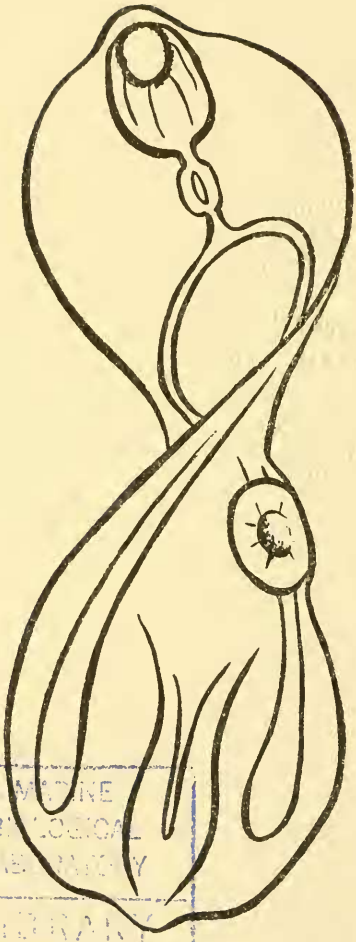
Trematodes
of the
Pacific Northwest
An Annotated Catalog



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Introduction

No single work exists in which the trematode information of the Pacific Northwest has been gathered together. For those who deal with the parasites, their hosts, or the diseases of domestic and game forms, such a work will greatly reduce the time that must be spent in searching. Much of the information has previously been sought out in this laboratory; therefore, it seemed desirable to complete and publish a catalog. This monograph is the result. In it are included all records of trematodes from the Pacific Northwest with notes about each species, whenever additional information exists.

The authors are primarily interested in the digenetic trematodes and the original plan was to catalog only that group. However, much monogenetic trematode information is included in the same literature; the list of known monogenetic trematodes is relatively short; so it seemed advisable to extend our work to include this group.

Also, the catalog was to be limited to parasites of the state of Oregon, but further reflection encouraged us to include the entire Pacific Northwest; *i. e.* Washington, Oregon, Idaho, and British Columbia. There were several reasons for this decision. Political subdivisions are readily utilized because the borders are clearly defined and understood and because distributional records are reported by political areas. This area by reason of climate and drainages constitutes a fairly distinct zoogeographical region.

The decision to eliminate California was based on several considerations: first, the fact that little is known of the trematode fauna of Northern California, especially in the area close to the Oregon border. Ingles (1936) considered the trematodes of amphibians of Northern California and Haderlie (1953) the trematodes of fishes of Northern California; but with the exception of these and a few short papers, nothing is known of the trematode fauna. Furthermore, the centers of trematode research have been in Berkeley, Stockton, and Dillon Beach, several hundred miles from Oregon; and trematode records tend to be concentrated in those areas. Many of the older records are listed only by state (or territory) and records from Southern California are not easily separated from those near the Oregon border. Furthermore, the trematode fauna of Southern California is quite different from that of the Pacific Northwest. Therefore, we have not included any California records.

Idaho was included because the center of trematode research, the University of Idaho at Moscow, is located only three miles from the Washington state line. Many of the trematodes reported from Idaho have also been reported from Washington, Oregon, and British Columbia.

For British Columbia and Washington an almost identical marine trematode fauna has been reported. This, of course, is due to the close proximity of the areas of trematode research; Friday Harbor in the San Juan Islands of Washington, Nanaimo on Vancouver Island, and Vancouver on the mainland of British Columbia, all within 60 miles of each other.

The literature for the trematodes of the Pacific Northwest is centered around a few individuals and laboratories. From British Columbia the major contributions have come from the Laboratory of the Fisheries Research Board of Canada at Nanaimo and the University of British Columbia. McFarlane and later Margolis have made major contributions from the former research center, and Cowan and Adams and their students from the latter. From Washington the major contributions have come from the University of Washington and its Friday Harbor laboratories, from Guberlet and his students, and from Lynch. In Idaho the work has come from the University of Idaho under the leadership of Schell. From Oregon, work has been centered in Portland and Corvallis. In Portland Macy and his students have made contributions from Reed College, and later from Portland State College. From Corvallis at Oregon State University the earlier reports came from the Department of Veterinary Medicine under the leadership of Simms and later Shaw, and the more recent reports have come from the Zoology Department from Pratt, his students, and associates.

In compiling this catalog a number of general references were used to establish synonymies, ranges, life histories, and general biology. Among these are the recent works of Yamaguti (1958), Skrjabin (1947-1958), Manter (1947, 1954), Dawes (1946, 1947), Winter (1955), and Sproston (1946). In general the synonymies in these works have been accepted unless there was general disagreement.

Additional papers on the trematodes of the Northwest are scattered in many journals and are cited in the body of the text where they are pertinent. A few papers are not cited in the body of the text, but are included in the bibliography. These include the papers of Davis (1957) and Deforest (1958) who reported the incidence of trematode infection in the snails of Eastern Washington, and the paper of Jarcho and Burkalow (1952) which surveys schistosome dermatitis. None of these papers mentions the species of trematode involved.

The general plan of this monograph is to include a complete list of the monogenetic and digenetic trematodes of the area, arranged alphabetically by families. Under each species is included its synonymy; a complete list of Pacific Northwest host records, as well as an indication of other areas in which the trematode is found; comments about the taxonomy, if there is a disagreement, or if other problems appear to need clarification; citations of descriptions other than the original to which the reader might look for additional information, and figures to which he might refer if the original description was not readily available; and finally comments on the general biology, life history, distribution, or other facts which are known.

A taxonomically arranged list of hosts and their naturally occurring parasites is also included. Synonyms of hosts are given if parasites have been reported from them by obsolete names. The names of hosts have been taken from several sources. Fish names have been taken from Clemens and Wilby (1949) and Carl, Clemens, and Lindsey (1959). Professor R. E. Dimmick

of the Department of Fish and Game Management, Oregon State University, has also aided in the preparation of the fish host list. Amphibian and reptilian names are from Schmidt (1953). Bird names are from the American Ornithological Union Checklist (1959). Mammalian names are from Hall and Kelson (1959). Marine molluscan names have come from Abbott (1954). Fresh water molluscs in general follow the names of Ward and Whipple (1959) and Henderson (1929). Other invertebrate names are after Smith et al. (1954) and Ward and Whipple (1959).

The bibliography is alphabetically arranged and includes all papers cited in the catalog as well as a few additional papers from the Pacific Northwest which deal with treatment, diagnosis, or other aspects of trematode parasitism, but do not add new host or distribution records.

Unpublished theses and dissertations include many new distributional and host records. Many of these will subsequently be published, but others will not. To prevent a complete loss of these unpublished records, we are appending a list of them at the end of our bibliography.

The index is an attempt to list all scientific and common names that appear in the text of the paper.

A number of new host and distributional records are included and are indicated by an asterisk (*) instead of a bibliographic reference—followed by the county or counties where found. No attempt has been made to analyze the fauna critically or to make new synonymies. This catalog is a noncritical compilation of the published information that is available. Neither descriptions nor figures are included.

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Monogenetic Trematodes

Family ACANTHOCOTYLIDAE

Acanthocotyle pugetensis Guberlet, 1937

Host:	*Raja binoculata*	Wash.	Guberlet, 1937 Bonham & Guberlet, 1938

There are no other records.

Taxonomy: This species was named by Guberlet (1937) but described by Bonham and Guberlet (1938). Sproston (1946) is in error with Guberlet's date as 1936. Both Sproston and Winters (1955) accept Guberlet as the author even though the species was not described until later.

Acanthocotyle pacifica Guberlet, 1937

Hosts:	*Raja binoculata*	Wash.	Guberlet, 1937; Bonham & Guberlet, 1938
	Raja stellulata	Wash.	Bonham & Guberlet, 1938
	Raja rhina	Wash.	Bonham & Guberlet, 1938

There are no other records.

Taxonomy: The same comments apply here as to *A. pugetensis*.

Family CAPSALIDAE

Benedenia hendorffi (Linstow, 1889) Odhner, 1905

Synonyms: *Phylline hendorffi* Linstow, 1889
Epibdella hendorffi Monticelli, 1891

Price (1938) listed this parasite from an unidentified host from Spokane, Washington. It has also been reported from Europe (Linstow, 1889), Chile (Price, 1939a), and California (Heath, 1902).

Entobdella squamula (Heath, 1902) Johnson, 1929

Synonyms: *Epidella squamula* Heath, 1902
Phyllonella squamula MacCallum, 1927

Hosts:	*Hippoglossus stenolepis*	Alaska to Calif.	Guberlet, 1937
	Paralichthys californicus	Alaska to Calif.†	Guberlet, 1937; Heath, 1902
	Sebastodes spp.	Alaska to Calif.	Guberlet, 1937; Heath, 1902

†This may not be a Northwest record since this fish is not known to occur north of the California border. This parasite has also been reported from the Gulf of Mexico (Price, 1939a).

Morphology: The morphology of this worm has been compared to that of other members of the genus by Ronald (1957).

***Megalocotyle marginata* Folda, 1928**

Synonym: *Trochopos marginata* (Folda, 1928) Price, 1936

Hosts:	*Sebastodes nebulosus*	Wash.	Folda, 1928
	Sebastodes maliger	Wash.	Bonham, 1950
	Sebastodes caurinum	Wash.	Bonham, 1950
	Sebastodes melanops	Wash.	Bonham, 1950

The only other report of this parasite is from Alaska from two species of *Sebastodes* (Bonham, 1950).

***Megalocotyle trituba* Pratt and Aldrich, 1953**

Hosts:	*Sebastodes paucispinus*	Ore.	Pratt & Aldrich, 1953
	Sebastodes alutus	Ore.	*Lincoln Co.
	Sebastodes diploproa	Ore.	*Lincoln Co.
	Sebastodes pinniger	Ore.	*Lincoln Co.
	Sebastodes ruberrimus	Ore.	*Lincoln Co.

This parasite has not been reported outside of the Pacific Northwest.

Family CHIMAERICOLIDAE

***Chimaericola leptogaster* (Leuckart, 1830) Brinkmann, 1942**

Synonym: *Octobothrium leptogaster* Leuckart, 1830

Host:	*Hydrolagus collei*	Wash.	Bonham, 1950

Sproston (1946) listed records of this form from *Chimaera monstrosa* from the North and Mediterranean seas.

Family DACTYLOGYRIDAE

***Dactylogyrus anchoratus* (Dujardin, 1845) Wagener, 1857**

Synonym: *Gyrodactylus anchoratus* Dujardin, 1845

Host:	*Cyprinus carpio*	B.C.	Monaco & Mizelle, 1955

This parasite has been reported from a number of cyprinids from Europe (Sproston, 1946; Kastak, 1956). In North America it has been reported from New York (Mueller, 1936). This would appear to be a European species that was brought over with the host.

***Dactylogyrus banghami* Mizelle and Donahue, 1944**

Hosts:	*Richardsonius balteatus*	B.C.	Monaco & Mizelle, 1955
	Rhinichthys cataractae	B.C.	Monaco & Mizelle, 1955
	Couesius plumbeus	B.C.	Monaco & Mizelle, 1955

This has also been reported from Ontario (Mizelle and Donahue, 1944).

Morphology: Redescribed by Monaco and Mizelle (1955).

* Asterisks denote new (previously unpublished) records of the parasite in the area.

Dactylogyrus columbiensis **Monaco and Mizelle, 1955**

Host:	*Ptychocheilus oregonensis*	B.C.	Monaco & Mizelle, 1955

Dactylogyrus extensus **Mueller and Van Cleave, 1932**

Host:	*Cyprinus carpio*	B.C.	Monaco & Mizelle, 1955

This form has been reported from New York (Mueller and Van Cleave, 1932) and Oklahoma (Roberts, 1957).

Morphology: Additional by Mueller, 1936.

Dactylogyrus mylocheilus **Monaco and Mizelle, 1955**

Hosts:	*Mylocheilus caurinum*	B.C.	Monaco & Mizelle, 1955
	Couesius plumbeus	B.C.	Monaco & Mizelle, 1955

Dactylogyrus ptychocheilus **Monaco and Mizelle, 1955**

Host:	*Ptychocheilus oregonensis*	B.C.	Monaco & Mizelle, 1955

Dactylogyrus richardsonius **Monaco and Mizelle, 1955**

Host:	*Richardsonius balteatus*	B.C.	Monaco & Mizelle, 1955

Dactylogyrus tridactylus **Monaco and Mizelle, 1955**

Host:	*Ptychocheilus oregonensis*	B.C.	Monaco & Mizelle, 1955

Dactylogyrus vancleavei **Monaco and Mizelle, 1955**

Hosts:	*Ptychocheilus oregonensis*	B.C.	Monaco & Mizelle, 1955
	Acrocheilus alutaceum	B.C.	Monaco & Mizelle, 1955

Family DISCOCOTYLIDAE

Discocotyle salmonis **Schaffer, 1916**

Hosts:	*Prosopium williamsoni*	B.C.	Bangham & Adams, 1954
	Salvelinus malma	B.C.	Bangham & Adams, 1954

This trematode has been reported from New York by Schaffer (1916). Price (1943) reviewed the genus.

Octomacrum lanceatum **Mueller, 1934**

Synonym: *Octobothrium sagittatum* Wright, 1879, *nec* Leuckart, *nec.* Olsson

Hosts:	*Catostomus macrocheilus*	Idaho	Fritts, 1959
	Catostomus macrocheilus	B.C.	Bangham & Adams, 1954
	Catostomus catostomus	B.C.	Bangham & Adams, 1954
	Mylocheilus caurinum	B.C.	Bangham & Adams, 1954

This parasite has also been reported from New York by Mueller (1934).

Octomacrum **sp.**

Octomacrum sp. has been reported from *Richardsonius balteatus* and *Couesius plumbeus* from British Columbia (Bangham and Adams, 1954).

Family GYRODACTYLIDAE

Gyrodactylus couesius Wood and Mizelle, 1957

Host:	*Couesius plumbeus*	B.C.	Wood & Mizelle, 1957

This form has not been reported elsewhere.

Gyrodactylus elegans Nordmann, 1832

Synonym: *Gyrodactylus japonicus* Kikuchi, 1929 (Yamaguti, 1940)

Hosts:	*Salmo gairdnerii*	Wash.	Guberlet, Hansen, & Kavanaugh, 1927
	Gasterosteus aculeatus	(Experimentally)	Hansen & Kavanaugh
	Salmo clarkii	Wash.	Wood & Mizelle, 1957
	Gasterosteus cataphractus	Wash.†	Guberlet, 1937
	Salmo trutta	Wash.	Wood & Mizelle, 1957
	Ophiodon elongatus	Wash.	Guberlet, 1937
	Salvelinus fontinalis	Wash.	Wood & Mizelle, 1957
	Sebastodes spp.	Wash.	Guberlet, 1937

†*Gasterosteus cataphractus* does not occur in the Pacific Northwest and is probably reported in error. It is assumed that this should be *G. aculeatus.*

Sproston (1946) listed many records from Europe. Seamster (1938) and Mueller (1936) reported this form from elsewhere in the United States. It has also been reported from Japan (Kikuchi, 1929). *Gyrodactylus elegans* is considered an important pathogen of fish especially in hatcheries. Mizelle (1938) reviewed the literature of the family and control of epidemics.

Gyrodactylus sp.

Griffith (1953) reported *Gyrodactylus* sp. from *Catostomus columbianus palouseanus* from Washington; Shaw, Simms, and Muth (1934) reported it from *Salmo gairdnerii* from Oregon; and Shaw (1933) reported it from hatcheries in Oregon.

Family HEXABOTHRIIDAE

Rajonchocotyle batis Cerfontaine, 1899

Synonyms: *Rajonchocotyle ovata* Guberlet, 1937
Rajonchocotyle wehri Price, 1942

Hosts:	*Raja binoculata*	Wash.	Guberlet, 1937; Bonham, 1950
	Raja stellulata	Wash.	Price, 1942

Cerfontaine (1899) reported this worm from *Raja batis* from Europe. Winters (1955) considered *R. ovata* and *R. wehri* to be synonyms of *R. batis* although Sproston (1946) had not done so.

***Squalonchocotyle somniosi* (Causey, 1926) Guberlet, 1933**

Synonym: *Onchocotyle somniosi* Causey, 1926

Host:	*Somniosus microcephalus*	Calif. to Alaska	Guberlet, 1937

Causey (1926) reported this form from Alaska.

***Squalonchocotyle abbreviata* (Olsson, 1876) Cerfontaine, 1899**

Synonyms: *Onchocotyle abbreviata* Olsson, 1876
Onchocotyle striata Miller, 1927
Erpocotyle striata (Miller, 1927) Price, 1942
Erpocotyle abbreviata (Olsson, 1876) Price, 1942

Host:	*Squalus suckleyi*	Wash.	R. C. Miller, 1927; Guberlet, 1932a, 1937; Bonham, 1950

This form has also been reported from Europe by Olsson (1876), and the Siberian Pacific by Layman (1930). Slinn (1957) reported it as *Erpocotyle abbreviata* from Great Britain.

***Squalonchocotyle grisea* Cerfontaine, 1899**

Synonyms: *Onchocotyle appendiculata* Taschenberg, 1879
Neocrpocotyle grisea (Cerfontaine, 1899) Price, 1942

Host:	*Hexanchus griseus*	Wash.	Bonham, 1950

This form has been reported from the Mediterranean by Cerfontaine (1899), Stossich (1898), and Taschenberg (1879). Rees and Llewellen (1941) reported it from Ireland.

Family MICROCOTYLIDAE

***Microcotyle chiri* Goto, 1894**

Host:	*Hexagrammos decagrammos*	Wash.	Bonham, 1950

Other hosts have been reported from Japan (Goto, 1894).

***Microcotyle sebastis* Goto, 1894**

Hosts:	*Sebastodes maliger*	Wash.	Bonham & Guberlet, 1937
	Sebastodes melanops	Wash.	Bonham & Guberlet, 1937
	Sebastodes melanops	Ore.	*Lincoln Co.
	Sebastodes caurinus	Wash.	Guberlet, 1937
	Ophiodon elongatus	Wash.	Guberlet, 1937

This form has also been reported from Japan (Goto, 1894; Yamaguti, 1934).

***Microcotyle* sp.**

Microcotyle sp. has been reported from *Radulinus asprellus* from Washington by Bonham (1950).

Tripathi (1956) included a key to the genera of *Microcotylidae*.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Family MONOCOTYLIDAE

Merizocotyle pugetensis Kay, 1942

Host: *Raja binoculata* Wash. Kay, 1942; Bonham, 1950

There are no other records.

Family POLYSTOMATIDAE

Polystomoides coronatus (Leidy, 1888) Price, 1939

Synonyms: *Polystoma coronatum* Leidy, 1888
Polystoma opacum Stunkard, 1916
P. (Polystomoides) coronatum Ward, 1917
Polystoma megalocotyle Stunkard, 1916
Polystoma microcotyle Stunkard, 1916
Polystomoides megalocotyle (Stunkard, 1916) Stunkard, 1924
Polystoma albicollis MacCallum, 1918
Polystoma digitatum MacCallum, 1918

This synonymy is after Sproston (1946).

Host: *Clemmys marmorata* Ore. Thatcher, 1954

This form has been reported from places in North America outside of the Pacific Northwest by Steward (1914), Stunkard (1916, 1917, 1924), Price (1939b), and Harwood (1932). It has also been reported from Japan by Fukui and Ogata (1939).

