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Checklist of fishes from the Saint-Pierre and Miquelon archipelago

by

Gaëlle SIMIAN* (1, 2), Daniel ABRAHAM (3), Nicolas BAILLY (4, 5), Philippe BÉAREZ (6), Frank URTIZBEREA (7), Axelle PERROT (1), Herle GORAGUER (8), Robert LANGLOIS (9), Piotr DASZKIEWICZ (1), Fabrice TELETCHEA (10), Sandrine TERCERIE (1) & Gaël P.J. DENYS (1, 11)



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Abstract. – A list of diadromous and marine fishes occurring in the Saint-Pierre and Miquelon archipelago and its EEZ has been compiled from various available data sources: collections, local and international databases, and literature. This belated work was needed as the only existing checklist dates back to the 19th century and FishBase, as of early 2022, provided a list of only 14 species, and 81 in the French taxonomic register TAXREF. The list assembled here covers 122 species, of which 111 are marine fishes, assigned to 103 genera and 66 families. This list is not comprehensive, but it constitutes a first reference, to be updated with new information.

Résumé. – Inventaire des poissons de l'archipel de Saint-Pierre et Miquelon.

Une liste des poissons diadromes et marins de l'archipel de Saint-Pierre et Miquelon et sa ZEE a été constituée à partir des différentes sources de données disponibles : collections, base de données locales et internationales, et bibliographie. Ce travail était nécessaire car l'unique inventaire existant remonte au XIX^e siècle et FishBase au début de 2022, fournissait une liste de seulement 14 espèces, et 81 dans le référentiel taxonomique français TAXREF. La présente liste contient 122 espèces, dont 111 marines, réparties en 103 genres et 66 familles. Cette liste n'est pas exhaustive et constitue une première référence, qui pourra être mise à jour avec de nouvelles connaissances.

INTRODUCTION

The archipelago of Saint-Pierre and Miquelon (SPM) is a territorial overseas collectivity of France, located in the northwestern Atlantic Ocean south of the Canadian province of Newfoundland and Labrador in the Gulf of St. Lawrence (Fig. 1). SPM covers a land area of 242 km², and consists of three main islands: Miquelon and Langlade linked together by a 12 km long isthmus, and Saint-Pierre (26 km²). Under arbitration with the Canadian government, the Exclusive Economic Zone (EEZ) has a total area of 12,400 km², including a narrow corridor 200 nautical miles long and 10.5 nautical miles wide, locked in the Canadian EEZ, and ironically nicknamed the “French Baguette” (Fig. 1). This unique EEZ has a highly variable bathymetry: to the south (Saint-Pierre Bank), there are shallow-depth areas (45-50 m), while to the east and northeast of Saint-Pierre, the depths exceed 200 m. Finally, at the southernmost end of the EEZ corridor, the seabed is at a depth of 3,000 m.

Another peculiarity of the Saint-Pierre Bank is that it is

bathed by three currents whose waters mix on the bank: the cold Labrador current, from the Northeast, the Gulf Stream, from the South, and a plume of brackish water from the St. Lawrence estuary, from the West. Thus, due to the cold Labrador Current, SPM has often climatic conditions of a subarctic-oceanic character (Aubert de la Rüe, 1970).

The nature of the seabed is also very heterogeneous depending on location and depth, which creates a wide range of habitats hosting a great variety of species.

Fishes are key economical species, and in SPM, fishing is a traditional practice, historically based on the Atlantic cod (*Gadus morhua* Linnaeus, 1758) until the collapse of its fisheries in 1992 (Hutchings and Myers, 1994; Forest, 2022; Palomares and Pauly, 2022). Indeed, around SPM, the seabed and its cold-water corals and sponges, has been ravaged for the most part by the intensive trawling practiced during the years of industrial fishing (Conti, 2017). Thus, a species once very abundant like the Atlantic cod was assessed as “Vulnerable” in 1996 by the IUCN (Hutchings, 2001). The

(1) Unité Patrimoine Naturel – Centre d'expertise et de données (2006 OFB – CNRS – MNHN), Muséum national d'Histoire naturelle, 36 rue Geoffroy-Saint-Hilaire CP 41, 75005 Paris, France. gaelle.simian@mnhn.fr, axelle.perrot@etu.u-pec.fr, piotr.daszkiwicz@mnhn.fr, sandrine.tercerie@mnhn.fr, gael.denys@mnhn.fr

(2)-(11) See at the end of the article

* Corresponding author

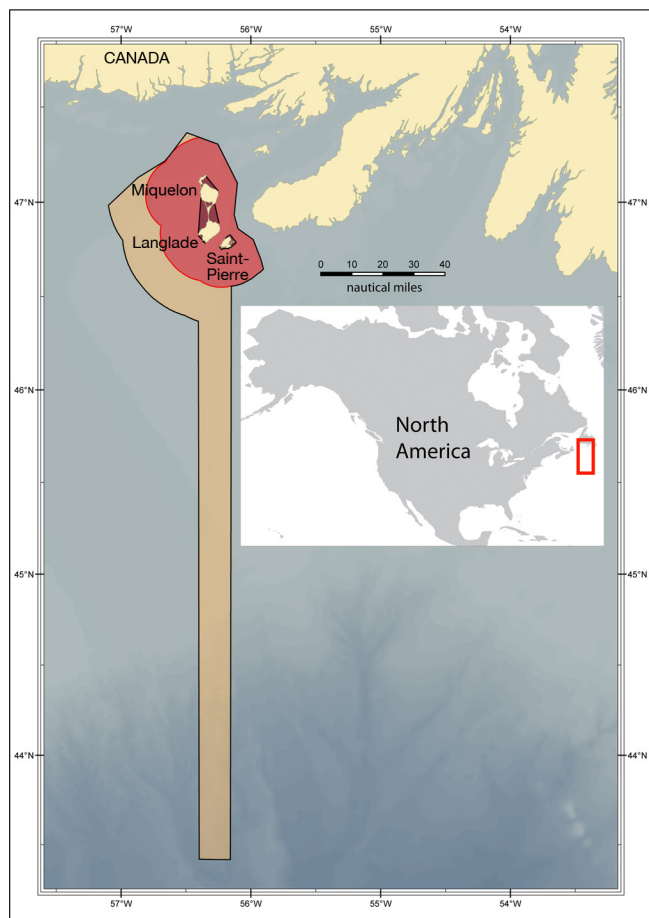


Figure 1. – Maritime space of Saint-Pierre and Miquelon archipelago: inland waters (dark red), Territorial Sea (red), Exclusive Economic Zone (orange). Source SHOM, 2021 and GEBCO, 2014.

species targeted by the fisheries of SPM are nowadays more diversified (Palomares and Pauly, 2022).

Fishes also play crucial roles in the functioning of ecosystems, and in the assessment of the ecological status of fresh and marine waters (e.g. Oberdorff *et al.*, 2002). Thus, environmental managers need information on these organisms for various purposes, such as conservation, management and the assessment of a country's natural wealth.

