

NOAA Technical Report NMFS SSRF-760



# Parasite-Host Records of Alaskan Fishes

Adam Moles

September 1982

U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service

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733. Possible management procedures for increasing production of sockeye salmon smolts in the Naknek River system, Bristol Bay, Alaska. By Robert J. Ellis and William J. McNeil. April 1979, iii+9 p., 4 figs., 11 tables.
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735. History of the fishery and summary statistics of the sockeye salmon, *Oncorhynchus nerka*, runs to the Chignik Lakes, Alaska, 1888–1966. By Michael L. Dahlberg. August 1979, iv+16 p., 15 figs., 11 tables.
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746. Distribution of gammaridean Amphipoda (Crustacea) on Georges Bank, by John J. Dickinson and Roland L. Wigley. June 1981, iii+25 p., 16 figs., 1 table.
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749. Food of eight northwest Atlantic pleuronectiform fishes, by Richard W. Langton and Ray E. Bowman. September 1981, iii+16 p., 1 fig., 8 tables.
750. World literature to fish hybrids with an analysis by family, species, and hybrid: Supplement 1, by Frank J. Schwartz. November 1981, iii+507 p.
751. The barge *Ocean 250* gasoline spill, by Carolyn A. Griswold (editor). November 1981, iv+30 p., 28 figs., 17 tables.
752. Movements of tagged summer flounder, *Paralichthys dentatus*, off southern New England, by F. E. Lux and F. E. Nichy. December 1981, iii+16 p., 13 figs., 3 tables.
753. Factors influencing ocean catches of salmon, *Oncorhynchus* spp., off Washington and Vancouver Island, by R. A. Low, Jr. and S. B. Mathews. January 1982, iv+12 p., 6 figs., 7 tables.

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U.S. DEPARTMENT OF COMMERCE

Malcolm Baldrige, Secretary

National Oceanic and Atmospheric Administration

John V. Byrne, Administrator

National Marine Fisheries Service

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# Parasite-Host Records of Alaskan Fishes

ADAM MOLES<sup>1</sup>

## ABSTRACT

This report summarizes the published records of parasites of freshwater and coastal marine fishes of Alaska through 1980. The report is organized both by parasite and by host, is cross-referenced, and provides a convenient, single source of information on parasites of Alaskan fishes.

## INTRODUCTION

References to parasites and their hosts for freshwater and coastal marine fishes of Alaska are scattered in dozens of published papers. This report provides a single source of published host-parasite records. Secondly, it reveals host species for which little information on parasites exists.

I have attempted to include all formally published accounts (except collections from the high seas) of parasites of fish from Alaskan coastal or freshwaters through 1980. Most of these publications are from faunal surveys. The work of Jellison and Neiland (1965) was especially helpful in identifying some of the major pre-1960 work. I invite readers to call my attention to omissions.

For consistency in spelling, two references were used: Robins et al. (1980) and Margolis and Arthur (1979). No attempt has been made to unravel the complexities of parasite synonymy or to check the validity of published records. Scientific names have generally

been left as the authors reported them unless most of the literature has clearly adopted a different name.

The report consists of two sections—parasite-host and host-parasite. In the parasite-host section, parasites are listed in the following order: Protozoa, Myxozoa, Monogenea, Trematoda, Cestoda, Nematoda, Acanthocephala, Hirudinea, Isopoda, Copepoda, and Mollusca (glochidia). Parasites within each group are listed alphabetically with the reported hosts for each parasite, with the appropriate reference. Only the first reported instance of each parasite-host relation is cited, and duplicate citations have been avoided except where a subsequent citation is more readily available or more complete. The adult and larval forms are listed separately for Trematoda, Cestoda, and Nematoda. Forms for which the life stage cannot be determined are listed with the adults. The host-parasite section lists parasites found on or in a given fish. The host families are organized phylogenetically after Robins et al. (1980). Within each family, genera are listed alphabetically. Larval forms of parasites are indicated by an asterisk (\*) in the host listings.

<sup>1</sup>Northwest and Alaska Fisheries Center Auke Bay Laboratory, National Marine Fisheries Service, NOAA, P. O. Box 155, Auke Bay, AK 99821.

## PARASITE-HOST LIST

Parasite	Host	Reference
PROTOZOA		
<u>Cryptobia</u> sp.	<u>Cottus aleuticus</u>	Becker and Katz 1965
<u>Eimeria clupearum</u> (Thelohan 1894) Doflein 1909	<u>Clupea harengus pallasii</u>	Arthur and Arai 1980
<u>Eimeria nishin</u> Fujita 1934	<u>Clupea harengus pallasii</u>	Arthur and Arai 1980
MYXOZOA (MYXOSPOREA)		
<u>Ceratomyxa asymmetrica</u> Moser and Noble 1976	<u>Coryphaenoides cinereus</u>	Moser and Noble 1976
<u>Chloromyxum coregoni</u> Bauer 1948	<u>Oncorhynchus nerka</u>	Konovalov 1971
<u>Chloromyxum wardi</u> Kudo 1920	<u>Oncorhynchus nerka</u>	Kudo 1920
<u>Henneguya salminicola</u> Ward 1919	<u>Oncorhynchus gorbuscha</u>	Fish 1939
	<u>O. keta</u>	Fish 1939
	<u>O. kisutch</u>	Fish 1939
	<u>O. nerka</u>	Fish 1939
	<u>O. tshawytscha</u>	Fish 1939
<u>Kudoa</u> sp.	<u>Hippoglossus stenolepis</u>	Patashnik and Groninger 1964
	<u>Eopsetta jordani</u>	Patashnik and Groninger 1964
	<u>Microstomus pacificus</u>	Patashnik and Groninger 1964
<u>Myxobolus krokhini</u> Konovalov and Shulman 1966	<u>Oncorhynchus nerka</u>	Konovalov 1971
<u>Myxoproteus abyssus</u> Yoshino and Moser 1974	<u>Coryphaenoides cinereus</u> <u>C. longifilis</u>	Yoshino and Moser 1974 Yoshino and Moser 1974
<u>Ortholinea orientalis</u> (Shulman and Shulman- Albova 1953)	<u>Clupea harengus pallasii</u>	Arthur and Arai 1980
<u>Zschokkella meglitschi</u> Moser and Noble 1977	<u>Coryphaenoides longifilis</u>	Moser and Noble 1977

Parasite	Host	Reference
MONOGENEA		
<u>Acanthocotyle williamsi</u> (Price 1938) Yamaguti 1963	<u>Raja</u> sp.	Price 1938
<u>Benedenia derzhavini</u> (Layman 1930) Meserve 1938	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. zacentrus</u>	Sekerak 1975 Mamaev 1965 Sekerak 1975
<u>Cyclocotyloides pinguis</u> (Linton 1940) Price 1943	<u>Coryphaenoides pectoralis</u>	McCauley and Smoker 1969
Dactylogyrid	<u>Thymallus arcticus</u>	Dunagan 1957
<u>Entobdella hippoglossi</u> (O. F. Muller 1776) Johnston 1856	<u>Hippoglossus stenolepis</u>	Price 1939
<u>Gyrodactyloides strelkowi</u> Bykhovskaya and Polyanskaya 1953	<u>Oncorhynchus nerka</u>	Pennell et al. 1973
<u>Microcotyle sebastis</u> Goto 1894	<u>Sebastes alutus</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975
<u>Squalonchotyle somniosi</u> (Causey 1926)	<u>Somniosus pacificus</u>	Causey 1926
<u>Tetraonchus alaskensis</u> Price 1937	<u>Oncorhynchus kisutch</u> <u>O. nerka</u> <u>Salmo clarki</u> <u>Salvelinus malma</u>	Price 1937 Margolis 1963 Price 1937 Price 1937
<u>Tetraonchus rauschi</u> Mizelle and Webb 1953	<u>Thymallus arcticus</u>	Mizelle and Webb 1953
<u>Tetraonchus variabilis</u> (Mizelle 1953)	<u>Prosopium cylindraceum</u>	Mizelle and Webb 1953
<u>Trochopus marginata</u> (Folda 1928) Price 1936	<u>Sebastes ruberrimus</u> <u>S. melanops</u>	Yamaguti 1963, Bonham 1950 Bonham 1950
<u>Trochopus</u> sp.	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975



