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Check List of the Fishes of the Dominion of Canada and Newfoundland.

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### The Fishes of the Dominion of Canada

AND

### Newfoundland

#### PLATE I.

- I. Squalus acanthias (Picked Dogfish)
  - 2. Raja radiata (Starry Ray)
- 3. Acipenser sturio oxyrhynchus (Common Sturgeon)
  - 1-5. Lepidosteus osseus (Common Garpike)
    - 6-7. Amia calva (Bowfin)





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## CHECK LIST

OF

### The Fishes of the Dominion of Canada

AND

### Newfoundland

By ANDREW HALKETT Naturalist, Department Marine and Fisheries

Illustrated by 14 Plates



OTTAWA PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY 1913.

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#### INTRODUCTORY REMARKS

This publication is a check-list of the Fishes of British North America. Its aim is to give the species indigenous to the Dominion of Canada and Newfoundland, as well as those of the Fishing Banks beyond the three mile limit. A complete list of the fishes of Canada has long been a desideratum, and it is hoped that the present work will help to obviate that need. It should, however, be looked upon as a pioneer, heralding the way towards a fuller specific conception of our fishes and their distribution. There are records of specimens which are provisionally admitted in the list as distinct species, having been recorded so, which in reality may belong to species are not over numerous, in foot-notes. As regards the better known, and more commercially important kinds, the check-list may, in giving their range, more repletely serve its purpose; but even in a few of these the limits of their range, especially in the far north, and owing to confusion in their records and synonyms, are hard to determine. Records of certain specimens are possibly sometimes wrongly named by the recorders, and would therefore appear, had they been rightly named, under the species to which they really belong; although in some such cases the localities in which they were found may be included through other records. Species which occur close to our borders, or both north and south of our borders, although not actually recorded from our waters are also provisionally admitted; and this appears justifiable, because the late Rev. G. W. Taylor was constantly bringing to light species occurring in British Columbia which hitherto had not been recorded; and furthermore, researches have revealed species along our Atlantic sea-coast, and in the fresh waters of the Dominion, which formerly were not recorded north of the United States boundary. There are also some interesting records of casual visitors, such as the tarpon (Tarpon atlanticus) in Nova Scotia; and the occurrence of species very rare in Canada, such as the paddle-fish (Polyodon spathula) in Helen Lake, Nipigon River, and elsewhere in the Canadian Great Lakes region. The list of the fishes, especially the fresh water fishes, of Newfoundland is admitted to be inadequate. There appear to be no published records of the species of that colony (save a list of 'The Fishes of Labrador,' by William Converse Kendall), yet as one third of the island of Newfoundland is covered with water some interesting finds may in the future be looked for. Some remarkable and diverse forms, indigenous to the Banks of Newfoundland and to the Banks off Nova Scotia have been obtained on these fishing grounds, or have followed vessels into the harbours and ports from there, and it has been thought fitting to include such in the list.

Canada has its own particular species of fishes—that is species which do not occur, or have not been found, in the waters of any other country; and one of them, of which there is only one specimen known, recently discovered, is the type of a new genus (*Asemichthys*). The names of the species peculiar to Canada, with the localities where they occur, appear in their places in the body of the text. Contrariwise there is scarcely a sea on the surface of the globe in which there does not occur some fish which also occurs, or has occurred, on the coasts of Canada.

The check-list, of course, is not descriptive; but is simply, it is hoped, what it purports to be. It is a pioneer, feeling its way towards a better knowledge of what species of fishes inhabit the waters of the British North American possessions—especially those indigenous to Canada. It does not profess to be a complete list, but it is confidently believed to approximate the total number of fishes which our waters contain. It is subject to amendment then, in regard to species to be added to the list as records or discoveries reveal them; and not only so, but in regard to species, and such are apparently few, to be eliminated from the list as having no right there. As the list stands there are 569 species including sub-species (3 being in addenda), and they follow each other consecutively, and in systematic order, from the cyclostomes to the plectognaths: the families and orders under which they are placed appearing in a preceding scheme of classification. The technical name, governed by the rules of priority; the vernacular name, when the fish has one (and the majority of our fishes bear vernacular names); the environment, concisely; and the geographical distribution of each fish are given.

The check-list is based on all the available literature on the subject, and on my own personal observations in many parts of the Dominion; as well as in an examination of specimens in the museum. In its preparation a vast amount of material has been consulted. I am under inestimable obligation to Drs. Jordan and Evermann. Their great work on 'The Fishes of North and Middle America' in four massive volumns has been indispensable, and I am indebted to them for the settlement of priority of names. I adhere, however, to British ichthyologists where a matter of orthography is concerned—as *Lepidosteus* instead of *Lepisosteus* and *Hyodon* instead of *Hiodon*. Besides the great work of those authorities referred to, I have received much help from their 'American Food and Game Fishes,' and from Dr. Jordan's 'Guide to the Study of Fishes' in two volumns.

Many lists and records of the fishes of Provinces and localities have been diligently compared, and in respect to such valuable aid has been afforded me by individual students of the fishes of special localities.

To Mr. Harry Piers, Curator of the Provincial Museum of Nova Scotia, I am indebted not only for copies of his annual reports which contain accounts of fishes of Nova Scotia, and for records of the occurrence of *Chilomycterus schapfi* and *Mola mola* in that Province, but also for the loan of the following lists which are now out of print.

'Fishes of Nova Scotia,' 1866, by Thomas F. Knight.

'List of the Fishes of Nova Scotia,' 1879, by J. Matthew Jones.

'Nova Scotian Ichthyology,' 1885-6, by Dr. Honeyman.

To Dr. Phillip Cox, of Fredericton University, I owe a great deal, not only for the valuable aid which his 'Catalogue of the Marine and Fresh-water Fishes of New Brunswick' and his 'List of Fresh-water Fishes of the Gaspé Peninsula' have afforded me, but I am additionally indebted to him for kindly going over my manuscript in regard to the fishes of New Brunswick.

Gratefully do I acknowledge the favours of the late Rev. G. W. Taylor, formerly the Curator of the Biological Station at Departure Bay, Vancouver Island. In personal interviews and in correspondence he did me great service, and he had the kindness to review a provisional manuscript list of the fishes of British Columbia which I drew up for his perusal. It may be mentioned too that Mr. Taylor kindly volunteered to allow me to incorporate into my list, a list of the fishes of British Columbia, which he himself had in course of preparation, but unfortunately his death intervened and the list has never appeared. In regard to the fishes of British Columbia, I am also indebted to Mr. Francis Kermode, Curator of the Provincial Museum, Victoria, who kindly had a list of the fishes in the museum type-written for me, and who also sent me a copy of his published report which contains a list of the fishes in that collection. To him I am further indebted for getting a very young specimen of *Catulus brunneus*, through Dr. Gilbert of Leland-Stanford Junior University, identified.

The following lists and publications have been of great service:

'Food and Game Fishes of North America,' by the deceased Dr. G. Brown Goode.

'Check-list of the Fishes of Ontario,' by Mr. C. W. Nash, Lecturer on Biology for the Ontario Department of Agriculture. 'Notes on the Fishes of Canso,' and 'Notes on Fishes of Tignish, Prince Edward Island,' by ''r, G. A. Cornish, of Toronto University.

'The Fishes of Labrador,' by Mr. W. C. Kendall, of the United States Fish Commission.

'A Check-list of the Fresh-water Fishes of Canada,' by Evermann and Goldsborough.

'Fauna of the Atlantic Coast of Canada,' by Dr. Joseph Stafford, in which mention is made of fishes occurring at Gaspé.

Notes on the Fishes of Lake Ontario, of Lake Champlain, and of the St. Lawrence River, by Evermann and Kendall.

Catalogue of Fishes, &c., exhibited by the Department of Marine and Fisheries at the Colonial and Indian Exhibition, by the deceased Dr. J. F. Whiteaves.

Prof. Ramsay Wright's 'Preliminary Report on the Fish and Fisheries of Ontario' was of service; and 'List of Manitoba Fishes' by Dr. E. E. Prince, was of use as showing species which occur in Manitoba, but no localities are given.

The following British publications have been of great service, generally as showing the distribution of fishes, which occur in Canada, at the coasts of other lands, or in the open ocean.

'History of British Fishes,' 1859, in two volumns, by William Yarrell.

'An Introduction to the Study of Fishes,' 1880, by Dr. Albert Günther.

'The Cambridge Natural History': volumn VII—'Fishes'—in part by Dr. T. W. Bridge, of Trinity College, Cambridge, and in part by Dr. G. A. Boulenger, of the Zoological Department of the British Museum.

'Catalogue of the Perciform Fishes in the British Museum' by Dr. Boulenger.

'The Fishes of Porto Rico,' by Evermann and Marsh, published in a Bulletin of the United States, was of similar service concerning the occurrence of certain species at that island

To Dr. L. Hussakof of the American Museum of Natural History I am indebted for a diagnosis of different species of Myxine, with whom I corresponded on the subject. The diagnosis is from 'A Revision of the Myxinoids of the Genus Myxine,' by Mr. C. Tate Regan, of the British Museum.

I have also to mention aid received through Mr. Alex. Finlayson, Inspector of Hatcheries for the Dominion, whose acquaintance with many of our fishes, especially of our commercial fishes, is very thorough, in the determination of one or two specimens which were not readily recognizable owing to the effects of the preservatives in which they had been kept; and last, but by no means least, it affords me great pleasure to express my appreciation of the hearty interest shown to me by Mr. W. A. Found, Superintendent of Fisheries, during the time when the check-list was being prepared, and for his patience in awaiting its forthcoming.

A few words concerning the scheme of classification referred to above. In the present state of ichthyological knowledge a certain latitude may be allowable, and I may therefore be pardoned for venturing to arrange families and higher groups provisionally in such a way as for the present best appears to suit myself. The Cyclostomata naturally divide into two orders, the names here used for these being—Myxinoides (Hagfishes) and Petromyzontes (Lampreys). Being unready, as some do, to regard the Plagiostomi (Sharks and Rays) and the Holocephali (Chimæras) as distinctive sub-classes, I combine them in a single sub-class—Elasmobranchii, of which the two former are orders. I follow Hasse in sub-dividing the Plagiostomi according to the structure of the vertebre. These divisions I regard as sub-orders. The names Selachii and Batoidei (save that the former by some is the name employed for the entire subclass, which is then properly equivalent to Elasmobranchii) I discard, for the reason that the transition from the more primitive sharks through the tectospondylous sharks to the saw-fishes and more specialized rays, seems to be so marked as to preclude their sub-division in a way which cannot but be other than artificial; especially as the more natural sub-order Tectospondyli includes forms which it is usual to place with the Selachii on the one hand (although none such are represented in our waters) and with the Batoidei on the other. Discarding the name Ganoidei as untenable, I innovate the classification of the Teleostomi by dividing them primarily into two super-orders-Chondrostei and Teleostei. There is a closer relationship between the Holostei (Gar-pikes and Amia calva) in many essential particulars and the Teleostei, as recognized, than there is between the former and the Chondrostei. Therefore I include the Holostei as an order in the Teleostei. The two names to be sure signify much the same thing, but Holostei may stand as the name of the most primitive order of the super-order. Conformity to system requires an order in the super-order Chondrostei, although the super-order and order embrace the same. This I give as Acipenseroidei (the paddle-fish and the sturgeons). The super-order Teleostei, thus understood, contains XV orders (only two of which, Symbranchii and Opisthomi, are not represented in Canada) and I follow Boulenger in their names and arrangement, except that with him these orders (saving Holostei-here included in Teleostei) are sub-orders, and the super-order-Teleostei—an order; and his divisions of the Acanthopterygii I regard as sub-orders. Quotations from Boulenger given as foot-notes in the scheme of classification are intended as explanatory as to why I adopt his classification. In sub-dividing orders into families and genera, I have in substance been guided by Jordan and Evermann, and in the names of the species I essentially follow them; for their assiduity in having determined the priority of the names of the fishes of the continent of North and Middle America is obvious and manifest, and speaks for itself. Certain names employed by Jordan and Evermann, not always with them equal in rank, I have moreover adopted as sub-orders of some orders.

The check-list is followed by a brief glossary of technical terms, and indices of technical and vernacular names; and the work is illustrated with 14 plates, from photographs of mounted specimens and casts in the Canadian Fisheries Museum.

#### ANDREW HALKETT,

Naturalist, Department Marine and Fisheries.

Canadian Fisheries Museum,

OTTAWA, Canada, 1913.

### SCHEME OF CLASSIFICATION

#### CLASS PISCES (FISHES)

Sub-class I Cyclostomata (Hagfishes and Lampreys). Also known as Cyclostomi, and as Marsipobranchii.

ORDER I MYXINOIDES (Hagfishes). Also known as Hyperotreti.

Family I Myxinidæ. Genus 1 Myxine limosa 1 (American Hagfish) Family II Eptatretidæ Genus 2 Polistotrema stouti 2 (California Hagfish)

ORDER II PETROMYZONTES. (Lampreys). Also known as Hyperoartii

mily III Petromyzonidæ Genus 3 Petromyzon marinus 3 (Great Sea Lamprey) unicolor 4 (Landlocked Lamprey) Genus 4 Ichthyomyzon

concolor 5 (Silver Lamprey) castaneus 6 (Northern Lamprey) Genus 5 Entosphenus

tridentatus 7 (Three-toothed Lamprey) Genus 6 Lampetra aurea 8 (Brook Lamprey) cibaria 9 (Brook Lamprey) wilderi 10 (Small Black Lamprey: Brook Lamprey)

Sub-class II Elasmobranchii (Sharks, Rays, and Chimæras). Also known as Selachii and as Chondropterygii.

ORDER III PLAGIOSTOMI (Sharks and Rays)

SUB-ORDER I DIPLOSPONDYLI. (Plagiostomes in which the centra are imperfectly segmented, and joined in pairs, and each pair bearing two neural arches.) Family IV Hexanchida.<sup>4</sup> Known also as Notidanidw.

Genus 7 Notorhynchus

maculatus 11 (Cow Shark)

Genus 8 Hexanchus

corinus 12 (Shovel-nosed Shark)

SUB-ORDER 2 ASTEROSPONDYLL. (Plagiostomes in which the calcification of each centrum in cross section radiates star-like from the central axis.)

Family V Scylliorhinidæ. Scylliidæ in part of some.

Genus Sa Scylliorhinus

profundorum 12a (Roussette). See addenda p. 117

Genus 9 Catulus

brunneus 13 (Cat Shark: Swell Shark)

<sup>&</sup>lt;sup>4</sup>Although this family contains sharks which have 7 gill apertures on either side, *Hexanchus* has priority over *Notidanus*, and the name of the family should conform to that of the typical genus.

Family VI Galeidæ. Carchariidæ in part of some. Genus 10 Galeorhinus zyopterus 14 (Oil Shark: Tope) Genus 11 Prionace glauca 15 (Great Blue Shark) Family VII Alopiida, Included in Lamnida by some. Genus 12 Alopias vulpes 16 (Thresher) Family VIII Lamnida Genus 13 Lamna cornubica 17 (Porbeagle: Mackerel Shark) Genus 14 Carcharodon carcharias 18 (Great White Shark) Family IX Cetorhinida Genus 15 Cetorhinus maximus 19 (Basking Shark) SUB-ORDER 3 CYCLOSPONDYLL. (Plagiostomes in which the calcification of each centrum in cross section forms a ring around the axis.) Family X Squalida. Spinacida in part of some. Genus 16 Squalus acanthias 20 (Picked Dogfish) sucklii 21 (California Dogfish) Genus 17 Centroscymnus cœlolepis 22 (Spiny Dogfish) Genus 18 Centroscyllium fabricii 23 (Spiny Dogfish) Family XI Dalatiidæ. Spinacidæ in part of some. Genus 19 Somniosus microcephalus 24 (Sleeper Shark: Greenland Shark) SUB-ORDER 4 TECTOSPONDYLI. (Plagiostomes in which the calcification of each centrum in cross section forms a series of concentric rings around the axis.) Family XII Pristida Genus 20 Pristis pectinatus 25 (Common Sawfish) Family XIII Rajida. Raiida according to some (-- a question of orthography). Genus 21 Raja erinacea 26 (Common Skate) ocellata 27 (Big Skate) fyllæ 28 radiata 29 (Starry Ray) senta 30 lævis 31 (Barn-door Skate) granulata 32 rhina 33 binoculata 34 (Big-Skate-of-California) stellulata 35 abyssicola 36 (Deep Sea Ray)

#### SCHEME OF CLASSIFICATION

Family XIV Dasyatida. Also known at Trygonidae. Genus 22 Dasyatis centrura 37 (Common Sting Ray) ORDER IV HOLOCEPHALI (Chimaeras). Family XV Chimarida. Genus 23 Chimæra affinis 38 (Chimæra) Genus 24 Hydrolagus colliei 39 (Ratfish) Sub-class III Teleostomi (Sturgeons and their allies and true-boned fishes). (Series A<sup>1</sup>-Physostomous Teleostomes, or such in which the air-bladder, as a rule. SUPER ORDER I CHONDROSTEI (Sturgeons and their allies). **ORDER V** ACIPENSEROIDEI (Equivalent to the super-order) Family XVI Polyodontidæ. Genus 25 Polvodon spathula 40 (Paddle-fish) Family XVII Acipenseridæ. Genus 26 Acipenser transmontanus 41 (White Sturgeon) medirostris 42 (Green Sturgeon) sturio oxyrhynchus 43 (Common Sturgeon) rubicundus 44 (Lake Sturgeon) brevirostrum 45 (Short-nosed Sturgeon) SUPER-ORDER II TELEOSTEI (True-boned Fishes) ORDER VI HOLOSTEI (Extant representatives, Gar-pikes and the Bowfin). Family XVIII Lepidosteida. Genus 27 Lepidosteus osseus 46 (Common Garpike) platostomus 47 (Short-nosed Garpike) Family XIX Amiida. Genus 28 Amia calva 48 (Bowfin: Dogfish) ORDER VII MALACOPTERYGII<sup>2</sup> (Clupeoids, Salmonoids, and Viper Fishes and their allies). Equivalent (at least in so far as extant forms are concerned) to the order Isospondyli and to part of the Iniomi as regarded by Jordan and Evermann, and to the Scyphophori (a group of African fishes) placed by these authorities in Ostariophysi. SUB-ORDER 1 CLUPEOIDEA (Clupeoids) Family XX Elopidæ. Genus 29 Tarpon

atlanticus 49 (Tarpon)

<sup>&</sup>lt;sup>1</sup>In series A are included the super-order Chondrostei, and the orders Holostei, Malacopterygii, Ostariophysi, Apodes, and Haplomi, of the super-order Teleostei; whilst series B (page 21) embraces the remaining orders of Teleostei.

<sup>2&</sup>quot;Unquestionably the most generalized sub-order, having most in common with the Holostean ganoids." Boulenger.

Family XXI Albulida Genus 30 Albula vulpes 50 (Lady-fish). Family XXII Hyodontida. Genus 31 Hyodon alosoides 51 (Shad Mooneye) chrysopsis 52 (Western Goldeye) tergisus 53 (Mooneye: Toothed Herring) Family XXIII Dorosomida. Included in Clupeida by some. Genus 32 Dorosoma cepedianum 54 (Gizzard Shad: Hickory Shad) Family XXIV Clupeida Genus 33 Clupea harengus 55 (Common Herring) pallasii 56 (California Herring) Genus 34 Clupanodon cæruleus 57 (California Sardine) Genus 35 Pomolobus chrysochloris 58 (Blue Herring: Skipjack) mediocris 59 (Hickory Shad: Fall Herring) pseudoharengus 60 (Gaspereau: Alewife) æstivalis 61 (Glut Herring) Genus 36 Alosa sapidissima 62 (American Shad) Genus 37 Brevoortia tyrannus 63 (Menhaden: Mossbunker) Family XXV Engraulididg.<sup>1</sup> Included as a sub-family-Engrauling-by some in Clupeidæ. Genus 38 Engraulis mordax 64 (California Anchovy) Family XXVI Alepocephalidæ. Genus 39 Mitchillina bairdii 65 SUB-ORDER 2 SALMONOIDEA (Salmonoids) Family XXVII Salmonidæ. Genus 40 Coregonus coulterii 66 (Coulter's Whitefish) williamsoni 67 (Rocky Mountain Whitefish) kennicotti 68 (Broad Whitefish) richardsonii 69 (Richardson's Whitefish) quadrilateralis 70 (Round Whitefish: Shad-Waiter) clupeiformis 71 (Common Whitefish) nelsonii 72 (Humpback Whitefish) labradoricus 73 (Labrador Whitefish: Sault Whitefish)

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<sup>&</sup>quot;"This group is often regarded as a sub-family under the *Clupeidæ*, from which it differs in no character of high importance." Jordan and Evermann

Genus 41 Argyrosomus osmeriformis 74 (Smelt-of-the-New-York-Lakes) pusillus 77 (Least Whitefish) lucidus 78 (Great-Bear-Lake-Herring) laurettæ 79 (Lauretta Cisco) prognathus 80 (Bloater: Long-jaw) nigripinnis 81 (Black-fin: Blue-fin) tullibee 82 (Tullibee) Genus 42 Stenodus mackenzii 83 (Inconnu) Genus 43 Oncorhynchus gorbuscha S4 (Humpback Salmon) keta 85 (Dog Salmon) tschawytscha 86 (Spring Salmon: Quinnat: King Salmon) kisutch 87 (Coho: Silver Salmon) nerka 88 (Sockeye Salmon: Blue-back Salmon) kennerlyi 89 (Kennerly's Salmon: Little Redfish) Genus 44 Salmo salar 90 (Atlantic Salmon) ouananiche 92 (Ouananiche) rivularis 94 (Steelhead) irideus 96 (Rainbow Trout) trutta levenensis 97 (Loch Leven Trout) Genus 45 Cristivomer namayeush 98 (Salmon Trout: Great Lake Trout) siscowet 99 (Siscowet) Genus 46 Salvelinus fontinalis 100 (Speckled Trout: Brook Trout) parkei 101 (Dolly Varden Trout) alpinus alipes 102 (Long-finned Charr) areturus 104 (Aretic Charr) oquassa naresi 105 (Nares Charr) marstoni 106 (Marston Trout: Red Canadian Trout) Family XXVIII Thymallidæ. Included in Salmonidæ by some. Genus 47 Thymallus tricolor 108 (Michigan Grayling) montanus 109 (Montana Grayling) Family XXIX Argentinidæ. Included in Salmonidæ by some. Genus 48 Mallotus villosus 110 (Capelin)

Genus 49 Thaleichthys

pacificus 111 (Oolachan: Candle-fish)

Genus 50 Osmerus

thaleichthys 112 (Pacific Smelt)

mordax 113 (American Smelt)

dentex 114 (Rainbow Herring)

Genus 51 Mesopus

pretiosus 115 (Surf Smelt)

Genus 52 Argentina

silus 116 (Argentine: Siel Smelt)

Family XXX Microstomidæ. Included in Salmonidæ by some.

Genus 53 Bathylagus

pacificus 117 (Deep Sea Smelt)

SUB-ORDER 3 STOMIATOIDEA<sup>1</sup> (Viper Fishes and their allies)

Family XXXI Chauliodontidæ. Included as a sub-family—Chauliodontinæ—in the more comprehensive family Stomiatidæ of Boulenger. Placed in the order Iniomi by Jordan and Evermann.

Genus 54 Chauliodus

macouni 118 (Viperfish) sloanei 119 (Viperfish)

Family XXXII Sternoptychidæ. Included as a sub-family—Sternoptychinæ—in the more comprehensive family Stomiatidæ of Boulenger. Placed in the order Iniomi by Jordan and Evermann.

Genus 55 Sternoptyx

diaphana 120 Genus 56 Argyropelecus olfersi 121

onerst 121

Family XXXIII Stomiatida. Embraces as a sub-family—Stomiatina—a part only of the more comprehensive family Stomiatida of Boulenger. Placed in the order Iniomi by Jordan and Evermann. Genus 57 Stomias

ferox 122

TOTOIR 122

- Family XXXIV Malacosteida. Included in the sub-family—Stomiatina—in the more comprehensive family Stomiatida of Boulenger. Placed in the order Iniomi by Jordan and Evermann.
  - Genus 58 Malacosteus

niger 123

ORDER VIII OSTARIOPHYSI<sup>2</sup> (Canadian representatives Siluroids and Cyprinoids) The Scyphophori (fishes of Africa) are included in Ostariophysi by Jordan and Evermann—see under Malacopterygii, page 13.

<sup>&</sup>lt;sup>1</sup>For the sake of system I know not how better to distinguish from the clupeoids and salmonoids the families in which the Viper-fishes and their allies are embraced than by placing them in a sub-order which I denote Stomiatoidea. Whether or not in general the forms which this sub-order would embrace have the mesocoracoid-arch present, or atrophied, or absent, I do not know.

<sup>&</sup>lt;sup>240</sup>One of the most natural groups of the class Pisces, as demonstrated by M. Sagemehl in 1885." Boulenger.

### PLATE II.

 8 13. Oncornynchus gorbuscha (Humpback Salmon) (Showing seasonal characteristics)

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(Showing seasonal characteristics)

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SUB-ORDER 1 NEMATOGNATHI (Siluroids=Cat-fishes and their allies) Family XXXV Silurida Genus 59 Ictalurus punctatus 124 (Channel Catfish) Genus 60 Ameiurus lacustris 125 (Lake Catfish) natalis 126 (Yellow Catfish) vulgaris 127 (Long-jawed Catfish) nebulosus 128 (Common Catfish: Horned Pout) melas 129 (Black Bullhead) Genus 61 Noturus flavus 130 (Stone Catfish) Genus 62 Schilbeodes gyrinus 131 (Tadpole Stone Cat: Mad Tom) SUB-ORDER 2 EVENTOGNATHI<sup>1</sup> (Cyprinoids Suckers, Minnows, and Carps). Family XXXVI Catostomidae, Included as a sub-family -Catostominae in Cyprinidae Genus 64 Carpiodes Genus 65 Pantosteus jordani 136 (Mountain Sucker) Genus 66 Catostomus catostomus 138 (Northern Sucker) commersonii 140 (Common White Sucker) nigricans 141 (Stone Roller: Black Sucker) Genus 67 Erimyzon sucetta oblongus 142 (Chub Sucker) Genus 68 Minytrema melanops 143 (Spotted Sucker) Genus 69 Moxostoma aureolum 145 (Common Red Horse) macrolepidotum 146 (Large-scaled Red Horse) breviceps 148 (Short-headed Mullet)

<sup>&</sup>lt;sup>4</sup>I employ the name Eventognathi for the Cyprinoids as a sub-order instead of Pleetospendyli. The literal meaning of the latter is *waven together vertebra*, and the co-ossification of the anterior vertebrae is a character as true of the siluroids as of the cyprinoids. Nematognathi and Pleetospondyli are by some regarded as orders, and the latter is divisible into 3 sub-orders, viz:—Eventognathi., Heterognathi, and Gymnonoti, the first mentioned alone of which is represented in our waters. I therefore employ the names Nematognathi and Eventognathi as sub-orders of the order Ostariophysi.

Genus 70 Placopharynx duquesnii 149 Family XXXVII Cyprinida Genus 71 Campostoma anomalum 150 (Stone Roller: Stone Lugger) Genus 72 Acrocheilus alutaceus 151 (Chisel-mouth) Genus 73 Chrosomus ervthrogaster 152 (Red-bellied Dace) Genus 74 Hybognathus nuchalis 153 (Silver Minnow) argyritis 154 (White Minnow) Genus 75 Pimephales promelas 155 (Black-head Minnow: Bull Minnow) notatus 156 (Blunt-nosed Minnow) Genus 76 Mylocheilus caurinus 157 (Columbia River Chub) Genus 77 Semotilus corporalis 158 (Silver Chub: Fall-fish) atromaculatus 159 (Creek Chub: Horned Dace) Genus 78 Ptychocheilus oregonensis 160 (Squaw-fish) Genus 79 Leuciscus balteatus 161 (Columbia River Minnow) elongatus 162 (Red-sided Shiner) nachtriebi 163 (Nachtrieb Dace) neogæus 164 Genus 80 Opsopæodus emiliæ 165 Genus 81 Abramis crysoleucas 166 (Bream: Roach: Golden Shiner) Genus 82 Cliola vigilax 167 (Bull-head Minnow) Genus 83 Notropis jordani 168 (Jordan's Shiner) cavuga 169 (Cavuga Shiner) fretensis 170 muskoka 171 (Muskoka Shiner) heterodon 172 (Black-chin Minnow) blennius 173 (Straw-coloured Minnow) volucellus 174 scylla 175 hudsonius 176 (Spawn-eater: Spot-tail Minnow) selene 177 (Spawn-eater) whipplii 178 (Silverfin: Satin-fin Minnow) cornutus 179 (Dace: Redfin) jejunus 180 (Poor Minnow) scopifer 181

atherinoides 182 (Great Minnow) rubrifrons 183 (Rosy-front Minnow) umbratilis 184 (Redfin Minnow) Genus 84 Rhinichthys cataractæ 185 (Long-nosed Dace) dulcis 186 (Long-nosed Dace) atronasus 187 (Black-nosed Dace) Genus 85 Agosia nubila 188 (Dusky Minnow) umatilla 189 (Idaho Minnow) falcata 190 (Falcate Minnow) Genus 86 Hybopsis dissimilis 191 (Spotted Shiner) amblops 192 (Silver Chub) storerianus 193 (Lake Minnow) Genus 87 Couesius plumbeus 194 (Lake Chub) greeni 196 (Green's Chub) Genus 88 Platygobio gracilis 197 (Flat-headed Chub) Genus 89 Exoglossum maxillingua 198 (Cut-lip Minnow) Genus 90 Cyprinus carpio 199 (German Carp) Genus 91 Carassius auratus 200 (Goldfish) ORDER IX APODES<sup>1</sup> (Eels) Family XXXVIII Anguillida. Included in Muranida by Günther. Genus 92 Anguilla chrysypa 201 (American Eel) Family XXXIX Simenchelyida. Included in Anguillidar by Boulenger. Genus 93 Simenchelys parasiticus 202 (Snub-nosed Eel) Family XL Leptocephalidæ. Included in Murænidæ by Günther, and in Anguillidæ by Boulenger. Genus 94 Leptocephalus conger 203 (Conger Eel) Family XLI Nemichthyida. Included in Murænidæ by Günther. Genus 95 Avocettina infans 204 (Snipe Eel) Genus 96 Nemichthys scolopaceus 205 (Snipe Eel) avocetta 206 (Snipe Eel)

<sup>&</sup>quot;A large group of aberrant, degraded fishes, heralded by the Cretaceous genus Urenchelys, the most generalized of eels." Boulenger.

- Family XLII Synaphobranchidæ.<sup>1</sup> Included in Murænidæ by Günther, Genus 97 Synaphobranchus pinnatus 207 (Deep Sea Eel)
- Family XLIII Eurypharyngidæ, Included in Murænidæ (Saccopharynæ) by Günther, and in Saccopharyngidæ by Boulenger. Placed in the order Lyomeri (Gulpers) of Gill and Ryder, by Jordan and Evermann.

Genus 98 Gastrostomus

bairdii 208 (Gulper)

- ORDER X HAPLOMI.<sup>2</sup> (Such physostomous Teleostomes, excepting Symbranchii and Apodes, as are devoid of a mesocoracoid arch).
  - Family XLIV Luciidæ. Esocidæ of Günther, and with Umbridæ, equivalent to Esocidæ of Boulenger.

Genus 99 Lucius

reticulatus 209 (Green Pike: Common Eastern Pickerel) lucius 210 (Common Pike)

masquinongy 211 (Maskinonge)

Family XLV Umbrida. Equivalent with Luciidae to Esocidae of Boulenger.

Genus 100 Umbra

limi 212 (Mud Minnow)

Family XLVI Paciliida. Included in Cyprinodontida by some.

Genus 101 Fundulus

heteroclitus 213 (Common Killifish)

macrolepidotus 214 (Common Cobbler)

badius 215 (Garman's Cobbler)

diaphanus 216 (Fresh-water Killy: Grayback)

- notatus 217 (Top Minnow)
- Family XLVII Myctophidæ. Included in Scopelidæ by some. Placed in the order Iniomi by Jordan and Evermann.

Genus 102 Macrostoma quercinum 218 margaritiferum 219 castaneum 220 Genus 103 Ceratoscopelus madeirensis 221 (Lantern Fish) Genus 104 Lampanyetus güntheri 222 gemmifer 223 Genus 105 Nannobrachium nannochir 224 Genus 106 Diaphus

theta 225 (Head-light Fish)

<sup>&</sup>lt;sup>10</sup>Deep-sca Fishes, resembling the true Eels in the general form and in the presence of linear scales placed at right angles, but differing in the absence of the pterygo-palatine arch, as in the Saccopharyngidæ." Boulenger

<sup>&</sup>lt;sup>2</sup> The absence of the mesocoracoid bone distinguishes these fishes from the Malacopterygii, and the presence of a duct to the air bladder separates them from the Percesores, to some of which, the Scombresoridæ and the Atherinidæ, they are linked by the Cyprinodontidæ; whilst the Scopelidæ are connected with the Berycidæ by the Stephanoberycidæ.<sup>-</sup> Boulenger,

Genus 107 Rhinoscopelus coccoi 226 Genus 108 Myctophum punctatum 227 (Lantern Fish) Genus 109 Benthosema arcticum 228 Genus 110 Tarletonbeania Family XLVIII Paralepididæ. Included in Scopelidæ by some. Placed in the order Iniomi by Jordan and Evermann. Genus 111 Arctozenus Family XLIX Plaquodontida, Known also as Alepidosaurida, Placed in the order Iniomi by Jordan and Evermann. resculapius 232 (Wolf-fish: Hand-saw Fish) borealis 233 (Hand-saw Fish) Family L Percopside. As a family equivalent to the sub-order Salmoperce of Acanthopterygii (Acanthopteri) of Jordan and Evermann, and as such, of course, by them, Genus 113 Percopsis guttatus 234 (Sand Roller: Trout Perch) Genus 114 Columbia (Series B<sup>4</sup>—Physoclistous Teleostomes, or such in which the air bladder, as a rule, does not communicate with the œsophagus, or digestive tract, by a pneu-ORDER XI HETEROMI<sup>2</sup> (Spiny Eels) Family LI Notacanthida phasganorus 236 (Spiny Eel) Genus 116 Macdonaldia

rostrata 237 (Spiny Eel)

ORDER XII SELENICHTHYES.<sup>3</sup> (Represented solely by the Opah—Lampris luna). Instituted as a sub-order by Boulenger to contain Lampris luna.