Moreover, France, as a Party to the Convention on Biological Diversity (United Nations, 1992), has undertaken a national census of its biological diversity, important for its conservation and sustainable use. This objective is included in the national environmental code via Article L411-1A, which mandates the development of a National Inventory of Natural Heritage (*Inventaire du Patrimoine Naturel* – INPN) database, including the biological and geological diversity of metropolitan France and its overseas territories. The INPN database, based on the French taxonomic register TAXREF (Gargominy *et al.*, 2021), is assembled under the scientific

responsibility of the Muséum national d'Histoire naturelle (MNHN), with multiple stakeholders, and is made available to the public via its website: www.inpn.mnhn.fr. The present list has been drawn up within this framework.

The ichthyofaunas of Canada and the Gulf of Saint Lawrence have been well documented for more than one century (Halkett, 1913; Bigelow and Schroeder, 1948, 1953; Slashtenenko, 1958; McAllister, 1960, 1990; Bigelow *et al.*, 1963, 1964; Anderson *et al.*, 1966; Cohen *et al.*, 1973; Scott and Crossman, 1973; Nafpaktitis *et al.*, 1977; Dawson and Vari, 1982; Scott and Scott, 1988; Böhlke *et al.*, 1989; Coad *et al.*, 1995; Nozères *et al.*, 2010; Coad and Reist, 2004, 2018; Coad, 2013; Collette *et al.*, 2018) with 177 species. However, none of these works mentions SPM as part of the distribution area of any each species, which can be explained by the small size of the archipelago and its location, which is not associated with any ecological feature of the Gulf of Saint Lawrence. Bachelot de La Pylaie (1819) was the first, to our best knowledge, to provide information on the ichthyofauna of SPM, in a manuscript listing only 10 marine and freshwater species. FishBase (Froese and Pauly, 2021), in early 2022, included only fourteen fish species occurring within the EEZ of Saint Pierre and Miquelon, based on references dealing with the western central or eastern Atlantic ichthyofaunas (Fischer, 1978; Whitehead *et al.*, 1986; Quéro *et al.*, 1990), and on Gadiformes (Cohen *et al.*, 1990).

Herein we provide the first checklist of both diadromous and marine fishes occurring in and around the SPM archipelago. Although not comprehensive, it is intended to provide a first reference that may be updated in the light of new future studies.

MATERIAL AND METHODS

This checklist was established using all the available sources; all fishes belonging to the subphylum Vertebrata were considered, including Myxini, Petromyzonti, Elasmobranchii, Holocephali and Actinopteri (Fricke *et al.*, 2021).

We first consulted global databases, such as FishBase (Froese and Pauly, 2021) and GBIF (Global Biodiversity Information Facility; <https://www.gbif.org/>). From GBIF, we gathered information on specimens in fish collections (Appendix 1) (MNHN, Muséum national d'Histoire naturelle, Paris, France; USNM, Smithsonian Institution National Museum of Natural History, Department of Vertebrate Zoology, Division of Fishes, Washington DC, USA; ARC, Atlantic Reference Centre, New Brunswick, Canada; MCZ, Museum of Comparative Zoology, Harvard University, Ichthyology Department, Cambridge, Massachusetts, USA). We also considered local knowledge through a naturalist database (<http://www.naturespm.com/>), the website DORIS (<https://doris.ffessm.fr/>) and naturalist photos. We then con-

ducted a thorough bibliographic study and added information from systematic, faunistic and naturalist publications (Bachelot de La Pylaie, 1819; Fischer, 1978; Whitehead *et al.*, 1986; Cohen *et al.*, 1990; Quérou *et al.*, 1990; Urtizberea *et al.*, 2021), and scientific studies (Skomal *et al.*, 2017).

Species identifications were based mainly on Scott and Crossman (1973), Scott and Scott (1988) and Coad and Reist (2018). We followed the Eschmeyer's Catalog of Fishes (Fricke *et al.*, 2021) for the scientific nomenclature and classification.

Finally, English and French common names are provided for each species, based on FishBase, itself largely based on Page *et al.* (2013).

RESULTS

This first checklist includes 122 diadromous and marine fish species with confirmed occurrence in the EEZ of SPM, distributed in 66 families and 103 genera (Tab. I). This list is presented in phylogenetic order for classes and orders (Nelson *et al.*, 2016), and then in alphabetical order for families. Diadromous species are indicated with an asterisk, while the threat (if any) status is reported as: NT (Near Threatened), VU (Vulnerable), EN (endangered) and CR (Critically Endangered) (IUCN world assessment; <http://www.iucn-redlist.org>).

The list below, besides being part of FishBase, will be downloadable from the naturalist database Nature SPM (<http://www.naturespm.com/>), as well as through the next version of the French taxonomic register TAXREF (Gargominy *et al.*, 2021).

CLASS MYXINI

Order MYXINIFORMES

Family Myxinidae

Myxine glutinosa Linnaeus, 1758 – Hagfish – Myxine

CLASS PETROMYZONTI

Order PETROMYZONTIFORMES

Family Petromyzontidae

*¹*Petromyzon marinus* Linnaeus, 1758 – Sea lamprey – Lamproie marine

CLASS ELASMOBRANCHII

Order CARCHARHINIFORMES

Family Carcharhinidae

Carcharhinus plumbeus (Nardo, 1827) – Sandbar shark – Requin gris – EN

Prionace glauca (Linnaeus, 1758) – Blue shark – Requin bleu – NT

Table I. – Number of orders, families, genera and species of fish currently listed in the EEZ of the Saint Pierre and Miquelon archipelago.

Order	Families	Genera	Species
Acipenseriformes	1	1	1
Anguilliformes	3	3	3
Aulopiformes	2	2	2
Beloniformes	1	1	1
Carcharhiniformes	1	1	1
Chimaeriformes	1	2	2
Clupeiformes	1	2	3
Gadiformes	5	12	14
Gasterosteiformes	1	3	3
Lamniformes	2	3	3
Lampriformes	1	1	1
Lophiiformes	2	2	2
Myctophiformes	1	4	4
Myxiniformes	1	1	1
Notacanthiformes	1	1	1
Osmeriformes	3	4	5
Perciformes	17	25	31
Petromyzontiformes	1	1	1
Pleuronectiformes	1	5	6
Rajiformes	2	5	7
Salmoniformes	1	2	2
Scorpaeniformes	7	11	16
Squaliformes	3	3	3
Stomiiformes	2	3	3
Syngnathiformes	2	2	2
Tetraodontiformes	3	3	4
Total	66	103	122

Order LAMNIFORMES

Family Cetorhinidae

Cetorhinus maximus (Gunnerus, 1765) – Basking shark – Requin pèlerin – EN

Family Lamnidae

Carcharodon carcharias (Linnaeus, 1758) – Great white shark – Grand requin blanc – VU

Lamna nasus (Bonnaterre, 1788) – Porbeagle – Requin-taube commun, marache or maraiche – VU

Order SQUALIFORMES

Family Etmopteridae

Centroscyllium fabricii (Reinhardt, 1825) – Black dogfish – Aiguillat noir

Family Somniosidae

Somniosus microcephalus (Bloch & Schneider, 1801) – Greenland shark – Laimargue atlantique

¹ This species does not breed in the freshwaters of the archipelago.

