



Marine fishes from Galicia (NW Spain): an updated checklist

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Abstract

An annotated checklist of the marine fishes from Galician waters is presented. The list is based on historical both literature records and on new revisions. The ichthyofauna list is composed by 398 species. It is diversified in 2 superclasses, 3 class, 35 orders, 139 families and 288 genuses. Perciformes is the most diverse order with 37 families, 91 genus and 136 species. Gobiidae (19 species) and Sparidae (19 species) are the richest families. Biogeographically, the Lusitanian is the most important group including 204 species (51.3%), followed by the Atlantic group with 149 species (37.4%), the Boreal group with 28 species (7%) and the 17 species (4.3%) of the African group. A total of 42 species have been included as new records for the study area, and 3 records have been identified as doubtful. Identification and registration of errors from previous studies have been also indicated.

Key words: checklist, ichthyofauna, Galician waters, NE Atlantic, biogeography

Resumen

Se presenta un listado de los peces de mar de Galicia. El listado se basa en registros de publicaciones históricas y nuevas revisiones. La lista está compuesta por 398 especies, agrupadas en 2 superclases, 3 clases, 35 órdenes, 139 familias y 288 géneros. El orden Perciformes es el más diverso con 37 familias, 91 géneros y 136 especies. Gobiidae (19) y Sparidae (19) son las familias con mayor diversidad. Con respecto a la biogeografía, el grupo Lusitánico incluye 204 especies (51.3 %), seguido por 149 especies del Atlántico (37.4%), 28 del Boreal (7%) y 17 del Africano (4.3%). Se han reconocido 42 especies nuevas para la zona, identificado registros previos como errores de identificación o de registro y se han indicado otros 3 como dudosos.

Palabras clave: listado, ictiofauna, Galicia, Atlántico NE, biogeografía

Introduction

The first list of Galician marine fishes was written by Cornide (1788) and it comprised 65 species. Almost one century later, López-Seone (1866) elaborated a complete summary of the Galician fauna and enumerated 95 species of fishes, 53 of them new for the area. The 118 species described in these two pioneering works established the basis of the current knowledge of the marine ichthyofauna of Galicia. During the 20th century, studies concerning with any aspect of ichthyology (taxonomy, ecology, biology, fisheries, etc.) re-emerged, mainly due to the establishment in Vigo of the Instituto Español de Oceanografía (IEO) back in 1917, and the Instituto de Investigaciones Marinas (IIM-CSIC) in 1951. The research activity, scientific publications and the oceanographic and fishery surveys carried out by these two institutions quickly increased the number of marine fishes recorded in this region.

By the end of the 20th century, Galician marine ichthyofauna began to be concisely inventoried. Thus, in the first modern study on the Galician marine fishes, Solórzano *et al.* (1983) listed 265 species, being most of them littoral ones. Years later, Solórzano *et al.* (1988) increased this number up to 296 species. Piñeiro *et al.* (1996) and Bañón (2002) updated the checklist with 46 more new species, most of them from deep waters, establishing the number of total known species in 342. Subsequent records and reviews increased this number up to 357 (Bañón, 2009), which was the last update until the publication of the present work.

In the present paper, an annotated list of the marine fishes of Galicia, including 42 new records, is provided. The main new data sources included in this study have their origin in two historical series: the annual demersal trawl surveys carried out since 1983 by the Instituto Español de Oceanografía (IEO) and the monitoring program of artisanal fisheries carried out by the regional Government (Xunta de Galicia) since 1999.

