Although open to misinterpretation the tentacle oncotaxy remains the most efficient method of identifying species belonging to this

order, assuming that the original description was accurate, and included the arrangement and types of hooks both at varying levels of the tentacle and also on the different faces. Although the hook arrangements and terminology may appear to be initially confusing a careful study of fully extended tentacles should allow the identification of any species. Campbell and Carvajal (1975) suggested that the ratio of pars bothridialis : pars vaginalis : pars bulbosa could be of greater use in differentiating between closely related species, especially within the Eutetrarhynchidae, but I have found during the examination of specimens, that this method is only applicable when the parasites are in a similar state of tentacle extrusion, and also that adults and plerocerci sometimes show very different ratios. The description of proglottid morphology could also be improved. Too many descriptions neglect any mention of the internal morphology of the proglottids, or they are simply diagnosed as possessing typical trypanorhynchan organisation, when this varies greatly between genera and species.

The taxonomic confusion within the Trypanorhyncha does not facilitate the discussion of the degree of host specificity within groups of this Order. One of these problems is the status of the host, and whether it can be regarded as a natural host: a record of a parasite within an animal does not mean that it will successfully establish in the host. There are several examples of trypanorhynchs having been recorded in man (see Host-Parasite checklist, Section Two), but no examples of the parasites surviving within man or any other homeothermic animal. In general, hosts can be divided (Holmes, 1973)

into three groups: those in which the parasite can establish and reproduce, those in which it can survive, but not reproduce, and those in which it cannot establish. It is impossible to assign many published trypanorhynchan records to one of these categories without further information, or to assess the value of various hosts in maintaining the population of the parasite. Rohde (1980) has produced indices of host specificity based on the prevalence and intensity of parasitic infections, but again this quantitative approach is not feasible using much of the published data. I, therefore, support Dollfus (1957) in giving tentative suggestions about the apparent host specificity in the Trypanorhyncha.

The homeoacanthous trypanorhynchs include the Hepatoxylidae and Sphyricephalidae, which are found as post-larvae in a variety of teleosts, but appear to be restricted to the Pleurotremata as adults. The remaining homeoacanthous family, the Tentaculariidae, contains the genus Tentacularia, found as a post-larva in many teleosts, and as an adult in the Pleurotremata, and the genus Nybelinia, found in a wide variety of intermediate hosts, and as adults in both the Hypotremata and the Pleurotremata.

In the poecilacanthous trypanorhynchs the genus Gymnorhynchus, family Gymnorhynchidae, contains two species that appear to be much more specific in the plerocercus stage. Gymnorhynchus horridus is restricted to the teleost Mola mola, and found as an adult in the Pleurotremata, while G. gigas has been recorded from both Brama raii and Xiphias gladius as a plerocercus. The adult is unknown. In the Lacistorhynchidae the monotypic genus Lacistorhynchus has been recorded

from many teleosts as plerocerci, and from many sharks and rays as adults. In contrast the genus Grillotia, containing over ten species is again found in a wide range of teleost intermediate hosts, but is mainly restricted to the Hypotremata as adults. Exceptions include G. heptanchi from Hexanchus griseus and G. perelica from Carcharinus platydon, which are also cosmopolitan. In the family Callitetrarhynchidae the genus Dasyrhynchus is found in a wide variety of teleost intermediate hosts, and in definitive pleurotrematid hosts. The monotypic genus Floriceps is found in a wider range of definitive hosts, including Prionace glauca and Notorhynchus brevirostris, and in a range of teleost intermediate hosts, especially Mola mola. The genus Callitetrarhynchus has been recorded from many teleost families, while the adults are found in a variety of carcharhinid hosts.