Family Squalidae

Squalus acanthias Linnaeus, 1758 – Piked dogfish –
Aiguillat commun

Order RAJIFORMES**Family Arhynchobatidae**

Bathyraja spinicauda (Jensen, 1914) – Spinytail skate –
Raie à queue épineuse

Family Rajidae

Amblyraja radiata (Donovan, 1808) – Thorny ray – Raie
épineuse – VU
Leucoraja erinaceus (Mitchill, 1825) – Little skate – Raie-
hérisson
Leucoraja ocellata (Mitchill, 1815) – Winter skate – Raie
tachetée – EN
Malacoraja senta (Garman, 1885) – Smooth skate – Raie
lisse – VU
Rajella bigelowi (Stehmann, 1978) – Bigelow's ray – Raie
de Bigelow
Rajella fyllae (Lütken, 1887) – Round ray – Raie ronde

CLASS HOLOCEPHALI**Order CHIMAERIFORMES****Family Chimaeridae**

Hydrolagus affinis (de Brito Capello, 1868) – Small-eyed
rabbitfish – Chimère de profondeur

CLASS ACTINOPTERI**Order ACIPENSERIFORMES****Family Acipenseridae**

*²*Acipenser oxyrinchus* Mitchill, 1815 – Atlantic sturgeon –
Esturgeon noir – NT

Order ANGUILLIFORMES**Family Anguillidae**

**Anguilla rostrata* (Lesueur, 1817) – American eel –
Anguille d'Amérique – EN

Family Serrivomeridae

Serrivomer beanii Gill & Ryder, 1883 – Stout sawpalate –
Serrivomer trapu

Family Synphobranchidae

Synphobranchus kaupii Johnson, 1862 – Northern
cutthroat eel – Anguille égoragée bécue

Order NOTACANTHIFORMES**Family Notacanthidae**

Notacanthus chemnitzii Bloch, 1788 – Snubnosed spiny eel
– Poisson-tapis sombre

Order CLUPEIFORMES**Family Clupeidae**

*³*Alosa pseudoharengus* (Wilson, 1811) – Alewife –
Gaspereau
*⁴*Alosa sapidissima* (Wilson, 1811) – American shad –
Alose savoureuse
Clupea harengus Linnaeus, 1758 – Atlantic herring –
Hareng de l'Atlantique

Order OSMERIFORMES**Family Alepocephalidae**

Alepocephalus agassizii Goode & Bean, 1883 – Dusky
slickhead – Alépocéphale obscure
Alepocephalus bairdii Goode & Bean, 1879 – Manyray
smoothhead – Alépocéphale multirai

Family Argentinidae

Argentina silus (Ascanius, 1775) – Greater argentine –
Grande argentine

Family Osmeridae

Mallotus villosus (Müller, 1776) – Capelin – Capelan
**Osmerus mordax* (Mitchill, 1814) – Rainbow smelt –
Éperlan arc-en-ciel

Order SALMONIFORMES**Family Salmonidae**

**Salmo salar* Linnaeus, 1758 – Atlantic salmon – Saumon
atlantique
**Salvelinus fontinalis* (Mitchill, 1814) – Brook trout –
Omble de fontaine

Order STOMIIFORMES**Family Sternoptychidae**

Polyipnus clarus Harold, 1997 – Slope hatchetfish – Hache
d'argent bathyale

Family Stomiidae

Malacosteus niger Ayres, 1848 – Lightless loosejaw –
Drague sans lampe
Stomias boa (Risso, 1810) – Boa dragonfish – Stomie
commune

Order AULOPIIFORMES**Family Paralepididae**

Arctozenus risso (Bonaparte, 1840) – Spotted barracudina –
Barracudine pintade

Family Scopelarchidae

Benthalbella infans Zugmayer, 1911 – Zugmayer's pearleye
– Œil-perlé à basse quille

³ This species does not breed in freshwaters of the archipelago.

⁴ This species does not breed in freshwaters of the archipelago.

² This species does not breed in freshwaters of the archipelago.

Order MYCTOPHIFORMES**Family Myctophidae**

Benthoosema glaciale (Reinhardt, 1837) – Glacier lanternfish
– Lanterne glaciale

Ceratospopelus maderensis (Lowe, 1839) – Madeira
lanternfish – Lanterne cornée

Myctophum punctatum Rafinesque, 1810 – Spotted
lanternfish – Lanterne ponctuée

Notoscopelus kroyeri (Malm, 1861) – Krøyer's lanternfish –
Lanterne de Krøyer

Order LAMPRIFORMES**Family Lamprididae**

Lampris guttatus (Brünnich, 1788) – Opah – Opah

Order GADIFORMES**Family Gadidae**

Boreogadus saida (Lepechin, 1774) – Polar cod – Morue du
Nord

Gadus macrocephalus Tilesius, 1810 – Pacific cod – Morue
ogac

Gadus morhua Linnaeus, 1758 – Atlantic cod – Morue de
l'Atlantique

Melanogrammus aeglefinus (Linnaeus, 1758) – Haddock –
Aiglefin – VU

Pollachius virens (Linnaeus, 1758) – Saithe – Lieu noir

Family Lotidae

Brosme brosme (Ascanius, 1772) – Cusk – Brosme

Enchelyopus cimbrius (Linnaeus, 1766) – Fourbeard
rockling – Motelle à quatre barbillons

Family Macrouridae

Coryphaenoides rupestris Gunnerus, 1765 – Roundnose –
Grenadier de roche – CR

Macrourus berglax Lacepède, 1801 – Rough head grenadier
– Grenadier berglax

Nezumia bairdii (Goode & Bean, 1877) – Marlin-spike
grenadier – Grenadier du Grand Banc

Family Merlucciidae

Merluccius bilinearis (Mitchill, 1814) – Silver hake – Merlu
argenté – NT

Merluccius albidus (Mitchill, 1818) – Offshore silver hake
– Merlu blanc

Family Phycidae

Phycis chesteri Goode & Bean, 1878 – Longfin hake –
Merluce à longues nageoires

Urophycis tenuis (Mitchill, 1814) – White hake – Merluce
blanche

Order LOPHIIFORMES**Family Lophiidae**

Lophius americanus Valenciennes, 1837 – American angler
– Baudroie d'Amérique

Family Ogocephalidae

Dibranchius atlanticus Peters, 1876 – Atlantic batfish –
Malthe atlantique

Order BELONIFORMES**Family Scomberesocidae**

Scomberesox saurus (Walbaum, 1792) – Atlantic saury –
Balaou atlantique

Order GASTEROSTEIFORMES**Family Gasterosteidae**

**Gasterosteus aculeatus* Linnaeus, 1758 – Three-spined
stickleback – Épinoche à trois épines

**Apeltes quadracus* (Mitchill, 1815) – Four-spined
stickleback – Épinoche à quatre épines

**Pungitius pungitius* (Linnaeus, 1758) – Nine-spined
stickleback – Épinoche à neuf épines

Order SYNGNATHIFORMES**Family Centriscidae**

Macroramphosus scolopax (Linnaeus, 1758) – Longspine
snipefish – Bécasse de mer

Family Syngnathidae

Hippocampus erectus Perry, 1810 – Lined seahorse –
Hippocampe rayé – VU

Order SCORPAENIFORMES**Family Agonidae**

Aspidophoroides monopterygius (Bloch, 1786) –
Alligatorfish – Poisson alligator atlantique