Parasite	Host	Reference
<b>ADULT TREMATODA</b>		
<u>Aponurus argentini</u> Polyanski 1952	<u>Merluccius productus</u>	Kovalenko 1970
<u>Aporocotyle margolisi</u> Smith 1967	<u>Merluccius productus</u>	Kovalenko 1970
<u>Brachyphallus crenatus</u> (Rudolphi 1802) Odhner 1905	<u>Clupea harengus pallasii</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>O. tshawytscha</u> <u>Osmerus mordax</u>	Arthur and Arai 1980 Margolis 1957 Margolis 1963 Riis 1974 Neiland 1962b
<u>Bunodera luciopercae</u> (Muller 1776) Luhe 1909	<u>Salvelinus alpinus</u>	Mudry and McCart 1976
<u>Bunodera</u> sp.	<u>Gasterosteus aculeatus</u>	Dunagan 1957
<u>Crepidostomum farionis</u> (Muller 1780) Luhe 1909	<u>Esox lucius</u> <u>Oncorhynchus nerka</u> <u>Salmo gairdneri</u> <u>Salvelinus alpinus</u> <u>S. namaycush</u>	Dunagan 1957 Margolis 1963 Dunagan 1957 Mudry and McCart 1976 Dunagan 1957
<u>Crepidostomum isostomum</u> Hopkins 1931	<u>Thymallus arcticus</u>	Dunagan 1957
<u>Crepidostomum</u> sp.	<u>Oncorhynchus nerka</u> <u>Salmo gairdneri</u> <u>Salvelinus malma</u>	Neiland 1962a Neiland 1962a Neiland 1962a
<u>Derogenes macrostoma</u> Yamaguti 1938	<u>Merluccius productus</u>	Kovalenko 1970
<u>Derogenes varicus</u> (Muller 1784) Looss 1901	<u>Hemilepidotus hemilepidotus</u> <u>Hippoglossus stenolepis</u> <u>Lepidopsetta bilineata</u> <u>Lycodes palearis</u> <u>Merluccius productus</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>Ronquilus jordani</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. zacentrus</u>	Kruse 1977 Kruse 1977 Kruse 1977 Kruse 1977 Kovalenko 1970 Margolis 1957 Margolis 1963 Kruse 1977 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975

Parasite	Host	Reference
<b>Adult Trematoda (continued)</b>		
<u>Fellodistomum furcigerum</u> (Olsson 1867) Yamaguti 1954	<u>Merluccius productus</u>	Kovalenko 1970
<u>Fellodistomum sebastodis</u> Yamaguti and Matumura 1942	<u>Sebastes alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Gonocerca oshoro</u> Shimazu 1970	<u>Coryphaenoides pectoralis</u>	Shimazu 1970
<u>Hemiurus levinseni</u> Odhner 1905	<u>Boreogadus saida</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Dunagan 1957 Margolis 1957 Margolis 1963
<u>Lampritrema miescheri</u> (Zschokke 1890) Margolis 1962	<u>Brama japonica</u>	Margolis 1962
<u>Lecithaster gibbosus</u> (Rudolphi 1802) Luhe 1901	<u>Clupea harengus pallasi</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>Sebastes alutus</u>	Arthur and Arai 1980 Margolis 1957 Margolis 1963 Mamaev 1965
<u>Lecithochirium</u> sp.	<u>Merluccius productus</u>	Kovalenko 1970
<u>Lecithophyllum botryophorum</u> (Olsson 1868) Odhner 1905	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>Sebastes alutus</u> <u>S. ciliatus</u>	Margolis 1957, 1958a Margolis 1963, 1958a Sekerak 1975 Sekerak 1975
<u>Lecithophyllum spaerolecithum</u> (Manter 1925) Odhner 1927	<u>Sebastes alutus</u>	Mamaev 1965
<u>Neohelicometra sebastis</u> Sekerak and Arai 1974	<u>Sebastes alutus</u>	Sekerak 1975
<u>Neolepidapedon sebastisci</u> (Yamaguti 1938) Manter 1954	<u>Sebastes aleutianus</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975
<u>Opechona alaskensis</u> Ward and Fillingham 1934	<u>Porichthys notatus</u> <u>Sebastes alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Ward and Fillingham 1934 Sekerak 1975, Mamaev 1965 Sekerak 1975 Sekerak 1975 Sekerak 1975

Parasite	Host	Reference
Adult Trematoda (continued)		
<u>Opechona occidentalis</u> Montgomery 1957	<u>Sebastes ciliatus</u>	Sekerak 1975
<u>Parahemiurus merus</u> (Linton 1910) Woolcock 1935	<u>Oncorhynchus gorbuscha</u>	Margolis 1957
<u>Peracreadium gasterostei</u> (Dunagan 1957)	<u>Gasterosteus aculeatus</u>	Dunagan 1957
<u>Phyllodistomum lysteri</u> Miller 1940	<u>Dallia pectoralis</u>	Dunagan 1957
<u>Phyllodistomum</u> sp.	<u>Salvelinus alpinus</u> <u>Thymallus arcticus</u>	Mudry and McCart 1976 Dunagan 1957
<u>Podocotyle atomon</u> (Rudolphi 1802) Odhner 1905	<u>Sebastes alutus</u>	Mamaev 1965
<u>Podocotyle reflexa</u> (Creplin 1825) Odhner 1905	<u>Sebastes reflexa</u>	Mamaev 1965
<u>Podocotyle</u> sp.	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Pronoprymna petrowi</u> (Layman 1930) Bray and Gibson 1980	<u>Clupea harengus pallasii</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Arthur and Arai 1980 Margolis and Ching 1965 Margolis and Ching 1965
<u>Prosorhynchoides basargini</u> (Layman 1930) Margolis and Arthur 1978	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Margolis 1957 Margolis 1963
<u>Prosorhynchoides</u> sp.	<u>Osmerus mordax</u>	Neiland 1962b as <u>Bucephalopsis</u> sp.
<u>Prosorhynchus crucibulum</u> (Rudolphi 1819) Odhner 1905	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Prosorhynchus mizelli</u> Kruse 1977	<u>Aptocyclus ventricosus</u>	Kruse 1977

Parasite	Host	Reference
<b>Adult Trematoda (continued)</b>		
<u>Psettarium sebastodorum</u> Holmes 1971	<u>Sebastes alutus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Pseudopecoelus nossamani</u> Kruse 1977	<u>Hippoglossus stenolepis</u>	Kruse 1977
<u>Stephanostomum californicum</u> Manter and Van Cleave 1951	<u>Anoplopoma fimbria</u>	Kovalenko 1970
<u>Stephanostomum dentatum</u> (Linton 1900) Linton 1940	<u>Sebastes aleutianus</u>	Sekerak 1975
<u>Tubulovesicula lindbergi</u> (Layman 1930) Yamaguti 1934	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Margolis 1957 Margolis 1963
<u>Urinatrema aspinosum</u> Schiller 1956	<u>Hexagrammos lagocephalus</u>	Schiller 1956
LARVAL TREMATODA		
<u>Diplostomulum</u> sp.	<u>Oncorhynchus nerka</u>	Margolis 1957
<u>Nanophyetus salmincola</u> Chapin 1926	<u>Oncorhynchus</u> sp.	Farrell 1964
<u>Prosorhynchoides basargini</u> (Layman 1930) Margolis and Arthur 1978	<u>Clupea harengus pallasii</u>	Arthur and Arai 1980
<u>Prosorhynchus</u> sp.	<u>Hemilepidotus hemilepidotus</u>	Kruse 1977
<u>Rhipidocotyle</u> sp.	<u>Clupea harengus pallasii</u>	Arthur and Arai 1980
<u>Stephanostomum</u> sp.	<u>Atheresthes stomias</u>	Kovalenko 1969
<u>Tetracotyle</u> sp.	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Margolis 1957 Margolis 1963
ADULT CESTODA		
<u>Bothrimonus sturionis</u> Duvernoy 1842	<u>Coregonus</u> sp. <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>Salvelinus alpinus</u> <u>S. malma</u>	Burt and Sandeman 1969 Margolis 1963 Mudry and McCart 1976 Cooper 1921

Parasite	Host	Reference
Adult Cestoda (continued)		
<u>Bothriocephalus</u> <u>ospariichthydis</u> Yamaguti 1934	<u>Merluccius productus</u>	Kovalenko 1970
<u>Bothriocephalus scorpii</u> (O. F. Muller 1776) Rudolphi 1808	<u>Sebastes alutus</u>	Mamaev 1965
<u>Cyathocephalus truncatus</u> (Pallas 1781) Kessler 1868	<u>Esox lucius</u> <u>Oncorhynchus kisutch</u> <u>Salvelinus alpinus</u> <u>S. namaycush</u>	Dunagan 1957 Riis 1974 Mudry and McCart 1976 Dunagan 1957
<u>Diplocotyle olrikii</u> Krabbe 1874	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Margolis 1957 Margolis 1963
<u>Eubothrium crassum</u> (Bloch 1779) Nybelin 1922	<u>Salmo gairdneri</u> <u>Salvelinus alpinus</u>	Dunagan 1957 Mudry and McCart 1976
<u>Eubothrium salvelini</u> (Schrank 1790) Nybelin 1922	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Margolis 1957 Pennell et al. 1973
<u>Eubothrium</u> sp.	<u>Oncorhynchus kisutch</u> <u>O. nerka</u> <u>O. tshawytscha</u> <u>Salmo gairdneri</u> <u>Salvelinus malma</u>	Riis 1974 Margolis 1963 Riis 1974 Riis 1974 Riis 1974
<u>Glaridacris catostomi</u> Cooper 1920	<u>Catostomus commersoni</u>	Dunagan 1957
<u>Monorygma perfectum</u> (Van Beneden 1853)	<u>Somniosus pacificus</u>	Linton 1924
<u>Nybelinia surmenicola</u> Okada in Dollfus 1929	<u>Lamna ditropis</u>	Shimazu 1975
<u>Pedibothrium pinguicollum</u> (Sleggs 1927) Price 1938	<u>Raja</u> sp.	Price 1938
<u>Proteocephalus filicollis</u> (Rudolphi 1802) Weinland 1858	<u>Prosopium cylindraceum</u>	Dunagan 1957