'See note to series A, page 13.

<sup>20</sup>Closely related to the Haplomi, but separated chiefly on account of the closed air-bladder." Boulenger.

<sup>&</sup>lt;sup>3"</sup>A very aberrant type of uncertain affinities. Its only representative is the opah, *Lampris luna* a large pelagic fish of wide distribution." Boulenger.

In the VIIth volume of the Cambridge Natural History (1910) Boulenger places Lampris luna in his division Selenichthyes of the sub-order Catosteomi, but later in the XIth edition of the Encyclopardia Britannica (1911) he separates Selenichthyes as a distinctive sub-order, and places the rest of Catosteomi in the sub-order Thoracostei, a group proposed by Swinnerton to contain Hemibranchii and Lophobranchii.

Family L11 Lamprididæ. Placed as a family by Jordan and Evermann in their group Scombroidei, among the Acanthopterygii (Acanthopteri) and by Günther in Coryphænidæ, in his division Acanthopterygii Cotto-Scombriformes.

Genus 117 Lampris

luna 238 (Opah: King-fish)

ORDER XIII THORACOSTEI (Sticklebacks, Trumpet-fishes, Pipe-fishes, and Sea-horses). SUB-ORDER 1 HEMIBRANCHII (Sticklebacks and Trumpet-fishes). Regarded as a distinct order

by Jordan and Evermann. Subsequently with Jordan a sub-order of Phthinobranchii. Family LIII Gastrosteida

Genus 118 Eucalia

inconstans 239 (Brook Stickleback)

pygmæa 240 (Dwarf Stickleback)

Genus 119 Pygosteus

pungitius 241 (Nine-Spined Stickleback) brachypoda 242 (Arctic Stickleback)

Genus 120 Gastrosteus

denus ino dastrosteus

aculeatus 243 (Common Stickleback) atkinsii 244 (Eastern Stickleback)

atkinsh \_++ (Eastern Stickleback)

cuvieri 245 (Partly Armoured Stickleback)

cataphractus 246 (Alaska Stickleback)

williamsoni microcephalus 247 (California Stickleback)

Genus 121 Apeltes

quadracus 248 (Four-spined Stickleback)

\*Family LIV Autorhynchida

Genus 122 Aulorhynchus

flavidus 249 (Yellow Stickleback)

Family LV Fistulariida

Genus 123 Fistularia

tabacaria 250 (Trumpet Fish)

petimba 251 (Trumpet Fish)

SUB-ORDER 2 LOPHOBRANCHII (Pipe-fishes and Sea-horses.) Regarded as a distinct order by Jordan and Evermann. Subsequently with Jordan a sub-order of Phthinobranchii. Family LVI Syngnathida

Genus 124 Siphostoma

griseolineatum 252 (Pipe Fish)

fuscum 253 (Common Pipe Fish)

Genus 125 Hippocampus

hudsonius 254 (Common American Sea-horse)

ORDER XIV PERCESOCES. (Here embracing diversified forms, which more or less agree in characters pointed out by Boulenger).<sup>1</sup> A portion of this order—a suborder of Acanthopterygii (Acanthopteri) of Jordan and Evermann.

The admission, however, of certain families among the Percessores by Boulenger is not approved by Jordan.

<sup>&</sup>lt;sup>10</sup>'Air-bladder, if present, without duct. Parietal bones separated by the supraoecipital. Pectoral arch suspended from the skull; no mesocoracoid bone. Ventral fins, if present, abdominal, or at least with the pelvic bones not solidly attached to the elavicular arch.'' "Although this sub-order is perlaps only an artificial association, it must be borne in mind that, notwithstanding the very wide divergence which exists between the first and last families [Scombresocidæ and Anabantide], and however dissimilar their members may appear to be at first sight, a gradual passage may be traced connecting the most aberrant types.'' Boulenger.

Family LVII Scombresocide. Placed in their order Synentognathi by Jordan and Ever-Genus 126 Scombresox saurus 255 (Saury: Billfish) Family LVIII Exocatida. Included in Scombresocida by some. Placed in their order Synentognathi by Jordan and Evermann. Genus 127 Exocœtus volitans 256 (Flying Fish) Genus 128 Exonautes vinciguerræ 257 (Flying Fish) Genus 129 Cypselurus heterurus 258 (Flying Fish) Family LIX Ammodutide.<sup>1</sup> Placed in Ophidiida, among the Anacanthini by Günther. Placed in their group Ammodytoidei, among the Acanthopterygii (Acanthopteri) by Jordan and Evermann. Genus 130 Ammodytes dubius 259 (Sand Launce: Lant) americanus 260 (Sand Launce: Sand Lant) personatus 261 (Sand Launce) Family LX Atherinida. Placed by Günther in his division Acanthopterygii Mugili-Genus 131 Menidia menidia notata 262 (Silverside) Genus 132 Labidesthes sicculus 263 (Lake Silverside: Skipjack) Genus 133 Atherinopsis californiensis 264 (Pescado del Rey: California Smelt) Family LXI Chiasmodontida. Placed in Gadida, among the Anacanthini by Günther. Placed in their group Trachinoidea among the Acanthopterygii (Acanthopteri) by Jordan and Evermann. Genus 134 Chiasmodon<sup>2</sup> niger 265 (Black Swallower) Family LXII Sphuranida, Placed by Günther in his division Acanthopterygii Mugili-Genus 135 Sphyræna argentea 266 (California Barracuda) The following concerning a primitive species of sand-launce (Embolichthus mitsukurii) from Formosa is quoted from Jordan :-..... the most primitive species of sand-lance, Embolichthys mitsukurii, occurs in Formosa. In this

Nevertheless not being certain where otherwise to place the family Ammodytidæ I leave it provisionally in Percesores where Boulenger puts it, but it appears evident from the position of the pelvic fins in the above named species that its affinities are clsewhere.

species, alone of the sand-lances the ventral fins are retained. These are jugular in position, as in the *Zoarcida*, and the rays are I, 3. The discovery of this species makes it necessary to separate the *Ammodytida*....widely from the *Percessoces*."

Family LXIII Controlophidæ. Included in Stromateidæ by Boulenger. Included in Stromateidæ by Günther in his division Acanthopterygii Cotto-scombriformes. Placed in their group Scombroidei among the Acanthopterygii (Acanthopteri) by Jordan and Evermann.

Genus 136 Palinurichthys

perciformis 267 (Rudderfish)

Family LXIV Stromateide. Placed by Günther in his division Acanthopterygii Cottoscombriformes. Placed in their group Scombroidei among the Acanthopterygii (Acanthopteri) by Jordan and Evermann.

Genus 137 Palometa

simillimus 268 (California Pompano: Poppy Fish)

Genus 138 Poronotus

triacanthus 269 (Dollarfish: Harvest-fish)

Family LXV Icosteidæ. Placed in their group Scombroidei among the Acanthopterygii (Acanthopteri) by Jordan and Evermann. Included in Stromateidæ by Gill. Genus 139 Icosteus

enigmaticus 270 (Ragfish)

Family LXVI Acrotida. Placed in their group Scombroidei among the Acanthopterygii (Acanthopteri) by Jordan and Evermann. Included in Stromateidæ by Gill. Genus 140 Acrotus

willoughbyi 271 (Ragfish)

Family LXVII Zaproridæ. Placed in their group Scombroidei among the Acanthopterygii (Acanthopteri) by Jordan and Evermann.

Genus 141 Zaprora

silenus 272 (Prowfish)

ORDER XV ANACANTHINI (Anacanths=Cod-fishes and their allies). Placed among the Acanthopterygii (Acanthopteri) by Jordan and Evermann.

Family LXVIII Merlucciidæ. Included in Gadidæ by some.

Genus 142 Merluceius

bilinearis 273 (Silver Hake: Whiting) productus 274 (Pacific Hake)

Family LXIX Gadida

Genus 143 Boreogadus

saida 275 (Northern Pollack)

Genus 144 Pollachius

virens 276 (Pollack: Coalfish)

Genus 145 Theragra

fucensis 277 (Wall-eyed Pollack)

Genus 146 Microgadus

proximus 278 (California Tomcod) tomcod 279 (Tomcod: Frost-fish)

Genus 147 Gadus

callarias 280 (Common Codfish) macrocephalus 281 (Pacific Codfish)

ogac 282 (Greenland Codfish)

Genus 148 Melanogrammus

æglefinus 283 (Haddock)
# PLATE III.

14–19. Oncorhynchus keta (Dog Salmon) (Showing seasonal characteristics PLATE III. 14–19. Oncorhynchus keta (Dog Salmon) (Showing seasonal characteristics)



19

Genus 149 Antimora viola 284 (Violet Antimora) microlepis 285 (Small-scaled Antimora) Genus 150 Lota maculosa 286 (Fresh-water Ling: Burbot) Genus 151 Molya molva 287 (Ling) Genus 152 Urophycis regius 288 (Codling) tenuis 289 (Codling: White Hake) chuss 290 (Codling: Squirrel Hake) Genus 153 Gaidropsarus ensis 291 (Three-bearded Rockling) Genus 154 Enchelyopus cimbrius 292 (Four-bearded Rockling) Genus 155 Brosme brosme 293 (Cusk) Family LXX Macrurida Genus 156 Moseleva cyclolepis 294 Genus 157 Albatrossia Genus 158 Chalinura serrula 296 filifera 297 Genus 159 Coryphænoides rupestris 298 Genus 160 Macrurus holotrachys 299 (Grenadier) acrolepis 300 (Grenadier) ORDER XVI ACANTHOPTERYGII. (The vast majority of extant fishes. Such Teleosteans, although exceptions are numerous, as possess non-articulated rays in the dorsal and anal fins.) Acanthopteri of Jordan and Evermann. SUB-ORDER 1 BERYCIFORMES<sup>1</sup> Formerly placed with Perciformes by Boulenger, but later established by him as a distinct division of Acanthopterygii. Family LXXI Aphredoderida. Placed by Jordan and Evermann in their sub-order Xenarchi, of which it is the only family. Genus 161 Aphredoderus sayanus 301 (Pirate Perch) SUB-ORDER 2 PERCIFORMES Family LXXII Centrarchida Genus 162 Pomoxis annularis 302 (Crappie)

sparoides 303 (Calico Bass: Strawberry Bass)

Genus 163 Ambloplites

rupestris 304 (Rock Bass)

<sup>&</sup>lt;sup>10</sup>The most primitive of the Acanthopterygians, already well represented in the Chalk." Boulenger.

Genus 164 Chænobryttus gulosus 305 (Warmouth: Goggle-eye) Genus 165 Apomotis cyanellus 306 (Green Sunfish) Genus 166 Lepomis auritus 307 (Long-eared Sunfish: Yellow Belly) megalotis 308 (Long-eared Sunfish) humilis 309 (Red-spotted Sunfish) pallidus 310 (Blue Sunfish) Genus 167 Eupomotis gibbosus 312 (Common Sunfish) Genus 168 Micropterus dolomieu 313 (Small-mouth Black Bass) salmoides 314 (Large-mouth Black Bass) Family LXXIII Percida Genus 169 Stizostedion vitreum 315 (Pike Perch) canadense 316 (Sauger) Genus 170 Perca flavescens 317 (Yellow Perch: American Perch) Genus 171 Percina caprodes 318 (Log Perch) Genus 172 Hadropterus aspro 319 (Black-sided Darter) güntheri 320 (Günther's Darter) Genus 173 Cottogaster copelandi putnami 321 (Putnam's Darter) shumardi 322 (Shumard's Darter) cheneyi 323 (Cheney's Darter) Genus 174 Boleosoma nigrum 324 (Johnny Darter) olmstedi 325 (Tessellated Darter) Genus 175 Ammocrypta pellucida 326 (Sand Darter) Genus 176 Etheostoma boreale 327 (Northern Darter) iowæ 328 coruleum 329 (Rainbow Darter) flabellare 330 (Fan-tailed Darter) Genus 177 Boleichthys fusiformis 331 (Fusiform Darter) exilis 332 Genus 178 Microperca punctulata 333 (Least Darter)

Family LXXIV Serranida chrysops 334 (White Bass) lineatus 335 (Striped Bass) Genus 180 Morone americana 336 (White Perch) Family LXXV Scianida Genus 181 Cynoscion regalis 337 (Common Weakfish) nobilis 338 (White Sea Bass) Genus 182 Aplodinotus grunniens 339 (Fresh-water Drum: Lake Sheepshead) Genus 183 Eques Family LXXVI Bathymasterida.<sup>1</sup> Included in Pseudochromididæ by Boulenger. Placed Genus 184 Ronquilus jordani 341 (Ronquil) Family LXXVII Trichodontide.<sup>2</sup> Placed by Jordan and Evermann in their group Trachinoidea, with apparent good reason. Genus 185 Trichodon trichodon 342 (Sand-fish) Family LXXVIII Sparida Genus 186 Stenotomus chrysops 343 (Porgy: Common Scup) Genus 187 Archosargus Family LXXIX Embiotocida. Placed by Jordan and Evermann in their sub-order Genus 188 Cymatogaster aggregatus 345 (Sparada: Viviparous Perch) Genus 189 Brachyistius frenatus 346 (Surf-fish) Genus 190 Amphistichus argenteus 347 (Surf-fish) Genus 191 Embiotoca jacksoni 348 (Common Surf-fish: Blue Surf-fish) Genus 192 Taniotoca lateralis 349 (Striped Surf-fish) Genus 193 Phanerodon furcatus 350 (White Surf-fish) Genus 194 Damalichthys

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<sup>&</sup>quot;The relations of the group are uncertain; externally they resemble the Opisthoguathida, but the relation cannot be close, and the number of vertebra is greatly increased." Jordan and Evermann.

<sup>&#</sup>x27;Stated by Boulenger to "agree in the character of the vertebral column with the Serranidae," but "bearing some resemblance to the Trachinidae, with which they have usually been associated."

Family LXXX Labridæ. Placed by Jordan and Evermann in their sub-order Pharyn-Genus 195 Tautogolabrus adspersus 352 (Cunner) Genus 196 Tautoga onitis 353 (Tautog: Black-fish) SUB-ORDER 3 SCOMBRIFORMES Family LXXXI Scombrida Genus 197 Scomber scombrus 354 (Common Mackerel) japonicus 355 (Chub Mackerel) Genus 198 Gymnosarda pelamis 356 (Oceanic Bonito) Genus 199 Thunnus thynnus 357 (Tunny: Horse Mackerel) Genus 200 Germo alalunga 358 (Long-finned Albacore) Genus 201 Sarda sarda 359 (Bonito) chilensis 360 (California Bonito) Family LXXXII Gempylidæ. Trichiuridæ in part of some. Genus 202 Escolar violaceus 361 (Escolar) Family LXXXIII Lepidopida.<sup>1</sup> Trichiuridae in part of some. Genus 203 Benthodesmus atlanticus 362 Family LXXXIV Xiphiida Genus 204 Xiphias gladius 363 (Sword-fish) Family LXXXV Carangida Genus 205 Naucrates ductor 364 (Pilot-fish) Genus 206 Seriola zonata 365 (Rudder-fish: Banded Seriole) Genus 207 Decapterus macarellus 366 (Mackerel Shad) Genus 208 Trachurops crumenophthalmus 367 (Goggler) Genus 209 Caranx crysos 368 (Hard-tail: Yellow Mackerel) Genus 210 Selene vomer 369 (Moonfish)

<sup>&</sup>lt;sup>10</sup>The retention of the rudimentary caudal furnishes a slender character for the distinction of Lepidopidæ as a family from Trichiuridæ." Jordan and Evermann.

Family LXXXVI Pomatomida<sup>1</sup> Genus 211 Pomatomus saltatrix 370 (Bluefish) Family LXXXVII Bramida Genus 212 Brama raii 371 (Pomfret) SUB-ORDER 4 ZEORHOMBI. (A division established by Boulenger to contain the extinct Amphistiidæ, the only known representative of which is *Amphistium paradoxum*, Zeidæ-the John Dories, and Pleuronectidæ-the Flat-fishes). Family LXXXVIII Pleuronectidæ. Placed by Jordan and Evermann in their sub-order Heterosomata-the Flat-fishes (Pleuronectidae and Soleidae). Genus 213 Atheresthes Genus 214 Reinhardtius hippoglossoides 373 (Greenland Halibut) Genus 215 Hippoglossus hippoglossus 374 (Halibut) Genus 216 Lyopsetta Genus 217 Eopsetta jordani 376 (California Sole) Genus 218 Hippoglossoides platessoides 377 (Sand Dab: Rough Dab) elassodon 378 Genus 219 Psettichthys melanostictus 379 (Sole) Genus 220 Pleuronichthys comosus 380 (Muddy Flounder) Genus 221 Parophrys vetulus 381 (Sharp-nosed Flounder) Genus 222 Inopsetta ischyra 382 Genus 223 Isopsetta isolepis 383 Genus 224 Lepidopsetta bilineata 384 (Two-lined Flounder) Genus 225 Limanda ferruginea 385 (Rusty Dab) aspera 386 (Alaska Dab) Genus 226 Pseudopleuronectes americanus 387 (Winter Flounder: Common Flatfish) Genus 227 Liopsetta putnami 388 (Eel-back Flounder: Smooth Flounder) Genus 228 Platichthys stellatus 389 (Starry Flounder)

<sup>10</sup>This family is closely related to the *Carangidæ*, from which group it seems to be an offshoot towards the Percoids." Jordan and Evermann.

Genus 229 Microstomus pacificus 390 (Slipperv Sole) Genus 230 Glyptocephalus cynoglossus 391 (Craig Fluke: Pole Flounder) zachirus 392 (Long-finned Sole) Genus 231 Lophopsetta maculata 393 (Window Pane) Genus 232 Cithariehthys sordidus 394 (Soft Flounder) SUB-ORDER 5 GOBHFORMES. Group Gobioidea in part of Jordan and Evermann. Family LXXXIX Gobiida Genus 234 Lepidogobius lepidus 396 (Goby) Genus 235 Quietula y-cauda 397 (Goby) ios 398 (Goby) SUB-ORDER 6 DISCOCEPHALL<sup>1</sup> Family XC Echeneididae. Included in Scombridae in his division Acanthopterygii Cotto-Scombriformes by Günther. Genus 237 Remora remora 399 (Remora: Sucking-fish) SUB-ORDER 7 SCLEROPAREL (Mail-cheeked Fishes). Equivalent to the sub-orders Loricati<sup>2</sup> and Craniomi<sup>3</sup> of Jordan and Evermann. Family XCI Scorpanida. Genus 238 Sebastes marinus 400 (Snapper: Rose-fish) Genus 239 Sebastolobus alascanus 401 altivelis 402 Genus 240 Sebastodes goodei 402a See addenda p. 117 paueispinis 403 (Jack-fish: Bocaccio) melanops 404 (Black Sea Bass)

<sup>10</sup>They form an isolated group, and have no real affinity with the Scombridæ, with which they have long been associated." Boulenger.

<sup>20</sup>This group is distinguished by a single peculiar character, the extension of the third suborbital bone across the check to or toward the preoperele. From the *Craniomi*, an offshoot from the same group, in which the development of the suborbital stay is carried much farther, the present group is distinguished by the normal character of the shoulder girdle.<sup>11</sup> Jordan and Evermann.

<sup>30</sup>Scapular arch abnormal, the post-temporal forming an integral part of the cranium and the postero-temporal crowded out of place by the side of the proscapula above or at the edge of the post-temporal. In other respects essentially as in the *Loricati*, from which the *Craniomi* are derived." Jordan and Evermann.

The families of Craniomi are Triglidæ, Peristediidæ, and Cephalacanthidæ, no representatives of the second mentioned of which have been recorded for Canada.

mystinus 405 (Black Rock-fish: Priest-fish) brevispinis 406 alutus 407 pinniger 408 (Orange Rock-fish) introniger 409 ruberrimus 410 (Red Rock-fish: Tambor) aurieulatus dallii 411 (Brown Rock-fish) rastrelliger 411a (Grass Rockfish). See addenda p. 117. caurinus 412 maliger 413 (Yellow-backed Rock-fish) chrysomelas 414 (Black and Yellow Rock-fish) nebulosus 415 (Yellow Spotted Rock-fish) nigrocinetus 416 (Black Banded Rock-fish) Family XCII Anoplopomatida.<sup>1</sup> Included in Comephorida by Boulenger. Genus 241 Anoplopoma fimbria 417 (Coal-fish: Skil) Family XCIII Hexagrammida Genus 242 Hexagrammos decagrammus 418 (Boregat: Starry Rock Trout) stelleri 419 (Greenling) superciliosus 420 (Red Rock-trout) Genus 243 Ophiodon elongatus 421 (Cultus Cod) Genus 244 Zaniolepis latipinnis 422 (Broad-fin Cod) Genus 245 Oxylebius pictus 423 (Painted Cod) Family XCIV Cottida. Genus 246 Jordania zonope 424 Genus 247 Scorpænichthys marmoratus 425 (Cabezon) Genus 248 Chitonotus pugetensis 426 Genus 249 Icelinus strabo 427 Genus 250 Astrolytes fenestralis 428 Genus 251 Artedius lateralis 429 asperulus 430 Genus 252 Axvrias harringtoni 431 Genus 253 Artediellus atlanticus 432

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<sup>10</sup>This family is closely allied to the *Hexagrammidæ*, differing chiefly in the normal development of the nostrils, which are formed as in the *Scorpænidæ* and as in fishes generally." Jordan and Evermann.

Genus 254 Ruscarius meanvi 433 Genus 255 Icelus bicornis 434 Genus 256 Radulinus asprellus 435 Genus 257 Asemichthys tavlori 436 Genus 258 Triglops pingeli 437 beani 438 Genus 259 Prionistius macellus 439 Genus 260 Hemilepidotus hemilepidotus 440 (Red Sculpin) Genus 261 Enophrys bison 441 (Stone Sculpin: Buffalo Sculpin) Genus 262 Cottus asper 442 (Prickly Bull-head) gulosus 443 (California Miller's Thumb) semiscaber 444 (Rocky Mountain Bull-head) ictalops 445 (Blop) ricei 446 onvehus 447 pollicaris 448 (Olivaceous Miller's Thumb) cognatus 449 (Great-Bear-Lake-Bull-head) aleuticus 450 philonips 451 spilotus 452 Genus 263 Uranidea bendirei 453 franklini 454 (Franklin's Sculpin) gracilis 455 (Miller's Thumb: Blop) formosa 456 (Lake Miller's Thumb) Genus 264 Myoxocephalus eneus 457 (Grubby: Pigmy Sculpin) scorpioides 458 (Arctic Sculpin) scorpius 459 (European Sculpin) grænlandieus 460 (Daddy Sculpin) octodecimspinosus 461 (Common Sculpin: Long-spined Sculpin) polyacanthocephalus 462 (Great Sculpin) Genus 265 Dasycottus setiger 463 Genus 266 Oncocottus hexacornis 464 (Long-horned Sculpin) Genus 267 Triglopsis. Placed in Comephoridæ by Boulenger. thompsoni 465 (Lake Sculpin: Deep-water Blop) ontariensis 466

# PLATE IV

20/24 One or kynchus (senawy) (seha) Quanat or Spring Salmon) Showing seasonal chara (cristics)

[8 - also plate V, figure 31.]

and a second second

Showing seasonal characteristics) [See also plate V, figure 31.]



Plate IV

Genus 268 Gymnocanthus pistilliger 467 tricuspis 468 Genus 269 Oligocottus Genus 270 Blennicottus globiceps bryosus 471 (Globe-headed Sculpin) Genus 271 Blepsias cirrhosus 472 (Prickled Sailor-fish) Genus 272 Nautichthys oculofasciatus 473 (Banded Sailor-fish) Genus 273 Hemitripterus americanus 474 (Sea Raven) cavifrons 475 (Sea Raven) Genus 274 Synchirus gilli 476 Genus 275 Ascelichthys rhodorus 477 Genus 276 Psychrolutes paradoxus 478 (Spineless Sculpin) Genus 277 Gilbertidia sigolutes 479 Family XCV Rhamphocottida Genus 278 Rhamphocottus richardsoni 480 (Richardson's Sculpin) Family XCVI Agonida. Genus 279 Hypsagonus quadricornis 481 Genus 280 Pallasina barbata 482 aix 483 Genus 281 Leptagonus decagonus 484 Genus 282 Podothecus acipenserinus 485 (Common Alligator-fish) Genus 283 Agonus cataphractus 486 (Sea Poacher: Pogge) Genus 284 Averruncus emmelane 487 (Dark-coloured Alligator-fish) Genus 285 Xystes axinophrys 488 Genus 286 Bathyagonus nigripinnis 489 Genus 287 Xenochirus pentacanthus 490 Genus 288 Odontopyxis trispinosus 491

Genus 289 Bothragonus swanii 492 Genus 290 Aspidophoroides monoptervgius 494 (Sea Poacher: Alligator-fish) inermis 495 Family XCVH Cyclopterida Genus 291 Cyclopterus lumpus 496 (Lump-fish: Lump-sucker) Genus 292 Eumicrotremus spinosus 497 orbis 498 Family XCVIII Liparidida.<sup>1</sup> Included in Cyclopterida by Boulenger. Genus 293 Neoliparis atlanticus 499 flore 500 greeni 501 (Green's Sucker) Genus 294 Liparis liparis 502 (Sea Snail) evelopus 503 fucensis 504 tunicatus 505 herschelinus 506 dennvi 507 pulchellus 508 (Stone Sucker) Genus 295 Bathyphasma ovigerum 509 Genus 296 Careproctus Genus 297 Paraliparis Family XCIX Triglida Genus 298 Prionotus Family C Cephalacanthida.<sup>2</sup> Dactylopteride according to Boulenger. Genus 299 Cephalacanthus volitans 514 (Flying Robin: Flying Gurnard)

<sup>10</sup>Reasons for separating this family from the *Cyclopteridæ* and placing it farther from the *Cottidæ* exist in the continuous dorsal, the connection of dorsal and anal with the caudal, the more complete transformation of the ventral rays, the more slender and spine-like suborbital process, the expanded upper limb of the preoperculum, the styliform inter-operculum, the shorter olfactory nerves, and the more elongate brain." Jordan and Evermann, after Garman.

 $<sup>^{2}</sup>$ As the young of this family with a single genus, which have comparatively short pectoral fins, were once regarded as a species belonging to a distinct genus *Cephalacanthus*, perhaps the valid genus ought to stand *Dactylopterus*; and in that case the name of the family would conform to that of the genus—Dactylopteridæ.

SUB-ORDER S JUGULARES Family CI Batrachoidida, Placed by Jordan and Evermann in their sub-order Haplodoci<sup>t</sup> Genus 300 Porichthys Family CII Gobiesocide, Placed by Jordan and Evermann in their sub-order Xenop-Genus 301 Caularchus meandricus 516 (Suck-fish: Cling-fish) Family CIII Blenniide. Placed by Jordan and Evermann in their group Blennioidea. Genus 302 Heterostiehus polyactocephalum 518 (Tufted Blenny) nugator 519 Genus 304 Apodichthys<sup>3</sup> flavidus 520 (Yellow Blenny) Genus 306 Pholis<sup>3</sup> ornatus 524 (Ornamented Gunnel) Genus 307 Anoplarchus Genus 308 Xiphistes Genus 309 Xiphidion mucosum 527 (Slimy Eel Pout) rupestre 528 (Rock Eel Pout) Genus 310 Leptoclinus Genus 311 Lumpenus anguillaris 531 (Snake Blenny) lampetræformis 533 (Serpent Blenny) Genus 312 Stichaus punctatus 534

<sup>1</sup>'This group is distinguished mainly by the undivided post-temporal, the reduction in the number of gill arches to 3, and by the absence of peculiarities shown by related forms." Jordan and Evermann.

<sup>&</sup>lt;sup>20</sup>'A well-marked group of small fishes, constituting a single family." Jordan and Evermann.

<sup>&</sup>lt;sup>3</sup>On account of the structure of the præcaudal vertebræ, *Apodichthys* and *Pholis* are not placed by Boulenger in Blennidæ, but in a family—Pholididæ—by themselves. I do not venture to so place them, lest in so doing other genera which may be included in these two by Boulenger (*Xercrpcs* for instance) might also for the same reason require to be placed in Pholididæ.

Genus 313 Ulvaria subbifurcata 535 (Radiated Shanny) Genus 314 Eumesogrammus præcisus 536 Family CIV Cryptacanthodidæ. Included in Blenniidæ by Günther. Placed by Jordan and Evermann in their group Blennioidea. Genus 315 Delolepis virgatus 537 (Wrymouth) Genus 316 Cryptacanthodes maculatus 538 (Wrymouth: Ghost-fish) Family CV Anarhichadida. Included in Blenniida by some. Placed by Jordan and Evermann in their group Blennioidea. Genus 317 Anarhichas latifrons 539 (Wolf-fish) minor 540 (Wolf-fish) lupus 541 (Wolf-fish) lepturus 542 (Alaska Wolf-fish) Genus 318 Anarrhichthys ocellatus 543 (Wolf Eel) Family CVI Scytalinida. Included in Zoarcida by Boulenger. Placed by Jordan and Evermann in their group Ophidioidea. Genus 319 Scytalina cerdale 544 Family CVII Zoarcidæ. Placed by Jordan and Evermann in their group Ophidioidea. Genus 320 Zoarces anguillaris 545 (Eel Pout) Genus 321 Lycodopsis pacificus 546 (Pacific Eel Pout) Genus 322 Lycodes vahlii 547 zoarchus 548 reticulatus 549 frigidus 550 terræ-novæ 551 Genus 323 Lycodalepis mucosus 552 Genus 324 Lycenchelys paxillus 554 Genus 325 Bothrocara mollis 555 Genus 326 Gymnelis viridis 556 stigma 557 Genus 327 Lycocara parrii 558