Leptagonus decagonus (Bloch & Schneider, 1801) –
Atlantic poacher – Agone atlantique

Family Cottidae

Artediellus atlanticus Jordan & Evermann, 1898 –
Atlantique hookear sculpin – Hameçon atlantique

Artediellus uncinatus (Reinhardt, 1834) – Arctic hookear
sculpin – Hameçon neigeux

Myoxocephalus aenaeus (Mitchill, 1814) – Grubby –
Chaboisseau bronzé

Myoxocephalus octodecemspinosus (Mitchill, 1814) –
Longhorn sculpin – Chaboisseau à dix-huit épines

Myoxocephalus scorpius (Linnaeus, 1758) – Shorthorn
sculpin – Chaboisseau à épines courtes

Triglops murrayi Günther, 1888 – Moustache sculpin –
Faux-trigle armé

Family Cyclopteridae

Cyclopterus lumpus Linnaeus, 1758 – Lumpfish – Lompe

Eumicrotremus spinosus (Fabricius, 1776) – Atlantic spiny lumpsucker – Poule de mer atlantique

Family Hemitripterae

Hemitripterus americanus (Gmelin, 1789) – Sea raven – Hémitriptère atlantique

Family Liparidae

Liparis gibbus Bean, 1881 – Variegated snailfish – Limace marbrée

Family Psychrolutidae

Cottunculus microps Collett, 1875 – Polar sculpin – Cotte polaire

Family Sebastidae

Sebastes fasciatus Storer, 1854 – Acadian redfish – Sébaste acadien

Sebastes mentella Travin, 1951 – Beaked redfish – Sébaste rose

Sebastes norvegicus (Ascanius, 1772) – Golden redfish – Sébaste doré

Order PERCIFORMES

Family Ammodytidae

Ammodytes americanus DeKay, 1842 – American sand lance – Lançon d'Amérique

Ammodytes dubius Reinhardt 1837 – Northern sand lance – Lançon du nord

Family Anarhichadidae

Anarhichas denticulatus Krøyer, 1845 – Northern wolffish – Loup gélatineux

Anarhichas lupus Linnaeus, 1758 – Atlantic wolffish – Loup atlantique

Anarhichas minor Olafsen, 1772 – Spotted wolffish – Loup tacheté

Family Carangidae

Selene setapinnis (Mitchill, 1815) – Atlantic moonfish – Musso atlantique

Seriola dumerili (Risso, 1810) – Greater amberjack – Sériole couronnée

Family Centrolophidae

Centrolophus niger (Gmelin, 1789) – Rudderfish – Centrolophe noir

Hyperoglyphe perciformis (Mitchill, 1818) – Barrelfish – Centrolophe perciforme

Family Coryphaenidae

Coryphaena hippurus Linnaeus, 1758 – Common Dolphinfin – Coryphène commune

Family Istiophoridae

Kajikia albida (Poey, 1860) – Atlantic white marlin – Makaïre blanc de l'Atlantique – VU

Family Labridae

Tautogolabrus adspersus (Walbaum, 1792) – Cunner – Tanche-tautogue

Family Lumpenidae

Lumpenus lampraeformis (Walbaum, 1792) – Snake blenny – Lompénie serpent

Family Lutjanidae

Lutjanus campechanus (Poey, 1860) – Northern red snapper – Vivaneau campêche

Family Moronidae

Morone sp. – Basses – Bars américains

Family Pholidae

Pholis gunnellus (Linnaeus, 1758) – Rock gunnel – Gonelle

Family Polyprionidae

Polyprion americanus (Bloch & Schneider, 1801) – Wreckfish – Cernier commun

Family Scombridae

Sarda sarda (Bloch, 1793) – Atlantic bonito – Bonite à dos rayé

Scomber scombrus Linnaeus, 1758 – Atlantic mackerel – Maquereau commun

Thunnus alalunga (Bonnaterre, 1788) – Albacore – Germon – NT

Thunnus thynnus (Linnaeus, 1758) – Bluefin tuna – Thon rouge – EN

Family Stichaeidae

Eumesogrammus praecisus (Krøyer, 1836) – Fourline snakeblenny – Quatre-lignes atlantique

Stichaeus punctatus (Fabricius, 1780) – Arctic shanny – Stichée arctique

Ulvaria subbifurcata (Storer, 1839) – Crinkly dick – Ulvaire deux-lignes

Family Stromateidae

Peprilus triacanthus (Peck, 1804) – Atlantic butterfish – Stromatée à fossettes

Family Xiphiidae

Xiphias gladius Linnaeus, 1758 – Swordfish – Espadon

Family Zoarcidae

Lycenchelys verrillii Goode & Bean, 1877 – Wolf eelpout – Lycode à tête longue

Lycodes esmarkii Collett, 1875 – Greater eelpout – Lycode d'Esmark

Lycodes reticulatus Reinhardt, 1835 – Arctic eelpout – Lycode arctique

Lycodes vahlii Reinhardt, 1831 – Checker eelpout – Lycode à carreaux

Zoarces americanus (Bloch & Schneider, 1801) – Ocean pout – Loquette d'Amérique

Order PLEURONECTIFORMES**Family Pleuronectidae**

- Glyptocephalus cynoglossus* (Linnaeus, 1758) – Witch flounder – Plie cynoglosse
Hippoglossoides platessoides (Fabricius, 1780) – American plaice – Plie canadienne
Hippoglossus hippoglossus (Linnaeus, 1758) – Atlantic halibut – Flétan de l'Atlantique – EN
Myzopsetta ferruginea (Storer, 1839) – Yellowtail flounder – Limande à queue jaune
Pseudopleuronectes americanus (Walbaum, 1792) – Winter flounder – Plie rouge
Reinhardtius hippoglossoides (Walbaum, 1792) – Greenland halibut – Flétan du Groenland

Order TETRAODONTIFORMES**Family Balistidae**

- Balistes capricornis* Gmelin, 1789 – Grey triggerfish – Baliste cabri – VU

Family Molidae

- Mola mola* (Linnaeus, 1758) – Ocean sunfish – Poisson-lune – VU

Family Monacanthidae

- Aluterus schoepfii* (Walbaum, 1792) – Orange filefish – Bourse orange
Aluterus scriptus (Osbeck, 1765) – Scribbled leatherjacket filefish – Poisson-lime gribouillé

DISCUSSION

Compared with the number of known species in the Gulf of St. Lawrence (96; Appendix 2), the number of species identified in the Saint Pierre and Miquelon archipelago, 122 species, including 111 marine species, seems quite large. The spatial distribution of species record cannot be illustrated by a map due to the heterogeneity of the data and the imprecision of the sampling locations.