Parasite	Host	Reference
<b>Adult Cestoda (continued)</b>		
<u>Proteocephalus</u> sp.	<u>Dallia pectoralis</u> <u>Oncorhynchus kisutch</u> <u>O. nerka</u> <u>Prosopium cylindraceum</u> <u>Salmo gairdneri</u> <u>Salvelinus alpinus</u> <u>S. malma</u> <u>Thymallus arcticus</u>	Dunagan 1957 Riis 1974 Pennell et al. 1973 Riis 1974 Riis 1974 Mudry and McCart 1976 Riis 1974 Riis 1974
<u>Triaenophorus crassus</u> Forel 1868	<u>Esox lucius</u> <u>Salvelinus namaycush</u>	Dunagan 1957 Dunagan 1957
LARVAL CESTODA		
<u>Bothriocephalus scorpii</u> (Muller 1776) Rudolphi 1808	<u>Sebastes alutus</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975
<u>Bothriocephalus</u> sp.	<u>Merluccius productus</u>	Kovalenko 1970
<u>Diphyllobothrium dalliae</u> Rausch 1956	<u>Dallia pectoralis</u>	Rausch 1956
<u>Diphyllobothrium dendriticum</u> (Nitzsch 1824) Luhe 1910	<u>Salmo gairdneri</u>	Hilliard 1960
<u>Diphyllobothrium osmeri</u> (Von Linstow 1878)	<u>Osmerus mordax</u>	Hilliard 1960
<u>Diphyllobothrium phocarum</u> (Fabricius 1780)	<u>Eleginus gracilis</u>	Hilliard 1960
<u>Diphyllobothrium ursi</u> Rausch 1954	<u>Oncorhynchus nerka</u>	Rausch 1954, Hilliard 1960
<u>Diphyllobothrium</u> sp.	<u>Dallia pectoralis</u> <u>Merluccius productus</u> <u>Oncorhynchus nerka</u> <u>Pungitius pungitius</u> <u>Salmo gairdneri</u>	Colyar 1963 Kovalenko 1970 Margolis 1963 Colyar 1963 Babero and Rausch 1953, Needham and Behnke 1965
<u>Ligula intestinalis</u> (Linn. 1758) Gmelin 1790	<u>Salmo gairdneri</u>	Dunagan 1957

Parasite	Host	Reference
Larval Cestoda (continued)		
<u>Nybelinia surmenicola</u> (Okada in Dollfus 1929)	<u>Anoplopoma fimbria</u> <u>Atheresthes stomias</u> <u>Clupea harengus pallasi</u> <u>Hexanchus griseus</u> <u>Merluccius productus</u> <u>Oncorhynchus nerka</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Kovalenko 1970 Kovalenko 1969 Arthur and Arai 1980 Hart 1936 Kovalenko 1970 Margolis 1957 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Nybelinia</u> sp.	<u>Theragra chalcogramma</u>	Akmerov 1951
<u>Phyllobothrium caudatum</u> (Zschokke and Heitz 1914) Zmeev 1936	<u>Oncorhynchus gorbuscha</u> <u>O. keta</u> <u>O. nerka</u>	Margolis 1957 Canavan 1928 Margolis 1963
<u>Phyllobothrium</u> sp.	<u>Oncorhynchus gorbuscha</u> <u>O. keta</u> <u>O. kisutch</u> <u>O. nerka</u> <u>O. tshawytscha</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Riis 1974 Riis 1974 Riis 1974 Riis 1974 Riis 1974 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Proteocephalus</u> sp.	<u>Oncorhynchus nerka</u>	Margolis 1963
<u>Schistocephalus solidus</u> (Muller 1776) Steenstrup 1857	<u>Gasterosteus aculeatus</u>  <u>Pungitius pungitius</u>	Cooper 1918, Hilliard 1960, Valdez 1974 Hilliard 1960
<u>Scolex pleuronectis</u> Muller 1788	<u>Clupea harengus pallasi</u> <u>Sebastes alutus</u>	Arthur and Arai 1980 Mamaev 1965
<u>Scolex</u> sp.	<u>Anoplopoma fimbria</u> <u>Merluccius productus</u>	Kovalenko 1970 Kovalenko 1970
<u>Tetrarhynchus</u> sp.	<u>Hexanchus griseus</u>	Hart 1936
<u>Triaenophorus crassus</u> Forel 1868	<u>Oncorhynchus keta</u> <u>O. nerka</u> <u>Thymallus arcticus</u>	Uzmann and Hesselholt 19 Margolis 1963 Dunagan 1957
<u>Triaenophorus</u> sp.	<u>Dallia pectoralis</u>	Hilliard 1960

Parasite	Host	Reference
<u>ADULT NEMATODA</u>		
<u>Ascarophis pacificus</u> Zhukov 1960	<u>Sebastes alutus</u>	Mamaev 1965
<u>Ascarophis</u> sp.	<u>Oncorhynchus gorbuscha</u>	Margolis 1957
<u>Capillaria</u> sp.	<u>Oncorhynchus nerka</u>	Margolis 1963
<u>Cucullanus heterochrous</u> Rudolphi 1802	<u>Sebastes alutus</u>	Mamaev 1965
<u>Cucullanus</u> sp.	<u>Oncorhynchus tshawytscha</u> <u>Salmo gairdneri</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>Thymallus arcticus</u>	Riis 1974 Riis 1974 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Cystidicola farionis</u> Fischer 1798	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>Salvelinus alpinus</u> <u>S. malma</u> <u>S. namaycush</u>	Margolis 1967 Margolis 1967 Pennell et al. 1973 Ko and Anderson 1969 Dunagan 1957
<u>Hysterothylacium aduncum</u> (Rudolphi 1802)	<u>Merluccius productus</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Kovalenko 1970 Kovalenko 1970 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Hysterothylacium melanogrammi</u> (Smedley 1934) Seardorff and Overstreet 1981	<u>Merluccius productus</u>	Kovalenko 1970
<u>Philonema oncorhynchi</u> Kuitunen-Ekbaum 1933	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Margolis 1957 Margolis 1963, Dunagan 1957
<u>Rhabdochona</u> sp.	<u>Oncorhynchus nerka</u>	Pennell et al. 1973
<u>Salvelinema salmonicola</u> (Ishii 1916) Margolis 1966	<u>Oncorhynchus nerka</u>	Margolis 1967
<u>Truttaedacnitis alpinus</u> (Mudry and McCart 1974) Pybus, Anderson, and Uhazy 1978	<u>Salvelinus alpinus</u>	Mudry and McCart 1974



Parasite	Host	Reference
LARVAL NEMATODA		
<u>Anisakis simplex</u> (Rudolphi 1809) Dujardin 1845	<u>Clupea harengus pallasii</u>	Arthur and Arai 1980
<u>Anisakis</u> sp.	<u>Dallia pectoralis</u> <u>Gadus macrocephalus</u> <u>Merluccius productus</u> <u>Oncorhynchus gorboscha</u> <u>O. keta</u> <u>O. kisutch</u> <u>O. nerka</u> <u>O. tshawytscha</u> <u>Theragra chalcogramma</u>  <u>Thymallus arcticus</u>	Dunagan 1957 Stiles and Hassall 1899 Kovalenko 1970 Margolis 1957 Riis 1974 Riis 1974 Pennell et al. 1973 Riis 1974 Stiles and Hassall 1899, Scheffer and Slipp 1944 Dunagan 1957
<u>Contracaecum rudolphii</u> Hartwich 1964	<u>Salmo gairdneri</u>	Riis 1974
<u>Contracaecum</u> sp.	<u>Anoplopoma fimbria</u> <u>Atheresthes stomias</u> <u>Boreogadus saida</u> <u>Clupea harengus pallasii</u> <u>Gasterosteus aculeatus</u> <u>Merluccius productus</u> <u>Oncorhynchus gorboscha</u> <u>O. nerka</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u> <u>Stenobranchius leucopsarus</u>	Kovalenko 1970 Kovalenko 1969 Dunagan 1957 Arthur and Arai 1980 Dunagan 1957 Kovalenko 1970 Margolis 1957 Margolis 1963 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975 Collard 1968
<u>Hysterothylacium aduncum</u> (Rudolphi 1802)	<u>Boreogadus saida</u> <u>Clupea harengus pallasii</u>	Dunagan 1957 Arthur and Arai 1980
<u>Philonema oncorhynchi</u> Kuitunen-Ekbaum 1933	<u>Oncorhynchus kisutch</u> <u>Salmo gairdneri</u>	Riis 1974 Riis 1974
<u>Philonema</u> sp.	<u>Salmo gairdneri</u>	Needham and Behnke 1965