Genus 328 Derepodichthys alepidotus 559 SUB-ORDER 9 TAENIOSOMI <sup>1</sup> Family CIX Trachypterida. Genus 329 Trachypterus rex-salmonorum 560 (King-of-the-Salmon) ORDER XVII PEDICULATI (Anglers or Fishing-frogs and their allies) Family CX Lophiida Genus 330 Lophius piseatorius 561 (Angler: Fishing-frog: Monk-fish) Family CXI Ceratiida Genus 331 Ceratias holbolli 562 (Sea Devil) ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann. <sup>2</sup> SUB-ORDER 1 SCLERODEIMI Family CXII Balistida Genus 332 Balistes carolinensis 563 (Trigger-fish) Family CXII Balistida <sup>3</sup> Included in Balistidæ by some. Genus 333 Monacanthus hispidus 564 (File-fish) SUB-ORDER 2 GYMNODONTES Family CXIV Diodontida Genus 334 Chilomyeterus scheepf 565 (Common Burr-fish) Family CXV Molidæ Genus 335 Mola mola 566 (Sun-fish: Head-fish)	Family CVIII Derepodichthyidæ. Included in Zoareidæ by Boulenger. Placed by Jordan and Evermann in their group Ophidioidea.
alepidotus 559 SUB-ORDER 9 TAENIOSOMI <sup>1</sup> Family CIX Trachypterida. Genus 329 Trachypterus rex-salmonorum 560 (King-of-the-Salmon) ORDER XVII PEDICULATI (Anglers or Fishing-frogs and their allies) Family CX Lophiida Genus 330 Lophius piscatorius 561 (Angler: Fishing-frog: Monk-fish) Family CXI Ceratiida Genus 331 Ceratias holbolli 562 (Sea Devil) ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann. <sup>2</sup> SUB-ORDER 1 SCLERODEIMI Family CXII Balistida Genus 332 Balistes carolinensis 563 (Trigger-fish) Family CXIII Monacanthida. <sup>3</sup> Included in Balistidæ by some. Genus 333 Monacanthus hispidus 564 (File-fish) SUB-ORDER 2 GYMNODONTES Family CXIV Diodontidæ Genus 334 Chilomyeterus schcepfi 565 (Common Burr-fish) Family CXV Molidæ Genus 335 Mola mola 566 (Sun-fish: Head-fish)	Genus 328 Derepodichthys
<ul> <li>SUB-ORDER 9 TAENIOSOMI<sup>1</sup></li> <li>Family CIX Trachypterida.</li> <li>Genus 329 Trachypterus rex-salmonorum 560 (King-of-the-Salmon)</li> <li>ORDER XVII PEDICULATI (Anglers or Fishing-frogs and their allies)</li> <li>Family CX Lophida</li> <li>Genus 330 Lophius piscatorius 561 (Angler: Fishing-frog: Monk-fish)</li> <li>Family CXI Ceratiida</li> <li>Genus 331 Ceratias holbolli 562 (Sea Devil)</li> <li>ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann.<sup>2</sup></li> <li>SUB-ORDER 1 SCLERODERMI</li> <li>Family CXII Balistida</li> <li>Genus 332 Balistes carolinensis 563 (Trigger-fish)</li> <li>Family CXIII Monacanthida.<sup>3</sup> Included in Balistidae by some.</li> <li>Genus 333 Monacanthus hispidus 564 (File-fish)</li> <li>SUB-ORDER 2 GYMNODONTES</li> <li>Family CXIV Diodontidae</li> <li>Genus 334 Chilomyterus scheepf 565 (Common Burr-fish)</li> <li>Family CXV Molida Genus 335 Mola mola 566 (Sun-fish: Head-fish)</li> </ul>	alepidotus 559
<ul> <li>Family CIX Trachypteridæ.</li> <li>Genus 329 Trachypterus rex-salmonorum 560 (King-of-the-Salmon)</li> <li>ORDER XVII PEDICULATI (Anglers or Fishing-frogs and their allies)</li> <li>Family CX Lophiidæ</li> <li>Genus 330 Lophius piscatorius 561 (Angler: Fishing-frog: Monk-fish)</li> <li>Family CXI Ceratiidæ</li> <li>Genus 331 Ceratias holbolli 562 (Sea Devil)</li> <li>ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann.<sup>2</sup></li> <li>SUB-ORDER 1 SCLERODERMI</li> <li>Family CXII Balistidæ</li> <li>Genus 332 Balistes carolinensis 563 (Trigger-fish)</li> <li>Family CXIII Monacanthidæ.<sup>3</sup> Included in Balistidæ by some.</li> <li>Genus 333 Monacanthus hispidus 564 (File-fish)</li> <li>SUB-ORDER 2 GYMNODONTES</li> <li>Family CXIV Diodontidæ</li> <li>Genus 334 Chilomyeterus scheepfs 565 (Common Burr-fish)</li> <li>Family CXV Molidæ</li> <li>Genus 335 Mola mola 566 (Sun-fish: Head-fish)</li> </ul>	Sub-order 9 Taeniosomi <sup>1</sup>
Genus 329 Trachypterus rex-salmonorum 560 (King-of-the-Salmon) ORDER XVII PEDICULATI (Anglers or Fishing-frogs and their allies) Family CX Lophiida Genus 330 Lophius piscatorius 561 (Angler: Fishing-frog: Monk-fish) Family CXI Ceratiida Genus 331 Ceratias holbolli 562 (Sea Devil) ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann. <sup>2</sup> SUB-ORDER 1 SCLERODERMI Family CXII Balistida Genus 332 Balistes carolinensis 563 (Trigger-fish) Family CXII Monacanthida. <sup>3</sup> Included in Balistidae by some. Genus 333 Monacanthus hispidus 564 (File-fish) SUB-ORDER 2 GYMNOONTES Family CXIV Diodontida Genus 334 Chilomyeterus scheepf 565 (Common Burr-fish) Family CXV Molidae Genus 335 Mola mola 566 (Sun-fish: Head-fish)	Family CIX Trachypteridæ.
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<ul> <li>ORDER XVII PEDICULATI (Anglers or Fishing-frogs and their allies)</li> <li>Family CX Lophiida</li> <li>Genus 330 Lophius piscatorius 561 (Angler: Fishing-frog: Monk-fish)</li> <li>Family CXI Ceratiida</li> <li>Genus 331 Ceratias holbolli 562 (Sea Devil)</li> <li>ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthopterygii (Acanthopteri) by Jordan and Evermann.<sup>2</sup></li> <li>SUB-ORDER 1 SCLEROPERMI</li> <li>Family CXII Balistida</li> <li>Genus 332 Balistes carolinensis 563 (Trigger-fish)</li> <li>Family CXIII Monacanthida.<sup>3</sup> Included in Balistidae by some.</li> <li>Genus 333 Monacanthus hispidus 564 (File-fish)</li> <li>SUB-ORDER 2 GYMNODONTES</li> <li>Family CXIV Diodontida</li> <li>Genus 334 Chilomycterus schoepf 565 (Common Burr-fish)</li> <li>Family CXV Molida</li> <li>Genus 335 Mola mola 566 (Sun-fish: Head-fish)</li> </ul>	rex-salmonorum 560 (King-of-the-Salmon)
<ul> <li>Family CX Lophiida <ul> <li>Genus 330 Lophius</li> <li>piscatorius 561 (Angler: Fishing-frog: Monk-fish)</li> </ul> </li> <li>Family CXI Ceratiida <ul> <li>Genus 331 Ceratias</li> <li>holbolli 562 (Sea Devil)</li> </ul> </li> <li>ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthopterygii (Acanthopteri) by Jordan and Evermann.<sup>2</sup></li> <li>SUB-ORDER 1 SCLEROPERMI</li> <li>Family CXII Balistida <ul> <li>Genus 332 Balistes</li> <li>carolinensis 563 (Trigger-fish)</li> </ul> </li> <li>Family CXIII Monacanthida.<sup>3</sup> Included in Balistidae by some.</li> <li>Genus 333 Monacanthus</li> <li>hispidus 564 (File-fish)</li> </ul> <li>SUB-ORDER 2 GYMNODONTES</li> <li>Family CXIV Diodontidae <ul> <li>Genus 334 Chilomyeterus</li> <li>scheepf 565 (Common Burr-fish)</li> </ul> </li> <li>Family CXV Molidae <ul> <li>Genus 335 Mola</li> <li>mola 566 (Sun-fish: Head-fish)</li> </ul> </li>	ORDER XVII PEDICULATI (Anglers or Fishing-frogs and their allies)
<ul> <li>Genus 330 Lophius piscatorius 561 (Angler: Fishing-frog: Monk-fish)</li> <li>Family CXI Ceratiida</li> <li>Genus 331 Ceratias holbolli 562 (Sea Devil)</li> <li>ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann.<sup>2</sup></li> <li>SUB-ORDER 1 SCLEROPERMI</li> <li>Family CXII Balistida</li> <li>Genus 332 Balistes carolinensis 563 (Trigger-fish)</li> <li>Family CXIII Monacanthida.<sup>3</sup> Included in Balistidae by some.</li> <li>Genus 333 Monacanthus hispidus 564 (File-fish)</li> <li>SUB-ORDER 2 GYMNODONTES</li> <li>Family CXIV Diodontida Genus 334 Chilomyeterus scheepf 565 (Common Burr-fish)</li> <li>Family CXV Molida Genus 335 Mola mola 566 (Sun-fish: Head-fish)</li> </ul>	Family CX Lophiida
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<ul> <li>Family CXI Ceratiida <ul> <li>Genus 331 Ceratias</li> <li>holbolli 562 (Sea Devil)</li> </ul> </li> <li>ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthopterygii (Acanthopteri) by Jordan and Evermann.<sup>2</sup></li> <li>SUB-ORDER 1 SCLERODERMI</li> <li>Family CXII Balistida <ul> <li>Genus 332 Balistes</li> <li>carolinensis 563 (Trigger-fish)</li> </ul> </li> <li>Family CXIII Monacanthida.<sup>3</sup> Included in Balistidæ by some.</li> <li>Genus 333 Monacanthus</li> <li>hispidus 564 (File-fish)</li> </ul> <li>SUB-ORDER 2 GYMNODONTES</li> <li>Family CXIV Diodontidæ <ul> <li>Genus 334 Chilomycterus</li> <li>scheepf 565 (Common Burr-fish)</li> </ul> </li> <li>Family CXV Molidæ <ul> <li>Genus 335 Mola</li> <li>mola 566 (Sun-fish: Head-fish)</li> </ul> </li>	piscatorius 561 (Angler: Fishing-frog: Monk-fish)
Genus 331 Ceratias holbolli 562 (Sea Devil) ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann. <sup>2</sup> SUB-ORDER 1 SCLEROPERMI Family CXII Balistidæ Genus 332 Balistes carolinensis 563 (Trigger-fish) Family CXIII Monacanthidæ. <sup>3</sup> Included in Balistidæ by some. Genus 333 Monacanthus hispidus 564 (File-fish) SUB-ORDER 2 GYMNODONTES Family CXIV Diodontidæ Genus 334 Chilomycterus schæpfi 565 (Common Burr-fish) Family CXV Molidæ Genus 335 Mola mola 566 (Sun-fish: Head-fish)	Family CXI Ceratiida
holbolli 562 (Sea Devil) ORDER XVIII PLECTOGNATHI. (Telcosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop- terygii (Acanthopteri) by Jordan and Evermann. <sup>2</sup> SUB-ORDER 1 SCLERODERMI Family CXII Balistida Genus 332 Balistes carolinensis 563 (Trigger-fish) Family CXIII Monacanthida. <sup>3</sup> Included in Balistidæ by some. Genus 333 Monacanthus hispidus 564 (File-fish) SUB-ORDER 2 GYMNODONTES Family CXIV Diodontidæ Genus 334 Chilomycterus schæpfi 565 (Common Burr-fish) Family CXV Molidæ Genus 335 Mola mola 566 (Sun-fish: Head-fish)	Genus 331 Ceratias
<ul> <li>ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthopterygii (Acanthopteri) by Jordan and Evermann.<sup>2</sup></li> <li>SUB-ORDER 1 SCLERODERMI</li> <li>Family CXII Balistida <ul> <li>Genus 332 Balistes</li> <li>carolinensis 563 (Trigger-fish)</li> </ul> </li> <li>Family CXIII Monacanthida.<sup>3</sup> Included in Balistidae by some.</li> <li>Genus 333 Monacanthus <ul> <li>hispidus 564 (File-fish)</li> </ul> </li> <li>SUB-ORDER 2 GYMNODONTES</li> <li>Family CXIV Diodontidae <ul> <li>Genus 334 Chilomycterus</li> <li>scheepf 565 (Common Burr-fish)</li> </ul> </li> <li>Family CXV Molidae <ul> <li>Genus 335 Mola</li> <li>mola 566 (Sun-fish: Head-fish)</li> </ul> </li> </ul>	holbolli 562 (Sea Devil)
terygii (Acanthopteri) by Jordan and Evermann. <sup>2</sup> SUB-ORDER 1 SCLERODERMI Family CX11 Balistida Genus 332 Balistes carolinensis 563 (Trigger-fish) Family CX111 Monacanthida. <sup>3</sup> Included in Balistidae by some. Genus 333 Monacanthus hispidus 564 (File-fish) SUB-ORDER 2 GYMNODONTES Family CX1V Diodontida Genus 334 Chilomyeterus scheepfi 565 (Common Burr-fish) Family CXV Molida Genus 335 Mola mola 566 (Sun-fish: Head-fish)	ORDER XVIII PLECTOGNATHI. (Teleosteans, which have combined with other characters, the gill-openings very much reduced). Placed as a group in Acanthop-
SUB-ORDER 1 SCLERODERMI         Family CXII Balistida         Genus 332 Balistes         carolinensis 563 (Trigger-fish)         Family CXIII Monacanthida. <sup>3</sup> Included in Balistidae by some.         Genus 333 Monacanthus         hispidus 564 (File-fish)         SUB-ORDER 2 GYMNODONTES         Family CXIV Diodontida         Genus 334 Chilomycterus         scheepfs 565 (Common Burr-fish)         Family CXV Molida         Genus 335 Mola         mola 566 (Sun-fish: Head-fish)	terygii (Acanthopteri) by Jordan and Evermann. <sup>2</sup>
<ul> <li>Family CXII Balistida <ul> <li>Genus 332 Balistes</li> <li>carolinensis 563 (Trigger-fish)</li> </ul> </li> <li>Family CXIII Monacanthida.<sup>3</sup> Included in Balistidae by some.</li> <li>Genus 333 Monacanthus <ul> <li>hispidus 564 (File-fish)</li> </ul> </li> <li>SUB-ORDER 2 GYMNODONTFS</li> <li>Family CXIV Diodontidat <ul> <li>Genus 334 Chilomycterus</li> <li>schaepfi 565 (Common Burr-fish)</li> </ul> </li> <li>Family CXV Molidat <ul> <li>Genus 335 Mola</li> <li>mola 566 (Sun-fish: Head-fish)</li> </ul> </li> </ul>	SUB-ORDER 1 SCLERODERMI
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Genus 335 Mola mola 566 (Sun-fish: Head-fish)	Family CXV Molida
mola 566 (Sun-fish: Head-fish)	Genus 335 Mola

<sup>&</sup>quot;Remotely related to the Scombriform fishes, and perhaps derived from the same ancestral stock as the *Trichiarida*." Jordan and Evermann.

<sup>&</sup>lt;sup>20</sup>From the Squamipinnes the Plectognathi are certainly descended." "The close connection of these groups leads us to subordinate the Plectognathi to the Acanthopteri and to place its 3 sub-orders in their natural position as an offshoot from the Squamipinnes." Jordan and Evermann.

<sup>&</sup>lt;sup>34</sup>Closely allied to the *Balistida*, differing chiefly in having the first dorsal represented by a single spine, behind which is sometimes a rudiment." Jordan and Evermann.

# CHECK LIST

# 1. Myxine limosa\* Girard.

American Hagfish.

Marine. Parasitic: burrowing into the flesh of fishes.

Coast of North America, south to Cape Cod: recorded from Grand Manan, New Brunswick (Girard, 1858): also recorded from Devil's Island, some 70 miles off Nova Scotia, at a depth of 54 fathoms (Honeyman, 1886, as *M. glutinosa*).

2. Polistotrema stouti Lockington. (Plate XIII, figures 151 and 152).

# California Hagfish.

Marine. Parasitic: burrowing into the flesh of fishes.

Ranges from coast of Vancouver Island southward to coast of California.

# 3. Petromyzon marinus Linnæus.

# Great Sea Lamprey.

Anadromous. Parasitic: attaching itself to fishes.

Maritime Provinces, and Gaspe Bay (Stafford, 1905–1906), and presumably Gulf of St. Lawrence, perhaps extending still further north: "often found attached to the Mackerel" at Tignish, Prince Edward Island (Cornish): Atlantic coast of North America and Europe, including the British Isles—south on the American side to Chesapeake Bay: according to Yarrell (1859) found in the Mediterranean, and according to him included among the fishes of Iceland by Reinhardt: "also found on the west coast of Africa" (Bridge, 1910).

# 4. Petromyzon marinus unicolor De Kay.

Landlocked Lamprey.

Landlocked in lakes. Parasitic: attaching itself to fishes.

Recorded from Lake Champlain (De Kay, 1842, as Ammocates unicolor—larva): occurs in northern and central lakes of State of New York; abounding in Cayuga Lake.

# 5. Ichthyomyzon concolor Kirtland.

Silver Lamprey.

Lacustrine and fluviatile. Parasitic: attaching itself to fishes.

St. Lawrence River and Great Lakes region: presumably Michipicoten River (Agassiz, 1850, as Ammocates borealis): Hill River, Hudson Bay region (Preble, 1900): upper Mississippi Valley.

#### 6. Ichthyomyzon castaneus Girard.

Northern Lamprey.

Fluviatile. Parasitic: attaching itself to fishes.

Assiniboine River, Portage la Prairie, Manitoba (Thompson Seton, 1898); and locally recorded from the States of Minnesota, Kansas, Arkansas, and Louisiana.

Atlantic coasts of North America

<sup>\*</sup>The European Hagfish (*M. glutinosa*) and the American Hagfish (*M. linnosa*) have long been regarded as forms of one and the same species. Characters which specifically diagnose them have been pointed out in "A Revision of the Myxinoids of the Genus *Myxine*," by Mr. C. Tate Regan, and are here quoted:—

Myzinc glutinosa. 6 (exceptionally 7) branchial pouches. 7 to 9 teeth in the first series and 8 to 10 in the second, the 2 most anterior teeth in each series united. Pores 24-34+54-64+10-14. Length of head  $3\frac{2}{5}$  to 4 in the total length.

Northern and western coast of Europe. Myzine linosa. 6 branchial pouches. 9 teeth in the first series and 10 in the second, the two most anterior teeth in each series united. Pores 26 + 70 + 10. Length of head 31 in the total length.

It may be mentioned that in the "Revision" there is also a diagnosis, quoted below, of a new species M, atlantica from western North Atlantic, although it may not be indigenous to the coasts of Canada.

Myzine atlantica.n.sp. 6 branchial pouches. 9 teeth in the first series and S in the second, the two most anterior teeth in each veries united. Porce 28 + 64 + 12. Length of head  $3\frac{1}{2}$  in the total length.

#### 7. Entosphenus tridentatus Gairdner.

Three-toothed Lamprey.
Anadromous. Parasitic: attaching itself to fishes.
British Columbia: Pacific coast of North America, ranging from the Aleutian Islands to southern California.

#### 8. Lampetra aurea Bean.

Brook Lamprey.
Mostly abounding in streams. Parasitic: attaching itself to fishes.
Yukon River, and presumably Great Slave Lake (Richardson, 1836, as *Petromyzon fluvialis*):\* streams of Alaska and Kamehatka.

#### 9. Lampetra cibaria Girard.

Brook Lamprey. Fluviatile. Parasitic: attaching itself to fishes. Ranges from British Columbia southward to the Sacramento River, California.

#### 10. Lampetra wilderi Gage.

Small Black Lamprey: Brook Lamprey.

Mostly abounding in rivers, and ascending small streams to spawn. Parasitic: attaching itself to fishes.

State of New York and Great Lakes region westward, and embracing the Ohio valley to the Mississippi valley: perhaps to be found in Ontario and Manitoba.<sup>†</sup>

## 11. Notorhynchus maculatus Ayres.

Cow Shark.

Marine.

Doubtless occurs in British Columbian waters as it is known to range from the coast of the State of Washington to California, and is "rather common northward, especially in Humboldt Bay" (Jordan and Evermann).

12. Hexanchus corinus Jordan and Gilbert.

- Shovel-nosed Shark.
  - Marine.

Vancouver Island and Puget Sound, southward to Bay of Monterey, California.

#### 13. Catulus brunneus Gilbert.

Cat Shark: Swell Shark.

Marine.

Specimen (very young) in the Provincial Museum, Victoria, from Nanaimo, Vancouver Island: coast of California.<sup>‡</sup>

<sup>\*&</sup>quot;P. flurialis, Richardson, mentioned only as a small lamprey attached to an Inconnu in Great Slave Lake." Jordan and Evermann. "The proper identification of the specimen is uncertain; it is probably the same as L. *aurea.*" Evermann and Goldsborough.

<sup>&</sup>lt;sup>†</sup>"I am not positive as to the occurrence of this species in our waters, though I have often taken a small Lamprey in the northern and western streams of Ontario and in the rivers of Manitoba which I believe to be the Brook Lamprey." Nash.

<sup>&</sup>lt;sup>‡</sup>At the time of the publication of Jordan and Evermann's 'Fishes of North and Middle America' (1896) only one specimen of this species was known, "a female with mature eggs."

14. Galeorhinus zyopterus Jordan and Gilbert.

Oil Shark: Tope.

Marine.

Ranges from coast of California, from San Francisco to Cerros Island, Lower California, Mexico: recorded from British Columbia.

#### 15. Prionace glauca Linnæus.

Great Blue Shark.

Marine.

Maritime Provinces and Banks of Newfoundland: coasts of California and Brazil (Valenciennes, 1838, as *Squalus hirundinaccus*): more common in seas of Europe: "an inhabitant of the Mediterranean, and appears to occur much more frequently on the Devonshire and Cornish coasts than on any other part of the British Islands; it has been taken in the Bristol Channel, and in Swansea Bay; also off the south and east coasts of Ireland, and has been known to wander even as far north as Zetland" (Yarrell, 1859).

#### 16. Alopias vulpes Gmelin.

Thresher.

Pelagic.

Very cosmopolitan in the seas: Atlantic and Pacific Oceans: "occasionally taken [in Nova Scotia] in fishing nets, to their great detriment—a fine specimen in the collection of King's College, Windsor, N.S." (Jones, 1879): according to Knight, Basin of Minas and Gulf of St. Lawrence\* (1866, as *Carcharias vulpes*): also "Cumberland Bay and Bay des Chaleurs" (Cox, 1895): "commonest of the larger Sharks frequenting the British coasts" (Bridge, 1910): common in the Mediterranean: coast of New Zealand (Günther, 1880).

# 17. Lamna cornubica Gmelin.

Porbeagle: Mackerel Shark.

Pelagic.

Gulf of St. Lawrence and Maritime Provinces: north Atlantic and north Pacific: "occurs occasionally on the northern and frequently on the southern coasts of this country [Great Britain] and also on different parts of the Irish coast—not rare, according to Dr. Baikie, among the Orkney Islands" (Yarrell, 1859): "Haast has found this species also off the coast of New Zealand" (Günther, 1880).

# 18. Carcharodon carcharias Linnæus.

Great White Shark.

Pelagic.

Temperate and tropical seas: occasional on the Atlantic and Pacific coasts of North America, and for that reason included here: "found in all tropical and sub-tropical seas, from the Mediterranean to Australia and New Zealand" (Bridge, 1910, as C. rondeletii): Cape of Good Hope (Smith, 1842, as C. capensis): "its distribution evidently girdling the globe" (Jordan).

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<sup>\*</sup>Knight says:---"It is a great enemy to the small whales in the Gulf of St. Lawrence."

# PLATE V.

25.30 Oncorhynen Lister, Coho o. Silver Salmon-(Showits, sea onal characteristics)

 Oncochynchus tschawytscha (Quinnat or Spring Salmona oShowing spawning characteristic)

25 30. Oneorityueluts kisuteh (Coho or Silver Salmon)



#### 19. Cetorhinus maximus Gunner.

Basking Shark.

Pelagic.

Maritime Provinces and British Columbia: Arctic seas, southward on the American sides to Virginia and California, and on the European side to Portugal, and the Mediterranean: according to Bridge (1910) "fairly common off the coasts of Scotland, and it has been seen or captured at various points on the western coast of Ireland, and the eastern and southern coasts of England," and according to him "although generally described as a northern form *Cetorhinus* is known to occur in Australian waters."

#### 20. Squalus acanthias Linnæus. (Plate I, figure 1).

Picked Dogfish.

Marine.

Coast of Labrador (Storer, 1850 and 1853): Gulf of St. Lawrence, Gaspe Bay, and Maritime Provinces: "at Tignish the picked dogfish is very common and extremely destructive" (Cornish): both coasts of north Atlantic, extending south to Cuba on the American side: Knight says—"found everywhere on the coast of North America, from the Delaware to Davis' Straits" (1866, as *Spinax acanthus*): common on coasts of the British Islands, including the Orkney Islands (Yarrell, 1859), and other European coasts.

#### 21. Squalus sucklii Girard.

California Dogfish.

Marine.

British Columbia: ranges from the Aleutian Islands to California: once recorded from Bering Island, Bering Sea ((Stejneger): S. fernandinus Molina, of Chile perhaps referable to this species.

#### 22. Centroscymnus cœlolepis Bocage and Capello.

Spiny Dogfish.

Marine.

"Abundant on the fishing banks" off the coast of Nova Scotia (Jones, 1879): occasional off the coast of Massachusetts: coast of Portugal and adjacent coasts of the Atlantic.

#### 23. Centroscyllium fabricii Reinhardt.

Spiny Dogfish.

Marine.

Arctic seas and coasts of Greenland: "fishing banks off the coast" of Nova Scotia (Jones, 1879): occasional off the coast of Massachusetts: also said to be found "in the opposite hemisphere at the Falkland Islands" (Bridge, 1910).

## 24. Somniosus microcephalus Bloch.

Sleeper Shark: Greenland Shark.

Marine.

Aretic seas: coast of Labrador: "the only specimen of this rare northern form the author has had the opportunity of examining was taken off Halifax Harbour in February 1863" (Jones, 1879, as *Leanargus borcalis*): an individual from opposite the mouth of the Saguenay River, Province of Quebec (Whiteaves, 1886): on the American sides south to Cape Cod, and coast of Oregon: "numerous instances are recorded of its capture off the coast of Great Britain, especially in northern waters" (Bridge, 1910); and recorded from other European coasts, ranging southward to France.

### 25. Pristis pectinatus Latham.

Common Sawfish.

Marine.

"West Indies and Florida; abundant in the Gulf of Mexico; ascending the lower Mississippi": "occurs northward at least to Beaufort, North Carolina" (Jordan and Evermann): once, but long ago, recorded from coast of Nova Scotia (Denys, 1672).\*

# 26. Raja erinacea Mitchill.

Common Skate.

Marine.

Gulf of St. Lawrence, Gaspe Bay, and Maritime Provinces, including Grand Manan, Bay of Fundy: in the United States from the coast of Maine southward to Virginia.

#### 27. Raja ocellata Mitchill.

Big Skate. Marine. Maritime Provinces to the coast of the State of New York.

28. Raja fyllæ Lütken.

Marine.

Based upon a small specimen, some 8 inches in length, from Davis Straits, Greenland (Lütken, 1887): given here owing to its occurrence in Davis Straits.

#### 29. Raja radiata Donovan. (Plate I, figure 2).

Starry Ray.

Marine.

Both sides of North Atlantic: on the American side seemingly recorded at least as far south as Staten Island, State of New York (De Kay, 1842, as *R. americana*): Maritime Provinces, including the Bay of Fundy: common on the eastern coast of Nova Scotia (Cornish, 1901-2): on the eastern side of the Atlantic "inhabits the northern seas only, extending from the British Isles to Iceland and Greenland, the coast of Norway, and the Baltic as far as Scania" (Yarrell, 1859, on the authority of the *Skandinaviens Fiskar*).

#### 30. Raja senta Garman.

Marine.

Questionable on the coast of Labrador<sup>†</sup> (Schmitt, 1904): Banks of Newfoundland southward to Cape Cod.

#### 31. Raja lævis Mitchill.

Barn-door Skate.

Marine.

Maritime Provinces and Atlantic coast of United States south to coast of Florida.

†Queried by Kendall in his 'Check List of the Fishes recorded from the Labrador Peninsula.'

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<sup>\*&</sup>quot;L'espadon est un põisson gros comme une vache, de six å huit piéds de longueur, qui va en diminuant vers la quenë; il a sur le nez un espadon, dont il prend le nom, qui est long d'environs trois piéds, large d'environs quatre bons doigts; il y a de deux costez de cet espadon des pointes longues d'un pouce, de pareille distance les uns des autres, et va étraissessant vers le bout; il ne plye point et est dur et fort roide." L'Histoire Naturelle, par Nicholas Denys, Paris, 1072: quoted after Cox.

#### 32. Raja granulata\* Gill.

Marine.

"This new species is given in Messrs, Goode and Bean's list of N. E. American Fishes as occurring on La Have fishing bank" (Jones, 1879).

#### 33. Raja rhina Jordan and Gilbert.

Marine.

Recorded from Departure Bay, Vancouver Island: ranges from coast of Alaska southward to Bay of Monterey, California.

Raja binoculata Girard.
 Big-Skate-of-California.
 Marine.
 British Columbia: ranges from coast of Alaska southward to Bay of Monterey, California.

#### 35. Raja stellulata Jordan and Gilbert.

#### Marine.

British Columbia: ranges from Unalaska, Aleutian Islands, southward to Santa Barbara, California.

36. Raja abyssicola Gilbert and Thoburn.

Deep Sea Ray.

Bathybial.

Off Queen Charlotte Islands, British Columbia; known from a single male specimen, obtained at a depth of 1,588 fathous.†

#### 37. Dasyatis centrura Mitchill.

Common Sting Ray.

Marine.

May possibly be found in the Bay of Fundy as it is known to range from Cape Hatteras to the coast of Maine.

#### 38. Chimæra affinis Capello.

Chimæra.

Bathybial.

Atlantic Ocean: said to occur on the American coast as far south as Cape Cod: "a specimen collected on the south-eastern portion of La Have Bank":‡ Gulf Stream (Gill, 1877, as Ch. plumbea), and Lat. 40° N., Long. 60° W., (Gill, 1883, as Ch. abbreviata): recorded from off the coast of Portugal (Günther, 1880).

39. Hydrolagus colliei Lay and Bennett. (Plate XIII, figures 154 and 155).

Ratfish.

Marine.

British Columbia: ranges from coast of Alaska southward to Bay of Monterey, California: "especially plentiful off South-eastern Alaska, and about the wharves at Esquimalt" (Bridge, 1910).

"A doubtful species, imperfectly described, apparently not different from R. lavis." Jordan and Evermann.

<sup>&</sup>lt;sup>†</sup>No ray was ever found at any such a depth as this before. A ray from a depth of 565 fathoms is included in the list of deep-sea fishes obtained by the dredgings of the 'Challenger' (Gunther); and "*R. mamillidens*, a uniform jet-black species, has been obtained from a depth of 597 fathoms in the Bay of Bengal" (Bridge), but so far as available records show none have been obtained at a greater depth than some 600 fathoms except this one.

This specimen is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. XIX.

#### 40. Polyodon spathula Walbaum.

Paddlefish.

Lacustrine and fluviatile.

Exceedingly rare in Canada—the following appearing to be its records: Lake Huron, near Sarnia, Ontario (two specimens);\* Spanish River, District of Sudbury (one specimen); Lake Helen, Nipigon River (one specimen); Lake Erie (if from the Canadian side of the lake—one specimen): plentiful in the Mississippi valley and southern United States: also recorded from Ohio River (Le Sueur, 1817, as *Platirostra edentula*; and Rafinesque, 1820, as *Acipenser lagenarius*); and from Lake Ontario (Rafinesque, 1820, as *Proceros rittatus*).

#### 41. Acipenser transmontanus Richardson.

White Sturgeon.

Either anadromous or remaining permanently in fresh water.

British Columbia: recorded from Pine Island Lake and Saskatchewan River (Richardson, 1836): extends from Alaska southward to Monterey, California.

#### 42. Acipenser medirostris Ayres.

Green Sturgeon.

Frequents the sea or brackish water, seldom entering rivers beyond their mouths. British Columbia: ranges from San Francisco northward: "not common north of the Straits of Fuca" (Jordan and Evermann).

#### 43. Acipenser sturio oxyrhynchus† Mitchill. (Plate I, figure 3).

Common Sturgeon.

Anadromous-perhaps spawning in brackish as well as in fresh water.

Maritime Provinces and St. Lawrence River and tributaries: although a coastwise sturgeon reported from Manitoba and from northern lakes of the interior (Eigenmann, 1894): in the United States ranging from Maine to South Carolina.

# 44. Acipenser rubicundus Le Sueur.

Lake Sturgeon.

Lacustrine and fluviatile.

Provinces of Ontario and Quebec: St. Lawrence River, Lake of the Woods, and Prairie Provinces: also recorded from Labrador; Hudson Bay; and Albany River, Rupert Land (Richardson, 1836, as A. rupertianus): Mississippi and Ohio valleys and tributary waters.

#### 45. Acipenser brevirostrum Le Sueur.

Short-nosed Sturgeon.

Anadromous: entering the larger rivers and estuaries.

Recorded from St. Lawrence River and tributaries (Fortin, 1864): said to range in the United States from Cape Cod to Florida: reported from the coast of Texas.

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<sup>\*&</sup>quot;Old fishermen near Point Edward on the Lambton county shore vaguely refer to other specimens occurring in Lake Huron." Prince.

<sup>&</sup>lt;sup>†</sup>This is a sub-species of the common sturgeon (A. sturio) of Europe, from which it chiefly differs in the number and character of the stellate ossifications.

# 46. Lepidosteus osseus Linnæus. (Plate I, figures 4 and 5).

Common Garpike.

Lacustrine and fluviatile.

- St. Lawrence River, and Provinces of Ontario and Quebec, westward to Lake Huron: very plentiful near Belleville, Bay of Quinte: in the United States ranges from Vermont westward to the Great Lakes region and southward to the Rio Grande.
- 47. Lepidosteus platostomus Rafinesque.
   Short-nosed Garpike.
   Lacustrine and fluviatile.
   Not common in Canada: Great Lakes region, and Ohio and Mississippi valleys.

#### 48. Amia calva Linnæus. (Plate I, figures 6 and 7).

Bowfin: Dogfish.

Lacustrine and fluviatile.

- St. Lawrence River, and Provinces of Ontario and Quebec, westward to Lake Huron: very plentiful near Belleville, Bay of Quinte: in the United States, ranges from the Mississippi valley and Great Lakes region southward to the southern States.
- 49. Tarpon atlanticus Cuvier and Valenciennes.

#### Tarpon.

Marine, and fluviatile in that it ascends rivers from the sea.

Ordinarily ranges from Long Island to Brazil: common on coast of Florida: also occurs on the coasts of the West Indies: "common about Porto Rico where it evidently breeds, as numerous immature individuals were taken at Hucares and Fajardo" (Evermann and Marsh, 1899): twice recorded from Nova Scotia, from off Isaac's Harbour, and from Harrigan Cove in eel-grass.\*

#### 50. Albula vulpes Linnæus.

Lady-fish.

Marine.

All warm and tropical seas: ordinarily ranges on the American coasts northward to Long Island: a specimen obtained in September 1911, at Black's Harbour, Bay of Fundy, New Brunswick.<sup>†</sup>

# 51. Hyodon alosoides Rafinesque.

Shad Mooneye.

Lacustrine and fluviatile.

Manitoba and presumably Saskatchewan: Ohio River region.

\*This specimen which was speared on 6th September, 1906, is in the Provincial Museum at Halifax.

This specimen was received from Mr. William McIntosh, Curator of the Museum of the Natural History Society of New Brunswick, for identification. Not having seen the lady-fish before, and as the preservatives have considerably altered the appearance of the specimen, I should mention that it differs at least in one particular from descriptions and figures, viz:—the snout does not appear to overlap the mouth. But as this species passes through a metamorphosis, being at first a band-shaped larval form, and as this specimen is only about 7 inches in length, whereas the species attains a length of from  $1\frac{1}{2}$  ft. to 3ft., possibly every character had not been completed even although in effect the fish had passed through its metamorphosis when not more than an inch or two in length. This I do not know, but other external characters, particularly the heavy adipose covers over the eyes, appear to determine it a specimen of the lady-fish. Internal characters could not be examined, as all the organs had become pasty and undecipherable.

Hyodon chrysopsis Richardson.
 Western Goldeye.
 Lacustrine and fluviatile.
 Provinces of Manitoba and Saskatchewan.

#### 53. Hyodon tergisus, Le Sueur. (Plate VIII, figures 60 and 61).

Mooneye: Toothed Herring.

Lacustrine and fluviatile.

Provinces of Ontario and Quebec, including the St. Lawrence and Ottawa Rivers and Lake St. Peter (Montpetit, 1897): Great Lakes region, including Lake of the Woods: Ohio and Mississippi valleys.

# 54. Dorosoma cepedianum Le Sueur.

Gizzard Shad: Hickory, Shad.

Marine, in brackish water, lacustrine, sometimes landlocked, and fluviatile.

Recorded from St. John River, Fredericton, New Brunswick: "no doubt occurs in the St. Lawrence and doubtless also in the Ottawa River"\* (Prince, 1909): ranges along the Atlantic coast at least from Cape Cod to Mexico; and extends westward in the United States to the Mississippi: introduced into Lakes Eric and Michigan.

#### 55. Clupea harengus Linnaus. (Plate VIII, figures 62 and 63)

#### Common Herring.

Marine: but according to Boulenger, as first shewn by Günther, the fry or 'white-bait' have a predilection for brackish water.

Temperate and colder parts of the northern Atlantic and seas of Europe, including the British Isles: most abundant on the American side north of Cape Cod, extending to the coast of Labrador and embracing Newfoundland: occurs in Gaspe Bay (Stafford, 1905-1906): recorded from south shore of River St. Lawrence (Fortin, 1862, as *C. sardina*): extends in the United States as far south as Cape Hatteras, North Carolina.