In the heteroacanthous tapeworms the family Gilquiniidae, as already discussed (see Section Two), seems to be generally restricted to squaloid definitive hosts, while the plerocerci of Gilquinia have been recorded from a range of intermediate teleost hosts. The family Otobothriidae includes the genus Poecilancistrum, found as plerocerci and adults in teleosts and the Pleurotremata respectively and Otobothrium, found in a great range of intermediate hosts including teleosts and aquatic reptiles, and in a range of sharks and adults. The family Eutetrarhynchidae is unusual in that many of the records of plerocerci with well-developed tentacles come from decapod crustaceans, in addition to a wide range of teleosts. The adults appear to be restricted to either the Hypotremata or the Pleurotremata, depending on the genus. The species Parachristianella, including the new record (Section Two) of P. monomegacantha, has only been recorded from the

Hypotremata.

The Trypanorhyncha, therefore, appear to show a low degree of host specificity, which may vary between species, genera and families. In contrast the Diphyllidea and the Tetrphyllidea, two other orders of tapeworms which, like the Trypanorhyncha are found as adults in elasmobranch definitive hosts, show a high degree of host specificity, with each tapeworm species usually restricted to one elasmobranch species. The question of whether the Trypanorhyncha may show a higher degree of host specificity than recorded at present cannot be answered until many of the records of infection have been either reassessed or established anew.

The contrast between the biology of the Trypanorhyncha and the Tetrphyllidea is reinforced when life cycle studies are considered. The Tetrphyllidea which have been studied (Burt and Jarecka, 1982) show well developed oncospheres within the delicate, thin-walled eggs in the uterus. In contrast the six species of Trypanorhyncha that have been investigated appear to adopt a variety of strategies, all beginning with a robust egg possessing a hard outer shell which tans rapidly in sea water. The possibility of two types of life cycle suggested by Euzet (1957), one involving a free-living coracidium infecting copepods, which then become infective to teleosts, and the other involving the egg as the infective stage with a larva developing to the plerocercus stage in the crustacean intermediate host, suggests a major division within the Trypanorhyncha. As suggested in Section Three of this thesis, further work on the early developmental stages, especially of those species belonging to the heteroacanthous and homeoacanthous

groups, is needed to clarify the evolutionary significance of the trypanorhynch life cycle strategies. The lack of any "model" trypanorhynch which is easy to maintain within the laboratory is obvious as no life cycle has been successfully completed within the laboratory.

The biological tag studies reviewed during the course of this research showed a great increase over the last 10-20 years. Ostensibly trypanorhynchs may be considered as possessing great potential as biological tags, but again deficiencies in the knowledge of their basic biology detract from their use. Little is known of their ecology, or pathology, so although they may appear to be site specific in certain economically important fish their current application for commercial studies must be questioned.

The published material on the trypanorhynchs is both confusing and potentially misleading, since much of it is based on questionable identifications. The infrequent investigations into the biology of these cestodes do, however, highlight fundamental differences between the Trypanorhyncha and other orders of cestode. At present the trypanorhynch development, distribution and life-cycles appear to be unique and suggest that possibly the Trypanorhyncha should be considered phylogenetically as a group apart, like the Caryophyllidea (Mackiewicz, 1982) and the Gyrocotylidea (Williams, Colin and Halvorsen, 1987).

Conclusions

1. A great deal of basic survey work remains to be done, both in different hosts, particularly the elasmobranchs and invertebrates, and also in many neglected geographical areas. This should be extremely productive.
2. The validity of many early taxonomic studies must be questioned. Whenever possible specimens of new or existing species, from new or previously recorded hosts, should be deposited in national collections, to supplement the few existing type specimens.
3. Except for the general fish parasite faunal surveys, and the taxonomic studies of varying value carried out on trypanorhynch, little effort has been aimed at understanding the biology of these parasites.
4. No trypanorhynch life cycle has yet been completed within the laboratory indicating a fundamental lack of knowledge of these parasites.
5. Increasing pressure to understand the social and economic importance of trypanorhynch may be expected, in respect of both their pathogenicity and biological tag potential. Neither of these can be comprehensively investigated without other aspects of the parasite's biology being considered.

6. Phylogenetically, the Trypanorhyncha appear to have few affinities with other groups of cestodes. Traditionally, they have been regarded (Dollfus, 1942) as an old group showing little diversification. Until accurate knowledge of these tapeworms is available, it would be advisable to regard them as a group very much apart from other tapeworm orders

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