Neopolystoma orbiculare (Stunkard, 1916) Price, 1939

Synonyms: *Polystoma orbiculare* Stunkard, 1916
Polystomoides orbiculare (Stunkard, 1916) Ozaki, 1935
Polystoma oblongum Leidy, 1888, *nec.* Wright, 1879
Polystoma troosti MacCallum, 1918
Polystoma inerme MacCallum, 1918
Polystoma elegans MacCallum, 1918
Polystoma spinulosa MacCallum, 1918
Polystoma aspidonectis MacCallum, 1918
Polystoma floridanum Stunkard, 1924

Synonymy after Sproston (1946).

Host: *Clemmys marmorata* Ore. Thatcher, 1954

Additional hosts have been reported by all of the above authors from turtles from North America, many from aquaria.

Family UDONELLIDAE

Udonella caligorum **Johnston, 1835**

Synonyms: *Amphibothrium kroeyeri* Leuckart, 1847
Udonella lupi van Beneden & Hesse, 1863
Udonella merlucii van Beneden & Hesse, 1863
Udonella pollachii van Beneden & Hesse, 1863
Udonella sciaenae van Beneden & Hesse, 1863
Udonella triglae van Beneden & Hesse, 1863
Echinella hirudinis van Beneden & Hesse, 1863
Pteronella molvae van Beneden & Hesse, 1863
Udonella caligarum Taschenberg, 1879
Podarcella cancerillae Giard, 1889
Nitzchia papillosa Linton, 1898
Lintonia papillosa (Linton, 1898) Monticelli, 1904
Udonella socialis Linton, 1910
Calinella myliobati Guberlet, 1937

Host: *Caligus* sp. on *Raja binoculata* Wash. *San Juan Co.

Guberlet (1937) reported this form on other hosts from California. Sproston (1946) included reports from most of Europe and from Florida. The following copepods were included by Sproston (1946) as known hosts of this form: ***Caligus*** sp., *Anchorella* sp., *Cancerilla tabulata, "Argulus* sp.," *Alebion carchariae, Trebius caudatus, Caligus curtis, C. centrodonti,* and *C. labracis.*

Udonella ophiodontis **(Kay, 1945) Winter, 1955**

Synonym: *Calinella ophiodontis* Kay, 1945

Host: *Lepeophtheirus* sp. on
Ophiodon elongatus Wash. Kay, 1945

This form has not been reported elsewhere.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Digenetic Trematodes

Family ACANTHOCOLPIDAE

***Stephanostomum casum* (Linton, 1910) McFarlane, 1934**

Synonyms: *Stephanochasmus casum* Linton, 1910
Lechradena edentula Linton, 1910
Stephanostomum edentula (Linton, 1910) Yamaguti, 1953

Hosts:	*Sebastodes* sp.	B.C.	McFarlane, 1934
	Ophiodon elongatus	B.C.	McFarlane, 1936

Also reported from Mexico (Bravo-Hollis, 1956), Florida (Linton, 1910; Manter, 1947), Japan (Yamaguti, 1934) and North Carolina (Manter, 1931).

Morphology: This form was described and figured by McFarlane (1934, 1936) and Manter, (1947). Nothing is known of the life history of this form.

***Stephanostomum tristephanum* McFarlane, 1936**

Hosts:	*Ophiodon elongatus*	B.C.	McFarlane, 1936
		Wash.	McFarlane, 1936; Ching, 1960b

This form has not been reported elsewhere.

Family ACCACOELIIDAE

***Accacladocoelium macrocotyle* (Diesing, 1858) Odhner, 1928**

Synonyms: *Distoma macrocotyle* Diesing, 1858
Podocotyle macrocotyle (Diesing, 1858) Stossich, 1898

Host:	*Mola mola*	Ore.	*Pacific Ocean off Newport

Other records from Massachusetts (Linton, 1913), Ireland, Scandinavia, Mediterranean area, and North America according to Yamaguti (1958). Nothing is known of the life history.

***Odhnerium calyptrocotyle* (Monticelli, 1893) Yamaguti, 1934**

Synonyms: *Distoma calyptrocotyle* Monticelli, 1893
Mneidodhneria calyptrocotyle (Monticelli, 1893) Dollfus, 1935
Accocoelium calyptrocotyle (Monticelli, 1893) Luhe, 1900
Orophocotyle calyptrocotyle (Monticelli, 1893) Looss, 1902
Distomum foliatum Linton, 1898 (Yamaguti, 1953)
Orophocotyle foliata (Linton, 1898) Looss, 1902
Mneiodhneria foliata (Linton, 1898) Dollfus, 1935

Host:	*Mola mola*	B.C.	Lloyd, 1938

Additional hosts include *Beröe ovata* from Naples (Monticelli, 1893) and *Mola mola* from Japan (Yamaguti, 1934) and New Zealand (Manter, 1954). Nothing is known of the life cycle.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Family ALLOCREADIIDAE

Allocreadium lobatum Wallin, 1909

Hosts:	*Salmo gairdneri kamloops*	B.C.	Bangham & Adams, 1954
	Catostomus catostomus	B.C.	Bangham & Adams, 1954
	Prosopium williamsoni	B.C.	Bangham & Adams, 1954
	Ptychocheilus oregonensis	B.C.	Bangham & Adams, 1954
	Couesius plumbeus	B.C.	Bangham & Adams, 1954
	Mylocheilus caurinum	B.C.	Bangham & Adams, 1954

Additional hosts have been reported from New York (Mueller, 1934), Maine (Wallin, 1909), Wisconsin (Pearse, 1924; Fischthal, 1950), Delaware (Hunninen, 1936), Quebec (Bangham and Venard, 1946), Wyoming (Bangham, 1951).

Morphology: Mueller (1934) partially described this form.

Biology: The life history of this form is not known, but that of another species in this genus has been worked out by Seitner (1951).

Bunodera eucaliae (Miller, 1936) Miller, 1940

Synonym: *Bunoderina eucaliae* Miller, 1936

Hosts:	*Gasterosteus aculeatus*	B.C.	Bangham & Adams, 1954
	Eucalia inconstans	B.C.	Bangham & Adams, 1954
	Gasterosteus aculeatus	Ore.	*Benton County

Additional hosts have been reported from Maine (Mueller, 1936), Wisconsin (Bangham, 1944), and Lake Huron (Bangham, 1955).

Morphology: The only description is the original one by Miller (1936).

Biology: Hoffman (1955) has worked out the life cycle but has not proved it experimentally. The cercariae develop in a clam of the genus *Pisidium* and do not require a second intermediate host.

Crepidostomum cornutum (Osborn, 1903) Stafford, 1904

Synonyms: *Bunodera cornuta* Osborn, 1903
Distomum nodulosum (Zeder, 1800) Wright, 1884
Distomum auritus MacCallum, 1918 (?) Hopkins, 1934

Host:	*Gasterosteus aculeatus*	Ore.	*Linn County

Additional hosts have been listed by Hopkins (1934) from Ontario, Michigan, New York, Illinois, Mississippi, Quebec, Ohio, Wisconsin, Alabama, and Louisiana.

Morphology: This form was described in detail by Hopkins (1934) but was not figured in his paper.

Biology: Oculate xiphidiocercariae develop in *Musculium* or *Sphaerium* and encyst in crayfish. Contributions to the life history have been made by Bangham (1926), Hopkins (1933), Abernathy (1937), Ameel (1937), Henderson (1938), Hussey (1941), Parker (1941), and Cheng (1957b). Cheng and James (1960) described some of the embryology.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

***Crepidostomum cooperi* Hopkins, 1931**

Synonyms: *Crepidostomum ambloplitis* Hopkins, 1931 (Hopkins, 1934)
C. solidum Van Cleave & Mueller, 1932 (Hopkins, 1934)
C. fausti Hunninen & Hunter, 1933 (Hopkins, 1934)

Hosts:	*Salvelinus fontinalis*	Ore.	Shaw, Simms, & Muth, 1934
	S. malma	Ore.	Shaw, 1947; Shaw, Simms, & Muth, 1934
	Salmo gairdneri	Ore.	Shaw, 1933, 1947
	Crayfish and mayflies	Ore.	Shaw, Simms, & Muth, 1934

Additional hosts have been reported from Ontario, New York, Maine, Illinois, Louisiana, Mississippi, Oklahoma (Hopkins, 1934), and Quebec (Choquette, 1954).

Morphology: Described and figured by Hopkins (1931, 1934).

Biology: Ocellate xiphidiocercariae develop in species of *Musculium* or *Pisidium* and encyst in nymphs of mayflies or other aquatic insects or crustaceans (Hopkins, 1934; Choquette, 1954).

***Crepidostomum farionis* (O. F. Mueller, 1784) Braun, 1900**

Synonyms: *Fasciola farionis* O. F. Mueller, 1784
F. truttae Froelich, 1789
Distoma laureatum Zeder, 1800
Fasciola laureata (Zeder, 1800) Normann, 1840
Crossodera laureata (Zeder, 1800) Cobbold, 1860
Distoma farionis (O. F. Mueller, 1784) Blanchard, 1891
Crepidostomum laureatum (Zeder, 1800) Braun, 1900
Stephanophialia transmarina Nicoll, 1909
S. laureata (Zeder, 1800) Nicoll, 1909
S. farionis (O. F. Mueller, 1784) Faust, 1918
S. vitelloba Faust, 1918
Crepidostomum ussuruense Layman, 1930
C. vitellobum (Faust, 1918) Hopkins, 1931

Hosts:	*Salmo gairdneri*	Ore.	Shaw, 1947
		B.C.	Bangham & Adams, 1954
	Salmo clarkii	Ore.	*Benton County
		B.C.	Bangham & Adams, 1954
	S. gairdneri kamloops	B.C.	Bangham & Adams, 1954
	Salvelinus fontinalis	B.C.	Bangham & Adams, 1954
	S. malma	B.C.	Bangham & Adams, 1954
	Oncorhynchus kisutch	B.C.	Bangham & Adams, 1954
	O. nerka	B.C.	Bangham & Adams, 1954
	O. nerka kennerlyi	B.C.	Bangham & Adams, 1954
	Lota lota	B.C.	Bangham & Adams, 1954
	Prosopium williamsoni	B.C.	Bangham & Adams, 1954
	Thymallus arcticus	B.C.	Bangham & Adams, 1954

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Bangham and Adams (1954) considered this to be the principal parasite of fresh water fish of British Columbia. Hopkins (1934) summarized the distribution of this form and reported it from most of northern Europe, Siberia, and Great Britian, as well as from Alaska, Montana, Wyoming, and Vermont. Recent workers have reported it from Czechslovakia (Dyk, Lucky, and Valenta, 1954), Wales (Thomas, 1958), Quebec (Bangham and Venard, 1946), Wyoming (Bangham, 1951) and California (Haderlie, 1953). Yamaguti (1958) stated that it had been reported from Morocco but did not cite his reference. This reference is unexpected since all other records are boreal. This is primarily a parasite of salmonid fishes, though a few other hosts have been reported.

Morphology: This form has been redescribed in detail by Hopkins (1934).

Biology: Thomas (1958) discussed the general biology of the species. The life history has been worked out by Brown (1927) and Crawford (1943). Ocellate xiphidiocercariae develop in species of *Pisidium* and encyst in species of mayfly.

Crepidostomum isotomum Hopkins, 1931

Host: *Cottus asper* B.C. Bangham & Adams, 1954

This form has been previously reported only by Hopkins (1931, 1934) from Illinois.

Morphology: Described only by Hopkins (1931, 1934).

Biology: Hopkins (1934) has worked out the life history with admittedly weak evidence and has found ocellate xiphidiocercariae to develop in *Sphaerium* and encyst in mayfly nymphs.

***Crepidostomum* sp.**

Forms reported as *Crepidostomum* sp. have been reported from British Columbia by Bangham and Adams (1954) from *Thymallus arcticus* and *Lota lota*. Shaw (1947) reported *Crepidostomum* sp. from *Salmo clarki* and *Salvelinus fontinalis* from Oregon.

***Plagiocirrus primus* Van Cleave and Mueller, 1932**

Host: *Catostomus macrochcilus* Idaho Fritts, 1959

Reported by Van Cleave and Mueller (1932, 1934) from New York, and has not been reported elsewhere. The description by Van Cleave and Mueller is adequate and figures appear in both the 1932 and 1934 papers.

***Plagiocirrus testeus* Fritts, 1959**

Host: *Catostomus machrocheilus* Idaho Fritts, 1959

This is the only paper which mentioned this species.

***Plagiocirrus* sp.**

Bangham and Adams (1954) reported *Plagiocirrus* sp. from *Catostomus catostomus* from British Columbia.

Allocreadiidae

Griffith (1953) reported Allocreadiidae from *Catostomus macrochcilus* from Eastern Washington.

Family APOROCOTYLIDAE

Aporocotyle simplex Odhner, 1900

Hosts:	*Sebastodes* sp.	B.C.	McFarlane, 1936
	Sebastodes maliger	Wash.	Ching, 1960b

This species has previously been reported from Sweden (Odhner, 1900) and the Russian arctic (Skrjabin, 1951).

Morphology: This form was redescribed by McFarlane (1936) and figured and described by Skrjabin (1951). Nothing is known of the life cycle of this genus.

Sanguinicola klamathensis Wales, 1958

Host:	*Salmo clarki henshawi*	Ore.	Wales, 1958

This is the only record of this trematode.

Biology: Furcocercous cercariae develop in *Flumenicola virens,* penetrate fish, and mature in the veins of the gills. Miracidia being released cause damage to the gills and heavy mortality to fish hosts (Wales, 1958).

Family AZYGIIDAE

Otodistomum veliporum (Creplin, 1837) Stafford, 1904

Synonyms: *Distoma veliporum* Creplin, 1837
D. insigne Diesing, 1850
Fasciola squali grisei Risso of Deising, 1850
D. microcephalum Band, 1853
D. cestoides Beneden, 1870
D. nigrescens Olsson, 1876
Agamodistomum chimerae Ariola, 1899
Xenodistomum melanocystis Stafford, 1904
Otodistomum cestoides Beneden of Odhner, 1911
Cercaria cestoides Nicoll, 1913
Otodistomum cestoides Dollfus, 1937
O. cestoides pacificum Dollfus, 1937
O. veliporum leptotheca Dollfus, 1937
O. veliporum veliporum Dollfus, 1937
O. veliporum pachytheca Dollfus, 1937
O. pristiophori (Johnstone, 1902) (Probably)
Distoma pristiophori (Johnstone, 1902) (Probably)

The above synonymy is after Rees, 1953.

Hosts:	*Raja binoculata*	Wash.	Lloyd, 1938
	Hexanthus griseus	Wash.	*San Juan County
	Raja binoculata	Ore.	*Lincoln County

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Additional hosts have been summarized by Dollfus, (1937b) but must be examined under the various synonyms as noted above. He listed hosts from the Mediterranean, Norway, France, Canada, New Zealand, Alaska, Sweden, Belgium, Great Britain, Chile, Siberia, and Australia. Nicoll (1915b) listed additional British hosts; Rees (1953) listed hosts from Iceland, and Heller (1949) listed hosts from Canada.

Morphology: Manter (1926) described this worm in great detail.

Biology: The life history is not completely known. The adult, egg, and miricidium were described by Manter (1926), and metacercariae have been found encysted in *Glyptocephalus cynoglossus* and *Chimaera monstrosa*. The definitive host is usually a selachian (Nicoll, 1913; Dollfus, 1937b).

***Otodistomum plicatum* Kay, 1947**

Host: *Hexanthus griseus* Wash. Kay, 1947

There are no other records of this form.

Family BRACHYLAEMIDAE

***Brachylaime fuscatus* (Rudolphi, 1819)**

Synonyms: *Distoma fuscatum* Rudolphi, 1819
Harmostomum nicolli Witenberg, 1925
H. (Harmostomum) fuscatum Witenberg, 1925
Harmostomum pellucidum Werby, 1928
Bradhylaema pellucidum (Werby, 1928) Sinitsin, 1931

Host: *Turdus migratorius* Wash. Werby, 1928a

Additional hosts are listed in Yamaguti (1958).

Taxonomy: Kruidenier and Gallicchio (1959) have shown the correct designation of the genus to be *Brachylaime*.

Morphology: Skrjabin (1948) described and figured the worm. Dawes (1946) also described the form.

Biology: The life history has been partially worked out by Joyeaux, Baer, and Timon-David (1934) and by Timon-David (1954) and involves a cercaracum developing in the kidney of *Helix pisana* and becoming an adult in passerine birds.

***Glaphyrostomum propinquum* Braun, 1901**

Synonym: *Glaphyrostomum sanguinolentum* Werby, 1928 (Sinitsin, 1931)

Host: *Opornis tolmiei* Wash. Werby, 1928b

Additional hosts are listed in Yamaguti (1958).

Taxonomy: There is some disagreement as to the correct disposition of Werby's species. Dawes (1946) and Yamaguti (1958) accepted Sinitsin's (1931b) proposal, but Skrjabin (1948) retained Werby's species.

Family BUCEPHALIDAE

Rhipidocotyle elongatum McFarlane, 1936

Hosts:	*Ophiodon elongatus*	B.C.	McFarlane, 1936
	Ophiodon elongatus	Wash.	Ching, 1960b

Biology: The life cycle for this form is not known, but other species in the genus have been shown to have distinctive cercariae which develop in mussels and encyst in the tissues of small fish before reaching the definitive host (Kniskern, 1952).

Bucephalopsis ozakii (Ozaki, 1928) Nagaty, 1937

Synonyms: *Bucephalopsis ovatus* Ozaki, 1928 (Preoccupied by *B. ovatus* Linton, 1900)

Hosts:	*Salvelinus malma*	B.C.	Bangham & Adams, 1954
	Platyichthys stellatus	Ore.	*Lincoln Co.
	Leptocottus armatus	Ore.	*Lincoln Co.

This form has also been described from Korea (Ozaki, 1928).

Biology: The life history of this form is unknown, but the closely related *Bucephalopsis haemianus* has been shown to develop in the oyster, encyst in *Menidia,* and develop to maturity in various fishes (Palombi, 1934).

Prosorhynchus squamatus Odhner, 1905

Synonyms: *Bucephalus crux* Levinsen, 1881
Prosorhynchus grandis Lebour, 1908
Prosorhynchus triglae Nicoll, 1914

Host:	*Enophrys bison*	Ore.	*Lincoln Co.

Additional hosts have been reported from England by Dawes (1946), Nicoll (1907a, 1910a, 1915b), Arctic Russia by Issaitschikow (1928), and Chubrick (1952), Sweden by Levinsen (1881), and Japan by Ozaki (1924).

Biology: Chubrick (1952) concluded that the cercariae from *Mytilus edulis* and the metacercariae from *Liparis liparis* are the intermediate stages of this form in the Barents Sea; and that sometimes it is progenetic in the liparid.

Prosorhynchus scalpellus McFarlane, 1936

Host:	*Scorpaenichthys marmoratus*	B.C.	McFarlane, 1936

This species is not reported elsewhere.

Taxonomy: Nagaty (1937) considered this as a synonym of *Prosorhynchus crucibulus.*

Biology: The life history is unknown (see Biology section under *P. squamatus* above).

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* Asterisks denote new (previously unpublished) reports of the parasite in the area.

***Prosorhynchus facilis* (Ozaki, 1924) Eckmann, 1932**

Synonyms: *Prosorhynchus apertus* McFarlane, 1936
Gotonius facilis Ozaki, 1924

Hosts:			
	Ophiodon elongatus	B.C.	McFarlane, 1936
	Ophiodon elongatus	Wash.	Ching, 1960b

Additional hosts reported by Yamaguti (1953).

Morphology: McFarlane (1936) described it as *P. apertus* with figures.

Biology: The life history is unknown (see Biology section of *P. squamatus* above).