Among the marine species, 31 species identified from Saint-Pierre and Miquelon are not known from the nearby Gulf of St. Lawrence. Several hypotheses may explain the presence of these species. One of these hypotheses is provided by the bathymetry of the SPM's EEZ, which includes great depths (down to 3,000 m at the southernmost end of the "Baguette") which would explain the presence of bathyal species such as *Rajella bigelowi* or *Malacosteus niger*. This is the case for 17 of these 35 different recorded species.

On the other hand, while the SPM archipelago is bathed by the cold Labrador current, the southern tip of its EEZ is influenced by the warm waters of the Gulf Stream. Thus, the warmer waters of this zone can explain the presence of tropical or subtropical species such as *Hippocampus erectus*.

This is the case for 10 of these 35 different recorded species. This hypothesis is corroborated by the presence of sea turtles: *Caretta caretta* (Linnaeus, 1758) regularly observed and *Lepidochelys kempii* (Garman, 1880) very occasionally (Claro *et al.*, 2016). However, specific studies are needed to confirm this inference. The potential impact of global warming should not be ruled out, either. The remaining four species occur at moderate depth and/or in oceanic waters.

Finally, two species were not included. One is rainbow trout, *Oncorhynchus mykiss* (Richardson, 1836), and called *Salmo gairdnerii* Richardson, 1836 (Champigneulle *et al.*, 1983; Briand *et al.*, 2021) was introduced, but is not longer present in SPM. The other is Black wing flyingfish *Hirundichthys rondeletii* (Valenciennes, 1847), which is listed in the DORIS website. However, subaquatic identification of exocoetids is difficult and three other species [*Cypselurus furcatus* (Mitchill, 1815), *Cypselurus menalurus* (Valenciennes, 1846) and *Hirundichthys affinis* (Günther, 1866)] may live in this area (Scott and Scott, 1988; Parin, 2003). Thus, this species was removed from the list as its record and identification are questionable.

Among the 122 species, 20 are threatened according to the world IUCN assessment; of these, 7 are particularly so: *Coryphaenoides rupestris* (CR), *Carcharhinus plumbeus* (EN), *Cetorhinus maximus* (EN), *Leucoraja ocellata* (EN), *Anguilla rostrata* (EN), *Thunnus thynnus* (EN), *Hippoglossus hippoglossus* (EN). A regional IUCN assessment would be interesting for those species, as well as for all diadromous fish species occurring in the inland waters, which have declined these last decades. The required surveys could be undertaken using also the environmental DNA approach, which is a very efficient complement to standard method (e.g. Gold *et al.*, 2021), which would be especially appropriate for the small EEZ of SPM.

The checklist will also change with the growth of the taxonomic knowledge. Coulson *et al.* (2011) and McCusker *et al.* (2013) already listed several cases for which taxonomical revision works are needed in the Canada's Atlantic region, as exemplified below.

According to molecular data, a potential undescribed species of capelin *Mallotus* sp. co-occurs with *Mallotus villosus* on Northwestern Atlantic coast (Dodson *et al.*, 2007; Præbel *et al.*, 2008; Colbeck *et al.*, 2011; McCusker *et al.*, 2013), thus likely also in SPM. A recent morphometric study revealed the discrimination between female specimens of populations from Newfoundland, Arctic region and Alaska (Ressel *et al.*, 2020). Taxonomical investigations with both molecular and morphometric data are needed to characterize this new evolutionary lineage of capelin.

Coulson *et al.* (2011) found also intraspecific divergence in the spinytail skate *Bathyraja spinicauda* as well as in the starry ray *Amblyraja radiata*. These two species deserve of a taxonomic revision.