Study area and methods

Galicia is an autonomous region of Spain located in the north-western corner of the Iberian Peninsula, between the river Eo (43° 32' N, 7° 01' W) and the river Miño (41° 50' N, 9° 40' W) (Figure 1). The Galician coast has a length of 1,195 km, representing 35% of the Spanish coastline. The study area comprises the continental shelf and the slope of Galician waters including some abyssal zones and the Galicia Bank. The Galicia Bank is a deep seamount off the continental shelf, at about 42° 8' N – 11° 8' W with depths ranging from 650 in its summit to more than 1500 m. The Galician shelf is relatively narrow with a maximum width of 35 km. Galicia is located in the limit of the Eastern North Atlantic Upwelling System. Upwelling favourable winds prevail from March to October and cause the entry of great flows of salty cold water (Álvarez-Salgado *et al.*, 1993).

We have adopted Ellis *et al.* (2007) in the attribution of biogeographic affinity categories: Boreal, Lusitanian (including Mediterranean species), Atlantic (including deep-water or mesopelagic species widely distributed) and African.

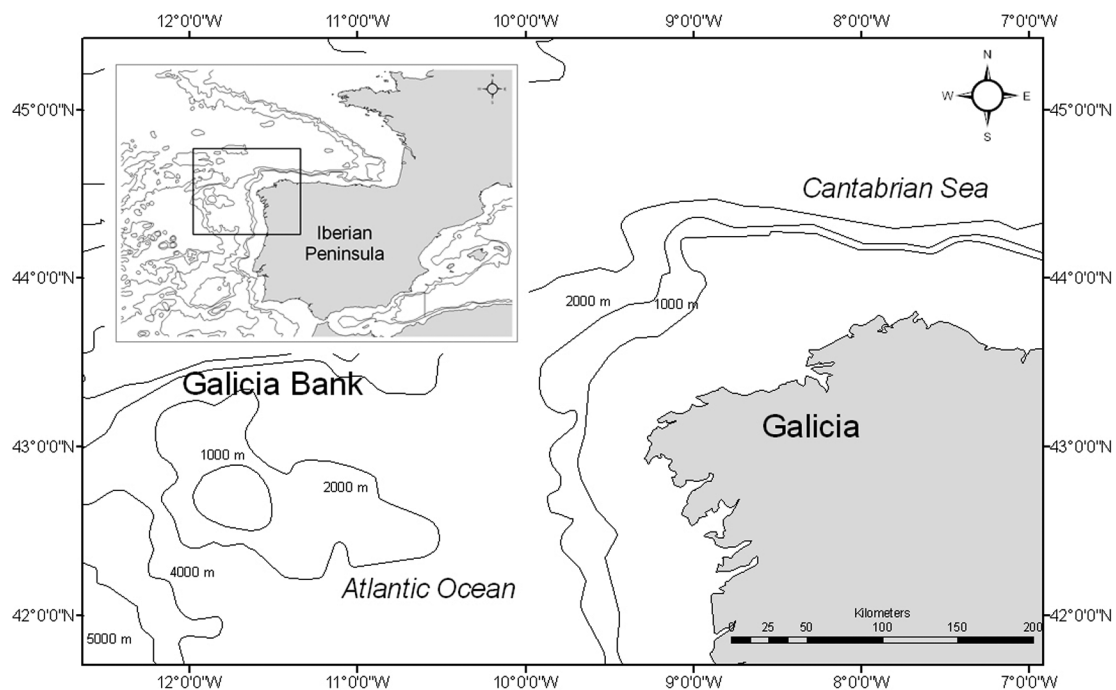


FIGURE 1. Map of the study area.

Specimens presented in the collection of the Museo de Ciencias Naturales Luís Iglesias de Santiago de Compostela Historia Natural have been marked by one asterisk (*). Additional material deposited in the Colección Ictiológica de Referencia (CIR) of the Instituto de Ciencias del Mar-CSIC de Barcelona have been indicated by two asterisks (**). Previous revisions of fish fauna from NE Atlantic made by Whitehead *et al.* (1986) and Quéro *et al.* (2003) have been used in the discussion of the data regarding the geographical distribution.

The checklist is presented in the taxonomic sequence: superclass, class, order, family, genus and species. We have followed Quéro *et al.* (2003) for the classification system order and Froese and Pauly (2010) for the scientific nomenclature and common names.