Parasite	Host	Reference
Larval Nematoda (continued)		
<u>Phocanema decipiens</u> (Krabbe 1878) Myers 1959	<u>Gadus macrocephalus</u> <u>Hemilepidotus hemilepidotus</u> <u>Hexagrammos lagocephalus</u>  <u>Oncorhynchus nerka</u>	Scheffer and Slipp 1944 Schiller 1954 Rausch 1953, Schiller 1954 Margolis 1963
<u>Phocanema</u> sp.	<u>Anaplopoma fimbria</u> <u>Atheresthes stomias</u> <u>Oncorhynchus nerka</u> <u>O. tshawytscha</u> <u>Osmerus mordax</u>	Kovalenko 1970 Kovalenko 1969 Margolis 1957 Riis 1974 Hilliard 1960
<u>Raphidascaris</u> sp.	<u>Dallia pectoralis</u> <u>Esox lucius</u> <u>Oncorhynchus tshawytscha</u> <u>Salvelinus namaycush</u>	Dunagan 1957 Dunagan 1957 Riis 1974 Riis 1974 Neiland 1962a
ACANTHOCEPHALA		
<u>Acanthocephalus lucii</u> (Muller 1776) Luhe 1911	<u>Gasterosteus aculeatus</u>	Dunagan 1957
<u>Bolbosoma caenoforme</u> (Heitz 1920) Meyer 1933	<u>Oncorhynchus nerka</u>  <u>Sebastes alutus</u>	Pennell et al. 1973, Margolis 1963 Mamaev 1965
<u>Bolbosoma</u> sp.	<u>Oncorhynchus gorbuscha</u>	Margolis 1957
<u>Corynosoma hadweni</u> Van Cleave 1953	<u>Oncorhynchus nerka</u> <u>Osmerus mordax</u>	Margolis 1958b Golvan 1959
<u>Corynosoma reductum</u> Von Lindstow 1905	<u>Sebastes alutus</u>	Mamaev 1965
<u>Corynosoma semerme</u> (Forssell 1904)	<u>Oncorhynchus nerka</u> <u>Osmerus mordax</u>	Margolis 1958b Neiland 1962b
<u>Corynosoma similis</u> Neiland 1962	<u>Osmerus mordax</u>	Neiland 1962b
<u>Corynosoma strumosum</u> (Rudolphi 1802) Luhe 1904	<u>Atheresthes stomias</u> <u>Clupea harengus pallasi</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>Osmerus mordax</u>	Kovalenko 1969 Arthur and Arai 1980 Margolis 1957, 1958b Margolis 1958b Neiland 1962b

Parasite	Host	Reference
Acanthocephala (continued)		
<u>Corynosoma villosum</u> (Van Cleave 1953)	<u>Clupea harengus pallasii</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u>	Arthur and Arai 1980 Margolis 1957, 1958b Margolis 1963
<u>Corynosoma</u> sp.	<u>Anoplopoma fimbria</u> <u>Boreogadus saida</u> <u>Hexagrammos lagocephalus</u> <u>Hemilepidotus hemilepidotus</u> <u>Oncorhynchus gorbuscha</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. zacentrus</u>	Kovalenko 1970 Dunagan 1957 Schiller 1954 Schiller 1954 Margolis 1957 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Echinorhynchus gadi</u> (Muller 1776)	<u>Boreogadus saida</u> <u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. zacentrus</u>	Dunagan 1957 Margolis 1957 Margolis 1963 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Echinorhynchus</u> sp.	<u>Atheresthes stomias</u>	Kovalenko 1969
<u>Metechinorhynchus salmonis</u> (Muller 1784) Petrochenko 1956	<u>Boreogadus saida</u> <u>Salvelinus alpinus</u>	Dunagan 1957 Mudry and McCart 1976
<u>Neoechinorhynchus rutili</u> (Muller 1780) Hamann 1892	<u>Coregonus sardinella</u> <u>Dallia pectoralis</u> <u>Gasterosteus aculeatus</u> <u>Lota lota</u> <u>Oncorhynchus kisutch</u> <u>O. nerka</u> <u>Salmo gairdneri</u> <u>Salvelinus alpinus</u> <u>S. malma</u>	Schmidt 1965 Dunagan 1957 Van Cleave and Lynch 1950 Schmidt 1965 Riis 1974 Margolis 1963 Riis 1974 Van Cleave and Lynch 1950 Van Cleave and Lynch 1950
<u>Neoechinorhynchus tenellus</u> (Van Cleave 1913) Van Cleave 1919	<u>Esox lucius</u>	Dunagan 1957
<u>Neoechinorhynchus tumidus</u> Van Cleave and Bangham 1949	<u>Coregonus laurettae</u> <u>C. nasus</u> <u>Coregonus</u> sp. <u>Oncorhynchus kisutch</u> <u>Prosopium cylindraceum</u> <u>Salmo gairdneri</u>	Schmidt 1965 Schmidt 1965 Schmidt 1965 Riis 1974 Schmidt 1965 Schmidt 1965

Parasite	Host	Reference
<b>Acanthocephala (continued)</b>		
<u>Neoechinorhynchus</u> sp.	<u>Oncorhynchus gorbuscha</u>	Margolis 1957
<u>Paracanthocephalus rauschi</u> Schmidt 1969	<u>Thymallus arcticus</u>	Schmidt 1969
<u>Rhadinorhynchus cololabris</u> Laurs and McCauley 1964	<u>Salmo gairdneri</u>	Hughes 1973
<u>Rhadinorhynchus trachuri</u> Harada 1935	<u>Oncorhynchus nerka</u>	Margolis 1957
HIRUDINEA		
<u>Levinsenia rectangulata</u> (Levinson 1882)	<u>Gadus macrocephalus</u> <u>Microgadus proximus</u> <u>Myoxocephalus</u> <u>polyacanthocephalus</u> <u>Theragra chalcogramma</u>	Moore and Meyer 1951 Moore and Meyer 1951 Moore and Meyer 1951 Akhmerov 1951
ISOPODA		
<u>Aega symmetrica</u> Richardson	Unnamed fish	Hatch 1947
<u>Livoneca californica</u> Schioedte and Meinertz 1884	Smelt	Hatch 1947
<u>Rocinela angustata</u> Richardson	<u>Hippoglossus stenolepis</u>	Hatch 1947
<u>Rocinela belliceps</u> (Stimpson 1864) Richardson 1899	<u>Gadus macrocephalus</u> <u>Hippoglossus stenolepis</u>	Hatch 1947 Hatch 1947
COPEPODA		
<u>Acanthochondria cornuta</u> (Muller 1776) Oakley 1930	<u>Hippoglossus stenolepis</u>	Wilson 1935
<u>Acanthochondria</u> sp.	<u>Merluccius productus</u>	Kovalenko 1970
<u>Bomolochus cuneatus</u> Fraser 1920	<u>Clupea harengus pallasii</u> <u>Oncorhynchus gorbuscha</u>	Arthur and Arai 1980 Vervoort 1964

Parasite	Host	Reference
Copepoda (continued)		
<u>Brachiella robusta</u> (Wilson 1912) Kabata 1970	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Caligus clemensi</u> Parker and Margolis 1964	<u>Clupea harengus pallasii</u>	Arthur and Arai 1980
<u>Chondracanthus lotellae</u> (Wilson 1936) Yamaguti 1963	<u>Myoxocephalus polyacanthocephalus</u>	Wilson 1935
<u>Chondracanthus pinguis</u> Wilson 1912	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Chondracanthus triventricosus</u> Sekerak 1970	<u>Sebastes alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Clavella adunca</u> (Strøm 1762) Dollfus 1953	<u>Gadus macrocephalus</u> <u>Theragra chalcogramma</u>	Wilson 1908 Akhmerov 1951
<u>Clavella canaliculata</u> Wilson 1915	<u>Microgadus proximus</u>	Wilson 1915, 1920
<u>Clavella irina</u> Wilson 1915	<u>Gadus macrocephalus</u>	Wilson 1915, 1920
<u>Clavella parva</u> Wilson 1912	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. melanops</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975
<u>Clavella perfida</u> Wilson 1915	<u>Theragra chalcogramma</u>	Wilson 1915
<u>Clavella recta</u> Wilson 1915	<u>Sebastes melanops</u>	Wilson 1915, 1920
<u>Colobomatus kyphosus</u> Sekerak 1970	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. ciliatus</u> <u>S. polyspinis</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975 Sekerak 1975