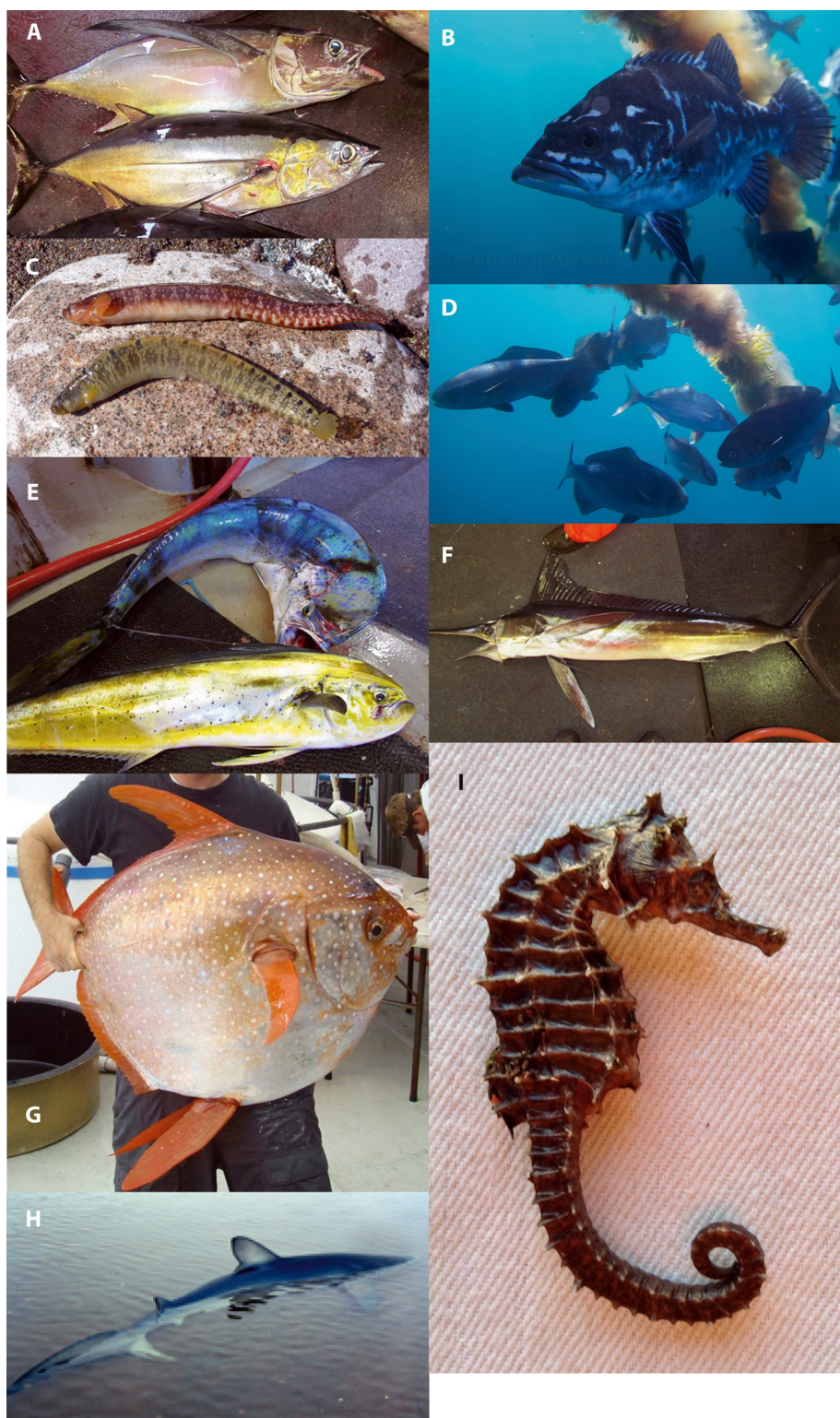


Figure 2. – Naturalist pictures of fishes from Saint-Pierre and Miquelon archipelago. **A:** *Thunnus alalunga* (Bonnaterre, 1788) (photo: Karl Beupertuis); **B:** *Polyprion americanus* (Bloch & Schneider, 1801) (photo: Joël Detcheverry); **C:** *Phollis gunnellus* (Linnaeus, 1758) (photo: Nicolas Cormier); **D:** *Hyperoglyphe perciformis* (Mitchill, 1818) + *Seriola dumerili* (Risso, 1810) (photo: Emmanuel Lemaillier); **E:** *Coryphaena hippurus* Linnaeus, 1758 (photo: Karl Beupertuis); **F:** *Kajikia albida* (Poey, 1860) (photo: Karl Beupertuis); **G:** *Lampris guttatus* (photo: Joël Detcheverry); **H:** *Prionace glauca* (Linnaeus, 1758) (photo: Joël Detcheverry); **I:** *Hippocampus erectus* Perry, 1810 (photo: Claire Lesoavec).

The Atlantic batfish *Dibranchius atlanticus* is a benthic species occurring in both sides of North and Central Atlantic Ocean at depths of 274 to 1,300 m (Scott and Scott, 1988). McCusker *et al.* (2013) do not mention it in their study because there is no available western Atlantic population to compare with their dataset. Like other ogcocephalids, this species moves by walking on the ground using its pectoral fins instead of swimming (Ward, 2002), and thus, western and eastern Atlantic populations appear to be isolated from each other, as evidence by Bradbury (1999), who found morphological differences related to the colour patterns and the numbers of pelvic-fin rays. The type locality of *D. atlanticus* lies with the eastern population off the African coasts. If molecular data support Bradbury's results, the species name of the western Atlantic population would change into *Dibranchius senticosus* (Goode, 1881), the first available name that would be then revalidated.

There are also cases where several species would become invalid according to molecular data (McCusker *et al.*, 2013). Sometimes, both molecular and morphological data do not allow to discriminate *Ammodytes americanus* from *Ammodytes dubius* Reinhardt, 1837 (Nizinski *et al.*, 1990; McCusker *et al.*, 2013). If a taxonomical revision considers these two taxa as only one species, *A. dubius* would be the senior synonym and the valid name. Other species group like *Lycodes* spp., *Macrourus* spp., *Sebastes* spp. and *Triglops* spp. are also of concern. There is work to do.

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(2) Centre de Recherche et d'Enseignement sur les Systèmes Côtiers (CRESCO), Muséum national d'Histoire naturelle, IFREMER, 38 rue du Port Blanc, 35800 Dinard, France. – (3) Inventaire des richesses faunistiques et floristiques des Iles Saint-Pierre-et-Miquelon, 32 rue Brue, Saint-Pierre. F-97500 Saint-Pierre-et-Miquelon, France. danart20@hotmail.com – (4) Sea Around Us, Institute for the Oceans and Fisheries, University of British Columbia, Vancouver, BC V6T 1Z4, Canada. n.bailly@q-quadrics.org – (5) UBC Fish Collection, Beaty Biodiversity Museum, University of British Columbia, Vancouver, BC V6T 1Z4, Canada – (6) Archéozoologie, archéobotanique : sociétés, pratiques et environnements (AASPE UMR 7209), Muséum national d'Histoire naturelle, CNRS, 55 rue Buffon CP 56, 75005 Paris, France. philippe.bearez@mnhn.fr – (7) Direction des Territoires, de l'Alimentation et de la Mer, Boulevard Constant Colmay, BP4217, 97500 Saint-Pierre-et-Miquelon, France. urtizberea.frank@gmail.com – (8) Délégation Ifremer, BP4240, 97500 Saint-Pierre-et-Miquelon, France. Herle.Goraguer@ifremer.fr – (9) Fédération pour la Pêche et la Protection des Milieux Aquatiques de Saint-Pierre-et-Miquelon, Place du Général de Gaulle, 97500 Saint-Pierre, Saint-Pierre-et-Miquelon, France. boblanglois64@gmail.com – (10) Unité de Recherche Animal and Fonctionnalités des Produits Animaux, Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environnement, Université de Lorraine, 54505 Vandœuvre-lès-Nancy, France fabrice.teletchea@univ-lorraine.fr – (11) UMR Biologie des Organismes et Ecosystèmes Aquatiques (UMR BOREA 8067), MNHN, CNRS, IRD, SU, UCN, UA, 57 rue Cuvier CP26, 75005 Paris, France.

Additional data

Appendix 1. – List of fish species from Saint Pierre and Miquelon archipelago in collections.