# 56. Clupea pallasii Cuvier and Valenciennes. (Plate VIII, figures 64 and 65).

California Herring.

#### Marine.

British Columbia and Puget Sound: ranging over the entire Pacific coast from San Diego, California, to Alaska and Kamchatka.

# 57. Clupanodon cæruleus Girard.

California

Marine

British Columbia and Puget Sound, extending southward to Magdalena Bay, Lower California.

#### 58. Pomolobus chrysochloris Rafinesque.

Blue Herring: Skipjack.

Lacustrine and fluviatile.

Great Lakes (at least Lakes Erie and Michigan into which it has introduced itself through the canals): Ohio River (Rafinesque, 1820), Mississippi Valley, and enters the Gulf of Mexico.

\*This, quoted from a review of Mr. C. W. Nash's 'Check List of the Fishes of Ontario', as to the occurrence of the fish in the Ottawa River at least needs substantiating.

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Hickory Shad: Fall Herring.

Marine.

Recorded from vicinity of Campobello Island, New Brunswick. (Cox, 1895, as *Chapea mediocris*): extends from Cape Cod to coast of Florida.

# 60. Pomolobus pseudoharengus Wilson.

Gaspereau: Alewife.

Anadromous or landlocked.

Widely distributed from the coasts of the Maritime Provinces and Labrador, and embracing the St. Lawrence River, to Lake Ontario, in which lake it is very abundant: extends along the Atlantic coast of the United States from Maine southward to the Carolinas: occurs landlocked in certain lakes of the State of New York.

61. Pomolobus æstivalis Mitchill.

Glut Herring.

Anadromous.

Extends from the Maritime Provinces to the Carolinas, but more abundant southward than northward.

# 62. Alosa sapidissima Wilson. (Plate VII, figure 59).

American Shad.

Anadromous.

Extends, or did extend, from Labrador, Newfoundland, Gulf of St. Lawrence, and Maritime Provinces, to the Gulf of Mexico; but its distribution in our waters more limited and local than formerly: "occasional in Baie-des-Chaleurs" (Cox, 1895): still frequents the shores of St. John and Albert Counties, and ascends the St. John River, New Brunswick; as well as occurring in Chigneeto, Cobequid and St. Marys Bays, and Bay Verte, Maritime Provinces: mentioned as occurring in Gaspe Bay (Stafford, 1905-1906, as *Clupca sapidissima*): "formerly abundant in the lower Ottawa, but has abandoned that river, and its occurrence within our boundaries [Ontario] is now only accidental" (Nash, 1908.): has been introduced into Pacific coast waters by the United States Fish Commission, and has "been established in several of the tributaries of the Mississippi River, notably the Ohio River" (Goode, 1888).

#### 63. Brevoortia tyrannus Latrobe. (Plate VIII, figures 66 and 67).

Menhaden: Mossbunker.

Marine: "probably spawning in brackish water."

Ranges from Nova Scotia, at least from St. Marys Bay, southward to Brazil;\* and mentioned by Jones (1879) in his "List of the Fishes of Nova Scotia" on the authority of Dr. Gilpin: being migratorially erratic, its geographical range varies greatly from year to year: according to Goode (1888), as defined for 1877, its wanderings "bounded by the parallels of north latitude 25° and 45°; on the continental side by the line of brackish water; on the east by the inner boundary of the Gulf Stream."<sup>†</sup>

<sup>\*&</sup>quot;Represented on the coast of Brazil by Brevoortia tyrannus aurea Agassiz." Jordan and Evermann.

<sup>&</sup>lt;sup>†</sup>Goode goes on to say:—"In the summer it occurs in the coastal waters of all the Atlantic States from Maine to Florida, in winter only south to Cape Hatteras: the limits of its winter migration occanwards cannot be defined, though it is demonstrated that the species does not occur about the Bernudas or Cuba, nor presumably in the Caribbean Sea."

- 64. Engraulis mordax Girard.
   California Anchovy.
   Marine.
   British Columbia: ranges from southern Alaska to coast of Lower California, Mexico.
- Mitchillina bairdii Goode and Bean. Bathybial. Grand Banks of Newfoundland (Goode and Bean, 1879, as Alepocephalus bairdii).
- 66. Coregonus coulterii Eigenmann and Eigenmann.

Coulter's Whitefish. Fluviatile. Kicking Horse River at Field and Golden, British Columbia.

#### 67. Coregonus williamsoni Girard.

Rocky Mountain Whitefish. Lacustrine and fluviatile: frequenting clear waters. Ranges from Alberta and Montana westward to coasts of British Columbia and States of Washington and Oregon; and southeastward to Utah.

#### 68. Coregonus kennicotti Milner.

Broad Whitefish.

Lacustrine and fluviatile.

Mackenzie and Yukon Rivers, and certain rivers of Alaska: also Great Bear Lake, and Lake Bennett (Evermann and Goldsborough, 1907): the type from Fort Good Hope (Milner, 1883): possible record Hudson Bay (Pennant, 1788, as Salmo lavaretus).

# 69. Coregonus richardsonii\* Günther.

Richardson's Whitefish.

Fluviatile.

The type from Arctic North America—locality unknown (Günther, 1866): Mackenzie River Basin (Preble, 1903-4).

# 70. Coregonus quadrilateralis Richardson.

Round Whitefish: Shad-Waiter.

Mostly lacustrine, seldom entering rivers.

Most widely distributed of our whitefishes: extending from Labrador, New Brunswick, and the New England States to British Columbia, Alaska, and the Arctic regions; and embracing within its range Hudson Bay (Richardson, 1823), Bathurst Inlet and Great Bear Lake (Richardson, 1836), Fort Enterprise (type locality), and Great Lakes region.

48

<sup>\*&</sup>quot;A doubtful species, perhaps identical with Coregonus kennicotti, or possibly with Coregonus nelsonii." Jordan and Evermann.
# PLATE VI.

 32-38 Oncorhynchus nerka (Soekeye Sahnon (Showing seasonal characteristics)
 39/40 Sahno ii.ularis (Steelhead Sahnon)

- apple and the second second
  - (Showing seasonal characteristics) 35 40. Salmo rivularis (Steelhead Salmon)



#### 71. Coregonus clupeiformis Mitchill. (Plate VII, figures 55 and 56).

Common Whitefish.

Mostly lacustrine

Collectively records repute its distribution to be from Labrador and New Brunswick to the Prairie Provinces and northward.\* abundant in the Great Lakes, especially in Lake Eric; its spawning beds being perhaps more especially on the Canadian side of the lake.

#### 72. Coregonus nelsonii Bean.

Humpback Whitefish. Lacustrine. Recorded from Lake Bennett, British Columbia (Evermann and Goldsborough, 1907), and from Alaska

#### 73. Coregonus labradoricus Richardson.

Labrador Whitefish: Sault Whitefish.

Lacustrine and fluviatile

Distributed from Labrador, Province of Quebec, and New Brunswick, to the Prairie Provinces, embracing the Great Lakes region, including Lake of the Woods: abundant at Sault Ste. Marie: in the United States extending from the "Great Lakes region to the lakes of the Adirondacks and White Mountains, and northeastward" (Jordan and Evermann).

#### 74. Argyrosomus osmeriformis H. M. Smith.

Smelt-of-the-New-York-Lakes.

Lacustrine.

Provisionally included here: "has been recorded only from Seneca and Skaneateles lakes, New York, where it is known as smelt: it doubtless inhabits others of the deep-water lakes of northern New York" (Jordan and Evermann); and possibly may be found in Ontario waters.

75. Argyrosomus artedi Le Sueur. (Plate VII, figures 57 and 58).

Cisco: Lake Herring.

Lacustrine.

Ranges from Province of Quebec and State of Vermont, occurring in Lakes Champlain and Memphremagog, and in Thirty-one nulle Lake, some 60 miles north of Ottawa (Shields, 1897) westward to Lake Superior: abundant in Lake Eric: extends northward to the Hudson Bay region and to Labrador.

# 76. Argyrosomus hoyi Gill.

Mooneye Cisco.

Lacustrine.

4

"Thus far known [1902] only from Lake Michigan and possibly from Lake Superior" (Jordan and Evermann): questionable in our waters.

\*"It is to be found throughout the Great Lakes region from Lake Champlain to Lake Superior, and possibly to Lake Winnipeg. It has been reported commercially from Lake of the Woods, Lake Winnipeg and Northwest Territory, but all references to its occurrence west of Lake Superior need verification. All specimens of so-called whitefish from Lake of the Woods which have been examined by any ichthyologist belong to a different species the Labrador whitefish (*Corrgonus labradoricus*), and this is doubtless the species which the Canadian Fish Commission reports call the 'whitefish' when referring to localities west of Lake Superior." Jordan and Evermann.

#### 77. Argyrosomus pusillus Bean.

Least Whitefish.

Fluviatile.

Barter Island, off Alaska, near the mouth of the Mackenzie River (Scofield, 1899): occurs in the Yukon River and "practically all of Alaska except the south-eastern portion" (Jordan and Evermann): will perhaps be found in British Columbia.

# 78. Argyrosomus lucidus Richardson.

Great-Bear-Lake-Herring.

Lacustrine and fluviatile.

Mackenzie River and tributaries: Great Bear Lake (Richardson, 1836, as Salmo (Coregonus) lucidus): Great Bear Lake River (Gilbert, 1894, as Coregonus lucidus): Herschel Island (Scofield, 1899): Arctic Red River (Preble, 1903-4).

#### 79. Argyrosomus laurettæ Bean.

Lauretta Cisco. Fluviatile. Yukon River northward to Point Barrow, Alaska: perhaps British Columbia.

#### 80. Argyrosomus prognathus\* H. M. Smith.

Bloater: Long Jaw. Lacustrine. Basins of the Great Lakes, with the possible exception of Lake Erie.

# 81. Argyrosomus nigripinnis Gill.

Blackfin: Bluefin.

Lacustrine.

Lake Michigan and certain lakes of Wisconsin and Minnesota: also reported from Lake Superior.<sup>†</sup>

# 82. Argyrosomus tullibee Richardson.

Tullibee.

Lacustrine.

Occurs in Lakes Erie, Superior, and Michigan; and in Lake Onondaga, State of New York: also in Lake of the Woods, and in the Provinces of Manitoba and Saskatchewan—frequenting the Qu'Appelle Lakes near the middle of the chain: recorded from Pine Island Lake and from Albany River region (Richardson, 1836, as Salmo (Coregonus) tullibee).

# 83. Stenodus mackenzii Richardson.

Inconnu.

Fluviatile and lacustrine.

Mackenzie and Yukon Rivers and their tributary waters: also recorded from Salt River (Richardson, 1823, as Salmo mackenzii—the type), and from Great Slave Lake (Richardson, 1836): perhaps identical with S. leucichthys of Siberia.

\*"This species and A. osmeriformis have been confounded under the name Coregonus hoyi, though neither much resembles the original of that name." Jordan and Evermann. A. hoyi, unless to be found in Lake Superior does not seem to belong to our waters; but is given provisionally in the Check List under number 76.

<sup>†&</sup>quot;It has also been reported from Lake Superior, but all the specimens of so-called blackfin or bluefin that we have seen from that Lake are the long jaw" [A. prognathus]. Jordan and Evermann.

84. Oncorhynchus gorbuscha Walbaum. (Plate II, figures 8-13).
 Humpback Salmon.
 Anadromous.

British Columbia: both coasts of the Pacific and their slopes, ranging from California to Kamehatka, and extending northward.

 Oncorhynchus keta Walbaum. (Plate III, figures 14-19). Dog Salmon. Anadromous.

British Columbia: both coasts of the Pacific and their slopes, ranging from California to Bering Straits, Kamehatka, and Japan—being "by far the most abundant species of salmon" in Japan (Jordan).

# Oncorhynchus tschawytscha Walbaum. (Plates IV and V, figures 20-24 and 31). Spring Salmon: Quinnat: King Salmon. Anadromous. Bridich Calending Indiana (Color De Color De Color

British Columbia: both coasts of the Pacific and their slopes, ranging from California to Bering Straits and China.

 Oncorhynchus kisutch Walbaum. (Plate V, figures 25-30). Coho: Silver Salmon. Anadromous.

British Columbia: both coasts of the Pacific and their slopes, ranging on the American side from California to Alaska, and on the Asiatic side southward to Japan.

88. Oncorhynchus nerka Walbaum. (Plate VI, figures 32-38).

Sockeye Salmon: Blue-back Salmon.

Anadromous.

British Columbia: both coasts of the Pacific and their slopes, ranging on the American side from Oregon to Alaska; and on the Asiatic side southward to Japan, being landlocked in Lake Akan in northern Hokkaido (Jordan).

# 89. Oncorhynchus kennerlyi Suckley.

Kennerly's Salmon: Little Redfish. Lacustrine and fluviatile, and perhaps 'anadromous. Certain lakes of British Columbia, and the States of Washington, Oregon, and Idaho.

90. Salmo salar Linnæus. (Plate VII, figure 41).

Atlantic Salmon.

Anadromous.

Both coasts of the Atlantic and its affluents: Maritime Provinces, Gaspe Bay, St. Lawrence River and Gulf with their tributary waters, including La Riviere Jupiter, Anticosti Island (Schmitt, 1904): formerly Lake Ontario: recently (1905) one specimen found near South Bay, Manitoulin Island, Lake Huron: Newfoundland and Labrador: recorded from Hudson Bay (Pennant, 1788): northeastern States of North America, and the Delaware River: lakes and rivers of Greenland (Fabricius, 1780): seas and rivers of Europe, including Lecland, and entering the Baltic: southern limit of distribution in Europe, Galicia, Spain.

#### 91. Salmo salar sebego Girard.

Landlocked Salmon.

Landlocked in lakes.

Certain lakes in New Brunswick, such as Loch Lomond and Seiff and Musquash Lakes; and of the States of Maine and New Hampshire: now more widely distributed by having been introduced into lakes of other localities.

# 92. Salmo salar ouananiche McCarthy.

Ouananiche.

Landlocked in lakes.

Saguenay River and Lake St. John regions, and lakes and rivers northward to the Ungava region, and eastward to Labrador: occurs also in lakes of Newfoundland—such as Red Indian and Terra Nova Lakes, and lakes at the head of Gambo River.

93. Salmo clarkii Richardson. (Plate VII, figures 42 and 43).

Cutthroat Trout.

Lacustrine and fluviatile, and coastwise: possibly entering the sea.

Southern Alberta and British Columbia: ranging from California perhaps as far north as Alaska.

94. Salmo rivularis Ayres. (Plate VI, figures 39 and 40).

Steelhead.

Anadromous.

British Columbia to California and eastward to the Mountains: extending as far north as Skagway, Alaska: introduced into Lake Superior by the United States Fish Commission, and since found in waters of Ontario.

# 95. Salmo rivularis kamloops Jordan.

Kamloops Trout.

Lacustrine.

Kamloops, Kootenay, Okanagan, and other lakes in British Columbia: certain lakes tributary to the Fraser and upper Columbia Rivers.

#### 96. Salmo irideus\* Gibbons. (Plate VII, figures 44 and 45).

Rainbow Trout.

Fluviatile, and perhaps in a measure anadromous.

Ranges, under a number of varieties, from State of Washington to California: introduced into certain eastern waters, including Lake Superior, Nova Scotia, and Newfoundland; records for British Columbia do not appear to be authentically supported.

<sup>\*</sup>It is affirmed by some that the rainbow trout is only an earlier stage, in the course of development, of the steelhead, but as this matter appears to others open to question it is given provisionally in the check-list as constituting in itself a valid species.

<sup>&</sup>lt;sup>†</sup><sup>(\*</sup>The California Rainbow Trout has proved its great adaptability to the environment of Newfoundland waters." Report of the Game and Inland Fisheries Board, Newfoundland, for the year 1910.

#### 97. Salmo trutta levenensis Walker.

Loch Leven Trout.

Lacustrine.

Loch Leven, Fifeshire, and other Scottish lochs: lochs in north of England (Jordan): introduced into lakes of Newfoundland; and by the United States Fish Commission into Shoshone Lake, Yellowstone National Park, and elsewhere.

98. Cristivomer namaycush\* Walbaum. (Plate VII, figures 46 and 47).
Salmon Trout: Great Lake Trout. Lacustrine and fluviatile.
Widely distributed from Labrador, the Maritime Provinces, and the State of Maine, to Vancouver Island, Alaska, and the Mackenzie River, northward to the Arctic Circle.

#### 99. Cristivomer namaycush siscowet Agassiz.

Siscowet. Lacustrine. Lake Superior: occasional in lakes Huron and Erie.

#### 100. Salvelinus fontinalis† Mitchill. (Plate VII, figures 48-50).

Speckled Trout: Brook Trout.

Fluviatile, lacustrine, and enters (as a sea-run variety-immaculatus) the sea.

Widely distributed in North America, presumably from the Arctic regions (but "the northern limits of its range being as yet not well ascertained"—Jordan, 1905) southward to Georgia and Alabama, and from Newfoundland to Saskatchewan.

# 101. Salvelinus parkei Suckley.

Dolly Varden Trout.

Lacustrine and fluviatile and entering the sea.

anges from California, embracing British Columbia, northward to Aleutian Islands, and Herschel Island, Beaufort Sea, Arctic Ocean (Scofield, 1899); and extending westward to the South Saskatchewan and Montana.

#### 102. Salvelinus alpinus alipes‡ Richardson.

Long-finned Charr.

Lacustrine and fluviatile.

Arctic regions: lakes in Regent's Inlet, Boothia Felix (Richardson, 1835-6, as Salmo alipes and Salmo nitidus): lakes and rivers of Greenland (Fabricius, 1780, as Salmo alpinus).

<sup>\*</sup>This species is subject to great variation, and although all the varieties bear the specific name of *namaycush* there is considerable reason for the popular distinctions such as salmon-trout, gray trout, and Mackinaw trout. Structurally, however, it has not appeared to ichthyologists that there are sufficient distinctions to warrant the separation of varieties into sub-species, except in the following.

<sup>&</sup>lt;sup>†</sup>This species varies greatly in size and coloration according to the character of the waters in which it occurs. Nipigon Lake, Ontario, is noted for its large sized individuals.

This and the two following are regarded as varieties of the European charr (S. alpinus).

# 103. Salvelinus alpinus stagnalis Fabricius.

Greenland Charr.

Lacustrine and fluviatile.

Aretic regions: Regent's Inlet and rivers of Boothia Felix (Richardson, 1836, as Salmo rossii): Coppermine River (Richardson, 1823 and 1836 as Salmo hearnii): streams and ponds of Greenland: also recorded from Labrador.\*

#### 104. Salvelinus alpinus arcturus Günther.

Arctic Charr. Lacustrine.

Vistania Esla

Victoria Lake, Flœberg Beach, Arctic America, Lat. 82°, 34' (Günther, 1877, as Salmo arcturus).

#### 105. Salvelinus oquassa naresi Günther.

Nares Charr. Lacustrine. Arctic America: Discovery Bay and Cumberland Gulf.

# 106. Salvelinus marstoni† Garman. (Plate VII, figures 51 and 52).

Marston Trout: Red Canadian Trout.

Lacustrine.

Recorded from the following lakes, among others in the Province of Quebec: Lac de Marbre, near Ottawa; lakes of the Laurentides Club in the Lake St. John region; Lac a Cassette, Rimouski County; and Lake Saccacomi and the Red Lakes, Maskinonge County: the above records probably right at the southern limits of its distribution, and that the centre of its distribution is much further north.

#### 107. Thymallus signifer Richardson.

Arctic Grayling.

Lacustrine and fluviatile.

Occurs in Lakes Bennett and Atkins, Forty-mile Creek, and other waters of the northern part of British Columbia: recorded from Great Slave Lake, Great Bear Lake, and Winter River regions (Richardson, 1823 and 1836): Mackenzie River and Alaska to the Arctic Ocean: Churchill River and tributaries, Hudson Bay.

# 108. Thymallus tricolor Cope.

Michigan Grayling.

Fluviatile.

Streams of the State of Michigan, and possibly to be found on the Ontario side of the St. Marys River: said to have been brought by Milbert from Lake Ontario (Cuvier and Valenciennes, 1848, as *T. ontariensis*).

<sup>\*&</sup>quot;Specimens from Greenland and Labrador in the U.S. National Museum have been identified and recorded as Salmo stagnalis. It is doubtful if this is a correct identification." Kendall, Various other records from Labrador.

Montana Grayling. Fluviatile. Southern Alberta?:\* certain rivers of Montana, and Yellowstone National Park.

# 110. Mallotus villosus Müller.

Capelin.

Marine: sometimes ascending streams.

Ranges from the Arctic regions southward, on the Pacific coasts to British Columbia and Kamehatka, and on the Atlantic coast of North America, embracing Greenland, Labrador, Newfoundland, Gulf of St. Lawrence, Maritime Provinces, and New England States, to Cape Cod.

#### 111. Thaleichthys pacificus Richardson.

Oolachan: Candlefish.

Anadromous in a measure.

British Columbia, ascending the Fraser and Naas Rivers: ranging from Oregon northward to Alaska.

#### 112. Osmerus thaleichthys Ayres.

Pacific Smelt. Marine. British Columbia: ranges from California to Alaska.

#### 113. Osmerus mordax Mitchill. (Plate VII, figures 53 and 54).

American Smelt.

Marine, fluviatile, and landlocked.

Atlantic coast of North America from Labrador to Virginia: lakes in Maritime Provinces, Province of Quebec, and New England States: Lac-des-Isles, Gatineau District, some sixty miles north of Ottawa.<sup>†</sup>

#### 114. Osmerus dentex Steindachner.

Rainbow Herring.

Marine and fluviatile.

Naas River, British Columbia: Arctic Red River (Preble, 1903-4): Pacific coast from Alaska, embracing both coasts of Bering Sea, and extending southwestward to northern China.

# 115. Mesopus pretiosus Girard.

Surf Smelt.

Marine: spawns in the surf.

British Columbia, extending southward to California.

\*A little salmonoid in rivers of southern Alberta, locally called the grayling, may be this sub-species.

<sup>&</sup>lt;sup>†</sup>Whilst engaged in some fisheries matters in the month of May, 1903, I found some specimens of the American Smelt floating dead on the surface of the water of Lac des Isles, in the Gatimeau district, P.Q. It is known that this species of fish exists land-locked in fresh water lakes in New Brunswick, Nova Scotia, and in the State of Maine, but its occurrence in a lake so far away from the sca as Lac des Isles, is perhaps worthy of mention. The specimens are dwarfed, otherwise the external characters appear to agree with the ordinary Osmerus mordar.

# 116. Argentina silus Arcanius.

Argentine: Siel Smelt.

Marine.

Grand Banks, Newfoundland: a specimen from the stomach of a codling (*Phycis tenuis*) off Sable Island, Nova Scotia (Goode and Bean, 1878, as *A. systemsium*): occasional on the coast of Maine, and off the coasts of northern Europe.

# 117. Bathylagus pacificus Gilbert.

Deep-sea Smelt.

Bathybial.

Coast of State of Washington: "two specimens taken in 685 and 877 fathoms" (Jordan and Evermann): given here as likely to occur in British Columbian waters.

# 118. Chauliodus macouni Bean.

- Viperfish.
- Bathybial.

Off Queen Charlotte Islands, British Columbia (the type—in 876 fathoms): extending southward to coast of California.

# 119. Chauliodus sloanei Bloch and Schneider.

Viperfish.

Bathybial.

Atlantic Ocean and Mediterranean: a specimen found in the stomach of a cod-fish at George's Banks—lat. 42° 08′ N., long 65° 35′ W., in 185 fathoms.

#### 120. Sternoptyx diaphana Hermann.

Bathybial and pelagic—"rising toward the surface at night or in stormy weather." Grand Banks, Newfoundland, southward to Santa Cruz Island, and recorded from Jamaica (Hermann, 1771): also off the Hawaiian and Japanese Islands.

#### 121. Argyropelecus olfersi Cuvier.

Bathybial and pelagic—"rising toward the surface at night or in stormy weather." Grand Banks, Newfoundland: open Atlantic, extending to the coasts of Brazil, Cape of Good Hope, and Norway.

122. Stomias ferox Reinhardt. Bathybial.

East Banquereau: ranging from Greenland southward to the Bahama Channel.

# 123. Malacosteus niger Ayres.

Bathybial.

A specimen collected on the northeastern edge of George's Bank by the schooner Alice G, Wonson in 125 fathoms: Gulf Stream southward to the Barbadoes.

# 124. Ictalurus punctatus Rafinesque.

Channel Catfish.

Abounding especially in river channels.

Rivers of Great Lakes region westward to Manitoba: Mississippi valley, and streams tributary to the Gulf of Mexico.

# PLATE VIL

Н.	Salmo salar (Atlantic Salmon)
12 43.	Salmo clarkii (Cutthroat Trout)
11 15	Salmo irideus (Rainbow Trout)
46 47.	Cristivomer namaycush (Salmon Trout)
48-50.	Salvelinus fontinalis (Speckled Trout)
51 52.	Salvelinus marstoni (Red Canadian Trout)
53 54	Osmerus mordax (American Smelt)
55 56.	Coregonus elupeiformis (Common Whitefish)
57 55.	Argyrosomus artedi (Cisco or Lake Herring)
59.	Alosa sapidissima (American Shad)

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PLATE VII.		
Salmo salar (Atlantic Salmon)	.11	
Salmo clarkii (Cutthroat Trout)	42-43.	
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Cristivomer namayeush (Salmon Trout)	46 47.	
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Salvelinus marstoni (Red Canadian Trout)	51 52.	
Osmerus mordax (American Smelt)	.15 55	
Coregonus elupeiformis (Common Whitefish)	55 56.	
Argyrosomus artedi (Cisco or Lake Herring)	57-58	
Alosa sanidissimo (Americia Shado		

and the second secon



# 125. Ameiurus lacustris Walbaum.

Lake Catfish.

Lacustrine and fluviatile.

St. Lawrence river and tributaries, and Great Lakes region westward to the Prairie Provinces: Hudson Bay (Pennant, 1788, as the mathemeg; and Walbaum, 1792, as *Gadus lacustris*): in the United States, ranging from the Great Lakes possibly to the Mississippi valley, but the limits of its southern habitat uncertain.\*

#### 126. Ameiurus natalis Le Sueur.

Yellow Catfish.

Lacustrine and fluviatile.

Great Lakes region: recorded from Sugarbush. Bevin, and Bark Lakes, Province of Quebec (D'Urban, 1859, as *Pimelodus canosus*): extends southward to the southern United States.

#### 127. Ameiurus vulgaris Thompson.

Long-jawed Catfish.

Lacustrine and fluviatile.

Lake Champlain and Provinces of Ontario and Manitoba: ranges in the United States from Vermont westward to Illinois and Minnesota: "most abundant from Lake Erie," (Nash).

#### 128. Ameiurus nebulosus Le Sueur. (Plate VIII, figures 68 and 69).

Common Catfish: Horned Pout.

Lacustrine and fluviatile.

Ranges in Canada from the Maritime Provinces to Manitoba, including the St. Lawrence River and Great Lakes region: recorded from the Saskatchewan River region (Richardson, 1823, as *Silurus felis*): in the United States extending from Maine westward to North Dakota, and southward to the southern States: has been introduced into rivers of California, and into lakes of southern Oregon.

#### 129. Ameiurus melas Rafinesque.

Black Bullhead.

Lacustrine and fluviatile.

Extends from upper St. Lawrence River and State of New York, westward to Nebraska (Gill, 1862, as Amiurus obesus) and Kansas (Gilbert, 1884, as Amiurus cragini): recorded from Medina River, Texas (Cope, 1880, as Amiurus brachyacanthus): presumably Ontario.<sup>†</sup>

# 130. Noturus flavus Rafinesque.

Stone Catfish.

Lacustrine and fluviatile.

Ottawa River:<sup>‡</sup> Lake Champlain: Great Lakes region, extending westward to Montana and Wyoming and southward to Texas.

\*"It is not certain just what its range really is. It is probably chiefly or even entirely confined to the Great Lakes and northward, including possible the upper Mississippi." Jordan and Evermann.

t"I believe that many years ago I took it in the county of Lincoln, Ontario." Nash.

<sup>‡</sup>A very small specimen some 1<sup>3</sup>/<sub>4</sub> inches long passed from the Ottawa River through the water taps of the Ottawa fish hatchery in February, 1909.

#### 131. Schilbeodes gyrinus Mitchill.

Tadpole Stone Cat: Mad Tom. Fluviatile.

Great Lakes region, extending from the Hudson River westward to the Mississippi valley; and probably to be found in Ontario.

# 132. Ictiobus cyprinella Cuvier and Valenciennes. Common Buffalo Fish. Lacustrine and fluviatile. Manitoba: Qu'Appelle valley, Saskatchewan, at the head of the chain of lakes; and Mississippi valley.

133. Ictiobus bubalus Rafinesque.
 Small-mouth Buffalo Fish.
 Fluviatile and lacustrine.
 Manitoba, and Mississippi valley and basin.

# 134. Carpiodes thompsoni Agassiz.

Lake Carp Sucker.

Lacustrine and fluviatile.

Lake Champlain, upper St. Lawrence River, and Great Lakes region, including Lake of the Woods.

# 135. Carpiodes velifer Rafinesque.

- Quillback.
- Fluviatile.

Prairie Provinces, Mississippi valley, and upper Missouri River, extending southward to the Rio Grande.

# 136. Pantosteus jordani Evermann.

Mountain Sucker.

Frequents clear streams.

Upper Missouri valley, streams of the Black Hills, South Dakota, localities in Montana and Idaho, and Columbia River basin: may be found in southern Alberta or perhaps in British Columbia.

137. Catostomus griseus Girard.

#### Gray Sucker.

Fluviatile.

Alberta and Saskatchewan: upper Missouri basin and Platte and Yellowstone Rivers.

#### 138. Catostomus catostomus Forster.

Northern Sucker.

Lacustrine and fluviatile.

Nearly cosmopolitan in the Dominion: ranging from Labrador and New Brunswick to British Columbia, and from the eastern to the western United States, extending southward at least to Latitude 40° N., but has been obtained in West Virginia; and occurs also in Alaska: recorded from Hudson Bay (Forster, 1773, and Pennant, 1788, as *Cyprinus catostomus*), and from "stream near Great Bear Lake and stream near Fort Good Hope" (Preble, 1903-4.)

#### 139. Catostomus macrocheilus Girard.

Columbia River Sucker.

Lacustrine and fluviatile.

Kootenay Lakes; Shushway Lake, Sicamous; and Thompson River, Kamloops; British Columbia: Columbia River basin, and rivers and lakes of the States of Oregon, Washington, Idaho, and Montana.

# 140. Catostomus commersonii Lacépède. (Plate VIII, figures 70 and 71).

Common White Sucker.

Lacustrine and fluviatile.

Very cosmopolitan in British North America, from the Maritime Provinces, Gaspé District, and Labrador, to Alberta: in the United States extending from the eastern States westward to Montana and Colorado and southward to Georgia: recorded from Hudson Bay (Pennant, 1788, as the Namapeth).

#### 141. Catostomus nigricans Le Sueur.

Stone Roller: Black Sucker.

Lacustrine and fluviatile.

Great Lakes region, including Lake of the Woods: in the United States extending from the State of New York to Minnesota and Kansas westward, and to the Carolinas and Arkansas southward.

#### 142. Erimyzon sucetta oblongus Mitchill.

Chub Sucker.

Lacustrine and fluviatile.

Mentioned in "List of the Fishes of Nova Scotia" (Jones, 1879); tributaries of lower St. John River, New Brunswick\* (Cox, 1895, after Adams); St. Lawrence River and tributaries (Fortin, 1865, as *Catostomus tuberculatus*); and Great Lakes region: in the United States extending from Maine westward to the Dakotas, and southward to Virginia and Oklahoma: "gradually passing southward into the typical *sucetta*" (Jordan and Evermann.)

#### 143. Minytrema melanops Rafinesque.

Spotted Sucker.

Lacustrine and fluviatile.

Great Lakes region: southeastward to North Carolina and southwestward to Texas: given here owing to its occurrence in the Great Lakes.

#### 144. Moxostoma anisurum Rafinesque.

White-nosed Red Horse.

Lacustrine and fluviatile.

St. Lawrence River; Great Lakes region, including Lake of the Woods; and Manitoba: Youghiogheny River, Pennsylvania (Cope 1870, as *Ptychostomus velatus*): Ohio River (Rafinesque, 1820, as *Catostomus anisurus*).

<sup>\*</sup>Dr. Cox considers this species to be extinct in New Brunswick, not having seen it for some thirty years. He regards the green pike (*Lucius reticulatus*) as being the cause of its disappearance.

- 145. Moxostoma aureolum Le Sueur. (Plate VIII, figures 72 and 73).
  - Common Red Horse.

Lacustrine and fluviatile.

St. Lawrence River and Great Lakes region, including Lake of the Woods; and Manitoba: abundant west of the Alleghaney mountains to Nebraska: extending southward to Arkansas and Georgia.

# 146. Moxostoma macrolepidotum Le Sueur.

Large-scaled Red Horse.

Lacustrine and fluviatile.

Pine Island Lake and Albany River (Günther, 1868, as *Catostomus macrolepidotus*): Chesapeake and Delaware Bays southward to North Carolina.

#### 147. Moxostoma lesueuri Richardson.

Northern Red Horse.

Lacustrine and fluviatile.

Manitoba: Saskatchewan River and northward of Great Slave Lake, Pine Island Lake, and Albany River district (Richardson, 1823 and 1836, under *Catostomus lesueuri* and other synonyms).

# 148. Moxostoma breviceps Cope.

Short-headed Mullet.

Lacustrine and fluviatile.

Great Lakes region\* and Ohio valley: Youghiogheny River, Pennsylvania (Cope, 1870, as *Ptychostomus breviceps*).

# 149. Placopharynx duquesnii Le Sueur.

Fluviatile.

Detroit River system (at least on the Michigan side): extending southward to Tennessee, Arkansas, and Georgia: "it is probably most abundant in the French Broad River and in the Ozark region" (Jordan and Evermann, 1902).