Results

SUPERCLASS AGNATHA

CLASS CEPHALASPIDOMORPHA

ORDER PETROMYZONTIFORMES

Family Petromyzontidae

**Petromyzon marinus* Linnaeus, 1758 — Sea lamprey

SUPERCLASS GNATHOSTOMATA

CLASS CHONDRICHTHYES

ORDER HEXANCHIFORMES

Family Hexanchidae

Hexanchus griseus (Bonnaterre, 1788) — Bluntnose sixgill shark

Family Chlamydoselachidae

**Chlamydoselachus anguineus* Garman, 1884 — Frilled shark

ORDER SQUALIFORMES

Family Echinorhinidae

Echinorhinus brucus (Bonnaterre, 1788) — Bramble shark

Family Squalidae

Squalus acanthias Linnaeus, 1758 — Piked dogfish

Squalus blainvillei (Risso, 1827) — Longnose spurdog

Family Centrophoridae

Centrophorus granulosus (Bloch & Schneider, 1801) — Gulper shark

Centrophorus squamosus (Bonnaterre, 1788) — Leafscale gulper shark

Deania calcea (Lowe, 1839) — Birdbeak dogfish

Deania hystricosa (Garman, 1906) — Rough longnose dogfish

Not mentioned for Galicia by McEachran and Branstetter in Whitehead *et al.* (1986) nor by Quéro *et al.* (2003). One record for Galicia based on an unreported specimen from the Galicia Bank.

Family Etmopteridae

**Etmopterus spinax* (Linnaeus, 1758) — Velvet belly lantern shark

Etmopterus princeps Collett, 1904 — Great lanternshark

Etmopterus pusillus (Lowe, 1839) — Smooth lanternshark

Family Somniosidae

Centroscymnus coelolepis Barbosa du Bocage & de Brito Capello, 1864 — Portuguese dogfish.

Centroselachus crepidater (Barbosa du Bocage & de Brito Capello, 1864) — Longnose velvet dogfish.
Scymnodon ringens Barbosa du Bocage & de Brito Capello, 1864 — Knifetooth dogfish
Somniosus rostratus (Risso, 1827) — Little sleeper shark

Family Oxynotidae

Oxynotus centrina (Linnaeus, 1758) — Angular roughshark
Oxynotus paradoxus Frade, 1929 — Sailfin roughshark

Family Dalatiidae

Dalatias licha (Bonnaterre, 1788) — Kitefin shark

ORDER SQUATINIFORMES

Family Squatinidae

Squatina squatina (Linnaeus, 1758) — Angelshark

ORDER LAMNIFORMES

Family Lamnidae

Lamna nasus (Bonnaterre, 1788) — Porbeagle
Carcharodon carcharias (Linnaeus, 1758) — Great white shark

Reported by Solorzano *et al.* (1988) based on specimens caught by the long line fleet and discharged at the Coruña fishmarket. We consider this as a doubtful record, because those specimens were probably caught out of the study area.

Isurus oxyrinchus Rafinesque-Schmaltz, 1810 — Shortfin mako

Family Cetorhinidae

Cetorhinus maximus (Gunnerus, 1765) — Basking shark

Family Alopiidae

Alopias vulpinus (Bonnaterre, 1788) — Thintail thresher
Alopias superciliosus (Lowe, 1841) — Bigeye thresher

Common species in the open waters of the North Atlantic but with a single record from Galicia: a male specimen stranded in Playa América, Nigrán (Pontevedra), in July 2008 (CEMMA, personal communication).

Family Scyliorhinidae

**Galeus melastomus* Rafinesque, 1810—Blackmouth catshark
Galeus atlanticus (Vaillant, 1888)—Atlantic sawtail cat shark

Not mentioned for Galician waters neither in Whitehead *et al.* (1986) nor in Quéro *et al.* (2003). Frequently caught between 400 and 711 m depth during the last years in the “Demersales” surveys. Probably this species was previously confused with *G. melastomus*.