Parasite	Host	Reference
Copepoda (continued)		
<u>Diocus frigidus</u> (Hansen 1923)	<u>Lycodes turneri</u>	Walters 1953
<u>Echthrogaleus coleoptratus</u> (Guerin 1837) Steenstrup and Lutken 1861	"Shark"	Wilson 1907, 1908, 1920
<u>Ergasilus auritus</u> Markevich 1940	<u>Gasterosteus aculeatus</u> <u>Oncorhynchus nerka</u>	Roberts 1963 Roberts 1963
<u>Ergasilus turgidus</u> Fraser 1920	<u>Gasterosteus aculeatus</u> <u>Oncorhynchus nerka</u>	Cope 1959 Cope 1959
<u>Haemobaphes theragrae</u> Yamaguti 1939	<u>Sebastes alutus</u> <u>S. zacentrus</u>	Sekerak 1975 Sekerak 1975
<u>Haemobaphes</u> sp.	<u>Merluccius productus</u>	Kovalenko 1970
<u>Lepeophtheirus appendiculatus</u> Krøyer 1863	<u>Hippoglossus stenolepis</u>	Wilson 1935
<u>Lepeophtheirus cuneifer</u> Kabata 1974	<u>Gadus macrocephalus</u> <u>Hexagrammos lagocephalus</u> <u>Hippoglossus stenolepis</u> <u>Isopsetta isolepis</u> <u>Leptocottus armatus</u> <u>Lumpenus sagitta</u> <u>Microgadus proximus</u> <u>Raja binoculata</u> <u>Squalus acanthias</u> <u>Theragra chalcogramma</u>	Kabata 1974 Kabata 1974 Kabata 1974 Kabata 1974 Kabata 1974 Kabata 1974 Kabata 1974 Kabata 1974 Kabata 1974 Kabata 1974
<u>Lepeophtheirus marcepes</u> Wilson 1944	<u>Pleuronectes</u> <u>quadrituberculatus</u>	Wilson 1944
<u>Lepeophtheirus parviventris</u> Wilson 1905	<u>Gadus macrocephalus</u> <u>Hippoglossus stenolepis</u> <u>Lepidopsetta bilineata</u> <u>Platichthys stellatus</u> <u>Pleurogrammus monopterygius</u>	Wilson 1905 Wilson 1905 Wilson 1905 Townsend 1938 Wilson 1908
<u>Lepeophtheirus salmonis</u> (Krøyer 1837) Verrill 1873	<u>Oncorhynchus gorbuscha</u> <u>O. nerka</u> <u>O. tshawytscha</u> <u>Salvelinus malma</u>	Wilson 1905 Wilson 1908 Wilson 1908 Wilson 1908
<u>Naobranchia occidentalis</u> Wilson 1915	<u>Gadus macrocephalus</u>	Wilson 1915

Parasite	Host	Reference
Copepoda (continued)		
<u>Parabrachiella</u> sp.	<u>Merluccius productus</u>	Kovalenko 1970
<u>Salmincola californiensis</u> (Dana 1852) Wilson 1915	<u>Oncorhynchus gorbuscha</u> <u>O. kisutch</u> <u>O. nerka</u>	Wilson 1908 Riis 1974 Wilson 1908, Margolis 1963 Riis 1974
<u>Salmincola carpionis</u> (Krøyer 1837) Wilson 1915	<u>Salmo gairdneri</u> <u>Salvelinus alpinus</u> <u>S. malma</u>	Mudry and McCart 1976 Wilson 1908
<u>Salmincola edwardsi</u> (Olsson 1869) Wilson 1915	<u>Salmo gairdneri</u> <u>Salvelinus alpinus</u> <u>Thymallus arcticus</u>	Dunagan 1957 Dunagan 1957 Dunagan 1957
<u>Salmincola extensus</u> (Kessler 1868) Kabata 1969	<u>Coregonus</u> sp.	Wilson 1908
<u>Salmincola extumescens</u> (Gadd 1901) Wilson 1915	<u>Coregonus clupeaformis</u>	Wilson 1908
<u>Salmincola thymalli</u> (Kessler 1868) Wilson 1915	<u>Prosopium cylindraceum</u> <u>Thymallus arcticus</u>	Riis 1974 Riis 1974
<u>Sarcotaces arcticus</u> Collett 1874	<u>Sebastes aleutianus</u> <u>S. alutus</u> <u>S. flavidus</u>	Sekerak 1975 Sekerak 1975 Avdeev and Avdeev 1975
<u>Thersitina gasterostei</u> (Pagenstecher 1861) Norman 1905	<u>Gasterosteus aculeatus</u>	Valdez 1974
MOLLUSCA		
<u>Anodonta beringiana</u> (Middendorf)	<u>Gasterosteus aculeatus</u> <u>Oncorhynchus nerka</u>	Cope 1959 Cope 1959
<u>Anodonta oregonensis</u> (Lea 1837)	<u>Gasterosteus aculeatus</u> <u>Oncorhynchus kisutch</u>	Moles 1980 Moles 1980

HEXANCHIDAE, cow sharks

Hexanchus griseus (Bonnaterre), sixgill shark

Cestoda

Nybelinia surmenicola\*

Tetrahyinchus sp.\*

LAMNIDAE, mackerel sharks

Lamna ditropis Hubbs and Follett, salmon shark

Cestoda

Nybelinia surmenicola

SQUALIDAE, dogfish sharks

Somniosus pacificus Bigelow and Schroeder, Pacific sleeper shark

Monogenea

Squalonchotyle somniosi

Cestoda

Monorygma perfectum

Squalus acanthias Linnaeus, spiny dogfish

Copepoda

Lepeophtheirus cuneifer

RAJIDAE, skates

Raja binoculata Girard, big skate

Copepoda

Lepeophtheirus cuneifer

Raja sp.

Monogenea

Acanthocotyle williamsi

Cestoda

Pedibothrium pinguicollum

CLUPEIDAE, herring

Clupea harengus pallasii Valenciennes, Pacific herring

Protozoa

Eimeria clupearum

Eimeria nishin

Myxospora

Ortholinea orientalis



Clupeidae, Clupea harengus pallasii (continued)

Trematoda

Brachyphallus crenatus  
Lecithaster gibbosus  
Prosorhynchoides basargini\*  
Pronoprymna petrowi  
Rhipidocotyle sp.\*

Cestoda

Nybelinia surmenicola\*  
Scolex pleuronectis\*

Nematoda

Anisakis simplex\*  
Contracaecum sp.\*  
Hysterothylacium aduncum\*

Acanthocephala

Corynosoma strumosum  
Corynosoma villosum

Copepoda

Bomolochus cuneatus  
Caligus clemensi

SALMONIDAE, trouts

Coregonus clupeaformis (Mitchill), lake whitefish

Copepoda

Salmincola extumescens

Coregonus laurettae Bean, Bering cisco

Acanthocephala

Neoechinorhynchus tumidus

Coregonus nasus (Pallas), broad whitefish

Acanthocephala

Neoechinorhynchus tumidus

Coregonus sardinella Valenciennes, least cisco

Acanthocephala

Neoechinorhynchus rutili

Coregonus sp.

Cestoda

Bothrimonus sturionis

Acanthocephala

Neoechinorhynchus tumidus

Copepoda

Salmincola extensus

Oncorhynchus gorbuscha (Walbaum), pink salmon

Myxozoa

Henneguya salminicola

Trematoda

Brachyphallus crenatus

Derogenes varicus

Hemiurus levinseni

Lecithaster gibbosus

Lecithophyllum botryophorum

Parahemiurus merus

Prosorhynchoides basargini

Pronoprymna petrowi

Tetracotyle sp.

Tubulovesicula lindbergi

Cestoda

Bothrimonus sturionis

Diplocotyle olrikii

Eubothrium salvelini

Phyllobothrium caudatum\*

Phyllobothrium sp.\*

Nematoda

Anisakis sp.\*

Ascarophis sp.

Contracaecum sp.\*

Cystidicola farionis

Philonema oncorhynchi

Acanthocephala

Bolbosoma sp.