# 150. Campostoma anomalum Rafinesque.

Stone Roller: Stone Lugger.

Fluviatile, ascending small brooks to spawn.

Detroit River, doubtless Lake Erie, and likely Niagara River:† State of New York, extending westward to Wyoming and southward to Texas.

# 151. Acrocheilus alutaceus Agassiz and Pickering.

Chisel-mouth.

Fluviatile.

Possibly British Columbia: Lower Columbia River and tributaries.

\*"This species seems to be confined to Lake Erie, so far as our Province [Ontario] is concerned." Nash.

<sup>†&</sup>quot;Should and probably does occur in streams flowing into Niagara River and into Lake Erie." Nash.

# 152. Chrosomus erythrogaster Rafinesque.

Red-bellied Dace.

Fluviatile.

Provinces of Ontario, Quebec, and New Brunswick: in the United States extending from Maine westward to Iowa and southward to northern Alabama.

#### 153. Hybognathus nuchalis Agassiz.

Silver Minnow.

Fluviatile.

Lake Ontario region: tributary streams of the United States from the Delaware and Neuse rivers westward to the upper Missouri and southward to Texas and Georgia: embraced under a number of sub-species and varieties.

# Hybognathus argyritis Girard. White Minnow. Fluviatile. Manitoba and upper Missouri region.

#### 155. Pimephales promelas Rafinesque.

Blackhead Minnow: Bull Minnow.

Lacustrine and fluviatile.

Extends from Lake Champlain to the Prairie Provinces, ranging southward to Kentucky and the Rio Grande.

# 156. Pimephales notatus Rafinesque.

Blunt-nosed Minnow.

Fluviatile.

Province of Quebec to Delaware: St. Lawrence River and presumably Ontario: "generally very abundant in small streams west of the Alleghanies" (Jordan and Evermann); extending westward to the Dakotas and southward to Alabama and Arkansas: may be found in Manitoba.

# 157. Mylocheilus caurinus Richardson. Columbia River Chub.

Fluviatile, and marine in that it enters the sea.

British Columbia, including Vancouver Island: extends south to Oregon.

# 158. Semotilus corporalis Mitchill. (Plate VIII, figures 74 and 75).

Silver Chub: Fall-fish.

Lacustrine and fluviatile.

Widely distributed in the rivers and streams of the Maritime Provinces: St. Lawrence River system and streams and ponds of Ontario: abundant also in northern United States east of the Alleghanies.

# 159. Semotilus atromaculatus Mitchill.

Creek Chub: Horned Dace.

Fluviatile.

Maritime Provinces and Provinces of Ontario and Quebec: St. Lawrence River and its tributaries: in the United States extending from Maine westward to Wyoming and southward to Alabama and Georgia.

# 160. Ptychocheilus oregonensis Richardson.

- Squawfish.
- Fluviatile.

British Columbia, including Vancouver Island: States of Washington and Oregon westward to Montana.

# 161. Leuciscus balteatus Richardson.

Columbia River Minnow. Fluviatile.

British Columbia: Columbia river and streams of Puget Sound: presumably westward to Montana (Evermann, 1891, as L. gilli).\*

# 162. Leuciscus elongatus Kirtland.

Red-sided Shiner.

Lacustrine and fluviatile.

"Very abundant in most streams in southern and central Ontario" (Nash, 1908): in the United States "Great Lakes and upper Mississippi Valley, chiefly from Pennsylvania to Minnesota" (Jordan and Evermann).

# 163. Leuciscus nachtriebi Cox

- Nachtrieb Dace.
- Lacustrine.

Certain lakes of northern Minnesota: given here as likely to occur in Lake of the Woods region.

#### 164. Leuciscus neogæus Cope.

Lacustrine and fluviatile.

Provinces of New Brunswick and Quebec, and presumably Ontario: also locally known from Michigan to South Dakota.

#### 165. Opsopœodus emiliæ Hay.

Fluviatile.

Streams tributary to Lake Erie: also distributed from southern Indiana southward to Georgia: given here owing to its occurrence in Lake Erie waters.

# 166. Abramis crysoleucas Mitchill. (Plate VIII, Figures 78 and 79).

Bream: Roach: Golden Shiner.

Lacustrine and fluviatile-abounding in bayous and weedy ponds.

Maritime Provinces, including Prince Edward Island: in the United States from the eastern States westward to Dakota and southward to Texas.

#### 167. Cliola vigilax Baird and Girard.

Bullhead Minnow.

Fluviatile.

Detroit, Michigan (Cope, 1866, as *Hybopsis tuditanus*), and therefore given here owing to its occurrence so close to our border: extends from Ohio westward to Iowa and southward to Texas and Georgia.

<sup>\*&</sup>quot;Apparently not distinct from L. balteatus." Jordan and Evermann.

168. Notropis jordani Eigenmann and Eigenmann. Jordan's Shiner. Fluviatile. South Saskatchewan River, Medicine Hat, Alberta.

#### 169. Notropis cayuga Meek.

Cayuga Shiner.

Lacustrine and fluviatile.

Qu'Appelle Valley, Saskatchewan: extends from northern New York State westward to South Dakota and Nebraska and southward to Arkansas: may be found in Ontario and Manitoba.

170. Notropis fretensis\* Cope.

#### Fluviatile.

Detroit River, Michigan (Cope, 1866, as *Hybopsis fretensis*) therefore given here as being so near our border.

#### 171. Notropis muskoka Meek.

Muskoka Shiner. Lacustrine and fluviatile. Gull Lake and adjacent waters, Muskoka, Ontario.

#### 172. Notropis heterodon Cope.

Blackchin Minnow. Fluviatile.

"Ranges from the St. Lawrence River westward" (Nash, 1908): in the United States extending, probably under a number of varieties,<sup>†</sup> from the State of New York to Michigan and Kansas.

#### 173. Notropis blennius Girard.

Straw-coloured Minnow.

Lacustrine and fluviatile.

Upper St. Lawrence River and Great Lakes region, including Lake of the Woods, to Manitoba: in the United States, under several varieties, extends from Ohio to Dakota and southward to Texas.

#### 174. Notropis volucellus Cope.

#### Fluviatile.

Detroit River, Michigan (Cope, 1864, as *Hybognathus volucellus*) therefore given here as being so near our border: known from northern Indiana, Michigan, and Wisconsin.

#### 175. Notropis scylla Cope.

Fluviatile: "sandy streams of the plains."

"Illinois River to western Kansas and Montana" (Jordan and Evermann): given here as likely to occur in the Prairie Provinces.

\*"A doubtful species, perhaps identical with Notropis cayuga." Jordan and Evermann.

*t"Notropis heterodon* is apparently subject to large variations." Jordan and Evermann.

176. Notropis hudsonius De Witt Clinton.
Spawn-eater: Spot-tail Minnow.
Lacustrine and fluviatile.
Great Lakes: State of New York westward to the Dakotas, and southward to South Carolina.

# 177. Notropis hudsonius selene Jordan.

Spawn-eater.

Lacustrine and fluviatile.

Lake Superior; Lake of the Woods; Prairie Provinces; and Hayes River, 15 miles above York Factory, Hudson Bay region (Preble, 1900).

#### 178. Notropis whipplii Girard.

Silverfin: Satin-fin Minnow.

Lacustrine and fluviatile.

St. Lawrence River and Great Lakes region: in the United States from central New York State westward to Minnesota and southward to Alabama and Arkansas.

#### 179. Notropis cornutus Mitchill.

Dace: Redfin.

Fluviatile.

Widely distributed in Canada from New Brunswick and Province of Quebec to Manitoba: will probably be found in the Prairie Provinces: in the United States "entire region east of the Rocky Mountains excepting the south Atlantic States and Texas: its varieties are great, some of them appearing like distinct species" (Jordan and Evermann).

# 180. Notropis jejunus Forbes.

Poor Minnow.

Lacustrine and fluviatile.

Lake of the Woods and Prairie Provinces: extending in the United States to Kansas and Pennsylvania.

# 181. Notropis scopifer Eigenmann and Eigenmann.

Fluviatile.

The three Prairie Provinces, viz:-Manitoba, Saskatchewan, and Alberta.

#### 182. Notropis atherinoides Rafinesque.

Great Minnow.

Lacustrine and fluviatile.

St. Lawrence River and Great Lakes region; Lake of the Woods; Prairie Provinces; and Ohio and Mississippi Valleys.

# 183. Notropis rubrifrons Cope.

Rosy-front Minnow.

Lacustrine and fluviatile.

Recorded from the St. Lawrence River and Lake of the Woods: in the United States extending from the State of New York westward to southern Michigan and southward to Kansas.

# PLATE VIII.

- 60-61. Hyodon tergisus (Mooneye)
- 62-63. Clupea harengus (Common Herring)
- 64-65. Clupea pallasii (California Herring)
- 66-67. Brevoortia tyrannus (Menhaden)
- 68-69. Ameiurus nebulosus (Common Catfish)
- 70-71. Catostomus commersonii (Common White Sucker)
- 1 73. Moxostoma aureolum (Common Red Horse)
- 74-75. Semotilus corporalis (Silver Chub or Fallfish)
- 76-77. Cyprinus carpio (German Carp)
- 78-79. Abramis crysoleucas (Bream or Roach)
- S0 81. Anguilla chrysypa (American Eel)
- S2. Leptocephalus conger (Conger Eel)
- S3-84. Lucius reticulatus (Green Pike)

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# PLATE VIII.

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Hyodon (ergisus (Mooneye)	60-61.		
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(lupea pallasii (California Herring)	61-65.		
Brevoortia tyrannus (Meahaden)	: 66-67:	-	14.1
Ameiurus nebulosus (Common Catfish)	. 69–80		
Catalana and the second	70-71		
Moxostoma aureolum (Common Red Horse:			
Semotilus corporalis (Silver Chub or Fallish)	. 67-1-7		
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	Hyodon tergisus (Mooneye) (000000000000000000000000000000000000	<ul> <li>60-61. Hyodon tergisus (Mooneye)</li> <li>61-65. Chupea pallasii (California Herring)</li> <li>66-67: Brevoortia tyramus (Meahalen)</li> <li>63-69. Ameinus nebulosus (Common Catfish)</li> <li>69. 70. 71. Caston annohum (Common Red Horsa)</li> <li>70. 71. Gyprinus garpio (Garman Carp)</li> <li>76-77. Gyprinus garpio (Garman Carp)</li> <li>80.81. Anguilla chrysypa (American Ed)</li> <li>82. Leptoeephalus conger (Conger (Conger Ed)</li> </ul>	<ul> <li>60-61. Hyodon (orgisus (Mooneye)</li> <li>61-65. Clupea pallasii (California Herring)</li> <li>66-67: Brevoortia tyrannus (Meahaden)</li> <li>68-69. Aneiuras nebulosus (Common Catfish)</li> <li>70. 71 (***********************************</li></ul>

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#### 184. Notropis umbratilis Girard.

#### Redfin Minnow.

Fluviatile and lacustrine.

Western New York State westward to Minnesota and southward to North Carolina and Alabama: given here as likely to occur in western Ontario: occurs under numerous sub-species and varieties in many of the States of North America.

#### 185. Rhinichthys cataractæ Cuvier and Valenciennes.

#### Long-nosed Dace.

Fluviatile: "frequenting clear and boisterous streams and rock pools."

Extending in Canada from New Brunswick and Province of Quebec to Lake Superior: "not uncommon at Sault Ste. Marie" (Nash, 1908): in the United States from the New England States westward to Wisconsin and southward to Virginia.

#### 186. Rhinichthys cataractæ dulcis Girard.

Long-nosed Dace.

Fluviatile.

Provinces of Saskatchewan and Alberta: Columbia River basin: "Rocky Mountain region on both sides of the divide" (Jordan and Evermann): headwaters of numerous rivers in western States, including tributaries of Great Salt Lake.

#### 187. Rhinichthys atronasus Mitchill.

Black-nosed Dace

Fluviatile: "clear brooks and mountain streams."

Extending from the Maritime Provinces and Province of Quebec to the Great Lakes region: in the United States extending from the New England States westward to Minnesota and southward to Virginia and northern Alabama.

#### 188. Agosia nubila Girard.

Dusky Minnow.

Fluviatile.

"Basin of Columbia River from western Idaho below the Shoshone Falls of Snake River to the coast, and in coastwise streams from Washington southward into Oregon" (Jordan and Evermann): given here as likely to occur in British Columbia.

# 189. Agosia umatilla Gilbert and Evermann.

#### Idaho Minnow.

Fluviatile.

"Known from the Columbia River at Umatilla and Payette River at Payette, Idaho" (Jordan and Evermann): given here as likely to occur in British Columbia.

#### 190. Agosia falcata Eigenmann and Eigenmann.

Falcate Minnow.

Lacustrine and fluviatile.

Recorded from Shushwap Lake, Sicamous, British Columbia: Columbia River basin and Idaho.

#### 191. Hybopsis dissimilis Kirtland.

Spotted Shiner.

Lacustrine and fluviatile.

Great Lakes region (at least Lake Erie): extending westward to Iowa and southward to the head waters of the Tennessee, and Arkansas.

# .192. Hybopsis amblops Rafinesque.

Silver Chub.

Fluviatile.

State of New York westward to Iowa and southward to Alabama: probably occurs in Canada.

#### 193. Hybopsis storerianus Kirtland.

Lake Minnow.

Lacustrine and fluviatile.

Lakes Ontario and Erie, and Manitoba: in the United States extends westward to eastern Wyoming and southward to Arkansas.

# 194. Couesius plumbeus Agassiz.

Lake Chub.

Lacustrine and fluviatile.

Ranges from Maritime Provinces and Province of Quebec to Lake Superior: recorded from Grant or St. Croix Lake, Mackenzie River region (Preble, 1903-4).

# 195. Couesius dissimilis\* Girard.

Fluviatile. Provinces of Saskatchewan and Alberta, and Montana.

# 196. Couesius greeni Jordan.

Green's Chub. Lacustrine and fluviatile. British Columbia, and Lake Pend d'Oreille, Idaho.

# 197. Platygobio gracilis Richardson.

Flat-headed Chub. Fluviatile.

Prairie Provinces: Athabasca and Mackenzie Rivers (Preble, 1903-4): Missouri and Yellowstone Rivers to the Rocky Mountains: southward to Kansas.

#### 198. Exoglossum maxillingua Le Sueur.

Cutlip Minnow.

Lacustrine and fluviatile.

Lake Champlain, St. Lawrence River, Lake Ontario, and State of New York, southward to Virginia.

<sup>\*&</sup>quot;Very close to C. plumbeus, the only important difference being in the form of the dorsal fin: probably a variety of C. plumbeus." Jordan and Evermann. According to Dr. Cox many authorities regard C. dissimilis and C. greeni as not specifically different from C. plumbeus.

German Carp.

Lacustrine and fluviatile.

Native to Asia, but introduced into Europe long ago; and of late years into North America: has made its way from the United States into the Bay of Quinte and other Canadian waters, being common throughout the Detroit River.

200. Carassius auratus Linnæus.

Goldfish.

Lacustrine and fluviatile.

Native to Japan and China. but introduced into waters of the United States, and well nigh cosmopolitan as an introduced fresh water pond and aquarium fish, wherein it breeds freely—sometimes even in the latter.

201. Anguilla chrysypa Rafinesque. (Plate VIII, figures 80 and 81).

American Eel.

Lacustrine, fluviatile, and catadromous: alleged to move sometimes through damp grass over land to adjacent waters.

Widely distributed in British North America from Newfoundland and Labrador westward; recorded from a stream in Anticosti Island (Schmitt, 1904): "does not occur above the Grand Falls, St. John River" [New Brunswick] (Cox): nor according to Nash above the Falls of Ningara in Ontario, the Falls "forming an insurmountable obstacle to further progress": in the United States extending from Maine westward to the Rocky Mountains, and southward into Mexico and Central America: occurs also in the West Indies: "caught in considerable numbers in Porto Rico in the small bamboo traps or 'nasas' set in the small rivers" (Evermann and Marsh, 1899): recorded from streams and lakes of Greenland (Fabricius, 1780, as Murana anguilla).

#### 202. Simenchelys parasiticus Gill.

Snubnosed Eel.

Bathybial: Parasitic: burrowing into the flesh of the halibut and other fishes.

Recorded from the Banks off Newfoundland and from Sable Island Banks:\* recorded also from the Azores (Collett, 1889, as *Conchognathus grimaldii*).

#### 203. Leptocephalus conger Linnæus. (Plate VIII, figure 82).

Conger Eel.

Marine.

Atlantic Ocean: on the American side extending from Cape Cod to Brazil: recorded by Dr. Stahl from Porto Rico (Evermann and Marsh, 1899): coasts of Europe, Asia, and Africa: has been recorded from New Brunswick—"a specimen taken in Pokemouche Gully in October, 1849" (Cox).

<sup>\*</sup>A specimen collected near Sable Island Banks is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. LVI.

# 204. Avocettina infans Günther.

Snipe Eel.

Bathybial.

Recorded (but with a query\* as to its being this species) from Prince of Wales Island, Alaska, close to the British Columbian border (Bean, 1890, as *Labrichthys gilli*) and therefore given here: otherwise known from West Indies, mid-Atlantic, off Pernambuco; at a depth of 2,500 fathoms.

#### 205. Nemichthys scolopaceus Richardson.

Snipe Eel.

Bathybial.

Atlantic Ocean; and Pacific Ocean, at least if the following (note to which see) is the same species: "fishing banks off the coast" of Nova Scotia (Jones, 1879): Grand Banks, Newfoundland: off New England coast: Madeira Islands: first recorded from south Atlantic (Richardson, 1848).

#### 206. Nemichthys avocetta† Jordan and Gilbert.

Snipe Eel. Bathybial.

Known from vicinity of Victoria, Vancouver Island, and from Puget Sound, State of Washington.

#### 207. Synaphobranchus pinnatus Gronow.

Deep-sea Eel.

Bathybial.

Northern Atlantic and western Pacific: "fishing banks off the coast of Nova Scotia" (Jones, 1879): Banks of Newfoundland: Canary and Madeira Islands: S. affinis Günther, of Japan may be referable to this species.

# 208. Gastrostomus bairdii Gill and Ryder.

Gulper.

Bathybial: has been obtained in from 389 to 1,467 fathoms. Known from Banks of Newfoundland and Davis Straits.

# 209. Lucius reticulatus Le Sueur. (Plate VIII, figures 83, and 84).

Green Pike: Common Eastern Pickerel. Lacustrine and fluviatile.

Ranges from New Brunswick and the St. Lawrence River westward to Ontario: extensively distributed east of the Alleghany Mountains to southern United States.

<sup>\*</sup>In their synonyms of A. infans Drs. Jordan and Evermann query Labrichthys gilli, but add in a foot-note: "probably identical with Avoccttina infans."

<sup>&</sup>lt;sup>†</sup>Perhaps ought not to be regarded distinct as a species from the preceding: "differing in some slight respects from all Atlantic specimens examined, but very likely not a distinct species." Jordan and Evermann.

#### 210. Lucius lucius Linnœus. (Plate IX, figures 85 and 86).

Common Pike.

Lacustrine and fluviatile.

Nearly cosmopolitan in the fresh waters of the northern parts of North America, Europe, and Asia, being the most widely distributed of fresh water fishes: widely distributed in British North America westward to Alberta: extending far north, the limits of its northern distribution not yet well determined, but it occurs in Alaska: extending in the United States from the State of New York westward to the Mississippi valley, perhaps further west, and southward to the Ohio River.

#### 211. Lucius masquinongy Mitchill.

#### Maskinonge.

Lacustrine and fluviatile.

St. Lawrence River and Great Lakes region, embracing the Provinces of Quebee and Ontario: common among the Thousand Islands: said also to occur in Manitoba: ranging from Lake Champlain to the upper Mississippi valley.

#### 212. Umbra limi Kirtland.

#### Mud Minnow.

Lacustrine and fluviatile: sluggish streams and ditches, even living in mud. Ranges from the Province of Quebec westward through the Great Lakes region to Minnesota and southward to the Ohio River.

#### 213. Fundulus heteroclitus Linnaeus.

#### Common Killifish.

Usually in brackish water: burying in the mud of lagoons.

Maritime Provinces, Gaspe Bay, Anticosti Island, and Labrador: in the United States extending from the coast of Maine southward to the Rio Grande.

#### 214. Fundulus heteroclitus macrolepidotus Walbaum.

Common Cobbler.

In brackish water.

Recorded from mouth of Little River, St. John, New Brunswick (Cox, 1895, as F. nigrofasciatus): ranges in the United States from Maine southward to Virginia.

#### 215. Fundulus heteroclitus badius Garman.

Garman's Cobbler. In brackish water. Island of Grand Manan, New Brunswick.

# 216. Fundulus diaphanus Le Sueur.

Fresh-water Killy: Grayback.

Lacustrine, fluviatile, and marine: frequenting river mouths and ascending streams. Maritime Provinces, including Prince Edward Island, and Provinces of Quebec and Ontario: in the United States from Maine to North Carolina.

#### 217. Fundulus notatus Rafinesque.

Top Minnow.

Abounds in ponds and canals.

Detroit River, Michigan, extending southward to southern States: given here as likely to be found on the Ontario side of the Detroit River.

# 218. Macrostoma quercinum Goode and Bean.

Bathvbial.

Grand Banks, Newfoundland, in from 700 to 800 fathoms (Goode and Bean, 1895, as Notoscopelus quercinum): also the Mediterranean.

# 219. Macrostoma margaritiferum Goode and Bean.

Marine

Based upon two specimens from off Banquereau (Goode and Bean, 1895, as Notoscopelus margaritifer).

#### 220. Macrostoma castaneum Goode and Bean.

Marine.

Based upon two specimens from Grand Banks of Newfoundland (Goode and Bean, 1895, as Notoscopelus castaneus).

# 221. Ceratoscopelus madeirensis Lowe.

Lantern Fish.

Bathybial.

Grand Banks of Newfoundland, in some 1,500 fathoms, extending eastward to the Mediterranean.

222. Lampanyctus güntheri Goode and Bean.

Marine.

Grand Banks of Newfoundland.

# 223. Lampanyctus gemmifer Goode and Bean.

Bathybial.

Based upon a specimen in 538 fathoms from Grand Banks of Newfoundland (Goode and Bean, 1895).

224. Nannobrachium nannochir Gilbert. Bathybial. British Columbia: ranges from Santa Barbara Islands, California, to Alaska.

#### 225. Diaphus theta Eigenmann and Eigenmann. Head-light Fish.

Bathybial.

Ranges at least from British Columbia to Point Loma near San Diego, California.

# 226. Rhinoscopelus coccoi Cocco.

Marine.

Coast of Newfoundland: abundant in the Gulf Stream: extends eastward to the Mediterranean and to the coast of Africa.

# 227. Myctophum punctatum Rafinesque.

Lantern Fish.

Marine.

Off Banks of Newfoundland: extending from Gulf Stream eastward to the Mediterranean.

#### 228. Benthosema arcticum Lütken.

#### Marine.

Davis Straits, Greenland (Lütken, 1892, as *Scopelus arcticus*): given here owing to its occurrence in Davis Straits.

#### 229. Tarletonbeania crenularis Jordan and Gilbert.

Marine.

Off Straits of Fuca, State of Washington: Santa Barbara Channel, California: "two small specimens known, one from the stomach of an albacore, the other blown on a vessel during a storm" (Jordan and Evermann): given here owing to its occurrence off Straits of Fuca.

# 230. Arctozenus borealis Reinhardt.

Bathybial.

"Greenland; occasionally southward to Cape Ann" (Jordan and Evermann), and therefore, being a northern fish, but extending south beyond our coasts, mentioned here.

#### 231. Plagyodus ferox Lowe.

Lancet Fish.

Bathybial.

Off Nova Scotia: Grand Banks, Newfoundland: coast of Massachusetts: Madeira, and Canary Islands (Cuvier and Valenciennes, 1849, as Alepisaurus azureus).

#### 232. Plagyodus æsculapius\* Bean.

Wolffish: Handsawfish. Marine. British Columbia: ranges from California northward to Alaska.

#### 233. Plagyodus borealis Gill.

Handsawfish. Marine. British Columbia: ranges from the Aleutian Islands to Puget Sound.

# 234. Percopsis guttatus Agassiz.

Sand Roller: Trout Perch.

Lacustrine and fluviatile.

Ranging more or less locally, sometimes as in the Great Lakes region abundantly, from Lake Champlain westward to Alberta, northward to the Hudson Bay region, and southward to Kansas and the Ohio and Delaware Rivers: ascends the river Moira, passing the town of Tweed, Ontario, at the spawning season in great numbers.

# 235. Columbia transmontana Eigenmann and Eigenmann.

Oregon Trout Perch.

Fluviatile: "sandy or weedy lagoons."

Known from the lower basin of the Columbia river: given here as likely to be found in British Columbia.

<sup>\*&</sup>quot;It does not seem to differ at all from Plagyodus fcrox." Jordan.

#### 236. Notacanthus phasganorus Goode.

- Spiny Eel.
- Marine.

Grand Banks, Newfoundland: known from one specimen which was taken from the stomach of a sleeper shark.

# 237. Macdonaldia rostrata Collett.

Spiny Eel.

Bathybia

Off Newfoundland: stations 2216 and 2553 of the United States s.s. *Albatross*: has also been obtained west of Iceland.

# 238. Lampris luna Gmelin.

Opah: Kingfish.

#### Pelagic.

Recorded from Sable Island,\* Nova Scotia: "off Madeira, occasionally taken off Newfoundland, Maine, and Cuba, also at Monterey and other places in California" (Jordan and Evermann): off coasts of Europe, and in the Mediterranean: British Islands, including coasts of Ireland and the Orkney Islands (Yarrell, 1859).

# 239. Eucalia inconstans Kirtland.

Brook Stickleback.

Fluviatile: in small brooks especially.

Ranges from Maritime Provinces to Alberta: in the United States from State of New York westward to Minnesota: doubtfully recorded from Sukkertoppen, Greenland (Cope, 1865).

# 240. Eucalia inconstans pygmæa Agassiz.

Dwarf Stickleback. Lacustrine. Lake Superior (Agassiz, 1850, as *Gasterosteus pygmœus*)

# 241. Pygosteus pungitius Linnæus.

Nine-spined Stickleback.

Lacustrine, fluviatile, and in brackish water.

Very widely distributed in Canada from the Atlantic probably to the Pacific, and to the Arctic Sea: Newfoundland and Labrador: in the United States south to Long Island, and in Alaska: northern parts of Europe.

#### 242. Pygosteus pungitius brachypoda Bean.

Arctic Stickleback.

Lacustrine and fluviatile.

Arctic regions: "mountain streams and lakes about Baffin's Bay" (Jordan and Evermann).

<sup>\*&</sup>quot;We have before us a drawing of a specimen of *Lampris luna* made at Sable Island by James Farquhar in 1856, and sent with an accompanying letter to Dr. J. Bernard Gilpin, of Halifax." Jordan and Evermann. "A specimen was taken at Sable Island some years ago, a rough sketch of which, with the colours well depicted, was made by one of the men belonging to the establishment there, and given to Dr. Bernard Gilpin, in whose portfolio I saw it and carefully examined it. Although the sketch was rude in the extreme, the peculiar form and brilliant colours left no doubt as to the fish. The man had never seen one before." Jones.
## PLATE, IX.

اند در	Lucius lucius Common Pilce
57 55.	Merluceius bilinearis (Silver Hak · or Whiting)
\$9.90.	Pollachius virens (Pollack)
91-92.	Microgadus tomeod effomeod or Fristiish
93-94.	Gadus callarias (Common Codfish
95-96.	Melanogrammus æglefinus (Haddork)
97.	Lota maculosa (Fresh-water Ling or Burbot)
95 10	Utophycis tenuis (Codling or White Hake)

PLATE IX.	
Lucius lucius (Common Pilto)	85 86.
Meduccius bilinearis (Silver Hales or Whiting)	.28 72
Pollachius virens (Polla 35	.00.02
Microgadus tomeo I (Tomeod or Freetlish)	91-92.
	93.94.
Melanogrammus reglefinus (Haddo 44)	95-96.
Lota maculosa (Fresh-water Ling or Burbot)	
Urophyeis tenuis (Codling or White Haker	.00-80





243.	Gastrosteus aculeatus* Linnæus. Common Stickleback.
	Maritime Provinces; and Gaspé district, Province of Quebec: also found in Ontario: Hud- son Bay, Labrador, and Greenland: extends southward in the United States to New Jersey: coasts and streams of northern Europe.
244.	Gastrosteus atkinsii Bean. Eastern Stickleback. Lacustrine and fluviatile. Province of Quebec and State of Maine.
245.	Gastrosteus cuvieri (firard. Partly Armoured Stiekleback. Lacustrine, fluviatile, and in brackish water. Labrador, Newfoundland, and Anticosti Island (Schmitt, 1904, as <i>Gasterosteus bispinosus</i> ): extending southward to the coast of Massachusetts.
246.	Gastrosteus cataphractus Pallas.
	Alaska Stuckleback. Marine: "rarely or never entering fresh water." British Columbia: ranges from California to Alaska, hence to Siberia and Japan.
247.	Gastrosteus williamsoni microcephalus Girard. California Stiekleback. Coastwise streams and brackish water. British Columbia: ranges from Lower California, Mexico, to Alaska.
248.	Apeltes quadracus Mitchill. Four-spined Stickleback. Marine. Maritime Provinces: ranges in the United States from Maine to New Jersey.
249.	Aulorhynchus flavidus (fill. Yellow Stickleback. Marine. British Columbia: ranges from coast of California to Alaska.
250.	<ul> <li>Fistularia tabacaria Linnæus.</li> <li>Trumpet Fish.</li> <li>Marine.</li> <li>"Occasional specimens taken in shore waters [of Nova Scotia] during the summer months" (Jones, 1879): ordinary range, "West Indies and neighbouring seas, generally common; occasional northward to Carolina and Florida, or even to Long Island" (Jordan and Evermann): has been recorded also from coast of Massachusetts.</li> </ul>

<sup>\*</sup>G. acudeatus and G. bispinosus are treated here as one and the same species, the European name being adopted for the two.

#### 251. Fistularia petimba Lacépède.

Trumpet Fish.

Marine.

"Western Pacific, and other warm seas, also recorded from the Bermudas and from Cuba" (Jordan and Evermann): "occasionally taken in shore waters" of Nova Scotia— "a fine specimen......taken at Portugal Cove, Halifax Harbour" and "a small specimen is in the Halifax Museum" (Jones, 1879, as F. serrata).

## 252. Siphostoma griseolineatum Ayres.

Pipefish.

Marine.

British Columbia and Puget Sound, extending southward to California.

#### 253. Siphostoma fuscum Storer.

Common Pipefish.

#### Marine.

Atlantic coast of the United States from Cape Ann southward to Virginia: "two specimens .....taken, 16 May, in Mill cove, Dartmouth,"\* and a specimen obtained in North West Arm, Halifax County, Nova Scotia, 11th May, 1909 (Piers);† and also recorded as "common in shore waters" of Nova Scotia (Jones, 1879, as Syngnathus peckianus).

#### 254. Hippocampus hudsonius<sup>+</sup> De Kay.

Common American Sea-horse.

Marine: attaching itself by coiling its caudal region around sea-weeds or other objects. Recorded from coast of Nova Scotia (Cox—verbally), and from Atlantic coast of Canada (Whiteaves, 1886, as *H. heptagonus*): "Atlantic coast from Cape Cod southward to Charleston" (Jordan and Evermann).

#### 255. Scombresox saurus Walbaum.

Saury: Billfish.

Pelagic: capable when pursued of springing out of the water, and for an interval of skipping along the surface.

Maritime Provinces: both sides of the north Atlantic, and the open sea.

#### 256. Exocœtus volitans Linnæus.

#### Flying-fish.

Pelagic, and capable of suspending itself and moving by its expanded pectoral fins for a time in the atmosphere.

Atlantic coast of North America, northward to Banks of Newfoundland: many coasts and open seas.

\*"Both specimens are males and differ from the normal in having three more rays (43) in the dorsal fin than the maximum normal number (40); and in the dorsal being on  $11\frac{1}{3}$  and 12 rings respectively instead of only 9 rings. It must be either a variety of *S. fuscum* or possibly a new species." Piers.

<sup>&#</sup>x27;Piers says;-"It presented a slight variation from the typical S. fuscum."

*<sup>‡</sup>H. antiquorum* recorded by Jones as "occasionally taken [in Nova Scotia] during the summer months; a Gulf Stream migrant no doubt" is probably referable to this species.

#### 257. Exonautes vinciguerræ Jordan and Meek.

Flying-fish.

Pelagic, and rising out of the water sails or springs through the air. Open Atlantic: extends from off Newfoundland southward, and occurs in the Gulf of Mexico: coasts of southern Europe.

#### 258. Cypselurus heterurus Rafinesque.

Flying-fish. Pelagic, and rising out of the water sails or springs through the air. Grand Banks, Newfoundland, extending to both coasts of Atlantic Ocean.

#### 259. Ammodytes dubius Reinhardt.

Sand Launce: Lant. Marine: sandy shores. Labrador and Greenland, southward to Cape Cod.

#### 260. Ammodytes americanus De Kay.

Sand Launce: Sand Lant. Marine: sandy shores. Maritime Provinces, Gaspe Basin, Labrador, and Newfoundland: southward to Cape Hatteras, North Carolina.

#### 261. Ammodytes personatus Girard.

Sand Launce. Marine: "burying itself in the sand." British Columbia: shores of the Pacific from California to Alaska, including the Aleutian Islands, and westward to Japan.

#### 262. Menidia menidia notata\* Mitchill.

Silverside. Marine. Maritime Provinces and southward.

#### 263. Labidesthes sicculus Cope.

Lake Silverside: Skipjack. Lacustrine and fluviatile. Great Lakes region and Mississippi valley southward to the southern United States.

#### 264. Atherinopsis californiensis Girard.

Pescado del Rey: California Smelt. Marine.

Ordinary range coast of California: three mounted specimens in the Canadian Fisheries Museum were obtained by Mr. S. F. Denton, taxidermist, in British Columbia.

<sup>\*&</sup>quot;An examination of numerous specimens of *Menidia* from various places between Florida and Halifax shows that *M. notata* and *M. menidia* intergrade perfectly. The first will therefore stand as *Menidia menidia notata*." Jordan and Evermann.