Family CAMPULIDAE

***Campula oblonga* (Cobbold, 1858) Braun, 1900 *nec* Cobbold, 1876**

Synonyms: *Distoma oblongum* (Cobbold, 1858) Braun, 1892
Distoma (Brachylaimus) oblongum (Cobb., 1858) Stoss., 1892
Distomum tenuicolle Rudolphi, 1819, of Olsson, 1893
Brachycladium oblongum (Cobb., 1858) Looss, 1902
Opisthorchis oblonga Kowalewski, 1898

Host:			
	Phocaena vomerina	Wash.	Ching & Robinson, 1959

For other hosts see Yamaguti (1958).

Morphology: Described and figured by Skrjabin (1948) and by Dawes (1946). No life histories are known for this genus.

***Hadwenius nipponicus* Yamaguti, 1951**

Host:			
	Phocaena vomerina	Wash.	Ching & Robinson, 1959

For other hosts see Yamaguti (1951). Life histories are unknown for this genus.

***Lecithodesmus goliath* (van Beneden, 1858) Odhner, 1905**

Synonym: *Distomum goliath* van Beneden, 1858

Host:			
	Balaenoptera physalus	B.C.	Margolis & Pike, 1955

For other hosts see Dawes (1946) or Yamaguti (1958).

Morphology: This form has been described and figured by Braun (1902), Odhner (1905), Price (1932a), Dawes (1946), and Skrjabin (1948).

***Lecithodesmus spinosus* Margolis and Pike, 1955**

Host:			
	Balaenoptera borealis	B.C.	Margolis & Pike, 1955

No life history is known for this genus. There are no other reports of this species.

Family CLINOSTOMATIDAE

***Clinostomum marginatum* (Rudolphi, 1809)**

Synonyms: See note in Taxonomy below.

Hosts:	Birds of the Heron group	Pac. N.W.	Guberlet, 1927
	Larvae in *Mylocheilus caurinus*	B.C.	Bangham & Adams, 1954
	Larvae in *Richardsonius balteatus*	B.C.	Bangham & Adams, 1954

Additional host references in Yamaguti (1958), Harmes (1959), and Schwartz (1956).

Taxonomy: This species has not been definitely placed taxonomically. European workers (Dawes, 1946; Skrjabin, 1947d; Jaiswal, 1957) placed this in synonymy with *C. complanatum* (Rudolphi, 1819). Yamaguti (1958) showed the status of the species to be unclear. American workers accepted *C. marginatum* as the valid name as evidenced by continued reports of the species (Kruidenier, 1951; Hollis and Coker, 1949; Cameron, 1945; Bangham and Adams, 1954).

Biology: Furcocercous cercariae with fin folds develop in *Helisoma antrosum* and *H. campanulatum*; metacercariae encyst in many fish and develop to maturity in herons (Hunter and Hunter, 1934, 1935, 1935b; Cameron, 1945). Cameron (1945) also stated that man has been a host elsewhere.

Family CYCLOCOELIDAE

***Cyclocoelum obscurum* (Leidy, 1887) Harrah, 1922**

Synonym: *Monostomum obscurum* Leidy, 1887

Hosts: Reported from an unknown host from Spokane, Washington, by Harrah, 1922. Additional hosts (Harrah, 1922; Tubangui, 1933).

Family DICROCOELIIDAE

***Athesmia jolliei* Schell, 1957**

Host:	*Falco sparverius*	Idaho	Schell, 1957

No other record is known. No life history is known for this genus.

***Brachycoelium salamandrae* (Frölich, 1789) Stiles and Hassell, 1898**

Synonyms: *Fasciola salamandrae* Frölich, 1789
Distoma salamandrae Zeder, 1803
Distoma crassicolle Rudolphi, 1809
Distomum flavocinctum Linstow, 1879
Brachycoelium crassicolle (Frölich, 1789) Looss, 1899
Lecithodendrium crassicolle (Frölich, 1789) Stossich, 1799
Brachycoelium hospitale Stafford, 1903

The above synonymy is after Cheng (1958). Rankin (1938) reduced all the American species to synonymy with this species, but a restudy by Parker (1941) and later by Cheng (1958) indicated that this probably was not correct.

Hosts:	*Ensatina eschscholtzi*	Ore.	Lehmann, 1954
	Taricha granulosa	Ore.	Lehmann, 1954

For other host records see Harwood (1932), Byrd (1937a, 1937b), Cheng (1958), Najarian (1955), and Stafford (1900) as well as the European authors cited in the synonymy.

Morphology: Redescribed and figured by Cheng (1958). Kemnitz (1913) showed it to have 20 chromosomes.

Biology: The life cycle is largely unknown for this genus. See Timon-David (1956, 1957). Cort (1915a) found a worm parasitized with the larvae of a *Gordius* worm.

***Brachylecithum chivosca* (Pratt and Cutress, 1949) Skrjabin & Evranova, 1952**

Synonyms: *Olssoniella chivosca* Pratt & Cutress, 1949
Lypersomum (*Brachylecithum*) *chivosca* (Pratt & Cutress, 1949) Jaiswal, 1957

Host:	*Hesperiophonia vespertina brooksi*	Ore.	Pratt & Cutress, 1949

Not known outside of the Pacific Northwest.

Morphology: Redescribed and figured by Skrjabin and Evranova (1952).

***Brachylecithum idahoensis* Schell, 1957**

Host:	*Falco sparverius*	Idaho	Schell, 1957

There are no other records.

***Brachylecithum mosquense* (Skrjabin and Issaitchikov, 1927)**

Synonyms: *Oswaldoia mosquense* S. and I., 1927
Olssoniella mosquense (S. and I., 1927) Travassos, 1944
Lypersomum mosquense (S. and I., 1927) Skrjabin & Evranova, 1952

Hosts:	*Turdus migratorius*	Idaho	Schell, 1957
	Ixoreus naevis naevis	Idaho	Schell, 1957
	Turdus migratorius	Ore.	*Coos County

Additional host records by Yamaguti, 1958; Skrjabin and Evranova, 1952.

Morphology: Described and figured by Skrjabin and Evranova, 1952. For life histories of other members of this genus see Denton (1945), Jolivet and Theodorides (1950) and Mattes (1955).

***Concinnum burleighi* Schell, 1957**

Host:	*Passerella iliaco*	Idaho	Schell, 1957

There are no other records. For life histories of other members of this genus see Denton (1944), Patten (1952).

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Lutztrema monenteron (Price and McIntosh, 1935) Travassos, 1941

Synonyms: *Lypersomum monenteron* Price & McIntosh, 1935
Brachylecithum monenteron (Price & McIntosh, 1935) Strom, 1940

Hosts:			
	Turdus migratorius	Idaho	Schell, 1957
	Ixoreus naevis naevis	Idaho	Schell, 1957
	Pipilo erythophthalmus oregonus	Wash.	Schell, 1957

Additional North American hosts in Yamaguti (1958). Also reported from Europe by Mettrick (1956).

Morphology: Skrjabin and Evranova (1952) redescribed and figured this form. Denton and Byrd (1951) gave the flame cell formula and description. No life history is known for this genus. For life history studies on other species in this genus see Denton and Byrd (1951).

Paradistomum passerculum Schell, 1957

Host:			
	Passerculus sandwichensis alaudinis	Idaho	Schell, 1957

No other records. No life history is known for this genus.

Platynosomum fastosum Kossack, 1910

Synonym: *Dicrocoelium lanceolatum* var. *symmetricum* Bayless, 1918 (Yamaguti, 1958)

Host:			
	Neotoma fuscipes	Ore.	*Benton County

Additional hosts in Yamaguti (1958) and Perez Vigueras (1955).

Morphology: Redescribed and figured in Skrjabin and Evranova (1952).

Biology: In Puerto Rico the daughter sporocysts develop in the snail *Subulina octona* and leave the snail as sporocysts, then penetrate a lizard which is eaten by a cat (Maldonada, 1945).

Family DIPLOSTOMIDAE

Alaria arisaemoides Augustine and Uribe, 1927

Hosts:			
	Canis familiaris	Ore.	Dikmans, 1945; Price, 1932b
	Felis domesticus	Ore.	Dikmans, 1945

Other hosts from North America in Yamaguti (1958).

Morphology: Redescribed and figured by Dubois (1938).

Biology: Cercariae develop in *Planorbula armigera* and *Promenetus exacuous* and penetrate tadpoles and adults of *Rana pipiens, Rana sylvatica,* and *Bufo americanus.* Diplostomula develop in the lungs of foxes and migrate to the gut to mature—experimentally by Pearson (1956).

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Alaria marcinae **(LaRue, 1917) Walton, 1950**

Synonym: *Agamodistomum marcianae* LaRue, 1917

Hosts:	*Thamnophis sirtalis*	Wash.	Sumwalt, 1926
	Thamnophis ordinoides	Wash.	Sumwalt, 1926

In both cases these forms were larval in the snakes. Also reported from *Rana pipiens* by LaRue, 1917.

Alaria mustelae **Bosma, 1931**

Hosts:	*Mustela vison*	Ore.	Senger & Neiland, 1955
	Mustela frenata	Ore.	Senger & Neiland, 1955

Additional hosts listed by Dubois (1938).

Morphology: Bosma (1934) described the adult and larval stages in detail; these are also described and figured by Dubois (1938).

Biology: Cercariae develop in *Planorbula armigera;* metacercariae in tadpoles and frogs—confirmed experimentally by Bosma (1934).

Alaria oregonensis **LaRue and Barone, 1932**

Host:	*Canis latrans lestes*	Ore.	LaRue & Barone, 1927, 1932

Morphology: Described and figured by Dubois (1938).

Alaria **sp.**

Cram (1926) reported an *Alaria* sp. from a coyote (*Canis latrans lestes*) from Oregon, and Shaw (1947) reported a larval *Alaria* sp. from the Eastern Brook Trout, *Salvelinus fontinalis,* from Oregon.

Diplostomum **sp.**

Shaw (1947) reported a *Proalaria* sp. from a pelican (*Pelicanus* sp.) *Proalaria* is now considered to be a synonym of *Diplostomum* (Dubois, 1938).

Diplostomulum **sp.**

Diplostomulum is a "generic" name for metacercaria of diplostomid trematodes for which the adult form is unknown and which is unencysted in the intermediate host. Bangham and Adams (1945) reported the following fish hosts of *Diplostomulum* from fresh water of British Columbia:

Prosopium williamsoni	*Oncorhynchus kisutch*
P. cylindraceum quadrilaterale	*Salmo clarki*
Catostomus catostomus	*S. gairdneri kamloops*
C. macrocheilus	*Salvelinus fontinalis*
C. commersoni	*S. malma*
Mylocheilus caurinum	*Couesius plumbeus*
Ptychocheilus oregonensis	*Richardsonius balteatus*
Gasterosteus aculeatus	*Lota lota*
Micropterus salmoides	*Cottus asper*
	Cottus rhotheus

Neascus sp.

Neascus is a "generic" name for metacercariae of diplostomid trematodes for which the adult form is unknown, is encysted, and lacks lateral suckers. Bangham and Adams (1954) reported the following species of fresh water fish as hosts of *Neascus* in British Columbia:

Salmo clarkii
Salvelinus malma
Catostomus macrocheilus
Acrocheilus alutaceum
Rhinichthys cataractae
Richardsonius balteatus
Salvelinus fontinalis
Catostomus catostomus
Mylocheilus caurinum
Couesius plumbeus
Ptychocheilus oregonensis
Micropterus salmoides
Lepomis gibbosus

Pharyngostomoides procyonis Harkema, 1942

Host: *Procyon lotor* Ore. *Location unknown

The only other records are those of Harkema (1942).

Posthodiplostomum minimum (MacCallum, 1921) Dubois, 1936

Synonyms: *Diplostomum minimum* MacCallum, 1921
Neodiplostomum minimum (MacCallum, 1921) Dubois, 1935
Neodiplostomum orchilongum Noble, 1936
Posthodiplostomum orchilongum (Noble, 1936) Dubois, 1937

Hosts: Bangham and Adams (1954) reported the following fresh water fish from British Columbia as hosts for the larval stages of this trematode:

Catostomus catostomus
Mylocheilus caurinum
Couesius plumbeus
Ptychocheilus oregonensis
Gasterosteus aculeatus
Lepomis gibbosus
Catostomus macrocheilus
Acrocheilus alutaceum
Rhinichthys cataractae
Richardsonius balteatus
Lota lota
Cottus asper

More hosts from the Pacific Northwest with larval forms include:

Catostomus columbianus palouseanus Wash. Griffith, 1953
Catostomus macrocheilus Wash. Griffith, 1953
Lepomis macrochirus Wash. Griffith, 1953

Additional hosts have been listed by Dubois (1938), Hoffman (1958).

Morphology: Described and figured by Dubois (1938).

Biology: Miller (1954) showed oculate furcocercous cercariae to develop in *Physa heterostropha,* encyst experimentally in *Lepomis gibbosus* and *L. megalotus,* and develop in chicks. Hoffman (1958) has done additional work on their life history and physiology. He listed an extensive bibliography.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

***Tetracotyle* sp.**

Tetracotyle is a "generic" name for metacercariae of diplostomid trematodes which are unencysted, bear a pair of lateral cotylae (suckers), and in which the adult form is unknown. Bangham and Adams (1954) listed the following fresh water fish from British Columbia as hosts of *Tetracotyle:*

Prosopium williamsoni	*Catostomus catostomus*
Oncorhynchus nerka	*C. macrocheilus*
Salvelinus malma	*Mylocheilus caurinum*
Couesius plumbeus	*Richardsonius balteatus*
Ptychocheilus oregonensis	*Gasterosteus aculeatus*
Eucalia inconstans	*Cottus asper*
	Cottus rhotheus

***Cercaria* sp.**

Hunter et al. (1949) reported a "strigeid" cercaria from *Lymnaea palustris* from Washington.

Family ECHINOSTOMATIDAE

***Aporchis continuus* McCauley and Pratt, 1960**

Host: *Larus canus* Ore. McCauley & Pratt, 1960

There are no other records.

***Echinoparyphium contiguum* Barker and Bastron, 1915**

Host: *Ondatra zibethica* B.C. Knight, 1951

Hosts from other areas have been reported by Swales (1933) and Olsen (1938).

Morphology: Redescribed by Knight (1951) and described and figured in Skrjabin and Baschkirova (1956).

***Echinoparyphium recurvatum* (Linstow, 1873) Dietz, 1909**

Synonyms: *Distomum recurvatum* Linstow, 1873
Echinostomum recurvatum (Linstow, 1873) Stossich, 1892

Host: "Naturally infected snails" Ore. Senger, 1954

Additional hosts from other areas were listed by Yamaguti (1958).

Morphology: This form was figured and described by Skrajabin and Baschkirova (1956). The embryology and development of the excretory system of the cercariae were described by Kuntz (1953).

Biology: This parasite develops in various snails and the cercariae encyst in the same snail, another snail, or less frequently in some other animal. Gmitter (1955) reported it from *Lymnaea peregra* in Czechoslovakia, Harper (1929) reported it from *Valvata piscinalis,* Mathias (1926, 1927) reported it from various species of *Planorbis, Cyclas,* and *Lymnaea,* and Bittner (1925) showed metacercariae to occur in *Rana temporaria.*

This worm has been shown to cause the death of mute swans in Great Britain (Soulsby, 1955).

Echinostomum coalitum **Barker and Beaver, 1915**

Host:	*Ondatra zibethica*	B.C.	Knight, 1951

This form was also reported from Czechoslovakia by Bartik et al. (1956).

Taxonomy: The description of this species appeared in Barker (1915). However to give credit for unpublished material he included the names of both authors in his paper.

Morphology: Skrjabin and Baschkirova (1956) figured and described this form.

Biology: The life history has been worked out experimentally by Krull (1935a), though natural hosts apparently are unknown for most of the larval stages.

Echinostomum revolutum **(Frőlich, 1802) Looss, 1899**

Synonyms: *Fasciola revoluta* Frőlich, 1802
Distoma echinatum Zeder, 1803
Echinostoma echinatum (Zeder, 1803) Blainville, 1828
Distoma (Echinostoma) echinatum (Zeder, 1803) Dujardin, 1845
Distomum dilatatum Miram, 1840
Distomum armatum Molin, 1850
Echinostoma erraticum Lutz, 1924
Echinostoma neglectum Lutz, 1924

This synonymy is after Skrjabin and Baschkirova (1956). Beaver (1937) proposed additional synonymies.

Hosts:	*Ondatra zibethica*	Ore.	Rider & Macy, 1947 Senger & Neiland, 1955
	Anas platyrhynchus	Ore.	*Benton County
	Olor buccinator	B.C.	Cowan, 1946
	"Naturally infected snails"	Ore.	Senger, 1954

Additional hosts from other areas were listed by Yamaguti (1958). The species is cosmopolitan in both birds and mammals.

Morphology: Beaver (1937) monographed this form and described and figured the life stages. Additional figures may be found in Skrjabin and Baschkirova (1956). Redescribed and figured by Perez Vigueras (1956).

Biology: Beaver (1937) in his monograph gave a great deal of information about the life history and general biology. Yamaguti (1958) included a number of references to the biology of this species since Beaver's paper. The life history involves *Cercaria echinata* which develops within a snail host, then encysts either in the same snail, a different snail, or even a clam or tadpole. The definitive host gets the parasite by eating the cysts. This is a parasite of man in some parts of the world and a potential human parasite wherever it occurs.

Stephanoprora **sp.**

Host: Shaw (1947) listed *Stephanoprora* sp. from a gull of Oregon.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Cercaria cita Miller 1929

This echinostome cercaria was described by Miller (1929) from *Planorbis* sp. from Washington. It is of the magnacercous type.

Family FASCIOLIDAE

Fasciola hepatica Linnaeus, 1758

Synonyms: *Distoma hepaticum* Linnaeus, 1758
Distomum hepaticum Retzius, 1786
Planaria latiuscula Goeze, 1782
Cladocoelium hepaticum (Linnaeus, 1758) Stossich, 1892
Distoma caviae Sonsino, 1890

Hosts:			
	Sheep	Wash.	Stiles, 1902; Hall, 1912
	Sheep	Ore.	Stiles, 1902; Hall, 1912
	Goat	Wash.	Hall, 1912
	Sheep	Pac. N.W.	Guberlet, 1932a
	Cattle	B.C.	Swales, 1933
	Cattle	Ore.	Shaw, 1944
	Dama hemionus	B.C.	Swales, 1933
	Sheep	B.C.	Hadwen, 1916; Griffith, 1939; Bruce, 1930
	Sheep	Idaho	Huffman & Dade, 1925

For additional information about this well known worm the reader is referred to any of the standard parasitology textbooks such as Belding (1952) or Chandler (1955). Reinhard (1957) recently reviewed the history of the discovery of the life cycle of the liver fluke. Skrjabin (1948) had a bibliography with approximately 375 entries in it on the family Fasciolidae.

Biology: Cercariae develop in redia in various snails, encyst on the vegetation or the surface of the water, and ultimately enter the definitive host. In Oregon the following species of snail have been associated with *Fasciola hepatica: Lymnaea* (=*Galba*) *bulminoides* and *Lymnaea* (=*Galba*) *ferruginea* (Shaw, Muth, and Seghetti, 1939), *Lymnaea trunculata* (OSC Agri. Expt. Sta. Director's Report, 1928). Probably in error since this form is not known in North America.

The following papers deal with *Fasciola hepatica* in the Pacific Northwest; many deal with treatment, pathology, and control; OSC Agri. Expt. Sta. Dir. Rept. 1928; Simms, 1917, 1920; Shaw and Simms, 1927; Shaw, 1932, 1934, 1944; Shaw and Muth, 1942, 1946.