Corynosoma sp.

Corynosoma strumosum

Corynosoma villosum

Echinorhynchus gadi

Neoechinorhynchus sp.

Copepoda

Bomolochus cuneatus

Lepeophtheirus salmonis

Salmincola californiensis

Oncorhynchus keta (Walbaum), chum salmon

Myxozoa

Henneguya salminicola

Cestoda

Phyllobothrium caudatum\*

Phyllobothrium sp.\*

Trianenophorus crassus\*

Nematoda

Anisakis sp.\*

Salmonidae (continued)

Oncorhynchus kisutch (Walbaum), coho salmon

Myxozoa

Henneguya salminicola

Monogenea

Tetraonchus alaskensis

Cestoda

Cyathocephalus truncatus

Eubothrium sp.

Phyllobothrium sp.\*

Proteocephalus sp.

Nematoda

Anisakis sp.\*

Philonema oncorhynchi\*

Acanthocephala

Neoechinorhynchus rutili

Neoechinorhynchus tumidus

Copepoda

Salmincola californiensis

Mollusca

Anodonta oregonensis

Oncorhynchus nerka (Walbaum), sockeye salmon

Myxozoa

Chloromyxum wardi

C. coregoni

Henneguya salminicola

Myxobolus krokhini

Monogenea

Gyrodactyloides strelkowi

Tetraonchus alaskensis

Trematoda

Brachyphallus crenatus

Crepidostomum farionis

Crepidostomum sp.

Derogenes varicus

Diplostomulum sp.\*

Hemiurus levinseni

Lecithaster gibbosus

Lecithophyllum botryophorum

Prosorhynchoides basargini

Pronoprymna petrowi

Tetracotyle sp.\*

Tubulovesicula lindbergi

Salmonidae, Oncorhynchus nerka (continued)

Cestoda

Bothrimonus sturionis  
Diphyllobothrium sp.\*  
Diphyllobothrium ursi\*  
Diplocotyle olrikii  
Eubothrium salvelini  
Eubothrium sp.  
Nybelinia surmenicola\*  
Phyllobothrium caudatum\*  
Phyllobothrium sp.\*  
Proteocephalus sp.  
Proteocephalus sp.\*  
Trienophorus crassus\*

Nematoda

Anisakis sp.\*  
Capillaria sp.  
Contraecum sp.\*  
Cystidicola farionis  
Philonema oncorhynchi  
Phocanema decipiens\*  
Phocanema sp.\*  
Rhabdochona sp.  
Salvelinema salmonicola

Acanthocephala

Bolbosoma caenoforme  
Corynosoma hadweni  
Corynosoma semerme  
Corynosoma strumosum  
Corynosoma villosum  
Echinorhynchus gadi  
Neoechinorhynchus rutili  
Rhadinorhynchus trachuri

Copepoda

Ergasilus auritus  
Ergasilus turgidus  
Lepeophtheirus salmonis  
Salmincola californiensis

Mollusca

Anodonta beringiana

Oncorhynchus tshawytscha (Walbaum), chinook salmon

Myxozoa

Henneguya salminicola

Trematoda

Brachyphallus crenatus

Cestoda

Eubothrium sp.  
Phyllobothrium sp.\*

Salmonidae, Oncorhynchus tshawytscha (continued)

Nematoda

Anisakis sp.\*

Cucullanus sp.\*

Phocanema sp.\*

Raphidascaris sp.\*

Copepoda

Lepeophtheirus salmonis

Oncorhynchus sp.

Trematoda

Nanophyetus salmincola\*

Prosopium cylindraceum (Pallas), round whitefish

Monogenea

Tetraonchus variabilis

Cestoda

Proteocephalus filicollis

Proteocephalus sp.

Acanthocephala

Neoechinorhynchus tumidus

Copepoda

Salmincola thymalli

Salmo clarki Richardson, cutthroat trout

Monogenea

Tetraonchus alaskensis

Salmo gairdneri Richardson, rainbow trout

Trematoda

Crepidostomum farionis

Crepidostomum sp.

Cestoda

Diphyllobothrium dendriticum\*

Diphyllobothrium sp.\*

Eubothrium crassum

Eubothrium sp.

Ligula intestinalis\*

Proteocephalus sp.

Nematoda

Contraecaecum rudolphii\*

Cucullanus sp.

Philonema oncorhynchi\*

Philonema sp.\*

Acanthocephala

Neoechinorhynchus rutili

Neoechinorhynchus tumidus

Rhadinorhynchus cololabris

Salmonidae; Salmo gairdneri (continued)

Copepoda

Salmincola californiensis

Salmincola edwardsi

Salvelinus alpinus (Linnaeus), Arctic char

Trematoda

Bunodera luciopercae

Crepidostomum farionis

Phyllodistomum sp.

Cestoda

Bothrimonus sturionis

Cyathocephalus truncatus

Eubothrium crassum

Proteocephalus sp.

Nematoda

Cystidicola farionis

Truttaedacnitis alpinis

Acanthocephala

Metechinorhynchus salmonis

Neoechinorhynchus rutili

Copepoda

Salmincola carpionis

Salmincola edwardsi

Salvelinus malma (Walbaum), Dolly Varden

Monogenea

Tetraonchus alaskensis

Trematoda

Crepidostomum sp.

Cestoda

Bothrimonus sturionis

Eubothrium sp.

Proteocephalus sp.

Nematoda

Cystidicola farionis

Acanthocephala

Neoechinorhynchus rutili

Copepoda

Lepeophtheirus salmonis

Salmincola carpionis

Salvelinus namaycush (Walbaum), lake trout

Trematoda

Crepidostomum farionis

Cestoda

Cyathocephalus truncatus

Triaenophorus crassus

Nematoda

Cystidicola farionis

Raphidascaaris sp.\*

Salmonidae (continued)

Thymallus arcticus (Pallas), Arctic grayling

Monogenea

Tetraonchus rauschi

Trematoda

Crepidostomum isostomum

Phyllodistomum sp.

Cestoda

Proteocephalus sp.

Triaenophorus crassus\*

Nematoda

Anisakis sp.\*

Cucullanus sp.

Acanthocephala

Paracanthocephalus rauschi

Copepoda

Salmincola edwardsi

S. thymalli

OSMERIDAE, smelts

Osmerus mordax (Mitchill), rainbow smelt

Trematoda

Brachyphallus crenatus

Prosorhynchoides sp.

Cestoda

Diphyllobothrium osmeri\*

Nematoda

Phocanema sp.\*

Acanthocephala

Corynosoma hadweni

C. semerme

C. similis

C. strumosum

UMBRIDAE, mudminnows

Dallia pectoralis Bean, Alaska blackfish

Trematoda

Phyllodistomum lysteri

Cestoda

Diphyllobothrium dalliae\*

Diphyllobothrium sp.\*

Proteocephalus sp.

Triaenophorus sp.\*

Nematoda

Anisakis sp.\*

Raphidascaris sp.\*

Acanthocephala

Neoechinorhynchus rutili

ESOCIDAE, pikes

Esox lucius Linnaeus, northern pike

Trematoda

Crepidostomum farionis

Cestoda

Cyathocephalus truncatus

Trienophorus crassus

Nematoda

Raphidascaaris sp.\*

Acanthocephala

Neoechinorhynchus tenellus

MYCTOPHIDAE, lanternfishes

Stenobrachius leucopsarus (Eigenmann and Eigenmann), northern lampfish

Nematoda

Contracecum sp.\*

CATOSTOMIDAE, suckers

Catostomus commersoni (Lacepède), white sucker

Cestoda

Glaridacris catostomi

BATRACHOIDIDAE, toadfishes

Porichthys notatus Girard, plain midshipman

Trematoda

Opechona alaskensis

GADIDAE, codfish

Boreogadus saida (Lepechin), Arctic cod

Trematoda

Hemiurus levinseni

Nematoda

Contracecum sp.\*

Hysterothylacium aduncum\*

Acanthocephala

Corynosoma sp.

Echinorhynchus gadi

Metechinorhynchus salmonis



Gadidae (continued)

Eleginus gracilis (Tilesius), saffron cod

Cestoda

Diphyllobothrium phocarum\*

Gadus macrocephalus Tilesius, Pacific cod

Nematoda

Anisakis sp.\*

Phocanema decipiens\*

Hirudinea

Levinsenia rectangulata

Isopoda

Rocinela belliceps

Copepoda

Clavella adunca

C. irina

Lepeophtheirus cuneifer

Lepeophtheirus parviventris

Naobranchia occidentalis

Lota lota (Linnaeus), burbot

Acanthocephala

Neoechinorhynchus rutili

Merluccius productus (Ayres), Pacific hake

Trematoda

Aponurus argentini

Aporocotyle margolisi

Derogenes macrostoma

D. varicus

Fellodistomum furcigerum

Lecithochirium sp.