#### 265. Chiasmodon niger Johnson.

Black Swallower.

Bathybial

Recorded from Magdalena, Madeira—the first specimen by Lowe in 1850, at a depth of 312 fathoms; and the species found again at the same locality by Johnson in 1862: a specimen obtained by the 'Challenger' in the mid-Atlantic, on 26th August, 1873, at a depth of 1,500 fathoms: two specimens found floating upon the surface of the water—one near the island of Dominica, and the other, in June 1880, at La Have Bank,\* off Nova Scotia, by the Gloucester schooner Bessie W. Somers.

#### 266. Sphyræna argentea Girard.

California Barracuda.

Marine.

Recorded from Vancouver Island, British Columbia (—a specimen in the Provincial Museum, Victoria): "Pacific coast from San Francisco southward to Cape San Lucas; very abundant about the Santa Barbara Islands" (Jordan and Evermann).

#### 267. Palinurichthys perciformis Mitchill.

Rudderfish.

Marine.

Atlantic coast of North America southward to Cape Hatteras, North Carolina: "Two specimens were brought to the Museum [at Halifax] some years ago by a fisherman of Devil's Island" and during the summer of 1885 "they were very plentiful in our [Halifax] harbour" (Honeyman, 1886, as *Palinurus perciformis*): Canso,† Nova Scotia, and Banks of Newfoundland: "one specimen once taken in a live-box off Cornwall [England], having drifted across from America" (Jordan and Evermann).

#### **268.** Palometa simillimus Ayres. (Plate XIII, figures 156 and 157). California Pompano: Poppy Fish.

Marine.

British Columbia and Puget Sound, southward to California.

#### 269. Poronotus triacanthus Peck.

Dollarfish: Harvest Fish. Marine. Maritime Provinces southward to Florida.

#### 270. Icosteus ænigmaticus Lockington.

Ragfish.

Bathybial.

Off the coasts of the States of Washington, Oregon, and California: given here as likely to be found in British Columbian waters.

<sup>\*</sup>This specimen, which had swallowed a fish larger than itself, is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America' vol. IV, pl. CCCXXXII. There is also a fine illustration of this species, which had swallowed a Scopelus much larger than itself in Dr. Günther's 'Introduction to the Study of Fishes' p. 311.

<sup>&</sup>lt;sup>†</sup>"The fishermen call this species the 'Rudder fish,' and are familiar with it, as they state that it follows their sailing vessels into port from the 'Banks.'" Cornish.

#### 271. Acrotus willoughbyi Bean.

## Ragfish.

Bathybial.

Known from the States of Washington and California: given here as likely to be found in British Columbian waters.

#### 272. Zaprora silenus Jordan.

Prowfish.

Marine.

Only two specimens known, one from Nanaimo (the type,\* which is in the Provincial Museum, Victoria) and the other from the Straits near Victoria, Vancouver Island.

## 273. Merluccius bilinearis Mitchill. (Plate IX, figures 87 and 88).

Silver Hake: Whiting.

Marine.

Ranges from the coast of Labrador, embracing Newfoundland, Gulf of St. Lawrence, Maritime Provinces, and the New England States, southward to the Bahama Islands.

#### 274. Merluccius productus Ayres.

Pacific Hake.

Marine.

Ranges from British Columbia (according to Goode from Alaska) and Puget Sound southward to Santa Catalina Island.

## 275. Boreogadus saida Lepechin.

Northern Pollack.

Marine: hiding in holes in floating ice.

Arctic regions of America and Asia, extending from Greenland to Siberia: recorded from Labrador: also said to occur on coasts of Europe—no doubt far north.

#### 276. Pollachius virens Linnæus. (Plate IX, figures 89 and 90).

Pollack: Coalfish.

Marine.

Both sides of north Atlantic: recorded from Davis Straits: † Maritime Provinces southward to State of New York: "on the shores of Spitzbergen;" "in all the northern seas and in the Baltic;" Orkney and Shetland Islands; coasts of England; "on the Irish coast from Waterford along the eastern shore to Belfast;" and "very abundant on the western and northern coasts of Scotland" (Yarrell, 1859): "occurs about Iceland" (Goode, 1888): on the European side at least as far south as the coast of France.‡

<sup>\*</sup>The type specimen is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. CLII.

<sup>&</sup>quot;"The fry, under four or five inches in length, were caught with the trawl-net on the west coast of Davis Straits, during the first voyage of Captain Sir Edward Parry." Yarrell.

t"Concerning the limits of its southern range authorities differ. Günther places this at latitude 46° in the Bay of Biscay, whilst others claim that it enters the Mediterranean. Canestrini states that it has been observed at Taranto. It does not appear, however, that the species is abundant south of the English Channel." Goode.

277. Theragra fucensis\* Jordan and Gilbert. Wall-eved Pollack.

Marine.

British Columbia and Puget Sound southward to coast of California: probably extends northward to coast of Alaska.

278. Microgadus proximus Girard. California Tomcod.

Marine.

British Columbia: ranges from coast of California northward to coast of Alaska, including the Aleutian Islands.

#### 279. Microgadus tomcod Walbaum. (Plate IX, figures 91 and 92).

Tomcod: Frostfish.

Anadromous.

Ranges from coast of Labrador, and embracing the Gulf of St. Lawrence, Gaspe Bay, and Maritime Provinces, southward to the coast of Virginia.

#### 280. Gadus callarias Linnæus. (Plate IX, figures 93 and 94).

Common Codfish.

Marine.

Both sides of north Atlantic: ranging on the American side at least<sup>†</sup> from coast of Labrador, and embracing the Gulf of St. Lawrence, Gaspe Bay, Maritime Provinces, and Newfoundland, southward to coast of Virginia; and on the European side "found universally from Iceland very nearly as far south as Gibraltar" (Yarrell, 1859).

#### 281. Gadus macrocephalus Tilesius.

Pacific Codfish.

Marine.

British Columbia: both coasts of northern Pacific, ranging from Bering Sea southward to the off-shore banks of Oregon and to Japan: said to be very abundant in the sea of Okhotsk.

## 282. Gadus ogac Richardson.

Greenland Codfish.

Marine. Recorded from Labrador and Greenland.

<sup>\*&</sup>quot;This form may intergrade with *Theragra chalcogramma*, though the original types seem well separated. Little is known of its range to the northward." Jordan and Evermann.

 $<sup>\</sup>dagger G$ . callarias, G. macrocephalus, and G. ogac, are very closely allied, and in assigning specific rank to each it is not easy from ichthyological works to determine just where the northern range of G. callarias is as the three forms are often treated of as one and the same species. For instance, Goode says:—"The codfish is usually found in the North Atlantic, in the North Pacific, and in the Polar Ocean, its range extending far beyond the Arctic Circle" thus making no discrimination of species.

## 283. Melanogrammus æglefinus Linnæus. ((Plate IX, figures 95 and 96).

Haddock.

Marine. Both coasts of north Atlantic: on the American side ranging from coast of Labrador south-

ward, and embracing Gulf of St. Lawrence, Maritime Provinces, and Newfoundland, to coast of North Carolina; and on the European side from Iceland and "the Scandinavian coast to East Finmark and Varanger Fjord" (Goode, 1888) southward to the coast of France: "coast of Great Britain, from extreme north to the Land's End" and "all round the shores of Ireland" (Yarrell, 1859).

284. Antimora viola Goode and Bean.
Violet Antimora.
Bathybial.
"Fishing Banks off the coast" of Nova Scotia (Jones, 1879, as *Haloporphyrus viola*): Banks of Newfoundland, and southward.

#### 285. Antimora microlepis Bean.

Small-scaled Antimora. Bathybial. Off Queen Charlotte Islands: also recorded from coast of California and Bering Sea.

## 286. Lota maculosa\* Le Sueur. (Plate IX, figure 97).

Fresh-water Ling: Burbot.

Lacustrine and fluviatile.

Well nigh cosmopolitan in northern North America: recorded from Labrador, and ranging from New Brunswick westward to British Columbia; and from the Arctic regions southward to northern States of the Union.

#### 287. Molva molva Linnæus.

Ling.

Marine.

Reputed to have been recorded off Newfoundland:<sup>†</sup> "common on the northern coasts of Europe, Iceland, and Greenland" (Günther, 1880, as *M. vulgaris*): in the British Islands—"among the Western Islands, in the Orkneys, and on the Yorkshire coast; in Cornwall, and the Scilly Islands; and the species may be traced nearly all round the Irish coast" (Yarrell, 1859, as *Lota molva*): ranges "from Spitzbergen to the Gulf of Gascony......most abundant along the coast of northern Europe, especially in the German Ocean and off Norway" (Jordan and Evermann).

<sup>\*&</sup>quot;The American Burbot is very close to the common species of northern Europe and Asia, Lota lota ......and may prove wholly identical with the latter." Jordan and Evermann. Günther does not distinguish the two, for he says:—"It is locally distributed in Central and Northern Europe and North America." If the two are to be regarded as forms of one and the same species then the geographical range of the fresh water ling is in all probability nearly co-extensive with the fresh waters of the northern part of the northern hemisphere.

<sup>&</sup>quot;It is said to have been found in deep water off Newfoundland, but we have been unable to find the specific record." Jordan and Evermann.

#### 288. Urophycis regius Walbaum.

Codling.

Marine.

"Sir John Richardson gives Halifax as a locality for this species" (Jones, 1879, as *Phycis* regius): north Atlantic southward to Cape Fear.

#### 289. Urophycis tenuis Mitchill. (Plate IX, figures 98 and 99).

Codling: White Hake.

Marine.

Ranges from coast of Labrador southward to coast of North Carolina: Gulf of St. Lawrence, Gaspe Bay, Maritime Provinces, and Newfoundland.

#### 290. Urophycis chuss Walbaum.

Codling: Squirrel Hake. Marine. Geographical range essentially the same as that of the preceding species.

#### 291. Gaidropsarus ensis Reinhardt.

Three-bearded Rockling.

Bathybial.

"Atlantic coast of North America, from Greenland to Cape Hatteras; in deep water, reaching a depth in the Gulf Stream of 1,081 fathoms" (Jordan and Evermann).

#### 292. Enchelyopus cimbrius Linnæus.

Four-bearded Rockling.

Marine.

Both sides of north Atlantic, extending southward to the Gulf Stream: recorded from Chedabucto Bay, vicinity of Canso, Nova Scotia (Cornish, 1901 or 1902): "fishing banks off the coast" of Nova Scotia (Jones, 1879, as *Onus (Rhinonemus) cimbrius*): has been obtained in Bay Chaleur: "not uncommon on the southern coast of Sweden;" found also "among the islands of the Kattegat, on the west coast of Norway;" and recorded from the Frith of Forth and Rothsay (Yarrell, 1859, as *Motella cimbria*).

**293.** Brosme brosme Müller. (Plate X, figures 100 and 101).

Cusk.

Marine.

Both sides of north Atlantic: ranging on the American side from Greenland, and embraeing Labrador, Newfoundland, Maritime Provinces, and New England States, southward to coast of Massachusetts: "occurs in Iceland and Spitzbergen, and along the entire length of the Scandinavian Peninsula," and "occasionally taken in the Frith of Forth" (Goode, 1888): frequently found "in the Orkney Islands, and swarms among those of Zetland;" "among the Farce Islands;" "coasts of Norway as far as Finmark;" and "just touches the most northern point of Denmark, at Skagen in Jutland" (Yarrell, 1859, as Brosmius vulgaris).

294. Moseleya cyclolepis Gilbert. Bathybial.

Off Queen Charlotte Islands, British Columbia.

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100-101.	Bannie (Cust)
102-103.	Ponux, quoi les (Calico B:
104-105.	collipping and estris (Rock Bass)
106-107.	Euperante se common Samah
108-109.	Microptech admoides (La) e nouth Black Bran
110-111.	Microphenes Informate, Smill-month Black B.(3)
112-113.	Stizostellon, silve un Pine Perch
114-115.	Stizoste don canadense Sauger
116-117	Perca flavescon – Yellow Perch
118/119	Roccus lineatus Stripe   Bass)
120-121.	Mor o consecteana White Perchi
122.	Cynoscion regalis (Common Weaktish
123-124.	Apholanot is grunniens (Fresh-water Drum or Lake Sheepshead)

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10100	·
102-103.	Pomoxis sparwides (Calico Bas-
104-105.	Ambloplites rupestris (Rock Bass)
 106-107.	Eupomotis gibbosus (Common Sun.ish,
1.10 1	(1,2,2,2)
110-111.	Micropterus dolomicu (S.nall-mouth Black Base
112-113.	stizostedion vitreum (Pike Perch)
1011	
116-117.	Perca flavescens (Yellow Perch,
120-121.	Morone americana (White Perch)
.eer	Cynoseion regalis (Common Weakfish)
123-124.	Aplodinotus grunniens (Fresh-water Drum or Lake Sheepshea

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295.	Albatrossia pectoralis Gilbert. Bathybial. British Columbia: ranges from coast of Oregon northward to Bering Sea.
296.	Chalinura serrula Bean. Bathybial. Coast of British Columbia east of Prince of Wales Island, Alaska.
297.	Chalinura filifera Gilbert. Bathybial. Off Queen Charlotte Islands, British Columbia.
298.	Coryphænoides rupestris Gunner. Bathybial. "Aretic seas and the north Atlantic, on both coasts south to the banks of Newfoundland and Norway" (Jordan and Evermann).
299.	Macrurus holotrachys Günther. Grenadier. Bathybial. Recorded from Banks of Newfoundland, and from the mouth of the Rio de la Plata.
300.	<ul> <li>Macrurus acrolepis Bean.</li> <li>Grenadier.</li> <li>Bathybial.</li> <li>Coasts of British Columbia, and of the States of Washington and Oregon: also recorded from off Bogoslof Island, Bering Sea.</li> </ul>
301.	<ul> <li>Aphredoderus sayanus Gilliams.</li> <li>Pirate Perch.</li> <li>Fluviatile: sluggish streams and bayous.</li> <li>Presumably Ontario:* State of "New York coastwise to Texas, and throughout the Mississippi basin" (Jordan and Evermann).</li> </ul>
302.	Pomoxis annularis Rafinesque. Crappie. Lacustrine and fluviatile: frequenting sluggish waters. Ranges from the St. Lawrence River and Great Lakes region westward to the Dakotas and southward to Texas.
303.	<ul> <li>Pomoxis sparoides Lacépède. (Plate X, figures 102 and 103).</li> <li>Calico Bass: Strawberry Bass.</li> <li>Lacustrine and fluviatile.</li> <li>Provinces of Quebec and Ontario, through the Great Lakes region, including Lake of the Woods, westward to Manitoba: in the United States ranging from eastern States westward to the Mississippi Valley and southward to the southern States.</li> </ul>

<sup>\*&</sup>quot;It should be found in the streams of the Niagara district and at the western end of Lake Erie." Nash.

**304.** Ambioplites rupestris Rafinesque. (Plate X, figures 104 and 105). Rock Bass.

Lacustrine and fluviatile.

Provinces of Quebec and Ontario, embracing the St. Lawrence River and Great Lakes region, westward to Manitoba: in the United States ranging from Vermont westward to the Mississippi Valley and southward to Louisiana and Texas.

#### 305. Chænobryttus gulosus Cuvier and Valenciennes. Warmouth: Goggle-eye. Lacustrine and fluviatile. Presumably Ontario:\* Great Lakes region, westward to Iowa and Kansas, and southward to Georgia and Texas.

#### 306. Apomotis cyanellus Rafinesque.

Green Sunfish. Lacustrine and fluviatile: ascending brooks. Possibly Ontario:<sup>†</sup> ranges from Great Lakes region to Mexico.

#### 307. Lepomis auritus Linnæus.

Long-eared Sunfish: Yellow Belly. Fluviatile. New Brunswick:<sup>‡</sup> Maine to southern United States.

#### 308. Lepomis megalotis Rafinesque.

Long-eared Sunfish. Fluviatile. Possibly Ontario: Ohio to Minnesota, and southward to South Carolina and the Rio Grande.

#### 309. Lepomis humilis Girard.

Red-spotted Sunfish.

Lacustrine and fluviatile

Recorded from Langford Lake, British Columbia§ (May 1908—specimen in Provincial Museum, Victoria): ranges from Ohio westward to the Dakotas and southward to Texas.

<sup>\*&</sup>quot;I am under the impression that some years ago this fish was found in the marsh at Toronto, and also near Hamilton, but of late no specimens have been obtainable. It should occur in Lake Erie and will probably be found in the Niagara district." Nash.

<sup>&</sup>lt;sup>†</sup>"I have no Ontario records of this fish, but as it will probably be found in Lake Erie it is mentioned here." [Check-list Fishes of Ontario.] Nash.

<sup>&</sup>lt;sup>‡</sup>In regard to its occurrence in New Brunswick Dr. Cox says that the only record he knows is that of Dr. Leath Adams, and that its alleged occurrence in that province is extremely doubtful.

<sup>§</sup>This is the only record for Canada of this species known to the author, and the locality is a long way from the hitherto recognized range of the species. It may possibly range in waters of the Prairie Provinces, but as yet does not appear to have been recorded.

#### 310. Lepomis pallidus Mitchill.

Blue Sunfish.

Lacustrine and fluviatile.

Ontario and Great Lakes region: ranging in the United States from the western part of the State of New York westward to the Missouri Valley and southward to the Rio Grande and Florida, or according to Goode to Mexico:

#### 311. Eupomotis euryorus McKay.

Lacustrine and fluviatile.

The type recorded from Fort Gratiot, Lake Huron, Michigan, opposite Point Edward, Ontario (McKay, 1881, as *Lepomis curyorus*); and for that reason mentioned here: also recorded from northern Ohio and northern Indiana.

#### **312.** Eupomotis gibbosus Linnæus. (Plate X, figures 106 and 107).

Common Sunfish.

Lacustrine and fluviatile.

Ranging in Canada from the Maritime Provinces to Lake Huron; and in the United States from Maine westward to the Mississippi Valley, and southward to Florida.

#### 313. Micropterus dolomieu Lacépède. (Plate X., figures 110 and 111).

Small-mouth Black Bass.

Lacustrine and fluviatile.

Widely distributed in the Provinces of Ontario and Quebec, extending through the St. Lawrence River and Great Lakes region westward to Manitoba and the Mississippi Valley, and southward to South Carolina, Mississippi, and Arkansas: introduced into waters of other Provinces of the Dominion, and of various States of the Union, and also into waters of various European countries.

#### 314. Micropterus salmoides Lacépède. (Plate X, figures 108 and 109).

Large-mouth Black Bass.

Lacustrine and fluviatile.

Provinces of Ontario and Quebec, extending through the St. Lawrence River and Great Lakes region westward to Manitoba: ranges in the United States from the Great Lakes westward to the Mississippi Valley, and southward to southern States: also in waters of Mexico.

#### **315.** Stizostedion vitreum Mitchill. (Plate X, figures 112 and 113).

Pike Perch.

Lacustrine and fluviatile.

Provinces of Ontario and Quebec, extending through the St. Lawrence River and Great Lakes region westward to Saskatchewan: Hudson Bay region and Labrador: ranges in the United States from Vermont westward to the upper Mississippi Valley and southward to Alabama and Georgia.

- 316. Stizostedion canadense C. H. Smith. (Plate X, figures 114 and 115).
  - Sauger.

Lacustrine and fluviatile.

Provinces of Ontario and Quebec: distributed under one or two varieties\* from the St. Lawrence River and its tributaries westward, and embracing Manitoba, and perhaps Saskatchewan, to Montana, and southward to Arkansas.

#### 317. Perca flavescens Mitchill. (Plate X, figures 116 and 117).

Yellow Perch: American Perch.

Lacustrine and fluviatile.

Widely distributed in British North America from the Atlantic sea-board to Saskatchewan, and in the United States from Maine to the upper Missouri Valley, and extending southward to North Carolina.

318. Percina caprodes† Rafinesque.

Log Perch.

Lacustrine and fluviatile.

Extends from the Province of Quebec through the St. Lawrence River and Great Lakes region, westward to Lake Superior and Iowa, and southward to the Rio Grande and State of Mississippi.

## 319. Hadropterus aspro Cope and Jordan.

Black-sided Darter.

Fluviatile: frequenting clear gravelly streams.

Ranges from the Great Lakes region westward to Manitoba and the Missouri Valley and southward to Arkansas.

#### 320. Hadropterus güntheri Eigenmann and Eigenmann.

Günther's Darter.

Fluviatile and lacustrine.

Manitoba to Iowa: presumably Fort Gratiot, Lake Huron, Michigan, opposite Point Edward, Ontario (Girard, 1859, as Alvordius maculatus).

#### 321. Cottogaster copelandi putnami§ Jordan and Gilbert.

Putnam's Darter. Lacustrine and fluviatile. Ranges from Lake Champlain to Lake Huron.

**322.** Cottogaster shumardi Girard. Shumard's Darter. Fluviatile.

Possibly to be found in Ontario waters: "Michigan to Ohio, Indiana, and Illinois, and southward to Kentucky and Arkansas" (Jordan and Evermann).

\*Three varieties of this species have been distinguished: the typical form and S. c. griseum and S. c. boreum.

<sup>†</sup>Two varieties of this species have been distinguished: the typical form and P. c. zebra.

*t*"Alvordius maculatus is more likely to be Hadropterus güntheri than H. aspro, as Girard describes it as having the head scaleless. Perhaps both are varieties of one species." Jordan and Evermann.

SQuestionably distinct from the ordinary C. copelandi.

323. Cottogaster cheneyi Evermann and Kendall.

Cheney's Darte

Fluviatile.

Known from Racket River, near Norfolk, St. Lawrence County, State of New York: given here as it may be found in Ontario waters.

#### 324. Boleosoma nigrum Rafinesque.

#### Johnny Darter.

Fluviatile and lacustrine: frequenting streams among gravel and weeds.

St. Lawrence River and Great Lakes region, and Ohio valley, westward to Saskatchewan and upper Mississippi valley, extending southward to Colorado.

#### 325. Boleosoma nigrum olmstedi Storer.

#### Tesselated Darter.

Fluviatile and lacustrine.

Province of Quebec, St. Lawrence River, and southern and eastern parts of Ontario: extending southward to Virginia.

#### 326. Ammocrypta pellucida Baird.

#### Sand Darter.

Lacustrine and fluviatile: burys in the sand in clear streams.

Will likely be found in Ontario: ranges from Lake Erie westward to Minnesota, and southward to Texas.

## 327. Etheostoma boreale Jordan.

#### Northern Darter.

Lacustrine and fluviatile.

Known localities of occurrence:—near Montreal (Jordan, 1884, as Pacilichthys borealis —the type); Gull Lake, Muskoka district, Ontario; and Manitoba: perhaps occurs far north in the Province of Quebec, and records may be looked for from other localities.

#### 328. Etheostoma iowæ Jordan and Meek.

#### Fluviatile and lacustrine.

Saskatchewan and perhaps Manitoba: range extending southward to Iowa and Nebraska.

#### 329. Etheostoma cœruleum Storer.

Rainbow Darter. Fluviatile. Ontario, and Ohio and Mississippi valleys.

#### 330. Etheostoma flabellare Rafinesque.

Fan-tailed Darter.Fluviatile: living in swift streams.Province of Quebec: ranging in the United States westward to Iowa, and southward to southern States.

#### 331. Boleichthys fusiformis Girard.

Fusiform Darter.

"Lowland streams and ponds."

Massachusetts westward to Minnesota, and southward to the Rio Grande: probably occurs in Canadian waters.

## 332. Boleichthys exilis Girard.

Fluviatile

Known from Red River and upper Missouri River basin.\*

#### 333. Microperca punctulata Putnam.

#### Least Darter.

"Clear, cold, weedy streams, and ponds."

Ranges from Michigan, Wisconsin, and Minnesota, southward to Arkansas: perhaps occurs in Canadian waters.

#### 334. Roccus chrysops† Rafinesque.

White Bass.

Lacustrine and fluviatile.

St. Lawrence River and Great Lakes region, westward to Manitoba and Mississippi valley, and southward to Arkansas: recorded from Lake Oromocto, one of the head waters of the Magaguadavic River, New Brunswick<sup>‡</sup> (Cox, 1895, after Adams).

#### 335. Roccus lineatus Bloch. (Plate X, figures 118 and 119).

#### Striped Bass.

Anadromous: essentially a brackish water species.

Atlantic coast of North America, from the Maritime Provinces to the Gulf of Mexico: ascends the Miramichi and St. Lawrence Rivers and tributaries; as well as "the Potomac to the Great Falls, and the other rivers of the Middle States, until it meets obstructions" (Jordan and Evermann): said to occur occasionally in Lake Ontario, and "has been taken at the mouth of the Niagara River"§ (Ramsay Wright): introduced into waters of the Pacific coast by the United States Fish Commission.

<sup>\*&</sup>quot;Specimens of a small darter obtained by Mr. Charles H. Bollman in Clam Lake, Michigan, may belong to this species." Jordan and Evermann.

<sup>&</sup>lt;sup>†</sup>"This is doubtless the Silver Bass of Canada, the details of whose introduction into France, and successful propagation by M. Carbonnier, from 1877 to 1879, are recorded by that experimenter in the Bulletin of the Society of Acclimation for 1881." Goode.

<sup>&</sup>lt;sup>‡</sup>Dr. Cox considers that the present occurrence of this species in Lake Oromocto is doubtful, and not only so, but that the record of Dr. Adams is open to question.

<sup>§&</sup>quot;There is a record of an example taken in the Niagara River at Lewiston, but this may have been a misidentification of the white bass." Jordan and Evermann. "The White Bass or Striped Lake Bass, *Roccus chrysops* is often confounded with the Striped Bass which it closely resembles." Goode.

**336.** Morone americana Gmelin. (Plate X, figures 120 and 121).

White Perch.

Anadromous, being essentially a brackish water species: often landlocked.

Atlantic coast of North America from the Gulf of St. Lawrence and Maritime Provinces to South Carolina: recorded as abounding "in the numerous lakes of Nova Scotia" (Knight, 1866, as *Labrax pallidus*).

## 337. Cynoscion regalis Bloch and Schneider. (Plate X, figure 122).

Common Weakfish.

Marine: on sandy shores.

Mr. S. F. Denton, taxidermist, Wellesley Farms, Mass., writes that he has mounted specimens which he understood from the senders had been obtained at coasts of Nova Scotia: reputed range "Atlantic and Gulf coast of the United States from Cape Cod southward to Mobile" (Jordan and Evermann).

#### 338. Cynoscion nobilis Ayres.

White Sea Bass. Marine. Vancouver Island, southward to coast of California.

#### **339.** Aplodinotus grunniens Rafinesque. (Plate X, figures 123 and 124).

Fresh-water Drum: Lake Sheepshead.

Lacustrine and fluviatile.

Extends from Ontario, through the Great Lakes region, westward to Manitoba; and ranging through the Ohio and Mississippi valleys southward to Louisiana and Texas: also recorded from the Rio Usumacinta, Tabasco, southern Mexico.

## 340. Eques lanceolatus Linnæus.

Ribbon-fish.

Marine.

Recorded from Sherringham Point, British Columbia (specimen in Provincial Museum, Victoria): "West Indies, ranging northward to Pensacola" (Jordan and Evermann): certain warm seas.

#### 341. Ronquilus jordani Gilbert.

Ronquil.

Marine.

Recorded from Departure Bay,\* Vancouver Island, from Puget Sound, and from coast of Alaska.

#### 342. Trichodon trichodon Tilesius.

Sand-fish.

Marine: burys in the sand of sandy shores.

British Columbia: ranges from coast of California to Bering Sea, and Kamehatka (Tilesius, 1811).

<sup>&</sup>lt;sup>1\*</sup>A specimen of this species was dredged at Departure Bay, Vancouver Island, near the Biological Station by the late Rev. G. W. Taylor, the then Curator of the station, and the author, in the Autumn of 1908, being its first record in Canadian waters.

#### 343. Stenotomus chrysops Linnæus.

- Porgy: Common Scup.
- Marine.

Possibly occurs in St. Mary's Bay, Nova Scotia\* (Knight, 1866, as *Pagrus argyrops*): ordinarily ranges from Cape Cod to South Carolina, being "especially abundant northward."

#### 344. Archosargus probatocephalus Walbaum.

- Sheepshead.
- Marine.

Said to be occasional in St. John's Harbour, New Brunswick (Cox, 1895, as *Diplodus probato-cephalus*): ranges ordinarily from Cape Cod to Florida Keys and the Gulf of Mexico.

#### 345. Cymatogaster aggregatus Gibbons.

Sparada: Viviparous Perch. Marine: in shallow water. British Columbia: ranges from Alaska to Lower California, Mexico.

#### 346. Brachyistius frenatus Gill.

Surf-fish. Marine: in shallow water. Ranges from Vancouver Island to Lower California.

#### 347. Amphistichus argenteus Agassiz.

Surf-fish.

Marine: in shallow water.

Ranges from entrance to Straits of Juan de Fuca at Cape Flattery, State of Washington, southward to coast of California: given here as it ought to be found on the British Columbian side of the Straits.

#### 348. Embiotoca jacksoni Agassiz.

Common Surf-fish: Blue Surf-fish. Marine. Ranges from Vancouver Island to Todos Santos Bay.

## **349.** Tæniotoca lateralis Agassiz. (Plate XIII, figures 158 and 159). Striped Surf-fish.

Marine. Ranges from British Columbia to coast of California.

#### 350. Phanerodon furcatus Girard.

White Surf-fish. Marine. Ranges from British Columbia to coast of California.

<sup>\*&</sup>quot;This fish is seldom found north of Cape Cod. About the year 1833, an attempt was made to introduce them [sic] into the waters north of the Cape, but with no success, the water proving too cold to enable them to breed there. The only authority that the writer possesses as to their existence on the coast of Nova Scotia, is, the 'Official Circular' from Mr. Gidney, the collector of Sandy Cove, in which it is stated that *porgics* are occasionally seen in St. Mary's Bay. If they are the true *porgics* they have probably strayed from a warmer latitude in pursuit of food." Knight.

## PLATE XI.

- 125–126 Tautogolabrus ad-persus (Cunner
- 127/128. Tautoga onitis (Tautog
- 129–130 Scomber scombrus (Common Macherel
- 131. Hippoglossoides platessoides (Sand Dab)
- 152 Hippoglossus hippoglossus (Halibut)
- 133 Hippoglossus hippoglossus (Halibut-specimen with the eyes on the left side of the head, an abnormal but an occasional character)
- 134 135. Pseudopleuronectes americanus (Winter Flounder)

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## PLATE XL.

- 115 11 Tautogolabrus adspersus (Cunner)
  - (i) office of the local office office
- and the second of the interview of the second second
- 131. Hippoglossoides platessoides (Sand Dab)
  - (i) III and the second seco
- 133. <sup>1410</sup> "Hippoglossus hippoglossus (Halibut-specimen with the eyes on the left side of the head, an abnormal but an occasional character.
  - 134-135. Pseudopleuronectes americanus (Winter Flounder)

<sup>(</sup>a) Providence of the second secon



- 351. Damalichthys argyrosomus (Girard. (Plate XIII, figures 160 and 161).
  - Porgee.

Marine: "entering the inlets in thousands."

Pacific Coast from British Columbia and Puget Sound to Lower California.

## 352. Tautogolabrus adspersus Walbaum. (Plate XI, figures 125 and 126).

#### Cunner.

Marine: in harbours and bays.

Atlantic coasts of North America extending from Labrador and Newfoundland to Sandy Hook, and embracing the Gulf of St. Lawrence, Gaspe Bay, Maritime Provinces, and New England States.

Tautoga onitis Linneus. (Plate XI, figures 127 and 128).
 Tautog: Black-fish.
 Marine: among rocks and kelp.
 Atlantic coasts of North America from the Maritime Provinces to South Ca

## 354. Scomber scombrus Linnæus. (Plate XI, figures 129 and 130).

Common Mackerel

Marine

Both sides of North Atlantic: on the American side from Labrador to Cape Hatteras, North Carolina; and on the European side from Norway to the Mediterranean and Adriatic.

#### 355. Scomber japonicus Houttuyn.

Chub Mackerel.

Widely distributed in the Atlantic and Pacific Oceans: extending as far northward as British Columbia, Labrador, and England: abounds off the coast of California, in the Mediterranean, and "everywhere in Japan" (Jordan, 1905).

#### 356. Gymnosarda pelamis Linnæus.

Oceanic Bonito.

Pelagie.

Warm seas; ranging northward on the western side of the Atlantic to the Bermudas and Cape Cod: recorded from the Atlantic coast of Canada (Whiteaves, 1886, as *Euthynnus pclamys*):\* also recorded from coast of California: coasts of Europe,—including coasts of Britain (Yarrell, 1859, as *Thymnus pclamys*).

<sup>\*</sup>The small specimen upon which this record is based is in a very poor state of preservation and hard to determine, but judging by what can be made out from the ragged and broken condition of the fins and their rays, and the otherwise mutilated condition of the specimen it does not appear to be this species. Certain of its characers, some of them more or less obscure, are as follows:—Maxillary not reaching the posterior border of the orbit: pectorals about mid-way between dorsal and ventral outlines: caudal deeply forked: anterior dorsal elongate with 20 rays: posterior dorsal and anal short: S dorsal and 7 anal finites: many other characters obscured, with little but the flesh remaining on the left side, and skin of the right scaleless, except very small scales, forming a corselet, which does not appear to extend beyond the pectoral fin. It would appear to agree more closely with *Sarda* than with *Gymnosarda*.

#### 357. Thunnus thynnus Linnæus.

Tunny: Horse Mackerel.

#### Pelagic.

Occurs on the Atlantic coast of Canada and the United States, around the coast of Newfoundland and at the Loffoden Islands: also on the Pacific coasts as far northward as California and Japan: "abundant in the Mediterraneean and ranging to the south coast of England and to Tasmania" (Günther, 1880): Yarrell (1859) says it has "been taken among the islands west and north of Scotland" and at a few other Scottish localities, and mentions "two instances of its having been taken on the Irish coast": occurs also in the Indian Ocean (Boulenger, 1910).

#### 358. Germo alalunga Gmelin.

Longfinned Albacore.

Pelagic.