Fascioloides magna (Bassi, 1875) Ward, 1917

Synonyms: *Fasciola magna* Bassi, 1875
Fasciola carioca Hassall, 1891
Fasciola americana Hassall, 1891
Distomum texanum Francis, 1891

Hosts:	Cattle	Idaho	Dikmans, 1945
		B.C.	Dikmans, 1945
	Elk	Ore.	Shaw, 1947
	Deer	B.C.	Shaw, 1947; Bruce, 1930
	Buffalo	B.C.	Cowan, 1951
	Mule deer	B.C.	Cowan, 1951
	Coast deer	B.C.	Cowan, 1951
	Moose	B.C.	Cowan, 1951; Bruce, 1930
	Cattle	B.C.	Swales, 1933; Bruce, 1930
	Dama hemionus	B.C.	Hadwen, 1916

Morgan and Hawkins (1949) discussed this form and gave additional hosts and distribution as well as the life history which is much like *Fasciola hepatica.* Skrjabin (1948) reviewed the morphology and figured the developmental stages but not the adult worm. Slusarski (1955) rejected the genus *Fascioloides* and thought that the name should be *Fasciola magna.* Life history studies on *Fascioloides magna* include those of Campbell and Todd (1954, 1955, 1956), Griffiths (1955), and Wu and Kingscote (1953, 1954).

Family FELLODISTOMATIDAE

***Fellodistomum brevum* Ching, 1960b**

Host:	*Microstomus pacificus*	Wash.	Ching, 1960b

***Fellodistomum furcigerum* (Olsson, 1868) Yamaguti, 1953**

Synonym: *Steringophorus furciger* (Olss.) Odhner, 1905

Host:	*Pleuronichthys decurrens*	Wash.	Ching, 1960b

Family GORGODERIDAE

***Phyllodistomum singulare* Lynch, 1936**

Host:	*Dicamptodon ensatus*	Ore.	Lynch, 1936

Morphology: Redescribed and figured by Pigulevsky, 1953.

***Phyllodistomum staffordi* Pearse, 1924**

Synonyms: *P. carolini* Holl, 1929 (Wu, 1938)
P. hunteri (Arnold, 1934) Dawes, 1946
Catoptroides hunteri Arnold, 1934

Hosts:	*Ictalurus nebulosus*	B.C.	Bangham & Adams, 1954
	I. melus	B.C.	Bangham & Adams, 1954
	I. natalis	Ore.	*Benton County
	I. nebulosus	Ore.	*Benton County

For hosts in areas away from the Pacific Northwest see Pearse (1924), Holl (1929), and Arnold (1934).

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Morphology: Described and figured by Pigulevsky (1953). While the life history of neither of the two Northwest species has been worked out, a great deal of information about other members of the genus is known. Frandsen (1957), Pande (1937), and Kaw (1950) considered *Gorgoderina* to be a synonym of *Phyllodistomum,* and Dollfus (1958) suggested that these two genera be differentiated on the basis of host class: *Gorgoderina* from the amphibians and *Phyllodistomum* from fish. *Phyllodistomum* life history studies have been made by Beilfus (1954), Shibue (1954), Yamaguti (1958), Crawford (1939), and Goodchild (1943). The genus was reviewed by Nybelin (1926), Holl (1929), Lewis (1935), Wu (1938), Fischthal (1942, 1943), and Meserve (1943). Other contributions to the biology of the genus concern the excretory anatomy by Byrd and Venard (1940), the ecology by Groves (1945) and the embryology by Dhingra (1954).

Family HEMIURIDAE

Aponurus sp.

Shaw (1947) reported *Aponurus* sp. from *Salvelinus malma* and *Salmo gairdneri* from Oregon.

Brachyphallus crenatus (Rudolphi, 1802) Odhner, 1905

Synonyms: *Fasciola crenata* Rudolphi, 1802
Distoma crenatum Rudolphi, 1809, *nec* Rudolphi, 1810, *nec* Molin, 1859
D. appendiculatum Rudolphi, 1819, in part
Distomum ventricosum Wagener, 1860, in part
D. ocreatum Olsson, 1867 *nec* Rudolphi, 1819, *nec* Molin, 1861
Apoblema ocreatum Juel, 1899
A. appendiculatum Monticelli, 1892, in part, and Mühling, 1898, *nec* Rudolphi, 1802
?*Fasciola serratulata* Mueller, 1780
?*Distoma ocreatum* of Linton, 1900
?*Fasciola salmonis* Mueller, 1780
Hemiurus ocreatus (Rudolphi) of Lühe, 1901

The above synonymy is after Dawes (1946).

Hosts:	*Salvelinus malma*	B.C.	Bangham & Adams, 1954
	Oncorhynchus tshawytscha	Wash.	Lloyd, 1938
	Oncorhynchus tshawytscha	Ore.	Shaw, 1947

This trematode is known from the Scandinavian arctic (Odhner, 1905), Russian Arctic (Schulman and Schulman-Albova, 1953), England (Nicoll, 1915), Poland (Markowski, 1933), Japan (Yamaguti, 1934), Atlantic Coast of North America (Linton, 1940; Manter, 1926; Lander, 1904).

Morphology: The morphology of this worm has been worked out in great detail by Lander (1904) and again by Lloyd (1938).

Biology: The life histories of this species and other members of the genus are unknown.

Derogenes crassus Manter, 1934

Hosts:	*Ophiodon elongatus*	Ore.	McCauley, 1960
	Sebastodes paucispinus	Ore.	McCauley, 1960

This parasite has been reported from Florida (Manter, 1934), Japan (Yamaguti, 1938) and Tasmania (Crowcroft, 1947).

Morphology: This was described in detail only by Manter (1934). Nothing is known of the life history.

Derogenes varicus (Mueller, 1784) Looss, 1901

Synonyms: *Fasciola varica* Mueller, 1784, of Rudolphi, 1802
Distoma varicum Zeder of Rudolphi, 1809
Distomum dendriticum Creplin, 1829, in part
Derogenes varicum (Mueller, 1784) of Olsson, 1868, and Levinsen, 1881, *nec* Monticelli, 1890

Hosts:	*Ophiodon elongatus*	Wash.	Lloyd, 1938
	Ophiodon elongatus	Wash.	Ching, 1960b
	Sebastodes maliger	Wash.	Lloyd, 1938
	Sebastodes maliger	Wash.	Ching, 1960b
	Sebastodes caurinus	Wash.	Ching, 1960b
	Leptocottus armatus	Wash.	Lloyd, 1938
	Clinocottus embryum	Wash.	Ching, 1960b
	Microgadus proximus	Ore.	McCauley, 1960
	Gasterosteus aculeatus	Wash.	Ching, 1960b
	Platichthys stellatus	Wash.	Ching, 1960b
	Porichthys notatus	Wash.	Ching, 1960b
	Isopsetta isolepis	Wash.	Ching, 1960b

This trematode probably has the largest host list of any trematode of fishes. It has been reported from Europe (Nicoll, 1915b; Tosh, 1905; Rees, 1953; Olsson, 1868; Looss, 1901; Issaitschikow, 1928, 1933; Dogeli and Rosova, 1941; Schulman and Schulman-Albova, 1953; Poljansky, 1955); the East Coast of North America (Stafford, 1904; Miller, 1941; Manter, 1926, 1934; Heller, 1949; Linton, 1940), from the South Atlantic (Szidat, 1955), Japan (Yamaguti, 1953), New Zealand (Manter, 1954), and Galapagos (Manter, 1940).

Taxonomy: Dawes (1946) placed several other species of *Derogenes* in synonymy with *D. varicus* but this was not generally accepted (Manter, 1954; Yamaguti, 1953, 1958).

Morphology: There are adequate morphological descriptions and figures by Odhner (1905), Manter (1926), and Lloyd (1938). Nothing is known of the life history.

Derogenes sp.

Shaw (1947 described *Derogenes* sp. from *Salmo gairdneri* from Oregon. We have examined this form from the same host, from *Salma clarki, Oncorhynchus kisutch,* and *O. tshawytscha* and believe it to be an undescribed species. It will be described elsewhere.

Genolinea laticauda Manter, 1925

Synonym: *Genolinea robusta* Lloyd, 1938 (Manter, 1954)

Hosts:	*Scorpaenichthys marmoratus*	B.C.	McFarlane, 1936
	S. marmoratus	Wash.	Lloyd, 1938
	Ophiodon elongatus	Wash.	Lloyd, 1938
	Leptocottus armatus	Ore.	McCauley, 1960
	Enophrys bison	Ore.	McCauley, 1960
	Blepsias cirrhosis	Ore.	McCauley, 1960

The only other report of this form was from Maine (Manter, 1925).

Genolinea manteri Lloyd, 1938

Hosts:	*Leptocottus armatus*	Wash.	Lloyd, 1938
	Lumpenus sagitta	Ore.	McCauley, 1960
	Enophrys bison	Ore.	McCauley, 1960
	Dasycottus setiger	Wash.	Ching, 1960b

This parasite is unknown outside of the Pacific Northwest. Lloyd (1938) has adequately described the form. Nothing is known of its life history.

Genolinea montereyensis Annereaux, 1947

Host:	*Leptocottus armatus*	Ore.	McCauley, 1960

The only other report of this trematode is that of Annereaux (1947) from California.

Genolinea oncorhynchi Margolis and Adams, 1956

Host:	*Oncorhynchus gorbuscha*	B.C.	Margolis & Adams, 1956

This is the only report of this trematode.

Halipegus occidualis Stafford, 1905

Synonym: *Halipegus lermensis* Caballero, 1941 (Caballero, 1948)

Hosts:	*Rana aurora*	Ore.	Macy & Demott, 1957; Macy, Cook, & Demott, 1960
	Tarica torosa	Ore.	Macy & Demott, 1957; Macy, Cook, & Demott, 1960
	Dicamptodon ensatus	Ore.	Macy & Demott, 1957; Macy, Cook, & Demott, 1960

This form has been reported from Eastern Canada by Stafford (1904), Maryland by Krull (1935b), and Mexico by Caballero (1941).

Morphology: This form has been described by Krull (1935b) and Macy, Cook, and Demott (1960).

Biology: Krull (1933b, 1935b), Macy and Demott (1957), and Macy, Cook, and Demott (1960) worked out the life cycle experimentally. In Oregon (Macy and Demott, 1957; Macy, Cook, and Demott, 1960) found that cystophorus cercariae develop in *Planorbis trivolvis subcrenatus* and penetrate the ostracod *Cypridopsis vidua* before reaching the definitive host. Krull (1935b) was able to get cercariae to penetrate several species of *Cyclops* and a dragon fly.

Hemiurus levinseni **Odhner, 1905**

Synonyms: *Distoma appendiculatum* Rudolphi in Olsson, 1868, in part
Distomum appendiculatum Rudolphi in Levinsen, 1881, in part

Hosts:	*Oncorhynchus tshawytscha*	Wash.	Lloyd, 1938
	O. gorbuscha	B.C.	Margolis, 1956
	Sebastodes ruberrimus	Wash.	Lloyd, 1938
	S. caurinus	Wash.	Lloyd, 1938
	Ophiodon elongatus	Wash.	Lloyd, 1938
	Microgadus proximus	Ore.	McCauley, 1960
	Theragra chalcogramma	Wash.	Ching, 1960b

This form has also been reported from Europe (Nicoll, 1915; Issaitschikow, 1928, 1933; Schulman and Schulman-Albova, 1953; Poljansky, 1955); from the Far East (Layman, 1930); Arctic Atlantic (Dollfus, 1923; Odhner, 1905); Atlantic coast of North America (Cooper, 1915; Linton, 1940; Heller, 1949; Manter, 1925, 1926).

Morphology: Manter (1926) and Odhner (1905) adequately described this form.

Biology: Myers (1956) reported a mature hemiurid resembling *H. levinseni* in the intestine of *Sagitta elegans* from New Brunswick. She suggested that *Sagitta* feeds on the same plankton as the small fish hosts which are also heavily infected.

Intuscirrus aspicotti **Acena, 1947**

Host:	*Enophrys bison*	Wash.	Acena, 1947

This form has been reported only in this one paper and is unknown elsewhere.

Lecithaster salmonis **Yamaguti, 1934**

Hosts:	*Oncorhynchus tshawytscha*	Wash.	Lloyd, 1938
	Salvelinus malma	B.C.	Bangham & Adams, 1954
	Oncorhynchus nerka	B.C.	Bangham & Adams, 1954
	Oncorhynchus kisutch	Wash.	Ching, 1960b
	Sebastodes maliger	Wash.	Ching, 1960b
	Sebastodes melanops	Wash.	Ching, 1960b
	Leptocottus armatus	Wash.	Ching, 1960b
	Clinocottus embryum	Wash.	Ching, 1960b
	Gasterosteus aculeatus	Wash.	Ching, 1960b
	Cymatogaster aggregata	Wash.	Ching, 1960b
	Porichthys notatus	Wash.	Ching, 1960b

Additional hosts were reported by Yamaguti (1934, 1940, 1951) from Japan.

Biology: The life history is unknown, but Hunninen and Cable (1941, 1943b) worked out the life history of the closely related *L. confusus*.

Lecithaster **sp.**

Shaw (1947) reported *Lecithaster* sp. from the chinook salmon *Oncorhynchus tshawytscha* from Oregon.

Lecithochirium exodicum McFarlane, 1936

Synonyms: *Sterrhurus magnatestis* Park, 1936
Lecithochirium medium Acena, 1941
Sterrhurus exodicus (McFarlane, 1936) Yamaguti, 1958
Adinosoma exodica (McFarlane, 1936) Skrjabin & Guschanskaja, 1955
Dissosaccus medius (McFarlane, 1936) Skrjabin & Guschanskaja, 1955
Lecithochirium magnatestis (Park, 1936) Skrjabin & Guschanskaja, 1955

Hosts:			
	Ophiodon elongatus	B.C.	McFarlane, 1936
	Ophiodon elongatus	Wash.	Lloyd, 1938; Ching, 1960b
	Ophiodon elongatus	Wash.	*Neah Bay, Wash., San Juan Islands, Wash.
	Ophiodon elongatus	Ore.	McCauley, 1960
	Eopsetta jordani	Ore.	Gregoire & Pratt, 1952
	Platyichthys stellatus	Wash.	Ching, 1960b
	Sebastodes ruberrimus	Wash.	Acena, 1941
	Sebastodes maliger	Wash.	Lloyd, 1938; Ching, 1960b

The only other record of this parasite is by Park (1936) from California.

Morphology: The description by Lloyd (1938) is adequate.

Biology: The life history of the species is unknown. Lloyd (1938) found the worm commonly at Friday Harbor, Washington; in *Ophiodon elongatus,* but was unable to find it in the same host 70 miles away at Seattle, Washington.

Lecithochirium sp.

Lloyd (1938) reported *Lecithochirium* sp. from the ctenophore *Bolinopsis microptera* from Washington.

Lecithophyllum anteroporum Margolis, 1958

Hosts:			
	Merluccius productus	B.C.	Margolis, 1958
	Oncorhynchus nerka	B.C.	Margolis, 1958
	O. gorbuscha	B.C.	Margolis, 1958

There are no other reports of this species. Nothing is known of the life cycle.

Parahemiurus merus (Linton, 1910) Woolcock, 1935

Synonyms: *Hemiurus merus* Linton, 1910
Parahemiurus platyichthyi Lloyd, 1938
P. parahemiurus Vaz & Pereira, 1930
P. atherinae Yamaguti, 1938
Parahemiurus harengulae Yamaguti, 1938

Hosts:			
	Platyichthys stellatus	Wash.	Lloyd, 1938
	Gasterosteus aculeatus	Wash.	Ching, 1960b

Additional hosts have been reported from Florida by Manter (1947) and Linton (1910); South America by Manter (1940) and Vaz & Pereira (1930); Japan by Yamaguti (1938); and Bimini by Soganderes-Bernal (1959).

Morphology: This worm has been described many times, but the descriptions by Manter (1940) and Lloyd (1938) are the most useful. Nothing is known of the life history.

Tubulovesicula lindbergi **(Layman, 1930) Yamaguti, 1934**

Synonyms: *Lecithaster lindbergi* Layman, 1930
Lecithurus lindbergi (Layman, 1930) Piguelevsky, 1938
Dinurus nanaimoensis McFarlane, 1936
Tubulovesicula spari Yamaguti, 1934
T. muraenosocis Yamaguti, 1934
T. californica Park, 1938
T. pseudorhombi Yamaguti, 1938
T. madurensis Nigrelli, 1940
T. nanaimoensis (McFarlane, 1936) Manter, 1947
T. anguillae Yamaguti, 1934 (Soganderes-Bernal, 1959)
T. serrani Nagaty, 1956 (Soganderes-Bernal, 1959)

Hosts:			
	Leptocottus armatus	Ore.	McCauley, 1960
	Parophrys vetulus	B.C.	McFarlane, 1936
	Scorpaenichthys marmoratus	B.C.	McFarlane, 1936
	Psettichthys melanostictus	Wash.	McCauley, 1960
	Psettichthys melanostictus	Ore.	McCauley, 1960
	Oncorhynchus tshawytscha	Ore.	McCauley, 1960
	Lepidopsetta bilineata	Ore.	McCauley, 1960
	Platyichthys stellatus	Ore.	McCauley, 1960
	Citharichthys sordidus	Ore.	McCauley, 1960
	Citharichthys stigmaeus	Ore.	McCauley, 1960
	Anoplarchus purpurescens	Ore.	McCauley, 1960
	Enophrys bison	Ore.	McCauley, 1960
	Ophiodon elongatus	Ore.	McCauley, 1960
	Sebastodes caurinus	Wash.	Ching, 1960b
	Sebastodes melanops	Wash.	Ching, 1960b
	Sebastodes nigrocinctus	Wash.	Ching, 1960b
	Ophiodon elongatus	Wash.	Ching, 1960b
	Leptocottus armatus	Wash.	Ching, 1960b
	Hemilepidotus hemilepidotus	Wash.	Ching, 1960b
	Synchirus gilli	Wash.	Ching, 1960b
	Isopsetta isolepis	Wash.	Ching, 1960b
	Parophrys vetulus	Wash.	Ching, 1960b
	Theragra chalcogramma	Wash.	Ching, 1960b
	Oncorhynchus kisutch	Wash.	Ching, 1960b
	Gasterosteus aculeatus	Wash.	Ching, 1960b

Additional hosts have been reported from Siberia by Layman (1930); Japan by Yamaguti (1934, 1938, 1939, 1940, 1951); Madeira by Nigrelli (1940); and California by Park (1936).

Morphology: This worm was figured and described by each of the workers who described one of the synonyms and was redescribed by McCauley (1960). Nothing is known of the life history.

Family HETEROPHYIDAE

Apophallus donicus (Skrjabin and Lindtrop, 1919) Price 1931

Synonyms: *Rossicotrema donicum* Skrjabin & Lindtrop, 1919
Rossicotrema simile (Ransom, 1920) Ciurea, 1924
Rossicotrema venustus (Ransom, 1920) Morozov, 1952
Cotylophallus similis Ransom, 1920
Cotylophallus venustus Ransom, 1920

Host:	Gull	Ore.	Shaw, 1947

Morphology: Described and figured by Morosov (1952) as *Rossicotrema donicum* which he considered to be the valid name.

Cryptocotyle lingua (Creplin, 1825) Fischoeder, 1903

Synonyms: *Distoma lingua* Creplin, 1825
Tocotrema lingua of Looss, 1899
Dermocystis ctenolabri Stafford, 1905
Hallum caninum Wigdor, 1918

Host:	*Larus glaucescens*	Wash.	Ching, 1960a

Biology: Stunkard and Willey (1929) and Stunkard (1930) found that the pleurolophocercous cercaria develops in *Littorina littorea,* penetrates and encysts in the cunner, and excysts in the guts of birds and mammals.