Cestoda

Bothriocephalus ospariichthydis

Bothriocephalus sp.\*

Diphyllobothrium sp.\*

Nybelinia surmenicola\*

Scolex sp.\*

Nematoda

Anisakis sp.\*

Contracaecum sp.\*

Hysterothylacium aduncum

H. melanogrammi

Copepoda

Acanthochondria sp.

Haemobaphes sp.

Parabrachiella sp.

Gadidae (continued)

Microgadus proximus (Girard), Pacific tomcod

Copepoda

Lepeophtheirus cuneifer

Clavella canaliculata

Hirudinea

Levinsenia rectangulata

Theragra chalcogramma (Pallas), walleye pollock

Cestoda

Nybelinia sp.\*

Nematoda

Anisakis sp.\*

Copepoda

Clavella adunca

Clavella perfida

Lepeophtheirus cuneifer

ZOARCIDAE, eelpouts

Lycodes palearis Gilbert, wattled eelpout

Trematoda

Derogenes varicus

Lycodes turneri Bean, polar eelpout

Copepoda

Diocus frigidus

MACROURIDAE, grenadiers

Coryphaenoides cinereus

Myxozoa

Ceratomyxa asymmetrica

Myxoproteus abyssus

Coryphaenoides longifilis

Myxozoa

Myxoproteus abyssus

Zschokkella meglitschi

Coryphaenoides pectoralis (Gilbert), giant rattail

Monogenea

Cyclocotyloides pinguis

Trematoda

Gonocerca oshoro

GASTEROSTEIDAE, sticklebacks

Gasterosteus aculeatus Linnaeus, threespine stickleback

Trematoda

Bunodera sp.

Peracreadium gasterostei

Cestoda

Schistocephalus solidus\*

Nematoda

Contracecum sp.\*

Acanthocephala

Acanthocephalus lucii

Neoechinorhynchus rutili

Copepoda

Ergasilus auritus

Ergasilus turgidus

Thersitina gasterostei

Mollusca

Anodonta beringiana

Anodonta oregonensis

Pungitius pungitius (Linnaeus), ninespine stickleback

Cestoda

Diphyllobothrium sp.\*

Schistocephalus solidus\*

BRAMIDAE, pomfrets

Brama japonica Hilgendorf, Pacific pomfret

Trematoda

Lampritrema miescheri

BATHYMASTERIDAE, ronquils

Ronquilus jordani (Gilbert), northern ronquil

Trematoda

Derogenes varicus

STICHAEIDAE, pricklebacks

Lumpenus sagitta Wilimovsky, snake prickleback

Copepoda

Lepeophtheirus cuneifer

SCORPAENIDAE, scorpionfish

Sebastes aleutianus (Jordan and Evermann), roughey rockfish

Monogenea

Benedenia derzhavini

Trochopus sp.

Trematoda

Derogenes varicus

Neolepidapedon sebastisci

Podocotyle sp.

Prosorhynchus crucibulum

Stephanostomum dentatum

Cestoda

Nybelinia surmenicola\*

Phyllobothrium sp.\*

Nematoda

Contracecum sp.\*

Cucullanus sp.

Hysterothylacium aduncum

Acanthocephala

Corynosoma sp.\*

Echinorhynchus gadi

Copepoda

Brachiella robusta

Chondracanthus pinguis

Clavella parva

Colobomatus kyphosus

Sarcotaces arcticus

Sebastes alutus (Gilbert), Pacific ocean perch

Monogenea

Benedenia derzhavini

Microcotyle sebastis

Trochopus sp.

Trematoda

Derogenes varicus

Fellodistomum sebastodis

Lecithaster gibbosus

Lecithophyllum botryophorum

L. spaerolecithum

Neohelicometra sebastis

Opechona alaskensis

Podocotyle atomon

Podocotyle sp.

Prosorhynchus crucibulum

Psettarium sebastodorum

Cestoda

Bothriocephalus scorpii

Bothriocephalus scorpii\*

Nybelinia surmenicola\*

Phyllobothrium sp.\*

Scolex pleuronectis\*

Scorpaenidae (continued).

Nematoda

Ascarophis pacificus  
Contracaecum sp.\*  
Cucullanus heterochrous  
Cucullanus sp.  
Hysterothylacium aduncum

Acanthocephala

Bolbosoma caenoforme  
Corynosoma reductum  
Corynosoma sp.  
Corynosoma sp.\*  
Echinorhynchus gadi

Copepoda

Brachiella robusta  
Chondracanthus pinguis  
Chondracanthus triventricosus  
Clavella parva  
Colobomatus kyphosus  
Haemobaphes theragrae  
Sarcotaces arcticus

Sebastes ciliatus (Tilesius), dusky rockfish

Monogenea

Trochopus sp.

Trematoda

Derogenes varicus  
Fellodistomum sebastodis  
Lecithophyllum botryophorum  
Opechona alaskensis  
Opechona occidentalis  
Podocotyle sp.  
Prosorhynchus crucibulum

Cestoda

Nybelinia surmenicola\*  
Phyllobothrium sp.\*

Nematoda

Contracaecum sp.\*  
Hysterothylacium aduncum

Acanthocephala

Corynosoma sp.\*

Copepoda

Brachiella robusta  
Chondracanthus pinguis  
Chondracanthus triventricosus  
Colobomatus kyphosus

Sebastes flavidus (Ayres), yellowtail rockfish

Copepoda

Sarcotaces arcticus

**Scorpaenidae (continued)**

Sebastes melanops Girard, black rockfish

Monogenea

Trochopus marginata

Copepoda

Clavella parva

C. recta

Sebastes polyspinis Taranetz and Moiseev, northern rockfish

Trematoda

Fellodistomum sebastodis

Opechona alaskensis

Podocotyle sp.

Psettarium sebastodorum

Cestoda

Nybelinia surmenicola\*

Phyllobothrium sp.\*

Nematoda

Contracecum sp.\*

Hysterothylacium aduncum

Copepoda

Chondracanthus pinguis

Chondracanthus triventricosus

Colobomatus kyphosus

Sebastes reflexa

Trematoda

Podocotyle reflexa

Sebastes ruberrimus (Cramer), yelloweye rockfish

Monogenea

Trochopus marginata

Sebastes zacentrus (Gilbert), sharpchin rockfish

Monogenea

Benedenia derzhavini

Microcotyle sebastis

Trochopus sp.

Trematoda

Derogenes varicus

Neolepidapedon sebastisci

Opechona alaskensis

Podocotyle sp.

Prosorhynchus crucibulum

Psettarium sebastodorum

Scorpaenidae, Sebastes zacentrus (continued)

Cestoda

Bothriocephalus scorpii\*

Nybelinia surmenicola\*

Phyllobothrium sp.\*

Nematoda

Contracaecum sp.\*

Hysterothylacium aduncum

Acanthocephala

Corynosoma sp.\*

Echinorhynchus gadi

Copepoda

Brachiella robusta

Chondracanthus pinguis

Chondracanthus triventricosus

Colobomatus kyphosus

Haemobaphes theragrae

ANOPLPOMATIDAE, sablefish

Anoplopoma fimbria (Pallas), sablefish

Trematoda

Stephanostomum californicum

Cestoda

Nybelinia surmenicola\*

Scolex sp.\*

Nematoda

Contracaecum sp.\*

Phocanema sp.\*

Acanthocephala

Corynosoma sp.\*

HEXAGRAMMIDAE, greenling

Hexagrammos lagocephalus (Pallas), rock greenling

Trematoda

Urinatrema aspinosum

Nematoda

Phocanema decipiens\*

Acanthocephala

Corynosoma sp.

Copepoda

Lepeophtheirus cuneifer

Pleurogrammus monopterygius (Pallas), Atka mackerel

Copepoda

Lepeophtheirus parviventris

COTTIDAE, sculpins

Cottus aleuticus Gilbert, coastrange sculpin

Protozoa

Cryptobia sp.

Hemilepidotus hemilepidotus (Tilesius), red Irish lord

Trematoda

Derogenes varicus

Proisorhynchus sp.\*

Nematoda

Phocanema decipiens\*

Acanthocephala

Corynosoma sp.

Leptocottus armatus Girard, Pacific staghorn sculpin

Copepoda

Lepeophtheirus cuneifer

Myoxocephalus polyacanthocephalus (Pallas), great sculpin

Copepoda

Chondracanthus lotellae

Hirudinea

Levinsenia rectangulata

CYCLOPTERIDAE, snailfish

Aptocyclus ventricosus (Pallas), smooth lumpsucker

Trematoda

Proisorhynchus mizelli

PLEURONECTIDAE, righteye flounders

Atheresthes stomias (Jordan and Gilbert), arrowtooth flounder

Trematoda

Stephanostomum sp.\*

Cestoda

Nybelinia surmenicola\*

Acanthocephala

Corynosoma strumosum

Echinorhynchus sp.