Widely distributed, but rare on the Atlantic coast of America: a specimen obtained at Banquereau at a depth of 300 fathoms in the summer of 1878 (Jones, 1879, as *Orcynus alatunga*): occurs on the Pacific coast northward to California, and abundant at the Santa Barbara Islands: "very common in the Mediterranean."

#### 359. Sarda sarda Bloch.

Bonito.

Pelagic.

Abundant in Atlantic Ocean northward to Cape Cod: oceasional on coast of Nova Scotia— "a very rare fish in these waters" (Piers, 1902): "a young example captured at the mouth of Halifax Harbour" (Jones, 1879, as *S. pelamys* if such signifies this species): inhabits the open ocean, and occurs on both sides of the Atlantic.

## 360. Sarda chilensis Cuvier and Valenciennes.

California Bonito. Marine. British Columbia: ranging in the Pacific Ocean from Patagonia to Japan.

## 361. Escolar violaceus Bean.

#### Escolar.

Bathybial.

Type specimen\* from La Have Bank, off Nova Scotia (Bean, 1887, as *Thyrsitops violaccus*): "lives in the abysses of the Gulf Stream" (Jordan, 1905).

#### 362. Benthodesmus atlanticus Goode and Bean.

Marine.

"One specimen taken from the stomach of a halibut caught on the western edge of the Grand Banks of Newfoundland in 80 fathoms" (Jordan and Evermann).

<sup>\*</sup>This specimen is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. CXXXV, and the specimen of the following species (*Benthodesmus atlanticus*) in pl. CXXXVI.

#### 363. Xiphias gladius Linneus.

Sword-fish.

Pelagic.

Atlantic Ocean, and on both its sides: Maritime Provinces and Newfoundland Banks: occurs also in the Pacific Ocean, and in the Mediterranean; and according to Goode (1888) enters the Baltic: otherwise distributed in many seas, being, be it said, "of nearly world-wide distribution" and "occurring oceasionally on the coasts of Great Britain and Ireland" (Boulenger, 1910); and also occurring at the South Sea Islands (Günther, 1887); yet according to Jordan (1995) "rare off the California coast" and "searcely known in Japan."

#### 364. Naucrates ductor Linnæus.

Pilot-fish

Pelagic.

"Known in all tropical and temperate seas" (Günther, 1880): "oceasionally appears on our [British] coasts, accompanying large sharks and ships" (Boulenger, 1910): "our specimen was brought to the Museum [at Halifax] for identification—it must have been caught near our harbour"—(Honeyman, 1886): "oceasional on our Atlantic coast from Cape Cod to the West Indies" (Jordan and Evermann).

#### 365. Seriolo zonata Mitchill.

Rudderfish: Banded Seriole.

Marine.

A specimen "was caught on the banks south of Devil's Island" off Nova Scotia (Honeyman, 1886): ranges ordinarily from Cape Cod to Cape Hatteras.

366. Decapterus macarellus Cuvier and Valenciennes.

Mackerel Shad.

Marine.

Chedabucto Bay, Canso, Nova Scotia:\* "warm parts of the Atlantic, straying northward to Cape Cod; scarce on our coast" (Jordan and Evermann).

#### 367. Trachurops crumenophthalmus Bloch.

Goggler.

#### Marine.

Recorded from Canso, Nova Scotia:<sup>†</sup> ordinarily ranges on the Atlantie and Pacific<sup>‡</sup> coasts of tropical America, extending occasionally northward to Cape Cod: abundant at the West Indies, the Bermudas, the Hawaiian Islands, and on the west coast of Mexico: occurs besides in most tropical seas, and on the coast of Africa: "in the Indian Ocean, the Red Sea, and off the coast of Guinea" (Goode, 1888, as *Caranx crunecophthalmus*).

<sup>\*&</sup>quot;Two specimens of this species were caught in the Chedabucto Bay trap-nets. They were wholly unfamiliar to the fishermen, and are apparently rarely seen at Canso." Cornish.

<sup>&</sup>lt;sup>4</sup>"Two specimens were taken in the trap-nets by local fishermen, to whom the fish was unknown before. The specimens were found to differ from the description of Drs. Jordan and Evermann in two respects—there are no scales on the checks, and along the side, a bright golden yellow band passes longitudinally below the lateral line anteriorly; but about midway it crosses and then passes back above the lateral line." Cornish. Mr. Cornish queries the species.

t"We are unable to see any difference between the Pacific Coast form *Trachurus brachychirus*, Gill, and the ordinary *crumenophthalmus*." Jordan and Evermann.

#### 368. Caranx crysos Mitchill.

Hardtail: Yellow Mackerel.

Marine.

According to Jones, not uncommon in the waters of Nova Scotia (1879, as *Paratractus pisquetus*): ranges southward to coast of Brazil: according to Evermann and Marsh "one of the best game-fishes of Porto Rico."

#### 369. Selene vomer Linnæus.

Moonfish.

Marine.

"Specimens are occasionally taken in shore waters" of Nova Scotia (Jones, 1879, as Argyriosus vomer); and "the young of it is said, in one or two instances, to have been found as far north as Halifax" (Honeyman, 1886, as S. argentea): ordinarily Atlantic and Pacific\* coasts of America "from Cape Cod to Brazil, and from California to Peru": included among the fishes of Porto Rico "on the authority of Poey and Stahl" (Evermann and Marsh, 1899).

#### 370. Pomatomus saltatrix Linnæus.

Bluefish.

Marine.

"Inserted on the authority of Dr. Bernard Gilpin, who has seen specimens taken on this [Nova Scotian] coast" (Jones, 1879): widely distributed: Atlantic and Indian Oceans, and occasionally occurring in the Mediterranean.

#### 371. Brama raii Bloch.

Pomfret.

Pelagic.

British Columbia and Puget Sound, southward to Santa Catalina: Grand Banks, Newfoundland, and the Bermuda Islands: coasts of Europe, including the British Isles, and northward to the Faröe Islands: also occurs on the coast of Japan.

## 372. Atheresthes stomias Jordan and Gilbert.

Arrow-toothed Halibut. Marine.

British Columbia: ranges from coast of California northward to Bering Sea.

## 373. Reinhardtius hippoglossoides Walbaum.

Greenland Halibut.

Marine.

Arctic regions, extending southward to the Grand Banks and to Finland: coasts of Greenland: Fortune Bay, Newfoundland: recorded from Canso, Nova Scotia (Cornish, 1901 or 1902): "occasional specimens are brought us from the northern fishing banks [of Nova Scotia], but it is more common off Newfoundland" (Jones, 1879, as *Platy-somatichthys hippoglossoides*).

\*"The Pacific Coast form brevoortii—pacificus, is not evidently different from Sclene romer." Jordan and Evermann.

†"It is said to be found chiefly in the ice-fiords and between the great ice fields in Northern Greenland." Jordan and Evermann.

#### 374. Hippoglossus hippoglossus Linnaus. (Plate XI, figures 132 and 133).

Marine.

375. Lyopsetta exilis Jordan and Gilbert.

#### Marine.

Ranges from coast of California, at least as far north as Puget Sound: probably occurs in waters of British Columbia.

- 376. Eopsetta jordani Lockington.
  - California Sole.
  - Marine.

British Columbia and Puget Sound southward to coast of California.

#### 377. Hippoglossoides platessoides Fabricius. (Plate XI, figure 131).

Sand Dab: Rough Dab.

Marine.

Both sides of North Atlantic: ranging on the American side from Greenland southward to coast of Massachusetts, and embracing Labrador, doubtless Newfoundland, Gulf of St. Lawrence, Gaspe Bay, Maritime Provinces, La Have Bank, and New England States; and on the European side from the Scandinavian coast southward to the coast of England.

378. Hippoglossoides elassodon Jordan and Gilbert.

#### Marine.

British Columbia: ranges from Bering Sea southward to Puget Sound: also occurs on coast of Kamchatka.

## 379. Psettichthys melanostictus Girard.

Sole.

Marine: near the shore. British Columbia: ranges from coast of Alaska southward to coast of California.

#### 380. Pleuronichthys cœnosus Girard.

Muddy Flounder. Marine.

British Columbia and Puget Sound: ranging from coast of California to coast of Alaska.

## 381. Parophrys vetulus Girard.

Sharp-nosed Flounder. Marine. British Columbia: ranges from Santa Barbara, California, to coast of Alaska.

- 382. Inopsetta ischyra Jordan and Gilbert. Marine. Recorded from Puget Sound: given here as likely to occur in British Columbia.
- **383.** Isopsetta isolepis Lockington. Marine.

Range known to extend from Puget Sound south to Point Concepcion: doubtless occurs in British Columbia.

 384. Lepidopsetta bilineata Ayres. (Plate XIII, figure 153). Two-lined Flounder. Marine.
 British Columbia: ranges from coast of California to Bering Straits: "in Bering Sea it far outnumbers all other flounders" (Jordan and Evermann).

#### 385. Limanda ferruginea Storer. (Plate XII, figures 148 and 149).

Rusty Dab.

Marine.

Maritime Provinces and Gaspe Bay: ranges from coast of Labrador southward to State of New York.

#### 386. Limanda aspera Pallas.

- Alaska Dab.
- Marine.

Ranges from Vancouver Island northward to Bering Sea, and from Siberia southward to Sea of Okhotsk.

## 387. Pseudopleuronectes americanus Walbaum. (Plate XI, figures 134 and 135).

Winter Flounder: Common Flatfish.

Marine.

Ranges from the coast of Labrador southward to South Carolina, and embracing Gulf of St. Lawrence, Maritime Provinces, and New England States.

#### 388. Liopsetta putnami Gill.

Eel-back Flounder: Smooth Flounder. Marine.

Atlantic coast of North America, ranging from beyond Labrador southward to Cape Cod: its records within the limits of its range appear to be somewhat local: recorded from Labrador; Tignish, Prince Edward Island (Cornish, as *Lepidopsctta putnami*); Grand Manan; and represented in the United States National Museum, and in the Museum of Comparative Zoology, by specimens from various localities on the New England coast.

#### 389. Platichthys stellatus Pallas. (Plate XIII, figure 150).

Starry Flounder.

Marine: in shallow water: sometimes ascends rivers.

British Columbia: widely distributed from the Arctic Ocean southward to the Amur River, and Pacific coasts of Asia: abounds in Bering Sea.

- 390. Microstomus pacificus Lockington. Slippery Sole. Marine. British Columbia: ranges from coast of California northward to the Aleutian Islands.
- 391. Glyptocephalus cynoglossus Linnaeus. Craig Fluke: Pole Flounder. Marine. Both sides of North Atlantic: "abundant in Bedford Basin, the inner expansion of Halifax

Harbour" (Goode, 1888): recorded from Chedabucto Bay, Nova Scotia (Cornish, 1901 or 1902): La Have fishing bank (Jones, 1879): on the American side ranges southward at least to coast of Massachusetts; and northward according to Goode (1888) "it ranges nearly to Greenland": occurs also on certain European coasts.

- 392. Glyptocephalus zachirus Lockington. Long-finned Sole. Marine. British Columbia: ranges from coast of California northward to Bering Sea.
- 393. Lophosetta maculata Mitchill. ERRATUM

For 393 Lophosetta maculata read 393 Lophopsetta maculata.

#### 394. Citharichthys, sordidus Girard.

Soft Flounder. Marine. Ranges from British Columbia southward to the Mexican boundary.

- 395. Gobius nicholsii Bean. Marine. Coast of British Columbia.
- 396. Lepidogobius lepidus Girard. Goby. Marine. Ranges from Vancouver Island to Lower California.
- 397. Quietula y-cauda Jenkins and Evermann. Lives in mud flats at mouths of rivers and lagoons. Ranges from British Columbia to Guaymas, Sonora.
- 398. Clevelandia ios Jordan and Gilbert. Goby. Marine. British Columbia and Puget Sound.

#### 399. Remora remora Linnæus.

Remora: Sucking-fish.

Marine: attaching itself to sharks, vessels, or other objects.

Recorded from Atlantic coast of Canada (Whiteaves, 1886, as *Remora squalipeta*—specimen in Canadian Fisheries Museum): from Sechart, British Columbia (specimen in Provincial Museum, Victoria): from the British Islands\* (Yarrell, 1859, as *Echeneis remora*): ordinarily ranges in warm seas—in North America extending northward to the coasts of the States of New York and California: abounds in the West Indies.

400. Sebastes marinus Linnaus. (Plate XII, figures 136 and 137).

#### Snapper: Rose-fish.

Marine.

Both sides of the Atlantic Ocean: on the American side ranging from Greenland and Labrador southward to off the coast of New Jersey, and embracing the Maritime Provinces and Newfoundland: coasts of Europe northward to Iceland and Spitzbergen and southward to the British Channel.

#### 401. Sebastolobus alascanus Bean.

Bathybial.

British Columbia: coast of California to Alaska and Bering Sea.

- 402. Sebastolobus altivelis Gilbert.
  - Bathybial.

British Columbia: Alaskan Peninsula, and off the coast of California.

## 403. Sebastodes paucispinis Ayres. (Plate XIII, figure 162). Jack-fish: Bocaccio.

Marine.

- 3 specimens, obtained by Mr. S. F. Denton, Taxidermist, from British Columbia, in the Canadian Fisheries Museum: a specimen listed in 1898 by Mr. John Fannin, at that time Curator of the Provincial Museum, Victoria, as belonging to the collection of that museum; but without locality:<sup>†</sup> ordinarily ranges on coast of California.
- 404. Sebastodes melanops Girard. (Plate XIV, figures 177 and 178). Black Sea Bass. Marine.
   Vancouver Island: ranges from Monterey to Kadiak Island, Alaska.
- 405. Sebastodes mystinus Jordan and Gilbert. (Plate XIV, figures 175 and 176). Black Rock-fish: Priest-fish. Marine: in rather shallow water. Vancouver Island to coast of California.

<sup>\*&</sup>quot;Though natives of warmer latitudes, it is not surprising that they should occasionally come into precincts of the channel sticking on the bottoms of ships or transported by cosmopolite sharks." Yarrell.

<sup>&</sup>lt;sup>†</sup>Mr. Kermode, the present Curator, considers that Mr. Fannin was in error in listing this species, as no specimen can be found in the museum.
# PLATE XIL

136 137.	Sebastes marinus (Snapper or Rosefish)
138 139.	Myoxocephalus octodecimspinosus (Common Sculpin
140-141.	Myoxocephalus grænlandicus (Daddy Sculpin
142-143.	Hemitripterus americanus (Sea Raven
144-145.	Anarhichas lupus (Wolf-fish)
146-147.	Zoarces anguillaris (Eel Pout)
148-149.	Limanda ferruginea (Rusty Dab

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# PLATE XIÌ.

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- 140-141. Myoxocephalus grœnlandicus (Daddy Seulpin)
- 142-143. Hemitripterus americanus (Sea Raven)
  - 14-145. Anarhichas lupus (Wolf-fish)
- 146-147. Zoarces anguillaris (Eel-Pout) : in a studie energy in the b
  - 148-149. Limauda ferruginea (Rusty Dab)
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406.	Sebastodes brevispinis Bean. Marine.
	Known from a specimen from Hassler Harbour, southeastern Alaska: may possibly be found in waters of British Columbia.
407.	Sebastodes alutus Gilbert. Marine. British Columbia: ranges from coast of California to Bering Sea.
408.	Sebastodes pinniger Gill. Orange Rock-fish. Marine. Recorded from British Columbia: ranges southward, including Puget Sound, to coast o California.
409.	Sebastodes introniger Gilbert. Marine: in deep water. British Columbia: ranges from the Santa Barbara Islands to the Aleutian Islands.
410.	Sebastodes ruberrimus Cramer. (Plate XIV, figures 179 and 180). Red Rock-fish: Tambor. Marine. Ranges from British Columbia and Puget Sound southward to coast of California.
411.	Sebastodes auriculatus dallii Eigenmann and Beeson. Brown Rock-fish. Marine: enters Bays. Ranges from British Columbia to Point Reyes.
412.	Sebastodes caurinus Richardson. Marine. Ranges from British Columbia and Puget Sound to coast of Alaska.
413.	Sebastodes maliger Jordan and Gilbert. Yellow-backed Rock-fish. Marine. British Columbia: ranges from coast of California to coast of Alaska.
414.	Sebastodes chrysomelas Jordan and Gilbert. (Plate XIII, figures 163 and 164). Black and Yellow Rock-fish. Marine. Ranges from British Columbia and Puget Sound to coast of California.
415.	Sebastodes nebulosus Ayres. Yellow Spotted Rock-fish. Marine. Ranges from Vancouver Island to coast of California.
416.	Sebastodes nigrocinctus Ayres. (Plate XIII, figures 165 and 166). Black Banded Rock-fish. Marine: in deep water.

Ranges from Vancouver Island to coast of California.

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**417.** Anoplopoma fimbria Pallas. (Plate XIII, figures 167 and 168). Coal-fish: Skil. Marine.

Pacific coast of Canada from Straits of Juan de Fuca to Queen Charlotte Islands: entire range from coast of California to Aleutian Islands.

 Hexagrammos decagrammus Pallas. (Plate XIV, figures 169 and 170). Boregat: Starry Rock Trout. Marine.

British Columbia: ranges from Point Concepcion to Kadiak Island.

- Hexagrammos stelleri Tilesius.
  Greenling.
  Marine.
  British Columbia: ranges from coast of California to Aleutian Islands and Kamchatka.
- **420.** Hexagrammos superciliosus Pallas. Red Rock-trout. British Columbia: ranges from coast of California to Bering Sea.
- 421. Ophiodon elongatus Girard. (Plate XIV, figure 174). Cultus Cod. Marine.
   British Columbia: ranges from Santa Barbara to coast of Alaska.
- 422. Zaniolepis latipinnis Girard. Broad-fin Cod. Marine.
   British Columbia and Puget Sound south to coast of California.
- 423. Oxylebius pictus Gill.
  Painted Cod.
  Marine: lives among sea-weeds on rocky shores.
  British Columbia and Puget Sound southward to coast of California.
- **424.** Jordania zonope Starks. Marine. British Columbia and Puget Sound.
- Scorpænichthys marmoratus Ayres. (Plate XIV, figures 171-173).
  Cabezon.
  Marine.
  Ranges from British Columbia and Puget Sound to coast of California.
- **426.** Chitonotus pugetensis Steindachner. Marine. British Columbia and Puget Sound to coast of California.

- 427. Icelinus strabo Starks. Marine. British Columbia and Puget Sound.
- **428.** Astrolytes fenestralis Jordan and Gilbert. Marine. British Columbia and Puget Sound.
- 429. Artedius lateralis Girard.
  Marine: in rocky pools.
  British Columbia and Puget Sound to San Luis Obispo.

#### 430. Artedius asperulus Starks.

Marine. British Columbia and Puget Sound.

# 431. Axyrias harringtoni Starks.

Marine. British Columbia and Puget Sound.

432. Artediellus atlanticus Jordan and Evermann.

#### Marine.

Ranges from coast of Labrador to Cape Cod: recorded from off Sable Island (Kendall, 1909), and from the fishing banks off Nova Scotia (Jones, 1879, as *Centridermichthys uncinatus*).\*

 Ruscarius meanyi Jordan and Starks. Marine.
 British Columbia and Puget Sound.

#### 434. Icelus bicornis† Reinhardt.

#### Marine.

Circumpolar: Greenland and Davis Straits: also Labrador, and southward to Cape Cod: Alaska, Finland, and Spitzbergen to northern Russia.

#### 435. Radulinus asprellus Gilbert.

#### Marine.

Puget Sound and coasts of the States of Washington and Oregon: given here as likely to occur in British Columbia.

<sup>\*</sup>In all probability *Centridermichthys uncinatus* in Jones' "List of the Fishes of Nova Scotia" is referable to this species.

 $<sup>\</sup>dagger I$ , bicornis and I, hamatus are treated here as one and the same species; the name used being I, bicornis, "Circumpolar if all specimens named bicornis and hamatus belong to one species which is doubtful." "According to Dr. Lütken, Cottus bicornis is identical with Icclus hamatus, this opinion being based on a drawing of bicornis by Reinhardt." Jordan and Evermann.

#### 436. Asemichthys taylori\* Gilbert.

#### Marine.

"Type, a female, 55 mm. long, from Departure Bay, Vancouver Island; collected by the Rev. G. W. Taylor" (Gilbert, published 1912): only specimen known.

#### 437. Triglops pingeli Reinhardt.

#### Marine.

North Atlantic: at the north of its range extending from Greenland to Spitzbergen: on the American side, embracing Labrador, doubtless Newfoundland, Gulf of St. Lawrence, and Maritime Provinces, southward to Cape Cod; and on the European side to Christiansund.

#### 438. Triglops beani Gilbert.

#### Marine.

Ranges from British Columbia and Puget Sound northward to coast of Alaska and Bering Sea; and occurring on both sides of the Aleutian Islands.

#### 439. Prionistius macellus Bean.

Marine.

Ranges from British Columbia northward to coast of Alaska, including the Aleutian Islands.

#### 440. Hemilepidotus hemilepidotus Tilesius.

- Red Sculpi
- Marine.

British Columbia and Puget Sound: ranging from coast of California northward to coast of Alaska, hence westward to Kamchatka.

#### 441. Enophrys bison Girard.

Stone Sculpin: Buffalo Sculpin.

Marine.

British Columbia and Puget Sound: ranging from coast of California northward to coast of Alaska.

#### 442. Cottus asper Richardson.

Prickly Bull-head. Fluviatile: abounding in cold mountain streams. British Columbia, including Vancouver Island; and the States of Washington and Oregon.

#### 443. Cottus gulosus Girard.

California Miller's Thumb. Fluviatile: in coastwise streams. Recorded from Shawnigan Lake, British Columbia; and from the coast range of California.

<sup>\*</sup>This species is the type of a new genus. "I take pleasure in naming this interesting species for its discoverer, Rev. G. W. Taylor, Curator of the Biological Station at Nanaimo, B.C." Gilbert.

#### 444. Cottus semiscaber Cope.

Rocky Mountain Bull-head.

Fluviatile: in clear streams.

Both slopes of the Rocky Mountain region: ranging from the Fraser River system, British Columbia, southward to New Mexico: "its eastern and northern limits not well ascertained" (Jordan and Evermann).

#### 445. Cottus ictalops Rafinesque.

Blop.

Lacustrine and fluviatile: clear lakes and rocky brooks, and lime-stone springs: enters caves.

Provinces of New Brunswick, Quebec, and Ontario: St. Lawrence River and Great Lakes region: extending in the United States from the eastern States to the Dakotas and southward to southern States.

#### 446. Cottus ricei Nelson.

Lacustrine.

Recorded from Lakes Ontario and Michigan.

# **447.** Cottus onychus\* Eigenmann and Eigenmann. Fluviatile.

Recorded from Bow River, Calgary, Alberta.

448. Cottus pollicaris Jordan and Gilbert.

Olivaceous Miller's Thumb.

Lacustrine.

Recorded from Manitoba (Prince, 1909); and from off Racine, Lake Michigan, Wisconsin (Jordan and Gilbert, 1882, as *Uranidea pollicaris*).

#### 449. Cottus cognatus Richardson.

Great-Bear-Lake-Bullhead.

Lacustrine.

Great Bear Lake, Mackenzie District (Richardson, 1836): Lake Bennett, British Columbia (Evermann and Goldsborough, 1907): Labrador† (Kendall, 1909).

#### 450. Cottus aleuticus Gilbert.

Fluviatile, and in brackish water.<sup>‡</sup>

Recorded from Departure Bay, Vancouver Island, and "very abundant in the small streams passing through the village of Iliuliuk, Unalaska"—"probably the Uranidea microstoma of Lockington, based on specimens collected near St. Paul, Kadiak"—"extends southward in the Coast Range to Monterey" (Jordan and Evermann).

<sup>\*&</sup>quot;Not seen by us and perhaps not different from Cottus pollicaris." Jordan and Evermann.

<sup>&</sup>quot;Two specimens collected in North West River, July 27, are doubtfully identified as this species." Kendall. Recorded also from Labrador by Bowdoin in 1891, but queried by Kendall.

**t**"A specimen transferred to the salt water aquarium on the *Albatross* seemed to suffer no inconvenience from the change of water and lived for several days." Jordan and Evermann.

- 451. Cottus philonips Eigenmann and Eigenmann. Fluviatile. Recorded from Kicking Horse River, Field, British Columbia: Fraser River Basin.
- 452. Cottus spilotus Cope. Fluviatile. Recorded from Hudson Bay region; and from Grand River at Grand Rapids, Michigan.
- **453.** Uranidea bendirei Bean. Fluviatile. Recorded from the States of Washington, Oregon, and Idaho: given here owing to its

occurrence so close to our border.

- 454. Uranidea franklini\* Agassiz.
  Franklin's Sculpin.
  Lacustrine.
  North and east shores of Lake Superior (Agassiz, 1850, as Cottus franklini).
- 455. Uranidea gracilis Heckel.
  - Miller's Thumb: Blop. Lacustrine and fluviatile. Provinces of Quebec and New Brunswick, and Labrador: State of New York and New England States.
- 456. Uranidea formosa† Girard.

Lake Miller's Thumb.

Lacustrine and fluviatile.

Recorded from Madawaska River, New Brunswick (Cox, 1895): also recorded from Lake Ontario, off Oswego, State of New York, from a mutilated specimen from the stomach of a fresh water ling (Girard, 1850, as *Cottus formosa*).

#### 457. Myoxocephalus æneus Mitchill.

Grubby: Pigmy Sculpin. Marine: amongst sea-weeds near the shore. Ranges from the Bay of Fundy to the coast of the State of New York.

#### 458. Myoxocephalus scorpioides Fabricius.

- Arctic Sculpin.
- Marine.

Arctic regions of America: recorded from coasts of Labrador and Greenland.

#### 459. Myoxocephalus scorpius Linnæus.

European Sculpin.

Marine.

Aretic regions: mentioned by Jones as being very common in Nova Scotia (1879, as *Coltus scorpius*): recorded from Labrador, from Gaspe Bay (Stafford, 1905-1906, as *Acantho-cottus scorpius*, if such signifies this species), and from Eastport, Maine: occurs in northern seas of Europe and Asia, and on coasts of the British Islands.

<sup>&</sup>quot;Perhaps not distinct from Cottus [Uranidea] gracilis." Jordan and Evermann.

<sup>+&</sup>quot;A doubtful species." Jordan and Evermann,

460. Myoxocephalus grænlandicus\* Cuvier and Valenciennes. (Plate XII, figures 140 and 141). Daddy Sculpin.

Marine.

Ranges from Greenland, and embracing Labrador, doubtless Newfoundland, and the Maritime Provinces, southward to the State of New York.

#### 461. Myoxocephalus octodecimspinosus Mitchill. (Plate XII, figures 138 and 139).

Common Sculpin: Long-spined Sculpin.

Marine.

Atlantic coast of North America, ranging from Labrador to Virginia, and embracing the Gulf of St. Lawrence, Maritime Provinces, and New England States.

# 462. Myoxocephalus polyacanthocephalus Pallas.

Great Sculpin.

Marine.

British Columbia and Puget Sound: extending northward to Alaska, Bering Sea, and Kamchatka.

#### 463. Dasycottus setiger Bean.

Marine.

North Pacific: specimens obtained at various stations of the United States s.s. Albatross, off Sitkalidak Island, and at localities north and south of the Alaskan Peninsula, and north of Unalaska Island; also recorded from Puget Sound: given here as it ought in all probability to occur in British Columbian waters.

#### 464. Oncocottus hexacornis† Richardson.

Long-horned Sculpin.

Marine, lacustrine, and at mouths of rivers.

Circumpolar: recorded from mouth of Tree River near Copper Mine River (Richardson, 1836, as *Cottus hexacornis*—the type): Hudson Bay region and coast of Labrador: New Brunswick (Cox, 1895, as *Cottus labradoricus*): Greenland: Point Barrow, Port Clarence, Herschel Island, and Bering Straits: Siberia, White Sea, Nova Zembla, Baltic Sea, England, and dwarfed in Ladoga and Onega Lakes.<sup>‡</sup>

#### 465. Triglopsis thompsoni Girard.

Lake Sculpin: Deep-water Blop.

Lacustrine, and in tide pools.

Recorded from tide pools 75 miles north of York Factory, Hudson Bay region (Preble, 1900): previously known only from Lakes Ontario and Michigan.

<sup>\*&</sup>quot;According to Lütken the Greenland Sculpin (grænlaudicus) is not separated from scorpius by any character trenchant or constant." "Lilljiberg regards the 2 as identical a view not unlikely correct." Jordan and Evermann. "This form is considered in eurrent ichthyological literature as a sub-species of *M. scorpius*. The differences are few but well marked and seem to be constant in such specimens as the writer has been able to examine." Kendall.

to. hexacornis, O. quadricornis, and O. labradoricus provisionally treated here as one and the same species.

t"These dwarf specimens may not be separable from *Triglopsis* which genus is evidently derived from the lacustrine degradation of *Oncocottus*," Jordan and Evermann.

466. Triglopsis ontariensis Jordan and Thompson.

Lacustrine.

New species "founded on one specimen from off Toronto, Ontario" (Lambe, 1912).

#### 467. Gymnocanthus pistilliger Pallas.

Marine.

Recorded from Hudson Bay:\* and "collected at Niantilik Harbor, Cumberland Gulf":† coasts of Alaska, westward through Bering Sea, to Petropaulski.

- 468. Gymnocanthus tricuspis Reinhardt.
  - Marine.

Arctic Seas, extending southward on the American side to coast of Labrador, and on the European side to coast of Norway.

#### 469. Oligocottus borealis Jordan and Snyder.

Marine.

British Columbia and Puget Sound: ranging on the Pacific coast from Prince William Sound to Oregon.

#### 470. Blennicottus acuticeps Gilbert.

Marine.

Ranges from Vancouver Island to Prince William Sound: also from tide pools at Unalaska —4 type specimens.

#### 471. Blennicottus globiceps bryosus Jordan and Starks.

Globe-headed Sculpin. Marine. British Columbia and Puget Sound, ranging northward to Kadiak.

#### 472. Blepsias cirrhosus Pallas.

Prickled Sailor-fish.

Marine: in shallow water.

British Columbia and Puget Sound: ranging from coast of California northward to Alaska, hence westward to Kamchatka.

#### 473. Nautichthys oculofasciatus Girard.

Banded Sailor-fish.

Marine.

British Columbia and Puget Sound: ranging from coast of California northward to Kadiak Island.

<sup>\*&</sup>quot;This fish has been reported from the Atlantic side of North America, but it is probably a different species, as the mushroom-like filaments are not mentioned in their description. Sir John Richardson took a single specimen, a female 5 or 6 inches long, at Hudson Bay, which appears to be the same as these from Bering Sea." Scofield: quoted after Jordan and Evermann.

<sup>&</sup>lt;sup>†</sup>A specimen from this locality is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. CCCI.

# PLATE XIII.

- Platichthys stellatus (Starry Flounder)(Specimen with the eyes on the right side of the head, the eyes of this species being often on the left side)
- 151-152. Polistotrema stouti (California Hagfish)
- 153. Lepidopsetta bilineata (Two-lined Flounder)
- 154-155. Hydrolagus colliei (Ratfish)
- 156-157. Palometa simillimus (California Pompano)
- 158-159. Tæniotoca lateralis (Striped Surf-fish)
- 160–161. Damalichthys argyrosomus (Porgee)
- 162. Sebastodes paucispinis (Jackfish)
- 163-164. Sebastodes chrysomelas (Black and Yellow Rockfish)
- 165-166. Sebastodes nigrocinctus (Black-banded Rockfish)
- 167-168. Anoplopoma fimbria (Coalfish or Skil)

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(Specimen with the eyes on the right side of the head, the eyes of this species being often on the left side)

151-152. Polistotrema stouti (California Hagfish

153. Lepidopsetta bilineata (Two-lined Flounder)

154-155. Hydrolagus colliei (Ratfish)

156-157. Palometa simillimus (California Pompano)

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163-164. Sebastodes chrysomelas (Black and Yellow Rockfish)

165-166. Sebastodes nigrocinetus (Black-banded Rockfish)

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474. Hemitripterus americanus Gmelin. (Plate XII, figures 142 and 143).

	Marine. Atlantic coast of North America: Maritime Provinces, Gaspe Bay, Gulf of St. Lawrence, Labrador, and Newfoundland: extending southward to the coast of the State of New York.
475.	Hemitripterus cavifrons Lockington. Sea Rayen. Marine. Ranges from British Columbia northward to coast of Alaska.
476.	Synchirus gilli Bean. Marine. Barclay Sound, west coast of Vancouver Island.
477.	Ascelichthys rhodorus Jordan and Gilbert.

- 477. Ascelichthys rhodo Marine: abounding in rocky pools. British Columbia: very abundant at the entrance to the Straits of Juan de Fuca: ranges on the Pacific coast from Mendocino to Alaska.
- 478. Psychrolutes paradoxus Günther. Spineless Sculpin.

Sea Rayen. Marine.

British Columbia-the type from Gulf of Georgia (Günther, 1861): ranges from Puget Sound northward to coast of Alaska, including the Maskan Peninsula; "thence westward through Unimak Pass, along the northern shore of Unalaska Island to the Kuril Islands, and the Pribilof Islands and in Bristol Bay" (Jordan and Evermann).

479. Gilbertidia sigolutes Jordan and Starks-Marine.

480. Rhamphocottus richardsoni Günther. Richardson's Sculpin. British Columbia and Puget Sound: ranges from coast of California to Alaska.

#### 481. Hypsagonus quadricornis Cuvier and Valenciennes.

British Columbia: ranges from Puget Sound northward to Alaska, Bering Sea, and Kam-

482. Pallasina barbata Steindachner.

British Columbia: extends from the Arctic Ocean through the Bering Sea and to the coast

#### 483. Pallasina aix Starks.

484. Leptagonus decagonus Bloch and Schneider. Marine: in deep water. Arctic Ocean, extending southward to coasts of Newfoundland and Norway.

#### 485. Podothecus acipenserinus Tilesius.

Common Alligator-fish. Marine. British Columbia and Puget Sound, extending northward to Alaska, hence, including the Alcutian Islands, westward to Kamchatka.