Euryhelmis pacifica Senger and Macy, 1952

Hosts:	*Mustela vison*	Ore.	Senger & Macy, 1952
	Ondatra zibethica	Ore.	Senger & Macy, 1952
	Sorex bendirii palmeri (worms without eggs)	Ore.	Senger & Macy, 1952
	Peromyscus maniculatus	Ore.	Senger & Macy, 1952
	Ondatra zibethica	Ore.	Senger & Neiland, 1955
	Castor canadensis	Ore.	Senger & Neiland, 1955
	Dicamptodon ensatus (as metacercaria)	Ore.	Senger & Macy, 1952

Euryhelmis squamula (Rudolphi, 1819) Poche, 1926

Synonyms: *Distoma squamula* Rudolphi, 1819
Eurysoma squamula (Rudolphi, 1819) Dujardin, 1845
Monostomum squamula Diesing, 1851

Host:	*Mustela vison*	Ore.	Senger & Neiland, 1955

Morphology: Described and figured in Dawes (1946) and Morosov (1952). Morosov also included a long bibliography on this form.

Biology: Metacercariae encyst on the skin of frogs and are there eaten by the definitive host, according to Joyeaux, Baer, and Carrère (1934). In the Pacific Northwest metacercariae have been found on the surface of *Rana aurora* and *Rana aurora cascadae* (Senger and Macy, 1952).

***Galactosomum humbargari* Park, 1936**

Hosts:	*Larus californicus*	Calif.	Park, 1936
	L. heermanni	Wash.	Ching, 1960a
	L. glaucescens	Wash.	Ching, 1960a
	L. philadelphia	Wash.	Ching, 1960a

***Metagonimoides oregonensis* Price, 1931**

Hosts:	*Procyon lotor*	Ore.	Burns & Pratt, 1952; Shaw, 1947; Price, 1931
	Mustela vison	Ore.	Senger & Neiland, 1955

Additional hosts from Georgia were given by Sawyer (1958).

Morphology: Redescribed by Morosov (1952).

Biology: Cercariae develop in *Oxytrema silicula* in Oregon and either leave the snail and encyst in a frog or develop into metacercariae within the redia. In either case the worm reaches the definitive host by this host eating the snail or frog. The metacercariae have been reported from *Rana aurora* (Burns and Pratt, 1952).

Family LECITHODENDRIIDAE

***Acanthatrium oregonense* Macy, 1939**

Synonym: *Prosthodendrium* (*acanthatrium*) *oregonense* (Macy, 1939) Yamaguti, 1958

Hosts:	*Myotis evotis*	Ore.	Macy, 1939b
	M. californicus caurinus	Ore.	Macy, 1939b
	M. lucifugus	Ore.	Knight & Pratt, 1955

Not known from other areas.

Taxonomy: Yamaguti (1958) stated that Skarbilovich (1948) placed this in the subgenus *Acanthatrium* of *Prosthodendrium*, but this is in error as Skarbilovich (1948) placed it in the subgenus *Acanthatrium* of the genus *Acanthatrium*. Cheng (1957a) gave a key to 14 species of the genus.

Biology: Virgulate xiphidiocercariae develop in *Oxytrema silicula* in Oregon, then enter caddis fly larvae where they move about unencysted. They apparently reach the chiropteran host after the metamorphosis of the insect (Knight and Pratt, 1955).

Morphology: See Macy (1939)and Cheng (1959).

Allassogonoporus marginalis **Oliver, 1938**

Synonyms: *A. vespertilionis* Macy, 1940 (Gilford, 1955)
Myotitrema asymmetrica Macy, 1939 (Gilford, 1955)

Hosts:	*Myotis lucifugus*	Ore.	Knight & Pratt, 1955
	M. californicus caurinus	Ore.	Macy, 1940a
	Eptesicus fuscus	Ore.	Knight & Pratt, 1955

Hosts from locations outside of the Pacific Northwest include the muskrat (Oliver, 1938) and an additional bat (Macy, 1939b).

Morphology: Additional description and figures contributed by Skarbilovich (1948).

Biology: Virgulate xiphidiocercariae develop in sporocysts in *Flumenicola virens* in Oregon, then encyst in the larvae of caddis flies as metacercariae (Knight and Pratt, 1955).

Cephalophallus obscurus **Macy and Moore, 1954**

Host:	*Mustela vison* (experimentally)		Macy & Moore, 1954

Biology: Virgulate xiphidiocercariae develop in sporocysts in *Flumenicola virens* then encyst in crayfish (Macy and Moore, 1954). Not known outside of the Pacific Northwest.

Cephalouterina dicamptodonti **Senger and Macy, 1953**

Hosts:	*Dicamptodon ensatus*	Ore.	Senger & Macy, 1953
	Dicamptodon ensatus	Ore.	Lehmann, 1954

Not known outside of the Pacific Northwest.

Limatulum gastroides **Macy, 1935**

Host:	*Myotis californicus caurinus*	Ore.	Macy, 1947

Macyella postnoporus **Neiland, 1951**

Host:	*Ixoreus naevis*	Wash.	Neiland, 1951

Not known outside of the Pacific Northwest.

Family LEPOCREADIIDAE

Opechona alaskensis **Ward and Fillingham, 1934**

Host:	*Sebastodes ruberrimus*	Wash.	Ching, 1960b

Opechona occidentalis **Montgomery, 1957**

Synonym: *Pharyngora bacillaris* (Molin, 1859) of McFarlane, 1936

Hosts:	*Sebastodes* sp.	B.C.	McFarlane, 1936
	Sebastodes maliger	Wash.	Ching, 1960b

Another report of this form was made by Montgomery (1957) from California. It was described by McFarlane but more completely described by Montgomery. The life cycle is unknown, but Lebour (1916) found late cercarial stages of what appeared to be *O. bacillaris* in a number of coelenterates.

***Opechona parvasoma* Ching, 1960**

Host: *Sebastodes melanops* Wash. Ching, 1960b

***Lepidapedon pugetensis* Acena, 1947**

Host: *Sebastodes nebulosus* Wash. Acena, 1947

Other records are unknown. Lebour (1908) found larval stages of *L. rachion* in *Cardium edule* but other knowledge of life histories in the genus is wanting. Hanson (1950) questioned the validity of the species. It was poorly described, and the types were not available.

***Lepidapedon calli* Acena, 1947**

Host: *Parophrys vetulus* Wash. Acena, 1947

Other records are unknown. Hanson (1950) stated that this cannot be a species of *Lepidapedon,* but she offered no suggestions as to the proper disposition of the species. See note on life history under *L. pugetensis.*

***Lepidapedon microcotyleum* (Odhner, mss.) Dollfus, 1953**

Host: *Theragra chalcogramma* Wash. Ching, 1960b

Family LISSORCHIDAE

***Triganodistomum attenuatum* Mueller and Van Cleave, 1932**

Hosts: *Catostomus catostomus* B.C. Bangham & Adams, 1954
Catostomus macrocheilus B.C. Bangham & Adams, 1954

Additional record from New York (Mueller and Van Cleave, 1932). Wallace (1939, 1941) found *T. mutabile* to have tailless cercariae; it develops in species of *Helisoma* and encysts in *Chaetogaster* or *Planaria,* but nothing is known of the life history of *T. attenuatum.*

***Lissorchis* sp.**

Shaw (1947) reported *Lissorchis* from an unnamed host from Oregon.

Family MICROPHALLIDAE

***Gymnophallus deliciosus* (Olsson, 1893) Odhner, 1900**

Synonym: *Distoma deliciosum* Olsson, 1893

Host: *Larus occidentalis* Ore. Reish, 1950

Hosts from Europe have been reported by Olsson (1893) and Timon-David (1955).

Taxonomy: The genus *Gymnophallus* was placed in Gymnophallidae by Morosov (1955) and in the Fellodistomatidae by Cable (1953). It probably does not belong in the Microphallidae, but its placement is still undecided.

Morphology: It is described and figured by both Dawes (1946) and Morosov (1955). The life history of this species has not been worked out, but other species of the genus are known. See Giard (1907), Jameson (1902), Hutton (1952), and Zelikman (1953). For additional bibliography see Yamaguti (1958).

***Gymnophallus obscurus* Ching, 1960**

Host:	*Haematopus bachmani*	Wash.	Ching, 1960a

***Levinseniella propinqua* Jagerskiold, 1907**

Host:	*Haematopus bachmani*	Wash.	Ching, 1960a

***Microphallus primas* (Jagerskiold, 1909) Stunkard, 1951**

Synonyms: *Spelophallus primas* Jagerskiold, 1909
Microphallus primas (Jagerskiold, 1909) Stunkard, 1951
Spelotrema primas (Jagerskiold, 1909) Belopol'skaya, 1952
Microphallus primas (Jagerskiold, 1909) Ching, 1960a

Host:	*Haematopus bachmani*	Wash.	Ching, 1960a

***Plenosoma minimum* Ching, 1960**

Host:	*Haematopus bachmani*	Wash.	Ching, 1960a

Family MONORCHIDAE

***Telolecithus pugetensis* Lloyd and Guberlet, 1932**

Hosts:	*Cymatogaster aggregata*	B.C.	McFarlane, 1936
	Cymatogaster aggregata	Wash.	Lloyd & Guberlet, 1932
	Taeniotoca lateralis	Ore.	*Lincoln Co.

This trematode is unknown outside of the Pacific Northwest.

Biology: The life history is unknown. There is often great variation in the incidence of this parasite. In the summers of 1931 and 1932 Lloyd and Guberlet found nearly all the *Cymatogaster aggregata* examined to be infected with the parasite, but in the summer of 1934 several hundred fish failed to harbor a single worm (Lloyd, 1938).

Family NANOPHYETIDAE

***Nanophyetus salmincola* (Chapin, 1926) Chapin, 1927**

Synonyms: *Nanophyes salmincola* Chapin, 1926
Troglotrema salmincola (Chapin, 1926) Witenberg, 1932
Distomulum oregonensis Ward & Mueller, 1926

Hosts:	*Canis familiaris*	Ore.	Donham, 1925a, 1925b (Also in many veterinary reports and other papers from Oregon.)
	Canis familiaris	Wash.	Simms, Donham, & Shaw, 1931
	Canis familiaris	Idaho	Philip, 1955
	Canis latrans lestis	Wash.	Cram, 1926
	Canis latrans lestis	Ore.	Donham & Simms, 1927

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Procyon lotor	Wash.	Cram, 1926
Lynx rufus fasciatus	Wash.	Cram, 1926
Mustela vison	Ore.	Senger and Neiland, 1955
Canis vulpes	Ore.	Donham, Simms, & Miller, 1926
Felis domesticus	Experimentally	Simms, Donham, Shaw, & McCapes, 1931
Procyon lotor	Experimentally	Simms, Donham, Shaw, & McCapes, 1931
Vulpa fulve	Experimentally	Simms, Donham, Shaw, & McCapes, 1931
Vulpco fulva	Experimentally	Simms, Donham, Shaw, & McCapes, 1931
Ursus americanus	Experimentally	Simms, Donham, Shaw, & McCapes, 1931
Guinea pigs	Experimentally	Simms, Donham, Shaw, & McCapes, 1931
White rats	Experimentally	Simms, Donham, Shaw, & McCapes, 1931
Hamster	Experimentally	Bennington & Pratt, 1960
Salmo clarkii	Ore.	Simms, Donham, Shaw, & McCapes, 1931
Salmo gairdnerii	Ore.	Simms, Donham, Shaw, & McCapes, 1931
Salvelinus fontinalis	Ore.	Simms, Donham, Shaw, & McCapes, 1931
Oncorhynchus kisutch	Ore.	Simms, Donham, Shaw, & McCapes, 1931
Oncorhynchus tshawytscha	Ore.	Simms, Donham, Shaw, & McCapes, 1931
Oncorhynchus keta	Ore.	Simms, Donham, Shaw, & McCapes, 1931
Oxytrema silicula	Ore.	Sinitsin, 1930
Oxytrema silicula	Wash.	*(This distribution has been implied in many papers but never so stated.)

This parasite is limited to the area of Western Oregon, Southwestern Washington, and Northwestern California. Chapin (1926) reported rumors of this parasite from British Columbia, but they are doubtful.

Taxonomy: *Nanophyetus schikhobalowi* Skrjabin and Podiaposkaia, 1931, a parasite of man, was considered a synonym of *N. salmincola* by Witenberg (1932); however, Philip (1955) thought that since this form is not known from man in the Pacific Northwest, it must not be a synonym.

Morphology: The adult and the larval stages have been adequately described and figured by Bennington and Pratt (1960). Other figures can be found in Skrjabin (1958) for the adult and in Philip (1955) for the cercaria. The life stages were not figured by Sinitsin (1930) when he worked on the life cycle.

Biology: The worm is a parasite of various carnivores as listed above and produces a few eggs which hatch into miracidia in about 70 days. These develop rediae in *Oxytrema silicula* and form microcercous stylet cercariae. These cercariae find salmonid fish, encyst in the tissues of the fish, and are ultimately eaten by a carnivore where they develop into adults. The fluke is the vector of *Neorickettsia helminthoeca* Philip, Hadlow, and Hughes, 1953, and it is the causative agent for salmon poisoning of dogs. The work on this parasite and especially on the salmon poisoning aspects of it has been reviewed by Simms, Donham, and Shaw (1931), Simms, Donham, Shaw, and McCapes (1931), and more recently by Philip (1955). The reader is referred to the above-mentioned papers for references dealing with the salmon poisoning aspects of this parasite. Bennington and Pratt (1960) reworked the life history of the worm and figured many of the larval stages for the first time. Their references included most of the work pertaining to the biology of this worm.

***Xiphidiotrema lockeri* Senger, 1953**

Hosts:	*Sorex bendirii palmeri*	Ore.	Senger, 1953
	Sorex palustris navigator	Ore.	Senger, 1953

This parasite has not been reported elsewhere.

Taxonomy: Yamaguti (1958) placed this species in the subfamily Nephrotrematinae of the family Troglotrematidae, but Senger (1953) thought that it should be in the subfamily Nanophyetinae of the family Troglotrematidae. Skrjabin (1958) accepted Nanophyetidae Dollfus, 1939, as a family, but was apparently not aware of *Xiphidiotrema*. Yamuguti (1958) also accepted this family, but transferred *Xiphidiotrema* to Troglotrematidae without giving any reasons.

Family NOTOCOTYLIDAE

***Notocotylus imbricatus* (Looss, 1893) U. Szidat, 1935**

Synonyms: *Cercaria imbricata* Looss, 1893
Notocotylus gibbus of Stunkard & Dunihue, 1931

Host:	Domestic duck	Ore.	Dikmans, 1945

Additional hosts include several genera of waterfowl.

Taxonomy: Morgan and Hawkins (1949) considered *N. scineti* Fuhrmann, 1919, *N. urbanensis* Harrah, 1922, and *N. intestinalis* Tubangui, 1932, to be synonyms of *N. imbricatus*.

Morphology: This form was described and figured by Skrjabin (1953).

Biology: The life cycle has been worked out experimentally by U. Szidat (1933, 1935) and she showed that *Cercaria imbricata* encysts on vegetation, is eaten by ducks, and develops in them to the adult. In Oregon we found this cercaria developed in *Oxytrema silicula* and experimentally to maturity in the domestic duck.

Notocotylus urbanensis (Cort, 1914) Harrah, 1922

Synonyms: *Cercaria urbanensis* Cort, 1914
Monostomum sp. Stiles & Hassell, 1894

Hosts:	*Ondatra zibethica*	B.C.	Knight, 1951
	Ondatra zibethica	Ore.	Rider & Macy, 1947

For additional hosts see Harrah (1922).

Morphology: This form has been redescribed by Skrjabin (1953).

Biology: Cercariae develop in various species of *Physa* and *Lymnaea,* emerge, encyst on vegetation, and develop in the definitive host—(Cort, 1914; Cort, McMullen, and Brackett, 1937; Cort, Oliver, and McMullen, 1941). Herber (1950, 1955) did a careful review of the life history work and showed certain discrepancies in the conclusions of the earlier workers.

Notocotylus sp.

An unidentified species of *Notocotylus* has been reported from Oregon from *Ondatra zibethica* by Senger and Neiland (1955).

Ogmogaster plicatus (Creplin, 1829) Jägerskiold, 1891

Synonyms: *Monostomum plicatum* Creplin, 1829
Ogmogaster antarcticus Johnston, 1931

Hosts:	*Balaenoptera borealis*	B.C.	Margolis & Pike, 1955
	Balaenoptera physalis	B.C.	Margolis & Pike, 1955

Additional hosts were reviewed by Margolis and Pike, 1955.

Taxonomy: Margolis and Pike (1955), Dawes (1946), and Price (1932a) agreed that *O. antarcticus* is a synonym of *O. plicatus* even though both Skrjabin (1953) and Yamaguti (1958) included *O. antarcticus* as a valid species.

Morphology. This form was figured and described by Skrjabin (1953). No life history is known for this genus.

Quinqueserialis quinqueserialis (Barker and Laughlin, 1911) Harwood, 1939

Synonym: *Notocotylus quinqueserialis* Barker & Laughlin, 1911

Hosts:	*Ondatra zibethica*	Wash.	Harrah, 1922
	Ondatra zibethica	Ore.	Senger & Neiland, 1955
	Ondatra zibethica	B.C.	Knight, 1951

Taxonomy: This form was confused with *Notocotylus urbanensis* by Harrah (1922) according to Herber (1955), and Yamaguti (1958). Synonymy was discussed by Smith (1954).

Morphology: Skrjabin (1953) described and figured the worm.

Biology: The cercariae of this form develop in *Gyraulus parvus* according to Herber (1939, 1942).

Family OPECOELIDAE

Opecoelina radifistuli (Acena, 1941) Manter, 1947

Synonym: *Didcutosaccus radifistuli* Acena, 1941

Host:	*Sebastodes elongatus*	Wash.	Acena, 1941

Not known outside of the Pacific Northwest. Life histories in this genus are not known.

Opecoelina theragrae Lloyd, 1938

Hosts:	*Theragrae fuscnsis*	Wash.	Lloyd, 1938
	Sebastodes maliger	Wash.	Ching, 1960b

Not known outside of the Pacific Northwest. Life histories in this genus are not known.

Pseudopcoelus vulgaris (Manter, 1934) Van Wicklen, 1946

Synonym: *Cymbephallus vulgaris* Manter, 1934

Host:	*Lycodopsis pacifica*	Wash.	Lloyd, 1938

Additional hosts from Florida were reported by Manter (1934). No life history is known for this genus.

Plagioporous siliculus Sinitsin, 1931

Hosts:	*Salmo clarkii*	Ore.	Sinitsin, 1931a
	"Species of fresh water fishes"	Ore.	Sinitsin, 1931a

Morphology: All life history stages have been outlined by Sinitsin (1931a). There are no other discussions of this worm.

Biology: Sinitsin (1931a) stated that sporocysts produce cotylomicrocercous cercariae in the digestive gland of *Oxytrema silicula* and that the cercariae actively penetrate crayfish where they encyst. The crayfish are eaten by the definitive host. Metacercariae often are so mature that eggs can be seen in them. Sinitsin stated that cercariae stand on their tails waving to and fro (a condition which we have frequently observed), and that when a crayfish passes near them, the cercariae bend toward the crayfish (a response which we have been unable to confirm). We have been unable to complete the life cycle as outlined by Sinitsin. Sinitsin did not prove the life cycle experimentally.

Plagioporus virens Sinitsin, 1931

Hosts:	*Cottus* sp.	Ore.	Sinitsin, 1931a
	"Fresh water fishes"	Ore.	Sinitsin, 1931a

Morphology: Sinitsin described all the stages of the life cycle.