Collection	Collection ID	Species
ARC, Atlantic Reference Centre, New Brunswick, Canada	ARC_9111070	<i>Argentina silus</i> (Ascanius, 1775)
	ARC_8703242	<i>Ceratoscopelus maderensis</i> (Lowe, 1839)
	ARC_8703272	<i>Arctozenus risso</i> (Bonaparte, 1840)
	ARC_8703269	<i>Arctozenus risso</i> (Bonaparte, 1840)
	ARC_8703244	<i>Bentosema glaciale</i> (Reinhardt, 1837)
	ARC_8703243	<i>Polyipnus clarus</i> Harold, 1994
	ARC_8703270	<i>Serrivomer beanii</i> Gill & Ryder, 1883
	ARC_8703245	<i>Notoscopelus kroeyeri</i> (Malm, 1861)
	ARC_8703241	<i>Myctophum punctatum</i> Rafinesque, 1810
	ARC_9311985	<i>Lycenchelys verrillii</i> (Goode & Bean, 1877)
	ARC_22621	<i>Enchelyopus cimbricus</i> (Linnaeus, 1766)
	ARC_21907	<i>Argentina silus</i> (Ascanius, 1775)
	ARC_22939	<i>Triglops murrayi</i> Günther, 1888
	ARC_22991	<i>Triglops murrayi</i> Günther, 1888
	ARC_22289	<i>Urophycis tenuis</i> (Mitchill, 1814)
	ARC_23292	<i>Triglops murrayi</i> Günther, 1888
	ARC_22199	<i>Enchelyopus cimbricus</i> (Linnaeus, 1766)
	ARC_27577	<i>Zoarces americanus</i> (Bloch & Schneider, 1801)
	ARC_23134	<i>Artediellus atlanticus</i> Jordan & Evermann, 1898
	ARC_22227	<i>Enchelyopus cimbricus</i> (Linnaeus, 1766)
	ARC_27326	<i>Lycodes esmarkii</i> Collett, 1875
	ARC_22431	<i>Enchelyopus cimbricus</i> (Linnaeus, 1766)
ARC_22528	<i>Enchelyopus cimbricus</i> (Linnaeus, 1766)	
ARC_22429	<i>Enchelyopus cimbricus</i> (Linnaeus, 1766)	
ARC_27353	<i>Myoxocephalus octodecemspinus</i> (Mitchill, 1814)	
USNM, Smithsonian Institution National Museum of Natural History, Department of Vertebrate Zoology, Division of Fishes, Washington DC, USA	USNM 83887	<i>Amblyraja radiata</i> (Donovan, 1808)
	USNM 38090	<i>Glyptocephalus cynoglossus</i> (Linnaeus, 1758)
MCZ, Museum of Comparative Zoology, Harvard University, Ichthyology Department, Cambridge, Massachusetts, USA	MCZ:Ich:27825	<i>Phycis chesteri</i> Goode & Bean, 1878
	MCZ:Ich:37998	<i>Lycodes vahlii</i> Reinhardt, 1831
	MCZ: Ich:37997	<i>Amblyraja radiata</i> (Donovan, 1808)
MNHN, Muséum national d'Histoire naturelle, Paris, France	mnhn/ic/1998-1431	<i>Alosa pseudoharengus</i> (Wilson, 1811)
	mnhn/ic/1998-1432	<i>Alosa pseudoharengus</i> (Wilson, 1811)
	mnhn/ic/1998-1443	<i>Mallotus villosus</i> (Müller, 1776)
	mnhn/ic/1998-1445	<i>Mallotus villosus</i> (Müller, 1776)
	mnhn/ic/1998-1444	<i>Mallotus villosus</i> (Müller, 1776)
	mnhn/ic/1998-1458	<i>Zoarces americanus</i> (Bloch & Schneider, 1801)
	mnhn/ic/1998-1451	<i>Scomberesox saurus</i> (Walbaum, 1792)
	mnhn/ic/1998-1433	<i>Myoxocephalus scorpius</i> (Linnaeus, 1758)
	mnhn/ic/1998-1435	<i>Myoxocephalus scorpius</i> (Linnaeus, 1758)
	mnhn/ic/1998-1434	<i>Myoxocephalus scorpius</i> (Linnaeus, 1758)
	mnhn/ic/1998-1455	<i>Sebastes norvegicus</i> (Ascanius, 1772)
	mnhn/ic/1998-1456	<i>Sebastes norvegicus</i> (Ascanius, 1772)
	mnhn/ic/1998-1446	<i>Pholis gunnellus</i> (Linnaeus, 1758)
	mnhn/ic/1998-1447	<i>Pholis gunnellus</i> (Linnaeus, 1758)
	mnhn/ic/1998-1453	<i>Scomber scombrus</i> Linnaeus, 1758
	mnhn/ic/1998-1452	<i>Scomber scombrus</i> Linnaeus, 1758
	mnhn/ic/1998-1439	<i>Gadus morhua</i> Linnaeus, 1758
	mnhn/ic/1998-1440	<i>Gadus morhua</i> Linnaeus, 1758
	mnhn/ic/2001-1808	<i>Gadus morhua</i> Linnaeus, 1758

Appendix 1. – Continued.

Collection	Collection ID	Species
	mnhn/ic/1998-1441	<i>Gadus morhua</i> Linnaeus, 1758
	mnhn/ic/2005-1206	<i>Gadus morhua</i> Linnaeus, 1758
	mnhn/ic/1998-1442	<i>Urophycis tenuis</i> (Mitchill, 1814)
	mnhn/ic/1998-1425	<i>Ammodytes americanus</i> DeKay, 1842
	mnhn/ic/1998-1427	<i>Ammodytes americanus</i> DeKay, 1842
	mnhn/ic/1998-1426	<i>Ammodytes americanus</i> DeKay, 1842
	mnhn/ic/1998-1428	<i>Ammodytes americanus</i> DeKay, 1842
	mnhn/ic/1998-1459	<i>Carcharhinus plumbeus</i> (Nardo, 1827)
	mnhn/ic/1998-1449	<i>Pseudopleuronectes americanus</i> Walbaum, 1792
	mnhn/ic/1998-1450	<i>Pseudopleuronectes americanus</i> Walbaum, 1792
	mnhn/ic/1998-1448	<i>Pseudopleuronectes americanus</i> Walbaum, 1792
	mnhn/ic/1998-1454	<i>Benthalbella infans</i> Zugmayer, 1911
	mnhn/ic/1998-1436	<i>Triglops murrayi</i> Günther, 1888
	mnhn/ic/1998-1429	<i>Hyperoglyphe perciformis</i> (Mitchill, 1818)
	mnhn/ic/1998-1430	<i>Hyperoglyphe perciformis</i> (Mitchill, 1818)
	mnhn/ic/1998-1457	<i>Benthodesmus elongatus</i> (Clarke, 1879)
	mnhn/ic/1998-1437	<i>Melanogrammus aeglefinus</i> (Linnaeus, 1758)
	mnhn/ic/1998-1438	<i>Melanogrammus aeglefinus</i> (Linnaeus, 1758)

Appendix 2. – List of fish species occurring in the Gulf of St. Lawrence according to Scott and Scott (1988) and not yet listed in the EEZ of the Saint Pierre and Miquelon archipelago.