Nematoda

Phocanema sp.\*

Contracaecum sp.\*



Pleuronectidae (continued)

Eopsetta jordani (Lockington), petrale sole

Myxozoa

Kudoa sp.

Hippoglossus stenolepis Schmidt, Pacific halibut

Myxozoa

Kudoa sp.

Monogenea

Entobdella hippoglossi

Trematoda

Derogenes varicus

Pseudopecoelus nossamani

Isopoda

Rocinela angustata

Rocinela belliceps

Copepoda

Acanthochondria cornuta

Lepeophtheirus appendiculatus

Lepeophtheirus cuneifer

Lepeophtheirus parviventris

Isopsetta isolepis (Lockington), butter sole

Copepoda

Lepeophtheirus cuneifer

Lepidopsetta bilineata (Ayres), rock sole

Trematoda

Derogenes varicus

Copepoda

Lepeophtheirus parviventris

Microstomus pacificus (Lockington), Dover sole

Myxozoa

Kudoa sp.

Platichthys stellatus (Pallas), starry flounder

Copepoda

Lepeophtheirus parviventris

Pleuronectes quadrituberculatus Pallas, Alaska plaice

Copepoda

Lepeophtheirus marcepes

## ACKNOWLEDGMENTS

I would like to thank Pat Miller and Betty Wyatt for editing, checking, and typing the manuscript. I would also like to thank Leo Margolis of the Pacific Biological Station, Department of Fisheries and Oceans, Nanaimo, British Columbia, Canada, for the many hours spent checking the list, for the helpful suggestions in its preparation, and for identifying a number of elusive references.

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<i>Scolex</i> sp. . . . .	10, 28, 34
<i>Squalonchoryle somniosi</i> . . . . .	3, 19
<i>Stephanostomum californicum</i> . . . . .	7, 34
<i>Stephanostomum dentatum</i> . . . . .	7, 31
<i>Stephanostomum</i> sp. . . . .	7, 35
<i>Tetracoryle</i> sp. . . . .	7, 21, 22
<i>Tetraonchus alaskensis</i> . . . . .	3, 22, 24, 25
<i>Tetraonchus rauschi</i> . . . . .	3, 26
<i>Tetraonchus variabilis</i> . . . . .	3, 24
<i>Tetrarhynchus</i> sp. . . . .	10, 19
<i>Thersitina gasterostei</i> . . . . .	18, 30
<i>Triaenophorus crassus</i> . . . . .	9, 10, 21, 23, 25, 26, 27
<i>Triaenophorus</i> sp. . . . .	10, 26
<i>Trochopus marginata</i> . . . . .	3, 33
<i>Trochopus</i> sp. . . . .	3, 31, 32, 33
<i>Truttaedacnitis alpinus</i> . . . . .	11, 25
<i>Tubulovesicula lindbergi</i> . . . . .	7, 21, 22
<i>Urinatrema aspinosum</i> . . . . .	7, 34
<i>Zschokkella meglitschi</i> . . . . .	2, 29

## Hosts

<i>Anoplopoma fimbria</i> .....	7, 10, 12, 13, 14, 34	<i>Oncorhynchus gorboscha</i> 2, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 18, 21
<i>Aptocyclus ventricosus</i> .....	6, 35	<i>Oncorhynchus keta</i> .....
<i>Atheresthes stomias</i> .....	7, 10, 12, 13, 14, 35	2, 10, 12, 21
<i>Brama japonica</i> .....	5, 30	<i>Oncorhynchus kisutch</i> .....
<i>Boreogadus saida</i> .....	5, 12, 14, 27	2, 3, 8, 9, 10, 12, 14, 18, 22
<i>Catostomus commersoni</i> .....	8, 27	<i>Oncorhynchus nerka</i> 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 22
<i>Clupea harengus pallasi</i> .....	2, 4, 5, 6, 7, 10, 12, 13, 14, 15, 16, 19	<i>Oncorhynchus tshawytscha</i> .....
<i>Coregonus clupeaformis</i> .....	18, 20	2, 4, 8, 10, 11, 12, 13, 17, 23, 24
<i>Coregonus laurettae</i> .....	14, 20	<i>Oncorhynchus</i> sp. ....
<i>Coregonus nasus</i> .....	14, 20	7, 24
<i>Coregonus sardinella</i> .....	14, 20	<i>Osmerus mordax</i> .....
<i>Coregonus</i> sp. ....	7, 18, 20	4, 6, 9, 13, 26
<i>Coryphaenoides cinereus</i> .....	2, 29	<i>Platichthys stellatus</i> .....
<i>Coryphaenoides longifilis</i> .....	2, 29	17, 36
<i>Coryphaenoides pectoralis</i> .....	3, 5, 29	<i>Pleurogrammus monoptyerygius</i> .....
<i>Cottus aleuticus</i> .....	2, 35	17, 34
<i>Dallia pectoralis</i> .....	6, 9, 10, 12, 13, 14, 26	<i>Pleuronectes quadrituberculatus</i> .....
<i>Eleginus gracilis</i> .....	9, 28	17, 36
<i>Eopsetta jordani</i> .....	2, 36	<i>Porichthys notatus</i> .....
<i>Esox lucius</i> .....	4, 8, 9, 13, 14, 27	5, 27
<i>Gadus macrocephalus</i> .....	12, 13, 15, 16, 17, 28	<i>Prosopium cylindraceum</i> .....
<i>Gasterosteus aculeatus</i> .....	4, 6, 10, 12, 13, 14, 17, 18, 30	3, 8, 9, 14, 18, 24
<i>Hemilepidotus hemilepidotus</i> .....	4, 7, 13, 14, 35	<i>Pungitius pungitius</i> .....
<i>Hexagrammos lagocephalus</i> .....	7, 13, 14, 17, 34	9, 10, 30
<i>Hexanchus griseus</i> .....	10, 19	<i>Raja binoculata</i> .....
<i>Hippoglossus stenolepis</i> .....	2, 3, 4, 7, 15, 17, 36	17, 19
<i>Isopsetta isolepis</i> .....	17, 36	<i>Raja</i> sp. ....
<i>Lamna ditropis</i> .....	8, 19	3, 8, 19
<i>Lepidopsetta bilineata</i> .....	4, 17, 36	<i>Ronquilus jordani</i> .....
<i>Leptocottus armatus</i> .....	17, 35	4, 30
<i>Lota lota</i> .....	14, 28	<i>Salmo clarki</i> .....
<i>Lumpenus sagitta</i> .....	17, 30	3, 24
<i>Lycodes palearis</i> .....	4, 29	<i>Salmo gairdneri</i> .....
<i>Lycodes turneri</i> .....	17, 29	4, 8, 9, 11, 12, 14, 15, 18, 24
<i>Merluccius productus</i> .....	4, 5, 8, 9, 10, 11, 12, 15, 17, 18, 28	<i>Salvelinus alpinus</i> .....
<i>Microgadus proximus</i> .....	15, 16, 17, 29	4, 6, 7, 8, 9, 11, 14, 18, 25
<i>Microstomus pacificus</i> .....	2, 36	<i>Salvelinus malma</i> .....
<i>Myoxocephalus polyacanthocephalus</i> .....	15, 16, 35	3, 4, 7, 8, 9, 11, 14, 17, 18, 25
		<i>Salvelinus namaycush</i> .....
		4, 8, 9, 11, 13, 25
		<i>Sebastes aleutianus</i> .....
		3, 4, 5, 6, 7, 10, 11, 12, 14, 16, 18, 30
		<i>Sebastes alutus</i> 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 30
		<i>Sebastes ciliatus</i> .....
		3, 4, 5, 6, 10, 11, 12, 14, 16, 32
		<i>Sebastes flavidus</i> .....
		18, 32
		<i>Sebastes melanops</i> .....
		3, 16, 33
		<i>Sebastes polyspinis</i> .....
		5, 6, 7, 10, 11, 12, 16, 33
		<i>Sebastes reflexa</i> .....
		6, 33
		<i>Sebastes ruberrimus</i> .....
		3, 33
		<i>Sebastes zacentrus</i> .....
		3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 16, 17, 33
		<i>Somniosus pacificus</i> .....
		3, 8, 19
		<i>Squalus acanthias</i> .....
		17, 19
		<i>Stenobranchius leucopsarus</i> .....
		12, 27
		<i>Theragra chalcogramma</i> .....
		10, 12, 15, 16, 17, 29
		<i>Thymallus arcticus</i> .....
		3, 4, 6, 9, 10, 11, 12, 15, 18, 26