Biology: Sinitsin (1931a) stated that cotylomicrocercous cercariae develop in sporocysts in the liver of the stream snail *Flumenicola virens.* The cercariae behave similarly to those of *P. siliculus,* but they encyst in the snail *F. virens.* Each snail is usually infected with only a few metacercariae. Sinitsin did not prove this cycle experimentally.

Podocotyle atomon (Rudolphi, 1802) Odhner, 1905

Synonyms: *Fasciola atomon* Rudolphi, 1802
Distoma atomon Rudolphi, 1809
D. simplex Rudolphi, 1809 of Olsson, 1868
D. angulatum Dujardin, 1845
Allocreadium atomon (Rudolphi) of Odhner, 1901
Sinistropus simplex Stafford, 1904, in part
Psilostomum redactum Nicoll, 1906
Distomum vitellosum Linton of Johnston, 1907
? *Fasciola aeglefini* Mueller, 1776, in part
Podocotyle atomon var. *dispar* Nicoll, 1909
The above synonymy is after Dawes (1946).

Hosts:			
	Leptocottus armatus	B.C.	McFarlane, 1936
	Syngnathus grisco-lineatus	B.C.	McFarlane, 1936
	Epigeichthys atropurpureus	B.C.	McFarlane, 1936
	Hexagrammos stelleri	B.C.	McFarlane, 1936

Additional hosts have been reported from Europe (Dawes, 1946, 1947; Palombi, 1934; Rees, 1945) and New England (Manter, 1926; Linton, 1940; Hunninen and Cable, 1943a).

Morphology: Dawes (1946, 1947) presented a short description of the species; Odhner (1901, 1905), Linton (1940), and Manter (1926) have described the species adequately; and Hunninen and Cable (1943) added a few notes to the description and figured it well.

Biology: Cotylomicrocercous cercariae are produced in sporocysts in *Littorina rudis* and penetrate and encyst in marine amphipods. Metacercariae are progenetic or may develop in the definitive host (Hunninen and Cable, 1943a). Shulman (1950) found a similar life history in the White Sea. Jones (1933) discussed fertilization and egg formation.

Podocotyle abitionis McFarlane, 1936

Hosts:			
	Sebastodes sp.	B.C.	McFarlane, 1936
	Sebastodes maliger	Wash.	Ching, 1960b

Not known outside of the Pacific Northwest. Life history of this species unknown. For life history of a related species see under *P. atomon* above.

Podocotyle olssoni Odhner, 1905

Synonym: *Distoma simplex* Rudolphi, 1809 of Olsson, 1868

Host:			
	Leptocottus armatus	Ore.	*Coos County

Additional hosts have been reported from Sweden (Odhner, 1905), and New England (Manter, 1926; Linton, 1940).

Morphology: Described by Odhner (1905) and Manter (1926). Life history unknown. For life history of a related species see *P. atomon* above.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

***Podocotyle pacifica* Park, 1937**

Host:	*Gasterosteus aculeatus*	Wash.	Ching, 1960b

***Podocotyle pedunculata* Park, 1937**

Host:	*Leptocottus armatus*	Wash.	Ching, 1960b

***Podocotyle reflexa* (Creplin 1825) Odhner 1905**

Synonym: *Distomum reflexum* Creplin 1825

Hosts:	*Sygnathus griseo-lineatus*	B.C.	McFarlane, 1936
	Leptocottus armatus	B.C.	McFarlane, 1936
	Leptocottus armatus	Ore.	*Coos County

Additional hosts have been reported from Europe by Nicoll (1915), Odhner (1905), Baylis and Jones (1933), and Dawes (1946).

Morphology: This form is close to *P. atomon* and Dawes (1947) thought that it might be a synonym. It was briefly described by Odhner (1905) and by Dawes (1947). We know of no other description. The life history is unknown. For life history of a related form see *P. atomon* above.

***Podocotyle shawi* McIntosh, 1939**

Synonyms: *Allocreadium shawi* (McIntosh, 1939) Yamaguti, 1953
Cainocreadium shawi (McIntosh, 1939) Yamaguti, 1958

Hosts:	*Oncorhynchus kisutch*	Ore.	McIntosh, 1939
	Salmo gairdnerii	Ore.	McIntosh, 1939; Shaw, 1947
	Salmo clarkii	Ore.	McIntosh, 1939; Shaw, 1947

Not known outside of the Pacific Northwest.

Taxonomy: The position of this species is uncertain. Manter (1947) doubted that it belonged to *Podocotyle* and suggested perhaps *Peracreadium* or *Cainocreadium*. Yamaguti (1953) accepted the former suggestion and placed it in the subgenus *Peracreadium* of *Allocreadium*. Later Yamaguti (1958) transferred the species to *Cainocreadium*. McIntosh (1939) stated that the cirrus was spiny, but did not show spines in his figure. We have examined many specimens and failed to observe spines. Manter (1947) cited the presence of spines as a reason for removing the species from *Podocotyle*. We will retain it in *Podocotyle* pending results of work in progress.

Morphology: The only adequate description is by McIntosh (1939). Nothing is known of the life history.

***Podocotyle sinusacca* Ching, 1960**

Host:	*Leptocottus armatus*	Wash.	Ching, 1960b

***Podocotyle* sp.**

Shaw (1947) reported *Podocotyle* sp. from *Salmo gairdnerii* and *Salmo clarkii* from Oregon.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Family ORCHIPEDIDAE

Orchipedum tracheicola Braun, 1901

Host: *Olor buccinator* B.C. Cowan, 1946

For other hosts see Yamaguti (1958).

Morphology: Described and figured by both Dawes (1946) and Skrjabin (1947a). No life history is known for this genus or family.

Family PARAMPHISTOMATIDAE

Megalodiscus americanus Chandler, 1923

Hosts:	*Taricha* sp.	Ore.	Lehmann, 1956
	Taricha granulosa	Ore.	Lehmann, 1954
	Ambystoma gracile	Ore.	Lehmann, 1956

Additional hosts from California (Lehmann, 1960) and Southeastern United States (Chandler, 1923).

Morphology: Described and figured by Skrjabin (1949). The life history is not known, but the history of the closely related *M. temperatus* is known and is discussed with that species below.

Megalodiscus microphagus Ingles, 1936

Synonyms: *Diplodiscus microphagus* (Ingles, 1936) Walton, 1938
Diplodiscus microphagus (Ingles, 1936) Manter, 1938

Host: *Dicamptodon ensatus* Ore. McCauley & Pratt, 1959

Additional hosts from California (Ingles, 1936).

Morphology: Described and figured by Skrjabin (1949).

Megalodiscus temperatus (Stafford, 1905) Harwood, 1932

Synonyms: *Diplodiscus temperatus* Stafford, 1905
Megalodiscus ranophilus Millzner, 1924
Opisthodiscus americanus Holl, 1928
Cercaria inhabilis Cort, 1941

Host: *Rana aurora* Ore. *Benton County

Additional hosts listed in Yamaguti (1958), Skrjabin (1949), and Lehmann (1960).

Morphology: Described and figured in Skrjabin (1949).

Biology: The life cycle as worked out by Krull and Price (1932) showed that frogs became infected from eating cysts when they devoured their own shed skin. The germ cell cycle was worked out by Van der Woude (1954). Polysaccharides in this worm were investigated by Singh (1958).

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Ophioxenos dienteros Sumwalt, 1926

Hosts:			
	Bufo boreas	Wash.	Sumwalt, 1926
	Thamnophis sirtalis	Wash.	Sumwalt, 1926
	Thamnophis ordinoides	Wash.	Sumwalt, 1926
	Clemmys marmorata	Ore.	Thatcher, 1954

This parasite has not been reported outside of the Pacific Northwest.

Morphology: Described and figured by Skrjabin (1949).

Paramphistomum cervi (Schrank, 1790) Fischoeder, 1901

Synonyms: *Fasciola cervi* Schrank, 1790
Festucaria cervi Zeder, 1790
Fasciola elaphi Gmelin, 1791
Monostoma conicum Zeder, 1800
Amphistoma conicum Rudolphi, 1809
Amphistoma cervi Stiles and Hassell, 1900
Cercaria pigmentata Sonsino, 1892

Synonymy after Skrjabin (1949).

Host:			
	Cattle	B.C.	Swales, 1933

Other North American hosts were recorded by Cram (1925), Krull (1933a), Price (1928), and Price and McIntosh (1944).

Taxonomy: Morgan and Hawkins (1949) thought that the taxonomy of this genus needed revision. Dawes (1946) included a great many more species as synonyms of *P. cervi.*

Morphology: This form was figured by Morgan and Hawkins (1949) and described and figured by Skrjabin (1949).

Biology: *Cercaria pigmentata* Sonsino, 1892, develops in various species of *Physa* and *Bullinus,* encysts readily, and is ultimately eaten by the definitive host. (Szidat, 1936; Looss, 1896; Takahashi, 1927; Brumpt, 1936; Balozet and Callot, 1938; and Dinnik, 1951.)

Paramphistomum sp.

Several amphistomes have been reported from the Pacific Northwest which cannot be placed in a species with certainty. Bruce (1930) reported *Amphistomum conicum* from cattle of British Columbia, and one cannot be certain whether this was really *P. cervi* or *P. microbothrium* Fischoeder 1901, since *A. conicum* was not adequately defined. Dikmans (1945) reported *Paramphistomum* sp. from cattle from British Columbia and Oregon.

Stichorchis subtriquetrus (Rudolphi, 1814) Lühe, 1909

Synonyms: *Amphistoma subtriquetrum* Rudolphi, 1814
Distoma amphistomatoides Bojanus, 1817
Amphistomum subtriquetrus Westrumb, 1823
Cladorchis (*Stichorchis*) *subtriquetrus* Fischoeder, 1901

Host: *Castor canadensis* Ore. Shaw, 1947; Senger & Neiland, 1955

Morphology: Described and figured by Skrjabin (1949).

Biology: Cercariae develop in *Fossaria parva* in Louisiana, encyst on lettuce, and develop experimentally in guinea pigs (Bennett and Humes, 1939).

Zygocotyle lunatum (Diesing, 1836) Stunkard, 1916

Synonyms: *Amphistoma lunatum* Diesing, 1836
Zygocotyle ceratosa Stunkard, 1916
Chiorchis lunatus Travossos, 1921
Cercaria poconensis Willey, 1930

Hosts: *Olor buccinator* B.C. Cowan, 1946
Anas platyrhynchus Ore. *Exact location unknown

Additional hosts recorded in Yamaguti (1958).

Biology: Willey (1930, 1941) showed that *Cercaria poconensis* Willey, 1930, develops in species of *Helisoma* and develops to maturity in many ducks and some mammals. The lymph vessels are probably remnants of the cercarial excretory vesicle (Willey, 1954).

Family PHILOPHTHALMIDAE

Echinostephilla haematopi, Ching, 1960

Host: *Haematopus bachmani* Wash. Ching 1960a

Biology: Ching, 1960a, attempted the life history of this species.

Parorchis acanthus (Nicoll, 1906) Nicoll, 1907

Synonyms: *Zeugorchis acanthus* Nicoll, 1906
Parorchis avitus Linton, 1914 (Cable & Martin, 1935)

Host: *Larus occidentalis* Ore. *Lincoln County

Hosts from the Atlantic have been listed by Nicoll (1906, 1907b) and Linton (1914).

Morphology: Described and figured by Dawes (1946) and Skrjabin (1947b). Rees (1939, 1940) elaborated on the morphology, embryology, etc., but Brien (1954) was not in complete agreement with her. Perez Vigueras (1956) redescribed and figured this form.

Biology: The life history has been worked out by Lebour (1914), Lebour and Elmhirst (1922), and Stunkard and Cable (1932). Oguri and Chu (1955) worked on the effect of diet on infections of *P. acanthus*.

* Asterisks denote new (previously unpublished) reports of the parasite in the area.

Family PLAGIORCHIIDAE

Alloglossidium corti (Lamont, 1921)

Synonyms: *Plagiorchis corti* Lamont, 1921
Plagiorchis ameiurensis McCoy, 1928
Alloglossidium kenti Simer, 1929

Synonymy after Van Cleave and Mueller, 1934.

Hosts:	*Ictalurus nebulosus*	B.C.	Bangham & Adams, 1954
	Ictalurus nebulosus	Idaho	Fritts, 1959

Additional hosts from other areas listed by Van Cleave and Mueller (1934) and Harmes (1959).

Morphology: The adult was figured and described by Van Cleave and Mueller (1934).

Biology: Xiphidiocercariae develop in species of *Helisoma* and encyst in mayfly and dragonfly larvae (McMullen, 1935; Crawford, 1937).

Haplometrana intestinalis Lucker, 1931

Synonym: *Haplometrana utahensis* Olsen, 1937 (Waitz, 1959)

Hosts:	*Rana pretiosa*	Wash.	Lucker, 1931
	Rana pretiosa	Idaho	Waitz, 1959

Morphology: The reader is referred to the original description by Lucker (1931) and Olsen (1937) for morphological information.

Biology: Lophocercous xiphidiocercariae develop in *Physella utahensis;* frogs serve as both intermediate and definitive hosts (Olsen, 1937).

Lechriorchis plesientera Sumwalt, 1926

Hosts:	*Thamnophis sirtalis*	Wash.	Sumwalt, 1926
	Thamnophis ordinoides	Wash.	Sumwalt, 1926

No other records of this parasite are known. The taxonomic position of this form is not completely clear. Skrjabin and Antipin (1957) placed this parasite in the family Ochetosomatidae. They also described and figured the form.

Neoglyphe locellus (Kossack, 1910) Yamaguti, 1958

Synonyms: *Opisthioglyphe locellus* Kossack, 1910
O. (Neoglyphe) locellus (Kossack, 1910) Shaldybin, 1954

Hosts:	*Lymnaea bulimoides*	Ore.	Macy &Moore, 1958
	Hamster	Experimentally—Macy & Moore, 1958	

Also reported from Russia by Kossack (1910).

Taxonomy: *Neoglyphe* (Shaldybin, 1954) Yamaguti, 1958, was erected for those species of *Opisthioglyphe* found in mammals. Dollfus (1957) and Macy and Moore (1958) still retained *Opistohioglyphe* and the final decision on the proper designation must come later.

Morphology: Macy and Moore (1958) redescribed and figured the worm from material in Oregon.

Biology: Xiphidiocercariae develop in *Lymnaea bulminoides,* encyst in the sporocyst or in various species of insect, and develop to maturity in the hamster (experimentally) (Macy and Moore, 1958). Adults have been found in shrews in both Montana and Alaska, but apparently not in the area included in this checklist.

***Plagiorchis proximus* Barker, 1915**

Host: *Ondatra zibethica* B.C. Knight, 1951

Reported only from *Mustela vison* from other areas by Barker (1915).

***Plagiorchis vespertilionis parorchis* Macy, 1960**

Synonyms: *Fasciola vespertilionis* Müller, 1784
Distoma vespertilionis of Zeder, 1803
D. lima Rudolphi, 1809
Lepoderma vespertilionis of Looss, 1899
Plagiorchis vespertilionis (Müller, 1784) Braun, 1900

Hosts: *Myotis lucifugus alascensis* Wash. Macy, 1960
Mus musculus (experimental) Macy, 1956
Lymnaea stagnalis Wash. Macy, 1956
Ephemerid larvae (experimental)
Trichopterous larvae (experimental)
Dragon fly nymphs (experimental)
Culex mosquito larvae (experimental)

Biology: Xiphidiocercariae develop in *Lymnaea stagnalis,* encyst experimentally in four different sorts of immature insects, and develop experimentally in white mice. Macy (1960) decided that this form was a subspecies of the widely distributed *Plagiorchis vespertilionis* instead of a separate species as he had indicated in an abstract (Macy, 1956).

***Telorchis corti* Stunkard, 1915**

Synonyms: *Telorchis linstowi* Goldberger, 1911, *nec* Stossich, 1890
Telorchis lobosus Stunkard, 1915
Telorchis insculpti MacCallum, 1918
Telorchis guttati MacCallum, 1918
Telorchis chelopi MacCallum, 1918
Telorchis pallidus MacCallum, 1918
Telorchis angustus MacCalum, 1821, *nec* Stafford, 1900
Cercorchis corti (Stunkard, 1915) Perkins, 1928
Telorchis stenoura Ingles, 1930
Cercorchis texanus Harwood, 1932
Cercorchis medius McMullen, 1934, *nec* Stunkard, 1915

Above synonymy after Wharton, 1940.

Host: *Clemmys marmorata* Ore. Thatcher, 1954

Additional hosts are listed by Wharton (1940).

Morphology: See any of the authors of synonyms above for descriptions and figures.

Biology: Xiphidiocercariae develop in *Physella integra,* encyst in tadpoles, and develop to maturity in *Chrysemys picta.* They do not mature in *Thamnophis* sp., but do live for several weeks (McMullen, 1934).

Zeugorchis syntomentera Sumwalt, 1926

Synonyms: *Pseudorenifer syntomentera* (Sumwalt, 1926) Allison & Holl, 1937
Paralechriorchis syntomentera (Sumwalt, 1926) Byrd and Denton, 1938

Hosts: *Thamnophis sirtalis* Wash. Sumwalt, 1926
Thamnophis ordinoides Wash. Sumwalt, 1926

No other hosts are known.

Taxonomy: This species was transferred to *Pseudorenifer* by Allison and Holl (1937) and then to *Paralechriorchis* by Byrd and Denton (1938). Yamaguti (1958) rejected both these proposals and retained *Zeugorchis.* Skrjabin and Antipin (1957) accepted the genus *Paralechriorchis.*

Morphology: Adult and larval stages were described and figured by Ingles (1933) and Skrjabin and Antipin (1957).

Biology: Xiphidiocercariae develop in *Physa gyrina,* enter tadpoles of *Rana aurora* or *Hyla regilla,* which are in turn eaten by snakes (Ingles, 1933).

Family PSILOSTOMIDAE

Sphaeridiotrema globulus (Rudolphi, 1819) Odhner, 1913

Synonym: *Distoma globulus* Rudolphi, 1819

Host: Birds Ore. Dikmans, 1945

Hosts from other areas in Yamaguti (1958).

Morphology: Described and figured by Skrjabin (1947c) and Dawes (1946).

Biology: Szidat (1937) showed that cercariae develop in *Bythinia tentaculata,* encyst on the inside of the shell of this snail, and develop to maturity in *Anas boschas.* Price (1934) showed that this parasite caused a fatal ulceration of the intestine in *Marila affinis.*

Pseudopsilostoma ondatrae (Price, 1931) Yamaguti, 1958

Synonyms: *Psilostomum ondatrae* Price, 1931
Ribeiroia ondatrae (Price, 1931) Price, 1942

Host: *Larus californicus* Ore. Price, 1931c

This form has also been reported from the muskrat in other parts of North America by Price (1931c).

Taxonomy: Skrjabin (1947c) retained this form in the genus *Psilostomum*, but Yamaguti (1958) erected the new genus *Pseudopsilostoma* to include this form. *Psilostomum ondatrae* Price, 1931 of Beaver (1939) was considered to belong to *Ribeiroia* by Yamaguti (1958). If Yamaguti is correct, the life cycle as worked out by Beaver (1939) does not apply. The taxonomy of these forms needs clarification.

Biology: Kuntz (1951) discussed the embryology of the excretory system.

Family SCHISTOSOMATIDAE

Trichobilharzia adamsi Edwards and Jansch, 1955

Host:	*Physa conformis*	B.C.	Edwards & Jansch, 1955

Only record. One immature female was recovered from a duckling. Edwards and Jansch (1955) described and figured all the known stages. This form can cause cercarial dermatitis in man.