Family	Species	Family	Species
Myxinidae	<i>Myxine limosa</i> Girard, 1859	Salmonidae	<i>Oncorhynchus nerka</i> (Walbaum, 1792)
Carchariidae	<i>Carcharias taurus</i> Rafinesque, 1810	Salmonidae	<i>Oncorhynchus tshawytscha</i> (Walbaum, 1792)
Alopiidae	<i>Alopias vulpinus</i> (Bonnatere, 1788)	Salmonidae	<i>Salmo trutta</i> Linnaeus, 1758
Triakidae	<i>Mustelus canis</i> (Mitchill, 1815)	Salmonidae	<i>Salvelinus alpinus</i> (Linnaeus, 1758)
Carcharhinidae	<i>Rhizoprionodon terraenovae</i> (Richardson, 1836)	Sternoptychidae	<i>Maurolicus muelleri</i> (Gmelin, 1789)
Torpedinidae	<i>Tetronarce nobiliana</i> (Bonaparte, 1835)	Myctophidae	<i>Symbolophorus veranyi</i> (Moreau, 1888)
Rajidae	<i>Amblyraja hyperborea</i> (Collett, 1879)	Zeidae	<i>Zenopsis conchifer</i> (Lowe, 1852)
Rajidae	<i>Amblyraja jenseni</i> (Bigelow & Schroeder, 1950)	Phycidae	<i>Urophycis chuss</i> (Walbaum, 1792)
Rajidae	<i>Dipturus laevis</i> (Mitchill, 1818)	Gaidropsaridae	<i>Enchelyopus cimbrius</i> (Linnaeus, 1766)
Arhynchobatidae	<i>Bathyraja richardsoni</i> (Garrick, 1961)	Gaidropsaridae	<i>Gaidropsarus ensis</i> (Reinhardt, 1837)
Dasyatidae	<i>Bathytoshia centroura</i> (Mitchill, 1815)	Gadidae	<i>Arctogadus glacialis</i> (Peters, 1874)
Acipenseridae	<i>Acipenser brevirostrum</i> Lesueur, 1818	Gadidae	<i>Microgadus tomcod</i> (Walbaum, 1792)
Albulidae	<i>Albula vulpes</i> (Linnaeus, 1758)	Stromateidae	<i>Peprilus triacanthus</i> (Peck, 1804)
Halosauridae	<i>Halosaurus macrochir</i> (Günther, 1878)	Pomatomidae	<i>Pomatomus saltatrix</i> (Linnaeus, 1766)
Notacanthidae	<i>Notacanthus chemnitzii</i> Bloch, 1788	Scombridae	<i>Euthynnus alletteratus</i> (Rafinesque, 1810)
Muraenidae	<i>Gymnothorax funebris</i> Ranzani, 1839	Syngnathidae	<i>Amphelikturus dendriticus</i> (Barbour, 1905)
Congridae	<i>Conger oceanicus</i> (Mitchill, 1818)	Syngnathidae	<i>Syngnathus fuscus</i> Storer, 1839
Clupeidae	<i>Alosa aestivalis</i> (Mitchill, 1814)	Scophthalmidae	<i>Scophthalmus aquosus</i> (Mitchill, 1815)
Clupeidae	<i>Brevoortia tyrannus</i> (Latrobe, 1802)	Paralichthyidae	<i>Hippoglossina oblonga</i> (Mitchill, 1815)
Clupeidae	<i>Dorosoma cepedianum</i> (Lesueur, 1818)	Paralichthyidae	<i>Paralichthys dentatus</i> (Linnaeus, 1766)
Dussumieriidae	<i>Etrumeus sadina</i> (Mitchill, 1814)	Pleuronectidae	<i>Liopsetta putnami</i> (Gill, 1864)
Bathylagidae	<i>Bathylagus euryops</i> Goode & Bean, 1896	Carangidae	<i>Decapterus macarellus</i> (Cuvier, 1833)
Salmonidae	<i>Coregonus artedii</i> Lesueur, 1818	Carangidae	<i>Seriola zonata</i> (Mitchill, 1815)
Salmonidae	<i>Oncorhynchus clarkii</i> (Richardson, 1836)	Atherinopsidae	<i>Menidia menidia</i> (Linnaeus, 1766)
Salmonidae	<i>Oncorhynchus gorbuscha</i> (Walbaum, 1792)	Fundulidae	<i>Fundulus heteroclitus</i> (Linnaeus, 1766)
Salmonidae	<i>Oncorhynchus kisutch</i> (Walbaum, 1792)	Hemiramphidae	<i>Hyporhamphus unifasciatus</i> (Ranzani, 1841)

Appendix 2. – Continued.

Family	Species
Gigantactinidae	<i>Gigantactis longicirra</i> Waterman, 1939
Tetraodontidae	<i>Sphoeroides maculatus</i> (Bloch & Schneider, 1801)
Monacanthidae	<i>Monacanthus ciliatus</i> (Mitchill, 1818)
Monacanthidae	<i>Stephanolepis hispidus</i> (Linnaeus, 1766)
Moronidae	<i>Morone americana</i> (Gmelin, 1789)
Moronidae	<i>Morone saxatilis</i> (Walbaum, 1792)
Sparidae	<i>Archosargus probatocephalus</i> (Walbaum, 1792)
Sparidae	<i>Stenotomus chrysops</i> (Linnaeus, 1766)
Sciaenidae	<i>Cynoscion regalis</i> (Bloch & Schneider, 1801)
Sciaenidae	<i>Pogonias cromis</i> (Linnaeus, 1766)
Zoarcidae	<i>Gymnelus viridis</i> (Fabricius, 1780)
Zoarcidae	<i>Lycenchelys kolthoffi</i> Jensen, 1904
Zoarcidae	<i>Lycodes lavalaei</i> Vladykov & Tremblay, 1936
Zoarcidae	<i>Lycodes mucosus</i> Richardson, 1855
Zoarcidae	<i>Lycodes pallidus</i> Collett, 18979
Zoarcidae	<i>Lycodes polaris</i> (Sabine, 1824)
Zoarcidae	<i>Lycodes turneri</i> Bean, 1879
Stichaeidae	<i>Chirolophis ascanii</i> (Walbaum, 1792)
Lumpenidae	<i>Anisarchus medius</i> (Reinhardt, 1837)
Lumpenidae	<i>Leptoclinus maculatus</i> (Fries, 1838)
Lumpenidae	<i>Lumpenus fabricii</i> Reinhardt, 1836
Pholidae	<i>Pholis fasciata</i> (Bloch & Schneider, 1801)

Family	Species
Ammodytidae	<i>Ammodytes hexapterus</i> Pallas, 1814
Serranidae	<i>Centropristis striata</i> (Linnaeus, 1758)
Triglidae	<i>Prionotus carolinus</i> (Linnaeus, 1771)
Triglidae	<i>Prionotus evolans</i> (Linnaeus, 1766)
Gasterosteidae	<i>Gasterosteus wheatlandi</i> Putnam, 1867
Cottidae	<i>Gymnocanthus tricuspis</i> (Reinhardt, 1830)
Cottidae	<i>Icelus bicornis</i> (Reinhardt, 1840)
Cottidae	<i>Icelus spatula</i> Gilbert & Burke, 1912
Cottidae	<i>Myoxocephalus quadricornis</i> (Linnaeus, 1758)
Cottidae	<i>Myoxocephalus scorpioides</i> (Fabricius, 1780)
Cottidae	<i>Triglops nybelini</i> Jensen, 1944
Cottidae	<i>Triglops pingelii</i> Reinhardt, 1837
Agonidae	<i>Aspidophoroides olrikii</i> Lütken, 1877
Agonidae	<i>Hemitripterus americanus</i> (Gmelin, 1789)
Cyclopteridae	<i>Eumicrotremus derjugini</i> Popov, 1926
Liparidae	<i>Careproctus ranula</i> (Good & Bean, 1879)
Liparidae	<i>Careproctus reinhardti</i> (Krøyer, 1862)
Liparidae	<i>Liparis atlanticus</i> (Jordan & Evermann, 1898)
Liparidae	<i>Liparis coheni</i> Able, 1976
Liparidae	<i>Liparis fabricii</i> Krøyer, 1847
Liparidae	<i>Liparis inquilinus</i> Able, 1973
Liparidae	<i>Liparis tunicatus</i> Reinhardt, 1836