486. Agonus cataphractus Linnœus.
 Sea Poacher: Pogge.
 Marine.
 Aretic Ocean: Davis Straits, at least on the western coast of Greenland: seas of northern Europe: also recorded from Great Britain, and from the coast of France.

#### **487.** Averruncus emmelane Jordan and Starks. Dark-coloured Alligator-fish.

Marine

Known from British Columbia and Puget Sound.

488. Xystes axinophrys Jordan and Starks. Marine. Known from British Columbia and Puget Sound.

# 489. Bathyagonus nigripinnis Gilbert.

Bathybial.

British Columbia: ranges from the coast of the State of Washington northward to the Aleutian Islands and Bering Sea.

#### **490.** Xenochirus pentacanthus Gilbert. Marine: in deep water. British Columbia: ranges from coast of California northward to Bering Sea.

#### 491. Odontopyxis trispinosus Lockington.

Marine: in deep water. British Columbia and Puget Sound southward to Santa Barbara, California: recorded from Alaska (Lockington, 1879).

**492.** Bothragonus swanii Steindachner. Marine. British Columbia and Puget Sound.

# 493. Aspidophoroides olriki Lütken.

Marine.

Arctic Ocean: Davis Straits, at least on the Greenland side: also recorded from the Kara Sea.\*

<sup>\*&</sup>quot;The Dutch expedition took 15 specimens of this form in Barents Bay [Kara Sea] and probably confused it with A. monoplerygius." Jordan and Evermann.

#### 494. Aspidophoroides monopterygius Bloch.

Sea Poacher: Alligator Fish.

Marine.

Maritime Provinces, Gulf of St. Lawrence, and coast of Labrador: presumably Hudson Bay, and to the Arctic regions.

#### 495. Aspidophoroides inermis Günther.

#### Marine.

Ranges from Vancouver Island northward to coast of Alaska, including Bristol Bay and the eastern Alcutian Islands.

#### 496. Cyclopterus lumpus Linnaeus.

Lump-fish: Lump-sucker.

Marine: abounding on rocky shores.

Both coasts of north Atlantic Ocean: on the American side ranging from Davis Straits, and embracing Labrador, Newfoundland, Gulf of St. Lawrence, Gaspe Bay, Maritime Provinces, and New England States, southward to Cape Cod: on the European side occurs at the British Islands, including the Orkney Islands and "all around the Irish coasts" (Yarrell, 1859); and coasts of Scandinavia and Baltic Sea southward to coast of France.

#### 497. Eumicrotremus spinosus Müller.

Marine.

North Atlantic and Arctic Ocean: coast of Labrador: recorded from Davis Straits (Dresel —a specimen from the stomach of a halibut): "trawled off Halifax Harbour by the 'Speedwell' Expedition, August, 1877" (Jones, 1879, as Cyclopterus spinosus): extends southward to Maine and Denmark.

#### 498. Eumicrotremus orbis Günther.

#### Marine.

North Pacific Ocean: ranges from Vancouver Island to Bering Sea.

#### 499. Neoliparis atlanticus Jordan and Evermann.

Marine: among rocky shores.

The type from Godbout, Province of Quebec (in the United States National Museum at Washington): ranges from Newfoundland, and perhaps Labrador (Gill, 1872, but queried by Kendall), southward to Cape Cod: "taken off Halifax Harbour by the 'Speedwell' Expedition, August, 1877" (Jones, 1879, as *Liparis montagui*),\* and recorded as occurring in Gaspe Bay (Stafford, 1905-1906, also as *L. montagui*).

500. Neoliparis floræ Jordan and Starks.

Marine.

British Columbia and Puget Sound southward to coast of California.

<sup>\*</sup>Ncoliparis atlanticus has repeatedly been confounded with the European species N. (Liparis) montagui. "The published figures of N. montagui show a deeper fish with larger head and with the spinous dorsal very low, and scarcely distinct from the soft rays." Jordan and Evermann.

#### 501. Neoliparis greeni Jordan and Starks.

- Green's Sucker.
- Marine.

Only the type\* apparently known: from Esquimalt Harbour, near Victoria, Vancouver Island (in Leland Stanford Junior University Museum).

#### 502. Liparis liparis Linnæus.

Sea Snail.

Marine.

Both shores of North Atlantic: on the American side ranges from Davis Straits to Connecticut, and recorded from Labrador: abundant in northern Europe, ranging from Spitzbergen and Nova Zembla southward to France: "more common in the northern parts of the British Islands than in the southern"<sup>†</sup> (Yarrell, 1859).

#### 503. Liparis cyclopus Günther.

#### Marine.

Recorded from Esquimalt Harbour, Vancouver Island (Günther, 1861): probably ranges from Puget Sound to Bering Sea.

#### 504. Liparis fucensis Gilbert.

Marine.

Type specimens from Port Angeles, Straits of Juan de Fuca, State of Washington (Gilbert, 1893): given here as likely to occur in British Columbian waters: thought to have been found near San Francisco (Garman, 1892, as *L. calliodon*, and was if such is referable to the same species).<sup>‡</sup>

#### 505. Liparis tunicatus Reinhardt.

Marine.

Recorded from coasts of Labrador and Greenland.

#### 506. Liparis herschelinus Scofield.

Marine.

Arctic Ocean, having been recorded from Herschel Island, Beauford Sea, and should oceur, presumably, elsewhere in the North West Passage.

#### 507. Liparis dennyi Jordan and Starks.

Marine.

Ranges from Puget Sound northward, and recorded from near Unalaska: evidently occurs in British Columbian waters.

\*This specimen is figured, in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. CCCXVI.

<sup>†&</sup>quot;This species is found on the Berwickshire coast, and Dr. Parnell has obtained specimens in the Frith of Forth. Mr. Low says, 'The Sea Snail is found under stones at many places in Orkney; but in no place more frequently than that at the point of the Ness of Stromness, where they may be picked up by dozens." Yarrell.

 $<sup>\</sup>ddagger$  "Mr. Garman identifies this species with the *callyodon* of Pallas, but according to Pallas his species had the gill opening reduced to a lunate spiracle which is not the case in *Liparis fucensis*." Jordan and Evennann.

#### 508. Liparis pulchellus Ayres.

Stone Sucker.

Marine.

British Columbia: ranges from coast of California to Alaska and Bering Sea.

#### 509. Bathyphasma ovigerum Gilbert.

Bathybial.

- Off Queen Charlotte Islands, British Columbia—known apparently only from the type;\* obtained at 1,588 fathoms.
- 510. Careproctus ranula Goode and Bean.

#### Marine.

Off Chebucto Head, Halifax Harbour, Nova Scotia—only specimen apparently known (if distinct as a species from C. reinhardı)<sup>†</sup> obtained by the 'Speedwell' Expedition in 52 fathoms (Jones, 1879, as Liparis ranula).

#### 511. Paraliparis cephalus Gilbert.

#### Bathybial.

British Columbia: ranges from coast of California to Alaska: recorded also from north of Unalaska.

#### 512. Paraliparis ulochir Gilbert.

Bathybial.

Recorded from Gulf of California and Bering Sea: given here owing to its occurrence north and south of British Columbia.

#### 513. Prionotus carolinus Linnæus.

Common Gurnard.

Marine.

Ranges from Maine to South Carolina, perhaps from Maritime Provinces.

#### 514. Cephalacanthus volitans Linnæus.

Flying Robin: Flying Gurnard.

Marine: rises out of the water, like the flying fishes, and moves in the air.

Occasional off the coast of the southern part of the Bay of Fundy: "found along our entire coast [United States] south of Cape Cod, and in the waters of Brazil; also in the Mediterranean and in the neighbouring parts of the eastern Atlantic" (Goode, 1888); and recorded from various localities in the West Indies, including Porto Rico on the authority of Poey and Stahl (Evermann and Marsh, 1899).

#### 515. Porichthys notatus Girard.

#### Midshipman.

Marine: lives under stones.

British Columbia<sup>‡</sup> and Puget Sound, ranging southward to Lower California.

\*This specimen is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. CCCXVIII.

""Garman refers this species to the synonymy of *Careproctus reinhardi* [a fish known from Greenland and neighbouring islands] which may be correct." Jordan and Evermann.

<sup>‡</sup>A specimen in the Provincial Museum, Victoria, given in the catalogue as *P. porosissimus* would seem to belong to this species—the recorded range of *P. porosissimus* being from South Carolina to Texas and Argentina.

#### 516. Caularchus mæandricus Girard.

Suck-fish: Cling-fish. Marine: in rocky pools. British Columbia southward to Point Concepcion.

### 517. Heterostichus rostratus Girard.

Kelpfish.

Marine: abundant among kelp.

Reputed range coast of California: included here on the strength of a female mounted specimen\* obtained in British Columbia by Mr. S. F. Denton, taxidermist, which seems to answer to this species.

#### 518. Bryostemma polyactocephalum Pallas.

Tufted Blenny.

Marine.

British Columbia and Puget Sound, ranging northward to Bering Sea, hence westward to Kamehatka, and, if the same, to the island of Hokkaido, Japan (Herzenstein, 1890, as *Chirolophus japonicus*).

519. Bryostemma nugator Jordan and Williams. Marine.

British Columbia and Puget Sound.

#### 520. Apodichthys flavidus Girard.

Yellow Blenny. Marine: "usually found below low-tide mark." British Columbia and Puget Sound southward to Santa Barbara Islands.

#### 521. Xererpes fucorum Jordan and Gilbert.

Marine: in rocky pools, and amongst sea weeds often out of the water. British Columbia and Puget Sound southward to coast of California.

#### 522. Pholis gunnellus Linnæus.

Gunnel: Butterfish.

Marine: abounding on rocky shores among sea-weeds.

Both sides of north Atlantic: ranging on the American side from Labrador, and embracing the Gulf of St. Lawrence, Gaspe Bay, doubtless Newfoundland, and Maritime Provinces, southward to Wood's Hole; and on the European side from the coast of Norway to France: occurs in Great Britain from the southern counties of England, including Cornwall, along the east coast, including Berwick Bay and the Frith of Forth, northward to the Orkney and Shetland Islands.

<sup>\*</sup>Certain characters of this specimen are as follows:—Length with mouth protracted and open 18 inches: a single row of conical teeth with a series of villiform teeth behind them in each jaw: lateral line straight from top of operculum to beyond pectoral fin, thence straight to caudal fin: caudal fin furcate and separated from the dorsal and anal fins: dorsal fin terminating slightly in front of terminus of anal fin: first dorsal spine separated from the second—a rudimentary membrane near their base alone connecting them: soft portion of dorsal short and somewhat higher than spinous portion : a translucent spot behind the third spine, and numerous other spines in both dorsal and anal fins each with a translucent spot behind it: pectoral fin placed high, but distance from dorsal outline greater than from ventral outline: colour brownish and motiled with whitish markings.

523. Pholis fasciatus Bloch and Schneider.

Marine.

Ranges from the coast of Greenland westward to the Kuril Islands, embracing the Arctic Ocean and Bering Sea: its range indicating that it undoubtedly occurs in the waters of the North West Passage, and should therefore be considered indigenous to the Dominion.

#### 524. Pholis ornatus Girard.

Ornamented Gunnel.

Marine: lives in shallow water.

British Columbia: ranging from coast of California northward to Bering Sea, hence westward to Kamchatka.

525. Anoplarchus atropurpureus Kittlitz. Marine. British Columbia; ranging from coast of California to coast of Alaska and Bering Sea.

#### 526. Xiphistes chirus Jordan and Gilbert.

Marine.

British Columbia: ranges from coast of California northward to coast of Alaska.

527. Xiphidion mucosum Girard.

Slimy Eel Pout. Marine: abounding among rocks and sea-weeds. British Columbia: ranging from coast of California to coast of Alaska

528. Xiphidion rupestre Jordan and Gilbert.

Rock Eel Pout. Marine: living among rocks and sea-weeds. Ranges from British Columbia to coast of California.

#### 529. Leptoclinus maculatus Fries.

Langbarn.

Marine.

Arctic Ocean: occurs in Bering Sea and recorded from Unimak Pass and Bristol Bay: also occurs from Spitzbergen southward to the coasts of Norway and Sweden: possibly eircumpolar, and if so should occur in the waters of the North West Passage: recorded from the "fishing banks off the coast" of Nova Scotia (Jones, 1879, as L. aculcatus).

### 530. Lumpenus medius Reinhardt.

Marine.

Probably circumpolar: ranging at least from Spitzbergen and the coast of Norway westward, and including Greenland, Bering Sea, and Kamchatka; and should therefore occur in the waters of the North West Passage.

#### 531. Lumpenus anguillaris Pallas.

Snake Blenny.

Marine.

British Columbia: ranges from coast of California to Alaska, including the Aleutian Islands, and thence to Kamchatka.

#### 532. Lumpenus fabricii Cuvier and Valenciennes.

Marine.

Recorded from Gulf of St. Lawrence, Labrador (Schmitt, 1904), and Hudson Bay region (Preble, 1900): also from Greenland, Bering Sea, and Spitzbergen.

#### 533. Lumpenus lampetræformis Walbaum.

Serpent Blenny.

Marine.

Both sides of north Atlantic and in the Arctic Ocean: recorded from Labrador, and extending southward to Cape Cod "if *L. scrpentinus* is the same" (Jordan and Evermann): also recorded from Spitzbergen, Norway and Sweden, and Iceland under several synonyms.

#### 534. Stichæus punctatus Fabricius.

#### Marine.

Arctic Seas: ranging from Greenland westward to Siberia: on the Atlantic side extending southward to Hudson Bay, Labrador, Newfoundland, and Nova Scotia; and on the Pacific side to Bristol Bay and Prince of Wales Island, Alaska, close to the British Columbian border: in all probability extends southward to waters of British Columbia.

#### 535. Ulvaria subbifurcata Storer.

Radiated Shanny.

Marine.

North Atlantic Ocean: Maritime Provinces, extending southward to Cape Cod.

#### 536. Eumesogrammus præcisus Kröyer.

Marine.

Coasts of Greenland: "a specimen was forwarded by Mr. Whiteaves from the vicinity of Anticosti to the Smithsonian Institution" (Jones, 1879, as *E. unimaculatus*).

#### 537. Delolepis virgatus Bean.

Wrymouth.

Marine.

British Columbia and Puget Sound extending northward to southern Alaska.

#### 538. Cryptacanthodes maculatus Storer.

Wrymouth: Ghost-fish.\*

Marine.

Maritime Provinces and Gaspe Bay: ranging from coast of Labrador southward to Long Island Sound.

#### 539. Anarhichas latifrons Steenstrup and Hallgrimsson.

Wolf-fish.

Marine.

Ranges from beyond the Arctic Circle southward on both sides of the Atlantic: on the American side to Banquereau: recorded from Canso,<sup>†</sup> Nova Scotia, and from the "fishing banks of the coast" of that Province (Jones, 1879).

\*"The ghost-fish form (inornatus) occasionally seen, is doubtless an albino." Jordan and Evermann.

 $<sup>\</sup>dagger$ "One very large specimen of the wolf-fish was taken on the trawl of the steamer Active in about 50 fathoms. I learned that not more than one or two specimens are secured in a season, so that it is not a common fish." Cornish,

#### 540. Anarhichas minor Olafsen.

Wolf-fish.

Marine.

Ranges from beyond the Arctic Circle southward on both sides of the Atlantic: occasionally brought to Canso, Nova Scotia, by the fishermen;\* "fishing banks off the coast" of Nova Scotia (Jones, 1879): occurs on the New England coast, Iceland, and Norway.

# 541. Anarhichas lupus Linnaeus. (Plate XII, figures 144 and 145).

Wolf-fish.

Marine.

Both sides of north Atlantic southward to Cape Cod and France: Maritime Provinces, Gulf of St. Lawrence, Gaspe Bay, Labrador, and without doubt Newfoundland: "off the coasts of Norfolk and Yorkshire, in Berwick Bay, in the Frith of Forth, and among the Orkneys, occasionally also on the eastern coast of Ireland, and it is well-known on the northern shores of Europe, and in Greenland and Iceland" (Yarrell, 1859).

#### 542. Anarhichas lepturus Bean.

Alaska Wolf-fish.

Marine.

Ranges from Vancouver Island northward to coasts of Alaska, including the Aleutian Islands, thence westward, perhaps, to Kamchatka (Pallas, 1811, as Anarrhichas oricontalis).

#### 543. Anarrhichthys ocellatus Ayres.

Wolf Eel.

Marine.

British Columbia and Puget Sound southward to coast of California.

#### 544. Scytalina cerdale Jordan and Gilbert.

Marine: burrowing among rocks or living in gravel or wet-shingle between or near tide marks.

Recorded from Waadda Island, near Cape Flattery, State of Washington, at the entrance to the Straits of Juan de Fuca: given here as likely to occur on the British Columbian side of the Straits.

# 545. Zoarces anguillaris Peck. (Plate XII, figures 146 and 147).

Eel Pout.

Marine.

Ranges from the coast of Labrador, embracing the Gulf of St. Lawrence and Maritime Provinces, and doubtless Newfoundland, southward to the coast of Delaware.

546. Lycodopsis pacificus Collett.

Pacific Eel Pout.

Marine.

British Columbia and Puget Sound southward to coast of California.

<sup>\*&</sup>quot;Occasional specimens differing from the two foregoing [A. latifrons and A. lupus] are occasionally brought in by the fishermen, and appear to belong to this species. Like A. latifrons this is usually regarded as a purely Arctic wolf-fish." Cornish.

#### 547. Lycodes vahlii Reinhardt.

Marine.

"Fishing banks off the coast" of Nova Scotia (Jones, 1879): coast of Greenland, and presumably northern or Arctic seas of eastern North America.

#### 548. Lycodes zoarchus Goode and Bean.

Bathybial

Known apparently only from off the coast of Nova Scotia,\* having been found at 130 and 190 fathoms.

#### 549. Lycodes reticulatus Reinhardt.

#### Marine.

Recorded from Banquereau: both sides of north Atlantic: on the American side ranging from Greenland to Narrangansett Bay: abundant in northern Europe.

#### 550. Lycodes frigidus Collett.

Bathybial.

"North Atlantic and Arctic Ocean, from Spitzbergen south to the New England coast" (Jordan and Evermann): probably occurs in waters of British North America.

#### 551. Lycodes terræ-novæ Collett.

Bathybial.

Only the type apparently known—from Banks of Newfoundland—the specimen in the collection of the Prince of Monaco.

#### 552. Lycodalepis mucosus Richardson.

#### Marine.

Arctic America: Cumberland Gulf and Northumberland Sound.

553. Lycenchelys verrillii Goode and Bean.

#### Marine.

"Fishing banks off the coast" of Nova Scotia (Jones, 1879, as *Lycodes verrillii*): "an old male,† collected by the U.S. Fish Commission, 27 miles southwest of Chebucto, Nova Scotia" (specimen in U.S. National Museum): off the coast of New England.

# 554. Lycenchelys paxillus Goode and Bean.

Bathybial

Recorded from between La Have and Sable Island Banks, from off Newfoundland, and from Gulf Stream.

#### 555. Bothrocara mollis Bean.

Bathybial.

The type from off Queen Charlotte Islands: also recorded from southern California, off Bogoslof Island, and from near Unalaska.

\*The type specimen is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. CCCXLIX.

<sup>†</sup>This specimen is figured in Drs. Jordan and Evermann's 'Fishes of North and Middle America,' vol. IV, pl. CCCLI.

#### 556. Gymnelis viridis Fabricius.

#### Marine.

Arctic regions: -ranging from Greenland westward to Bering Sea: extending on the Atlantic side of North America southward to Nova Scotia; and on the Pacific side to Unalaska and Bristol Bay.

#### 557. Gymnelis stigma Lay and Bennett.

#### Marine.

Arctic regions; ranging from Greenland to Bering Sea: Northumberland Sound (Richardson, 1854, as G. viridis variety unimaculatus): Kotzebue Sound (Lay and Bennett, 1839, as Ophidium stigma).

#### 558. Lycocara parrii\* Ross.

#### Marine.

Recorded from Baffin's Bay (Ross, 1826, as Ophidium parrii).

#### 559. Derepodichthys alepidotus Gilbert.

Bathybial.

Only the type apparently known-from off Queen Charlotte Islands.

#### 560. Trachypterus rex-salmonorum Jordan and Gilbert.

King-of-the-Salmon. Marine. Recorded from Straits of Juan de Fuca, and from off the coast of California.

### 561. Lophius piscatorius Linnæus. (Plate XIV, figure 181).

Angler: Fishing-frog: Monkfish.

# Marine.

Both sides of north Atlantic: Maritime Provinces and Gaspe Bay: extending southward on the American side to the Barbado Islands: in the eastern hemisphere ranges from Norway to the Cape of Good Hope: "not rare on any part of the coasts of Great Britain and Ireland, and is particularly common in the Solent and in the harbours of Portsmouth and Southampton" (Yarrell, 1859).

#### 562. Ceratias holbolli Kröyer.

Sea Devil. Bathybial. Recorded from Nova Scotia and Greenland.

<sup>\*&</sup>quot;Very imperfectly known, no specimens having been obtained by any recent collector." Jordan and Evermann.

#### 563. Balistes carolinensis Gmelin.

Trigger-fis

Marine.

Recorded from Banquereau,\* some 50 miles southeast of Canso, Nova Scotia: "a specimen taken at St. Margaret's Bay is in the Halifax Museum"<sup>+</sup> (Jones, 1879, as *B. capriscus*): "a fine adult specimen.....taken with a spear on 25th August, near shore, Halifax harbour......Dartmouth," (Piers, 1910): "tropical parts of the Atlantic; occasional northward in the Gulf Stream; very common our coast [United States], and in the Mediterranean, rarely north to England" (Jordan and Evermann): a specimen was obtained by Dr. Melville in the Bay of Galway in 1853, and is recorded in Thompson's Natural History of Ireland (Yarrell, 1859).

#### 564. Monacanthus hispidus Linnæus.

File-fish.

Marine.

"Occasional specimens are taken in shore waters [of Nova Scotia]—the Rev. John Ambrose kindly forwarded one to the author about twelve years ago which was secured at St. Margaret's Bay" (Jones, 1879, as *Stephanolepis sctifer*): ordinarily ranges from the coast of Brazil and the West Indies, being abundant among the Florida Keys, northward to Cape Cod; and also occurs at Madeira and the Canary Islands.

#### 565. Chilomycterus schæpfi Walbaum.

Common Burrfish.

Marine.

Specimen off Sambro near Halifax "in the summer of about 1896" (Piers): "Cape Cod to Florida; very abundant southward in shallow water; especially numerous on the coast of the Carolinas and Florida" (Jordan and Evermann).

#### 566. Mola mola Linnæus.

Sun-fish: Head-fish.

Pelagic.

Temperate and tropical seas: recorded from coast of Labrador (Schmitt, 1904): occasional on the coasts of the Maritime Provinces: "not uncommon at Canso and out on the Banks" (Cornish, 1901-1902) "a specimen five feet six inches in length taken in Halifax Harbour, October, 1873" (Jones, 1879, as *M. rotunda*): a specimen captured "about ten miles off Devil's Island, at the mouth of Halifax Harbour"—18th July, 1894, and another seen in Bedford Basin "about half a mile from shore"—14th August, 1895 (Piers, 1897): recorded from Gaspe Bay (Stafford, 1905-1906): "common northward to England, Cape Cod, and San Francisco" (Jordan and Evermann): mentioned by Günther (1880) and by Yarrell (1859—each as *Orthagoriscus mola*) as occurring also on the coast of Ireland, and by Yarrell in Scotland, including the Frith of Forth, and at the Channel Islands: occurs at the West Indies, and in the Mediterranean and Adriatic Sea.

\*"One specimen of this remarkable File-fish was brought in by the deep-sea fishermen, who stated that it was 'gaffed' on Banquereau Bank, about fifty miles southeast of Canso. It was seen near the surface swimming around a floating buoy. Its captors had never seen one before, and it may be added that while the members of the family are abundant in tropical seas they become very scarce in high latitudes." Cornish.

<sup>†</sup>So recorded, but Mr. Piers, Curator of the Museum, says:—"J. M. Jones in his 'List of the Fishes of Nova Scotia'..... mentions a specimen taken at St. Margaret's bay which was then in the Provincial Museum. I have not been able to recognize that specimen in our collections."

# PLATE XIV.

169-170.	Hexagrammos decagrammus (Boregat)
171.	Scorpænichthys marmoratus (Cabezon-juvenile)
172-173.	Scorpænichthys marmoratus (Cabezon)
171.	Ophiodon elongatus (Cultus Cod)
$175 \ 176$	Sebastodes mystinus (Black Rockfish or Priestfish)
177 178.	Sebastodes melanops (Black Sea Bass)
179-180	Sebastodes ruberrimus (Red Rockfish or Tambor)
181	Lophius piscatorius (Angler, Fishing Frog, or Monkfish

PLATE XIV. 9 109-170 decagrammos decagrammus (Boregat)

171	171.	Scorpænichthy's marmoratus (Cabezon-Juvenile)
		, a ichthys marmoratus (Cabezon)
174.	174.	Ophiodon elongatus (Cultus Cod)
175-1	175-176.	Sebastodes mystimus (Black Rockfish or Priestfish)
177-1	177 178.	Sebastodės melanops (Black Sca Bass) - (11999)
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181.	181.	Lophius piscatorius (Angler, Fishing Frog, or Monkfish)

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#### ADDENDA.

Just as the check-list is going to press specimens of the following species have been received from Mr. S. F. Denton, taxidermist, which he claims to have obtained in British Columbia; and it is now too late to incorporate these species in their places in the list.

#### 12a. Scylliorhinus profundorum Goode and Bean.

Roussette.

Marine. Specimen from British Columbia as mentioned above: "one specimen—85648, U.S.N.M.—20½ inches, obtained by the Fish Commission steamer Albutross at a depth of 816 fathoms, in latitude 39° 9′ N., longitude 72° 3′ 15″ W.—Goode and Been" (Jordan and Evermann).

#### 402a. Sebastodes goodei Eigenmann and Eigenmann.

Marine. Specimen from British Columbia as mentioned above: reputed range coast of California: "the species is now taken in abundance about the Coronados Islands, Santa Catalina, and the Cortez Banks" (Jordan and Evermann).

#### 411a. Sebastodes rastrelliger Jordan and Gilbert.

Grass Rockfish.

Marine. Two specimens from British Columbia as mentioned above: reputed range coast of California.

# GLOSSARY OF TECHNICAL TERMS

- Anadromous.—Passing from the sea into fresh waters, as the salmon and certain other fishes do in order to spawn.
- Bathybial.-Living in depths: said of fishes and other creatures which inhabit the depths of the ocean.
- Bayous.—Plural of bayou: a term employed to signify a channel proceeding from a lake or river. Bayou is from a French word, signifying a long narrow channel or gut. As applied to a channel proceeding from a river or lake it appears to be a United States term and is adopted here.
- Brackish,-Salt water diluted with fresh water, as at the mouths of rivers and estuaries.
- Catadromous,---Passing from fresh water into the sea, as the eel does to spawn.
- Fluviatile.--Pertaining to rivers: inhabiting rivers.
- Lacustrine.-Pertaining to lakes: inhabiting lakes.
- Landlockea.—Inclosed or encompassed by land: a term employed in regard to certain varieties of marine fishes which live in lakes having no direct communication with the sea: for instance, the ouananiche.
- Marine—As a term employed in the check-list to denote such fishes as inhabit the sea without respect to the open sea or the depths.
- Parasitic.—Dependence of an animal or plant upon another animal or plant for subsistence by living in or on it.
- Pelagic.—Belonging to the ocean: inhabiting the open ocean.

The symbol of Mars,  $\sigma$ , is the zoological mark for the male, that of Venus,  $\varphi$ , for the female. [In the figures in the plates wherever the sexes are outwardly different, and in cases where the sexes are not outwardly different, but where sex was determined when the specimens were opened, males and females are distinguished by those symbols. In other instances it is impossible to indicate sex.]

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Shad, American	14.	47
" Gizzard.	1.1	46
" History 11 (51-50)	10	17
AHEREI)	40,	-114
Mackerel	25,	91
Shad Mooneye	11,	45
Shad-Waiter	14,	48
Shanny, Radiated	36	112
Shark Backing	10	11
blark, Dasking	1 - ,	11
" Lat	11,	39
" Cow	11,	39
" Great Blue	12,	-4()
" " White	12.	40
" Greenland	19	11
0 Mashanil	1.0	10
Mackerel	12,	-10
" Oil	12,	40
The start of second	11.	100
" Sleeper	12,	41
" Swell	11.	39
21.1		
Channes I Diama lan		0.0
Sharp-nosed Flounder	20,	9.5
Sheepshead	27,	88
" , Lake	27,	87
Shiner, Cayuga	18.	63
" Golden	IS.	62
" Jordan's	15	62
" Muskoko	1.19	0.0
MUSKOKA	10,	0.5
" Red-sided	18,	62
" Spotted	19,	66
Short-headed Mullet	17,	60
Short-nosed Garpike	13,	45
" Sturgeon	13.	44
Shovel-nosed Shark	11	39
Shumard's Denter	01:	21
Cal Carali	10,	-01
Slet Smelt	10,	00
Siluroids		17
Silver Chub 18, 19,	61,	-66
" -fin	18,	64
" Hake	91	77
" Lammor	11	20
4 Minutes	10	00
MINNOW	10,	01
" S.dn L.,	1.2.	11
Silverside		1.0
", Lake	23,	75
Siscowet	15.	53
Skate Barndoor	19	1.0
" Big	1.9	1.2
	12,	42
Common	12,	42
Skate-of-California, Big	12,	43
Skil	31,	98
Ship ek 11/22	46	$\overline{c} \rightarrow$
Sleeper Shark	12.	41
Slimy Ed Pout		111
Slippery Sole	30	05
Small Diask Temperat	11	20
C U U DI LD	11,	39
Small-mouth Black Bass	26,	83
" Buffalo Fish	17,	28
Small-scaled Antimora	25,	79

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$  S^{(i)}_{i} _{i} = \sum_{j=1}^{n}   S^{(i)}_{j} _{j} = \sum_{j=1}^{n$	16.	- 55
" California	23,	75
" Deep Sea	16,	56
" Pacific	16,	5.5
Siel	16,	56
N 11	16.	55
Smelt-of-the-New-York-Lakes	15,	49
Smooth Flounder	29,	94
Snake Blenny	35,	111
Snapper	30,	96
Snipe Eel	204 -	206)
Snub-nosed Eel	19,	67
Sockeye Salmon	15,	51
Soft Flounder	30,	95
Sole	29.	93
", California	29,	93
" . Long-finned	30.	95
" , Slipperv	30.	95
Sparada.	27	88
Spawn-eater	176:	177)
Speckled Trout	15.	53
Spineless Sculpin	33	105
Spiny Dogfish 19 (99-93) 41	1 (12)	1.00
Sniny Fel 21 (236:237) 72 (	936-	927)
Spiny-rayed Fishes		5_27
Spot-tail Winnow	18	61
Spotted Shiner	10,	66
" Sucker	17	50
Suring Salmon	14.9	51
Same feb	10,	60
Squirrel Hele	-10,	02
Starry Flounder	20,	00
" Dort	10	10
" Doal: Trout	-12), -21	42
Stalland	01, 15	50
Vieldsheels Meele	10,	- 02 mo
Suckieback, Alaska	<i></i>	10
Arcuc	22,	12
f California	22, 00	12
Camornia	,	10
Condition,		
" Dwart	22,	12
" Eastern	-2,	13
Pour-spinea	· · · · · · · · · · · · · · · · · · ·	13
Nine-spined	,	12
" Partly Armoured	22,	13
Lellow	22,	13
Sticklebacks	1.0	22
Sting Ray, Common	13,	43
Stone Catfish	17,	57
" Lugger	18,	60
" Roller	59,	60
" Seulpin	32,	100
" Sucker	31,	109
Strawberry Bass	25,	81
Straw-coloured Minnow	18,	63
Striped Bass	27,	86
Striped Surf-fish	27,	88

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Sturger	on Common	12	1GE 11
	Green	12,	.1.1
*5	Lake	12	11
	Short nosed	10,	11
	White	1.05	1.1
Sturio	111	1.,	1.1
Sucker	Black	17	50
Sucker 	Chub	17,	- 59 - 29
46	Columbia River	17,	59
46	Common White	17	50
•4	Grav	17	- 09
	Groop's	24	100
.6	Lake Carn	17	103
+5	Lump	11,	107
**	Mauntain	04,	107
**	Northern	14.	
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+5	Stone	11.	100
Such 6.		34,	109
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Sucking	ζ-μδη	30,	90
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	Gauge	26,	- 83
44	Common	26,	83
1	Green	26,	82
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G., C.C.	Red-spotted	26,	<u>S2</u>
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	, Common	27,	88
	, Striped	27,	88
	, White	27,	88
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Tesselat	ed Darter	26,	85
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Three-to	bothed Lamprey	11,	39
Threshe	r	12,	40
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	, California	24,	78
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" I	Jolly Varden	15,	53
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" Painhow	10,	24
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Red Canadian	IЭ,	54
" Red Rock	31,	-98
" Salmon	15,	53
" Speckled	15,	53
" Starry Rock	31.	98
Trout Perch	21	71
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Violet Antimora	25,	-79
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Wall-eved Pollack	24.	78
Warmouth	26	82
Washfish Common		-
Western Coldere	- 4	10
Western Goldeye	14,	40
White Bass	27,	86
Whitefish, Broad	14,	48
" Common	14,	-49
" Coulter's	14,	-48
" Humpback	14.	49
" Labrador	14	.19
" Loost	15	50
" Didadaa'	11	00
Richardson -	11.	17
" Rocky Mountain	14,	48
" Round	14,	48
" Sault	14,	49
White Hake	25,	-80
White Minnow	18.	61
White-nosed Red Horse	17	59.
White Perch	97	87
White San Bass		07
White the first is	-1.	- 24
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White Suri-fish	27,	88
Whiting	24,	77
Window Pane	30,	95
Winter Flounder	29,	94
Wolf Eel	36,	113
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" Alaska	36	113
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rellow Blenny	30,	110
Yellow Catfish	17,	-07
Yellow Mackerel	28,	92
Yellow Perch	26,	84
Yellow-spotted Rock-fish	31,	97
Yellow Stickleback	22.	73



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