Trichobilharzia elvae (Miller, 1923)

Synonym: *Cercaria elvae* Miller, 1923

Hosts:	*Lymnaea stagnalis*	Wash.	Macy & Moore, 1953
	L. stagnalis jugulus	Wash.	Schell, 1959
	Lymnaea palustris nuttalliana	Wash.	Hunter et al., 1949; Schell, 1959
	Lymnaea palustris nuttalliana	Idaho	Schell, 1959
	Ducklings	Experimentally	Macy, Moore, & Price, 1955

This form has also been reported from Michigan by Miller (1923).

Taxonomy: Macy and Moore (1953) believed this to be a valid species, but McMullen and Beaver (1945) believed it to be a synonym of the European species *T. ocellata*. The morphology was discussed by McMullen and Beaver (1945).

Biology: Furcocercous cercariae develop in the snail hosts and develop to maturity in birds. When the cercariae penetrate the skin of man they produce cercarial dermatitis (Macy, Moore, and Price, 1955).

Trichobilharzia oregonensis (MacFarlane and Macy, 1946) Macy and Moore, 1953

Synonym: *Cercaria oregonensis* McFarlane & Macy, 1946

Hosts:	*Physa ampullacea*	Ore.	McFarlane & Macy, 1946
	Ducks	Experimentally	Macy, Moore, & Price, 1955
	Geese	Experimentally	Macy, Moore, & Price, 1955

This form is known only in the Pacific Northwest.

Morphology: Well described and figured by Macy, Moore, and Price (1955).

Biology: Furcocercous cercariae develop in *Physa ampullacea* and penetrate the definitive host. The cercariae produce cercarial dermatitis in man (Macy, Moore, and Price, 1955).

Trichobilharzia physellae (Talbot, 1936) McMullen and Beaver, 1945

Synonyms: *Cercaria physellae* Talbot, 1936
Pseudobilharzia quequeduale McLeod, 1937

Hosts:	*Physa ampullacea*	Ore.	Macy & Moore, 1953
	Physa gyrina	Idaho	Schell, 1959

Additional hosts have been reported from Manitoba (McLeod, 1937; McLeod and Little, 1942) and Michigan (McMullen and Beaver, 1945).

Biology: The life history has been experimentally worked out by McLeod and Little (1942) and McMullen and Beaver (1945). Furcocercous cercariae develop in species of *Physa* and mature in various birds. When the cercariae penetrate man they cause cercarial dermatitis.

Gigantobilharzia huronsis Najim, 1950

Host:	*Physa gyrina*	Idaho	Schell, 1959

Additional hosts were reported by Najim (1950). Woodhead (1955) described the miracidium.

Biology: Najim (1950) reported that the cercariae from snails produced adults in chicks and canaries. His description was in abstract only.

Schistosomatium douthitti (Cort, 1915) Price, 1931

Synonym: *Cercaria douthitti* Cort, 1915

Host:	*Lymnaea palustris nuttalliana*	Idaho	Schell, 1959

Additional hosts have been reported from Illinois (Cort, 1914, 1915b), Michigan (Cort, 1918, 1936; Price. 1931a), Wisconsin (Brackett, 1940), Minnesota (Penner, 1938).

Biology: The life history was worked out by Price (1931a) and involved furcocercous cercariae developing in the snail hosts and becoming adults in several mammals. Kagan, Short, and Nez (1954) discussed the laboratory propagation of the trematode and had an extensive bibliography. The cercariae cause dermatitis in man.

Cercaria columbiensis Edwards and Jansch, 1955

Host:	*Physa conformis*	B.C.	Edwards & Jansch, 1955

This form has not been found since and nothing is known of the biology, except that it causes dermatitis.

Cercaria tuckerensis Miller, 1927

Host:	*Planorbis* sp.	Wash.	H. M. Miller, 1927

This dermatitis-producing cercaria has not been reported since.

Cercaria robinsonensis **Schell, 1959**

Host: *Physa gyrina* Idaho Schell, 1959

This cercaria has not been reported elsewhere. It causes cercarial dermatitis (Schell, 1959).

Schistosoma haematobium **(Bilharz, 1852) Weinland, 1858**

Lloyd (1913) reported a case of *Bilharzia haematobia* in Seattle, Washington, from a man who had come from Africa. This trematode cannot be considered a part of the natural trematode fauna of the Pacific Northwest.

Family SPIRORCHIDAE

Spirorchis artericola **(Ward, 1921) Stunkard, 1925**

Host: *Clemmys marmorata* Ore. Thatcher, 1954

Morphology: Skrjabin (1951) described and figured the worm. The germ cell cycle was worked out by Cort, Ameel, and Van Der Woude (1954).

Biology: Cercariae develop in sporocysts in *Helisoma trivolvis* then penetrate the turtle (Pieper, 1953). Other life history studies have been made by Ward (1921) and Stunkard (1923).

Family STEGODERMATIDAE

Deretrema cholaeum **McFarlane, 1936**

Host: *Sebastodes* sp. B.C. McFarlane, 1936

Unknown outside of the Pacific Northwest.

Morphology: Also figured and described by Skrjabin (1957).

Family SYNCOELIIDAE

Syncoelium katuwo **Yamaguti, 1938**

Synonym: *Syncoelium filiferum* (Sars) of Lloyd & Guberlet, 1936 (Manter 1954)

Hosts: *Oncorhynchus nerka* Wash. Lloyd & Guberlet, 1936
O. gorbuscha Wash. Lloyd & Guberlet, 1936

Additional host reported from Japan by Yamaguti (1938).

Morphology: Adequate descriptions are available (Yamaguti, 1938; Lloyd and Guberlet, 1936).

Biology: The life cycle is unknown. Sars (1885) described *S. filiferum* from euphausids, and these are possible intermediate hosts.

Family ZOOGONIDAE

Zoogonoides viviparus **(Olsson, 1868) Odhner, 1902**

Synonyms: *Distoma viviparum* Olsson, 1868
Zoogonus viviparus (Olsson) of Looss, 1901
Zoogonoides subaequiporus Odhner, 1911

Host: *Microstomus pacificus* Wash. Ching, 1960b

Biology: The morphology and life cycle of *Z. laevis* was described by Stunkard (1943). Dawes (1946) thought that *Z. laevis* might be a synonym of *Z. viviparus*.

Steganoderma formosum **Stafford, 1904**

Host: *Parophrys vetulus* Wash. Ching, 1960b

Digenetic trematodes of uncertain status

Monostone cercariae

Lehmann (1956) reported monostone cercariae encysted upon the rectal mesentery of a single *Ambystoma gracile* from Oregon.

Cercaria burti **Miller, 1923**

H. M. Miller (1925b, 1927) reported this form from *Lymnaea stagnalis* from Washington. He also reported it from Michigan (1923, 1926). It is a furcocercous form.

Cercaria sanjuanensis **Miller, 1927**

H. M. Miller (1927) described *Cercaria sanjuanensis* from *Lymnaea stagnalis* from Washington. It is a pharyngeal longifurcate form.

Cercaria hirsuta **Miller, 1927**

H. M. Miller (1927) described *Cercaria hirsuta,* a furcocercous form, from *Planorbis* sp. from Washington.

Cercaria granula **Miller, 1927**

H. M. Miller (1927) described *Cercaria granula,* a furcocercous form, from *Planorbis* sp. from Washington.

Cercaria absurda **Miller, 1927**

H. M. Miller (1927) described *Cercaria absurda,* a furcocercous cercaria, from *Planorbis* sp. from Washington.

Cercaria bulbocauda **Miller, 1927**

This furcocercous cercaria was described from *Planorbis* sp. from Washington by H. M. Miller (1927).

Cercaria searlesiae **Miller, 1925**

This cotylocercous cercaria was described from *Searlesia dira* from Washington by Miller (1925a).

Cercaria foliata **Miller, 1925**

An opthalmocercaria described by Miller (1925a) from *Pterorytis* (=*Purpura*) *foliata* from Washington.

***Cercaria purpuracaudata* Miller, 1925**

A binoculate magnacercous monostome was described by Miller (1925a) from *Bittium eshrichti* from Washington.

Cystophorous cercaria "A" of Miller, 1925

This cystophorous cercaria was described by Miller (1925a) from *Thais emarginata* from Washington.

Cystophorous cercaria "B" of Miller, 1925

This cystophorous cercaria was described by Miller (1925a) from *Thais lamellosa* from Washington.

Flukes

Shaw, Simms, and Muth (1934) reported "two kinds of flukes" from the Klamath Lake Sucker (*Deltistes* sp. or *Chasmistes* sp.) from Oregon.

Host List

INVERTEBRATE HOSTS

Phylum CTENOPHORA

Family BOLINOPSIDAE

Bolinopsis microptera (Agazziz)

Lecithochirium sp.

Phylum ARTHROPODA

Class CRUSTACEA

Subclass OSTRACODA

Family CYPRIDAE

Cypridopsis vidua (Müller)

Halipegus occidualis

Subclass COPEPODA

Family CALIGIDAE

Caligus sp. (on *Raja binoculata*)

Udonella caligorum

Lepeophtheirus sp. (on *Ophiodon elongatus*)

Udonella opiodontis

Subclass MALACOSTRACA

Pacifastacus sp. Crayfish

Crepidostomum cooperi
Cephalophallus obscurus
Plagioporus siliculus

Class INSECTA

Order DIPTERA

Mosquito larvae

Plagiorchis parorchis

Order EPHEMERIDA

Mayflies

Crepidostomum cooperi

Order TRICHOPTERA

Caddis flies

Acanthatrium oregonense
Allassogonoporus marginalis
Parorchis acanthus

Phylum MOLLUSCA

Class GASTROPODA

Order PULMONATA

Family LYMNAEIDAE

Galba bulminoides—synonym of *Lymnaea bulminoides bulminoides*

Galba ferruginea—synonym of *Lymnaea ferruginea*

Lymnaea bulminoides bulminoides Lea

Synonym: *Galba buliminoides*
Fasciola hepatica
Neoglyphe locellus

Lymnaea ferruginea Haldeman

Synonym: *Galba ferruginea*
Fasciola hepatica

Lymnaea palustris nuttalliana Lea

Synonym: *Stagnicola palustris nuttalliana*
Trichobilharzia elvae
Schistosomatium douthitti

Lymnaea stagnalis (Linnaeus)
Plagiorchis parorchis
Trichobilharzia elvae
Cercaria burti
Cercaria sanjuanensis

Lymnaea stagnalis jugulus Say
Trichabilharzia elvae

Lymnaea trunculata (?)
Fasciola hepatica

Stagnicola palustris nuttalliana—synonym of *Lymnaea palustris nuttalliana*

Family PHYSIDAE

Physa ampullacea Gould
Trichobilharzia physellae
Trichobilharzia oregonensis

Physa conformis Tryon
Trichobilharzia adamsi
Cercaria columbiensis

Physa gyrina Say
Trichobilharzia physellae
Cercaria robinsonensis
Gigantobilharzia huronensis

Family PLANORBIDAE

Helisoma subcreatum (?) (error of *H. subcrenatus* ?)

Synonym of *Planorbis trivolvis subcrenatus*

Planorbis sp.

Cercaria hirsuta
Cercaria granula
Cercaria absurda
Cercaria bulbocaudata
Cercaria cita
Cercaria tuckerensis

Planorbis trivolvis subcrenatus Carpenter

Halipegus occidualis

Order PROSOBRANCHIATA

Family BULIMIDAE

Flumenicola virens (Lea)

Allassogonoporus marginalis
Cephalophallus obscurus
Plagioporus virens
Sanguinicola klamathensis

Family CERITHIIDAE

Bittium eschrichti Middendorf

Cercaria purpuracaudata

Family MURICIDAE

Pterorytis foliata Gmelin

Synonym: *Purpura foliata*

Cercaria foliata

Purpura foliata—synonym of *Pterorytis foliata*

Thais emarginata (Deshayes)

Cystophorous cercaria A

Thais lamellosa (Gmelin)

Cystophorous cercaria B

Family NEPTUNEIDAE

Searlesia dira (Reeve)

Cercaria searlesiae

Family PLEUROCERIDAE

Goniobasis plicifera silicula—synonym of *Oxytrema silicula*

Goniobasis silicula—synonym of *Oxytrema silicula*

Oxytrema silicula (Gould)

Synonyms: *Goniobasis plicifera silicula*
Goniobasis silicula
Acanthatrium oregonense
Nanophyetus salmincola
Notocotylus imbricatus
Plagioporus siliculus

FISH HOSTS

Phylum CHORDATA

Class PISCES

Family BATRACHOIDIDAE

Porichthys notatus (Girard) Midshipman
Lecithaster salmonis
Derogenes varicus

Family BOTHIDAE

Citharichthys sordidus (Girard) Mottled Sand-dab
Tubulovesicula lindbergi

Citharichthys stigmaeus Jordan and Gilbert Speckled Sand-dab
Tubulovesicula lindbergi

Family CATOSTOMATIDAE

Catostomus catostomus (Forster) Fine-scaled Sucker
Allocreadium lobatum
Diplostomulum sp.
Neascus sp.
Octomacrum lanceatum
Plagiocirrus sp.
Postodiplostomum minimum
Tetracotyle sp.
Triganodistomum attenuatum

Catostomus columbianus palouseanus (Schultz and Thompson)
Palouse Fine-scaled Sucker
Gyrodactylus sp.
Postodiplostomum minimum

Catostomus commersonii (Lacepede) White Sucker
Diplostomulum sp.

Catostomus macrocheilus Girard Coarse-scaled Sucker
Allocreadiidae
Diplostomulum sp.
Neascus sp.
Octomacrum lanceatum

Plagiocirrus primus
Plagiocirrus testeus
Postodiplostomum minimum
Tetracotyle sp.
Triganodistomum attenuatum

"Klamath Lake Suckers" (probably *Deltistes* sp. or *Chasmistes* sp.) "Flukes"

Family CENTRARCHIDAE

Lepomis gibbosus (Linnaeus) Pumpkin-seed
Postodiplostomum minimum
Neascus sp.

Lepomis macrochirus Rafinesque Bluegill
Postodiplostomum minimum

Micropterus salmonides (Lacepede) Large-mouth Black-bass
Diplostomulum sp.
Neascus sp.

Family CHIMAERIDAE

Hydrolagus colliei (Lay and Bennett) Ratfish
Chimaericola leptogaster

Family COREGONIDAE

Prosopium cylindraceum (Pallas) Round Whitefish
Diplostomulum sp.

Prosopium williamsoni (Girard) Rocky Mountain Whitefish
Allocreadium lobatum
Crepidostomum farionis
Discocotyle salmonis
Diplostomulum sp.
Podocotyle shawi
Tetracotyle sp.

Family COTTIDAE

Aspicottus bison—synonym of *Enophrys bison*

Blepsias cirrhosis (Pallas) Silver Spot
Genolinea laticauda

Clinocottus embryum (Jordan and Starks) Mossy Sculpin
Lecithaster salmonis
Derogenes varicus

Cottus asper Richardson Prickly Bullhead
Crepidostomum isotomum
Diplostomulum sp.
Tetracotyle sp.

Cottus rhotheus (Rosa Smith) Torrent Sculpin
Diplostomulum sp.
Tetracotyle sp.

Cottus sp.
Plagioporus virens

Dasycottus setiger Bean Spiny-headed Sculpin
Genolinea manteri

Enophrys bison (Girard) Buffalo Sculpin

Synonym : *Aspicottus bison*
Genolinea laticauda
Genolinea manteri
Intuscirrus aspicotti
Prosorhynchus squamatus
Tubulovesicula lindbergi

Hemilepidotus hemilepidotus (Tiselius) Red Irish Lord
Tubulovesicula lindbergi

Leptocottus armatus Girard Common Sculpin
Bucephalopsis ozakii
Derogenes varicus
Genolinea laticauda
Genolinea manteri
Genolinea montereyensis
Lecithaster salmonis
Podocotyle atomon
Podocotyle olssoni
Podocotyle pedunculata
Podocotyle reflexa
Podocotyle sinusacca
Tubulovesicula lindbergi

Radulinus asprellus Gilbert Darter Sculpin
Microcotyle sp.

Scorpaenichthys marmoratus (Ayres) Giant Marbled Sculpin
Genolinea laticauda
Prosorhynchus crucibulus
Tubulovesicula lindbergi

Synchirus gilli Bean Manacled Sculpin
Tubulovesicula lindbergi

Family CYPRINIDAE

Acrocheilus alutaceum Agassiz and Pickering Chisel-mouth
Postodiplostomum minimum
Dactylogyrus vancleavei
Neascus sp.

Coucsius plumbeus (Agassiz) Lake Chub
Allocreadium lobatum
Dactylogyrus banghami
Dactylogyrus mylocheilus
Diplostomulum sp.
Gyrodactylus coucsius
Neascus sp.
Postodiplostomum minimum
Octomacrum sp.
Tetracotyle sp.

Cyprinus carpio Linnaeus Carp
Dactylogyrus anchoratus
Dactylogyrus extensus

Mylocheilus caurinum (Richardson) Chub
Allocreadium lobatum
Diplostomulum sp.
Clinostomum marginatum
Dactylogyrus mylocheilus
Postodiplostomum minimum
Neascus sp.
Tetracotyle sp.

Ptychocheilus oregonensis (Richardson) Squaw-fish
Allocreadium lobatum
Dactylogyrus columbiensis
Dactylogyrus ptychocheilus
Dactylogyrus tridactylus
Dactylogyrus vancleavei
Diplostomulum sp.
Neascus sp.
Postodiplostomum minimum
Tetracotyle sp.

Rhinichthys cataractae (Cuvier and Valenciennes) Long-nosed Dace
Dactylogyrus banghami
Neascus sp.
Postodiplostomum minimum

Richardsonius balteatus (Richardson) Red-sided Shiner
Clinostomum marginatum
Dactylogyrus banghami
Dactylogyrus richardsonius
Diplostomulum sp.
Neascus sp.
Postodiplostomum minimum
Octomacrum sp.
Tetracotyle sp.

Family EMBIOTOCIDAE

Cymatogaster aggregata Gibbons Yellow Shiner
Lecithaster salmonis
Telolecithus pugetensis

Embiotoca lateralis—synonym of *Taeniotoca lateralis*

Taeniotoca lateralis (Agassiz) Blue Sea Perch

Synonym: *Embiotoca lateralis*
Telolecithus pugetensis

Family GADIDAE

Lota lota (Linnaeus) Ling
Crepidostomum farionis
Crepidostomum sp.
Diplostomulum sp.
Postodiplostomum minimum

Microgadus proximus (Girard) Tomcod
Derogenes varicus
Hemiurus levinseni

Theregra fuccnsis (Pallas) Whiting
Opecoelina theregrae

Theregra chalcogamma (Pallas) Whiting
Hemiurus levinseni
Lepidapedon microcotyleum
Tubulovesicula lindbergi

Family GASTEROSTEIDAE

Gasterosteus cataphractus—This host reported from B.C. by Guberlet (1937) has never been reported from the Northwest and probably should be considered *G. aculeatus*.

Gasterosteus aculeatus Linnaeus Three-spined Stickleback
Bunodera cucaliae
Crepidostomum cornutum
Derogenes varicus
Diplostomulum sp.
Gyrodactylus elegans
Lecithaster salmonis
Podocotyle pacifica
Postodiplostomum minimum
Parahemiurus merus
Tetracotyle sp.
Tubulovesicula lindbergi

Eucalia inconstans (Kirtland) Brook Stickleback
Bunodera eucaliae
Tetracotyle sp.

Family HEXAGRAMMIDAE

Chiropsis decagrammos—synonym of *Hexagrammos decagrammos*

Hexagrammos decagrammos (Pallas) Kelp Greenling

Synonym: *Chiropsis decagrammos*
Microcotyle chiri

Hexagrammos stelleri Tiselius White-spotted Greenling
Podocotyle atomon

Ophiodon elongatus Girard Lingcod
Derogenes crassus
Derogenes varicus
Genolinea laticauda
Gyrodactylus elegans
Hemiurus levinseni
Lecithochirium exodicum
Microcotyle sebastis
Prosorhynchus facilis
Rhipidocotyle elongatum
Stephanostomum casum
Stephanostomum tristephanum
Tubulovesicula lindbergi
Udonella ophiodontis on *Lepeophtheirus* sp.

Family HEXANCHIDAE

Hexanthus griseus (Bonnaterre) Shovelnose Shark
Otodistomum plicatum
Otodistomum veliporum
Squalonchocotyle grisea

Family ICTALURIDAE

Ameiurus melas—synonym of *Ictalurus melas*

Ameiurus natalis—synonym of *Ictalurus natalis*

Ameiurus nebulosus—synonym of *Ictalurus nebulosus*

Ictalurus melas (Rafinesque) Black Catfish

Synonym: *Ameiurus melas*
Phyllodistomum staffordi

Ictalurus natalis (LeSueur)

Synonym: *Ameiurus natalis*
Phyllodistomum staffordi

Ictalurus nebulosus (LeSueur) Brown Catfish

Synonym: *Ameiurus nebulosus*
Alloglossidium corti
Phyllodistomum staffordi

Family MERLUCCIIDAE

Merluccius productus (Ayres) Hake
Lecithophyllum anteroporum

Family MOLIDAE

Mola mola (Linnaeus) Ocean Sunfish
Accocladocoelium macrocotyle
Odhnerium calyptrocotyle

Family PLEURONECTIDAE

Eopsetta jordani (Lockington) Petrale Sole
Lecithchirium exodicum

Hippoglossus stenolepis Schmidt Halibut
Entobdella squamula

Isopsetta isolepis (Lockington) Butter Sole
Derogenes varicus
Tubulovesicula lindbergi

Lepidopsetta bilineata (Ayres) Rock Sole
Tubulovesicula lindbergi

Microstomus pacificus (Lockington) Dover Sole
Stephanostomum tristephanum
Fellodistomum brevum

Paralichthys californicus (Ayres) (Probably a California record)
Entobdella squamula

Parophrys vetulus Girard Lemon Sole
Tubulovesicula lindbergi
Lepidapedon calli
Steganoderma formosum

Platyichthys stellatus (Pallas) Starry Flounder
Bucephalopsis ozakii
Derogenes varicus
Lecithochirium exodicum
Parahemiurus merus
Tubulovesicula lindbergi

Pleuronichthys decurrens (Jordan and Gilbert) Curl-fin Sole
Fellodistomum furcigerum

Psettichthys melanostictus Girard Sand Sole
Tubulovesicula lindbergi

Family RAJIDAE

Raja binoculata Girard — Big Skate
- *Acanthocotyle pacifica*
- *Acanthocotyle pugetensis*
- *Merizocotyle pugetensis*
- *Otodistomum veliporum*
- *Rajonchocotyle batis*
- *Udonella caligorum* on *Caligus* sp.

Raja rhina Jordan and Gilbert — Long-nosed Skate
- *Acanthocotyle pacifica*

Raja stellulata Jordan and Gilbert — Prickly Skate
- *Acanthocotyle pacifica*
- *Rajonchocotyle batis*

Family SALMONIDAE

Oncorhynchus gorbuscha (Walbaum) — Humpback Salmon
- *Genolinea oncorhynchi*
- *Hemiurus levinseni*
- *Lecithophyllum anteroporum*
- *Syncoelium katuwo*

Oncorhynchus keta (Walbaum) — Chum Salmon
- *Nanophyetus salmincola*

Oncorhynchus kisutch (Walbaum) — Silver Salmon
- *Crepidostomum farionis*
- *Diplostomulum* sp.
- *Derogenes* sp.
- *Lecithaster salmonis*
- *Nanophyetus salmincola*
- *Podocotyle shawi*
- *Tubulovesicula lindbergi*

Oncorhynchus nerka (Walbaum) — Sockeye Salmon
- *Crepidostomum farionis*
- *Lecithaster salmonis*
- *Lecithophyllum anteroporum*
- *Podocotyle shawi*
- *Syncoelium katuwo*
- *Tetracotyle* sp.

Oncorhynchus nerka kennerlyi (Suckley) — Kokanee Red Salmon
- *Crepidostomum farionis*
- *Crepidostomum* sp.
- *Podocotyle shawi*

Oncorhynchus tshawytscha (Walbaum) Chinook Salmon
Brachyphallus crenatus
Derogenes sp.
Hemiurus levinseni
Lecithaster salmonis
Lecithaster sp.
Nanophyetus salmincola
Tubulovesicula lindbergi

Salmo gairdnerii Richardson Rainbow Trout; Steelhead
Aponurus sp.
Crepidostomum cooperi
Crepidostomum farionis
Derogenes sp.
Diplostomulum sp.
Gyrodactylus elegans
Gyrodactylus spp.
Nanophyetus salmincola
Podocotyle shawi
Podocotyle sp.

Salmo gairdnerii kamloops (Jordan) Kamloops Trout
Allocreadium lobatum
Crepidostomum farionis

Salmo clarkii Richardson Cutthroat Trout
Crepidostomum farionis
Crepidostomum sp.
Derogenes sp.
Diplostomulum sp.
Nanophyetus salmincola
Neascus sp.
Plagioporus siliculus
Podocotyle shawi
Podocotyle sp.

Salmo clarkii henshawi (Gill and Jordan) Lahontan Cutthroat
Sanguinicola klamathensis

Salmo trutta Linnaeus Brown Trout
Gyrodactylus elegans

Salvelinus fontinalis (Mitchell) Eastern Brook Trout
Alaria sp.
Crepidostomum cooperi
Crepidostomum farionis
Crepidostomum sp.
Diplostomulum sp.
Nanophyetus salmincola
Neascus sp.

Salvelinus alpinus malma—synonym of *Salvelinus malma*

Salvelinus malma (Walbaum) Dolly Varden Trout

Synonym: *Salvelinus alpinus malma*
Aponurus sp.
Brachyphallus crenatus
Bucephalopsis ozakii
Crepidostomum cooperi
Crepidostomum sp.
Diplostomulum sp.
Discocotyle salmonis
Lecithaster salmonis
Neascus sp.
Tetracotyle sp.

Family SCORPAENIDAE

Sebastodes alutus (Gilbert) Long-jawed Rock-fish
Megalocotyle trituba

Sebastodes caurinus (Richardson) Copper Rock-fish
Derogenes varicus
Hemiurus levinseni
Megalocotyle marginata
Microcotyle sebastis
Tubulovesicula lindbergi

Sebastodes diploproa (Gilbert) Lobe-jawed Rock-fish
Megalocotyle trituba

Sebastodes elongatus (Ayres) Green-striped Rock-fish
Opecoelina radifistula

Sebastodes maliger (Jordan and Gilbert) Orange-spotted Rock-fish
Aporocotyle simplex
Derogenes varicus
Lecithochirium exodicum
Lecithaster salmonis
Megalocotyle marginata
Microcotyle sebastis
Opecoelina theregrae
Opechona occidentalis
Podocotyle abitionis

Sebastodes melanops (Girard) Black Rock-fish
Lecithaster salmonis
Megalocotyle marginata
Microcotyle sebastis
Opechona parvasoma
Tubulovesicula lindbergi

Sebastodes nebulosus (Ayres) Yellow-striped Rock-fish
Lepidapedon pugetensis
Megalocotyle marginata

Sebastodes nigrocinctus (Ayres) Black-banded Rock-fish
Tubulovesicula lindbergi

Sebastodes paucispinus (Ayres) Bocaccio
Derogenes crassus
Megalocotyle trituba

Sebastodes pinniger (Gill) Orange Rock-fish
Megalocotyle trituba

Sebastodes ruberrimus Cramer Red Snapper
Hemiurus levinseni
Lecithochirium exodicum
Megalocotyle trituba
Opechona alaskensis

Sebastodes sp.
Aporocotyle simplex
Deretrema cholaeum
Entobdella squamula
Gyrodactylus elegans
Opechona occidentalis
Podocotyle abitionis
Stephanostomum casum

Family SQUALIDAE

Somniosus microcephalus (Schneider) Sleeper Shark
Squalonchocotyle somniosi

Squalus suckleyi (Girard) Dog-fish
Squalonchocotyle abbreviata

Squalus sucklii—see *S. suckleyi*

Family STICHAEIDAE

Anoplarchus purpurescens Gill Coxcomb
Tubulovesicula lindbergi
Lumpenus sagitta (Willimovsky) Pacific Snake Blenny

Xiphister atropurpureus (Kittlitz) Black Blenny
Podocotyle atomon

Family SYNGNATHIDAE

Syngnathus griseo-lineatus Ayres Pipe-fish
Podocotyle atomon
Podocotyle reflexa

Family THYMALLIDAE

Thymallus arcticus (Richardson) Arctic Grayling

Synonym: *Thymallus signifer*
Crepidostomum farionis
Crepidostomum sp.

Thymallus signifer—synonym of *Thymallus arcticus*

Family ZOARCIDAE

Lycodopsis pacifica (Collett) Black-bellied Eel-pout
Pseudopecoelus vulgaris

"Species of Fresh Water Fishes"
Plagioporus siliculus
Plagioporus virens

"Fish"
Benedenia hendorfii

AMPHIBIAN HOSTS

Class AMPHIBIA

Order CAUDATA

Family AMBYSTOMIDAE

Ambystoma gracile (Baird) Northwestern Salamander
Megalodiscus americanus
Monostostome cercaria (encysted)

Dicamptodon ensatus (Eschscholtz) Pacific Giant Salamander
Cephalouterina dicamptodonti
Euryhelmis pacificus
Halipegus occidualis
Megalodiscus microphagus
Phyllodistomum singulare

Family PLETHODONTIDAE

Ensatina eschscholtzi Gray Eschscholtz Salamander
Brachycoelium salamandrae

Family SALAMANDRIDAE

Taricha granulosa (Skilton) Rough-skinned Newt

Synonym: *Triturus granulosus*
Megalodiscus americanus
Brachycoelium salamandrae

Taricha sp.

Synonym: *Triturus* sp.

Megalodiscus americanus

Taricha torosa (Rathke) California Newt

Halipegus occidualis

Triturus granulosus—synonym of *Taricha granulosa*

Triturus sp.—synonym of *Taricha* sp.

Order SALIENTIA

Family BUFONIDAE

Bufo boreas Baird and Girard Western Toad

Ophioxenos dienteros

Family RANIDAE

Rana aurora Baird and Girard Red-legged Frog

Euryhelmis pacificus (larval)

Halipegus occidualis

Megalodiscus temperatus

Metagonimoides oregonensis (larval)

Rana aurora cascadae Slater Cascade Range Frog

Synonym: *Rana cascadae*

Euryhelmis squamula (larval)

Rana cascadae—synonym of *Rana aurora cascadae*

Rana pretiosa Baird and Girard Spotted Frog

Haplometrana intestinalis

REPTILIAN HOSTS

Class REPTILIA

Order CHELONIA

Family EMYDIDAE

Clemmys marmorata (Baird and Girard) Pacific Pond Turtle

Neopolystoma orbiculare

Ophioxenos dienteros

Polystomoides coronatus

Spirorchis artericola

Telorchis corti

Order SERPENTES

Family COLUBRIDAE

Thamnophis ordinoides (Baird and Girard) Red-striped Garter Snake
Ophioxenos dienteros
Lechriorchis plesientera
Alaria marcianae
Zeugorchis syntomentera

Thamnophis sirtalis (Linnaeus) Common Garter Snake
Alaria marcianae
Lechriorchis plesientera
Ophioxenos dienteros
Zeugorchis syntomentera

AVIAN HOSTS

Class AVES

Order PELICANIFORMES

Family PELICANIDAE

Pelecanus sp. Pelican
Proalaria sp.

Order CICONIIFORMES

Family ARDEIDAE

"Birds of the Heron Group"
Clinostomum marginatum

Order ANSERIFORMES

Family ANATIDAE

Anas platyrhynchus Linnaeus Mallard Duck
Echinostomum revolutum
Zygocotyle lunatum

Cygnus buccinator—synonym of *Olor buccinator*

Cygnus olor (Gmelin) Mute Swan
Sphaeridiotrema globulus

Domestic Duck
Notocotylus imbricatus (Experimentally)
Trichobilharzia elvae (Experimentally)
Trichobilharzia oregonensis (Experimentally)
Sphaeridiotrema globulus (Experimentally)

Olor buccinator Richardson Trumpeter Swan

Synonym: *Cygnus buccinator*

Echinostomum revolutum
Orchipedum tracheicola
Zygocotyle lunatum

Order FALCONIFORMES

Family FALCONIDAE

Falco sparverius Linnaeus Sparrow Hawk
Athesmia jolliei
Brachylecithum idahoensis

Order GRUIFORMES

Family RALLIDAE

Fulica americana Gmelin American Coot
Cyclocoelum mutabile

Order CHARADRIIFORMES

Family LARIDAE

Larus argentatus Pontoppidan Herring Gull
Gymnophallus deliciosus

Larus californicus Lawrence California Gull
Calactosomum humbargari
Pseudopsilostoma ondatrae

Larus canus Linnaeus Mew Gull
Aporchis continuus

Larus glaucecens Naumann Glaucous-winged Gull
Galactosom humbargari
Gymnophallus deliciosus
Cryptocotyle lingua

Larus heermanni Cassin Heermann's Gull
Galactosomum humbargari

Larus occidentalis Audubon Western Gull
Gymnophallus deliciosus
Parorchis acanthus

Larus philadephia (Ord) Bonaparte's Gull
Galactosomum humbargari

Larus sp.
Stephanoprora sp.
Apophallus donicus

Family HAEMATOPODIDAE

Haematopus bachmani Audubon Black Oyster Catcher
Echinostephilla haematopi
Levinseniella propinqua
Plenosoma minimum
Gymnophallus obscurus
Microphallus primas

Order PASSERIFORMES

Family COMPSOTHLYPIDAE

Opornis tolmiei (Townsend) MacGillivray's Warbler
Glaphrystomum propinquum

Family FRINGILLIDAE

Hesperiophona vespertina brooksi Grinnell Western Evening Grosbeak
Brachylecithum chivosca

Passerella iliaca (Merriam) Fox Sparrow
Concinnum burleighi

Passerculus sandwichensis (Gmelin) Savannah Sparrow
Paradistomum passerculum

Pipilo erythophthalmus oregonus Bell Oregon Towhee
Synonym: *Pipilo maculatus oregonensis*
Lutztrema monenteron

Pipilo maculatus oregonensis—synonym of *Pipilo erythophthalmus oregonus*

Family TURDIDAE

Ixoreus naevis naevis (Gmelin) Pacific Varied Thrush
Brachylecithum mosquense
Macvella postnoporus
Lutztrema monenteron

Turdus migratorius Linnaeus American Robin
Brachylecithum mosquense
Brachylaeme fuscatus
Lutztrema monenteron

MAMMALIAN HOSTS

Class MAMMALIA

Order INSECTIVORA

Family SORICIDAE

Sorex bendirii (Merriam) Pacific Water Shrew
Euryhelmis pacificus

Sorex bendirii palmeri Merriam Pacific Water Shrew
Xiphidiotrema lockeri

Sorex palustris navigator (Baird) Water Shrew
Xiphidiotrema lockeri

Order CHIROPTERA

Family VESPERTILIONIDAE

Eptesicus fuscus (Beauvois) Big Brown Bat
Allassogonoporus marginalis

Myotis californicus caurinus Miller California Bat
Acanthatrium oregonense
Allassogonoporus marginalis
Limatulum gastroides

Myotis evotis (Allen) Long-eared Bat
Acanthatrium oregonense

Myotis lucifugus (LeConte) Little Brown Bat
Acanthatrium oregonense
Allassogonoporus marginalis
Plagiochis vespertilionis parorchis

Order RODENTIA

Family CASTORIDAE

Castor canadensis Kuhl Beaver
Euryhelmis pacificus
Stichorchis subtriquestrus

Family CRICETIDAE

Fiber zibethica—synonym of *Ondatra zibethica*

Neotoma fuscipes Baird Dusky-footed Woodrat
Platynosomum fastosum

Ondatra zibethica (Linnaeus) Muskrat
Synonym: *Fiber zibethica*
Echinoparyphium contiguum
Echinostomum coalitum
Echinostomum revolutum
Euryhelmis pacificus
Notocotylus sp.
Notocotylus urbanensis
Plagiorchis proximus
Quinqueserialis quinqueserialis

Peromyscus maniculatus (Wagner) Deer Mouse
Euryhelmis pacificus

Order PRIMATES

Family HOMINIDAE

Homo sapiens Linnaeus Man
Schistosoma haematobium

Order CETACEA

Family BALAENOPTERIDAE

Balaenoptera borealis Lesson Sei Whale
Ogmogaster plicatus

Balaenoptera physalus (Linnaeus) Common Finback Whale
Lecithodesmus goliath
Lecithodesmus spinosus
Ogmogaster plicatus

Family DELPHINIDAE

Phocaena vomerina (Gill) Pacific Harbor Porpoise
Campula oblongata
Hadwenius nipponicus

Order CARNIVORA

Family CANIDAE

Canis familiaris Common Dog
Alaria arisaemoides
Nanophyetus salmincola

Canis latrans lestes Merriam Coyote

Synonym: *Canis lestes* Merriam
Alaria oregonensis
Alaria sp.
Nanophyetus salmincola

Canis lestes synonym of *Canis latrans lestes*

Canis vulpes synonym of *Vulpes fulva*

Vulpes fulva (Desmarest) Red Fox

Synonym: *Canis vulpes*
Nanophyetus salmincola

Family FELIDAE

Felis domesticus Common Cat
Alaria arisaemoides
Nanophyetus salmincola (Experimentally)

Lynx fasciatus fasciatus—synonym of *Lynx rufus fasciatus*

Lynx rufus fasciatus (Rafinesque) Bobcat

Synonym: *Lynx fasciatus fasciatus*
Nanophyetus salmincola

Family MUSTELIDAE

Mustela frenata Lichtenstein Weasel
Alaria mustelae

Mustela vison Schreber Mink
Alaria mustelae
Cephalophallus obscurus (Experimentally)
Euryhelmis pacificus
Euryhelmis squamula
Metagonimoides oregonensis
Nanophyetus salmincola

Family PROCYONIDAE

Procyon lotor pacificus (Merriam) Raccoon
Synonym: *Procyon psora pacifica*
Metagonimoides oregonensis
Nanophyetus salmincola
Pharyngostomoides procyonis

Procyon psora pacifica—synonym of *Procyon lotor pacificus*

Family URSIDAE

Ursus americanus Bear
Nanophyetus salmincola

Order ARTIODACTYLIDA

Family BOVIDAE

Bison bison bison (Linnaeus) Buffalo
Fascioloides magna

Bos taurus Common Cow (Domesticated)
Fasciola hepatica
Fascioloides magna
Paramphistomum cervi
Paramphistomum sp.

Capra hircus Common Goat (Domesticated)
Fasciola hepatica

Ovis aires Common Sheep (Domesticated)
Fasciola hepatica

Family CERVIDAE

Alces alces shirasi (Nelson) Moose
Fascioloides magna

Cervus canadensis Erxleben Elk
Fascioloides magna

Dama hemionis (Rafinesque) Mule Deer
Synonyms: *Odocoilus columbianus*
Odocoilus hemionis
Fasciola hepatica
Fascioloides magna

Odocoilus columbianus—synonym of *Dama hemionis*

Odocoilus hemionis—synonym of *Dama hemionis*

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