**Scyliorhinus canicula* (Linnaeus, 1758)—Small-spotted catshark
Scyliorhinus stellaris (Linnaeus, 1758) —Nursehound

Family Pseudotriakidae

Pseudotriakis microdon de Brito Capello, 1868 — False catshark

Recorded for Galicia based on unreported specimens caught in the Galicia Bank (Figure 2).

Family Carcharhinidae

**Galeorhinus galeus* (Linnaeus, 1758) — Tope shark
Mustelus mustelus (Linnaeus, 1758) — Smooth-hound

Mustelus asterias Cloquet, 1821 — Starry smooth-hound

Prionace glauca (Linnaeus, 1758) — Blue shark



FIGURE 2. *Pseudotriakis microdon* (photo R. Bañón).

Family Sphyrnidae

Sphyrna zygaena (Linnaeus, 1758) — Smooth hammerhead

ORDER TORPEDINIFORMES

Family Torpedinidae

Torpedo torpedo (Linnaeus, 1758) — Common torpedo

**Torpedo marmorata* Risso, 1810 — Spotted torpedo

ORDER RAJIFORMES

Family Rhinobatidae

Rhinobatos rhinobatos (Linnaeus, 1758) — No common name

Rhinobatos cemiculus Geoffroy Saint-Hilaire, 1817—Blackchin guitarfish

Family Rajidae

Raja miraletus Linnaeus, 1758— Brown ray

Raja asterias Delaroche, 1809— Starry ray

Raja brachyura Lafont, 1873—Blonde ray

**Raja clavata* Linnaeus, 1758—Thornback ray

**Raja microocellata* Montagu, 1818—Small-eyed ray

**Raja montagui* Fowler, 1910—Spotted ray

Dipturus batis (Linnaeus, 1758) — Blue skate

Dipturus oxyrinchus (Linnaeus, 1758) — Longnosed skate

Leucoraja circularis (Couch, 1838) — Sandy ray

Leucoraja naevus (Müller & Henle, 1841) — Cuckoo ray

Rostroraja alba (Lacepède, 1803) — Bottlenosed skate

**Raja undulata* Lacepède, 1802 — Undulate ray

Family Dasyatidae

Dasyatis pastinaca (Linnaeus, 1758) — Common stingray

***Pteroplatytrygon violacea* (Bonaparte, 1832) — Pelagic stingray

Not mentioned for Galicia by McEachran and Capapé in Whitehead *et al.* (1986). Recorded from the Galicia Bank under the name of *Dasyatis violacea* (Bañón *et al.*, 1997).

Family Myliobatidae

**Myliobatis aquila* (Linnaeus, 1758) — Common eagle ray

Mobula mobular (Bonnaterre, 1788) — Devil fish

CLASS HOLOCEPHALI

ORDER CHIMAERIFORMES

Family Chimaeridae

**Chimaera monstrosa* Linnaeus, 1758 — Rabbit fish

Hydrolagus mirabilis (Collet, 1904) — Large-eyed rabbitfish

CLASS ACTINOPTERYGII

ORDER NOTACANTHIFORMES

Family Halosauridae

Halosaurus ovenii Johnson, 1864 — No common name

Not mentioned for Galicia by Sulak in Whitehead *et al.* (1986). Recorded from Galicia by Bañón *et al.* (1997): 13 specimens caught between 769 and 1139 m depth.

Halosauropsis macrochir (Günther, 1878) — Abyssal halosaur

Aldrovandia phalacra (Vaillant, 1888) — Hawaiian halosaurid fish

Family Notacanthidae

**Notacanthus bonaparte* Risso, 1840 — Shortfin spiny eel

Notacanthus chemnitzii Bloch, 1788 — Spiny eel

ORDER ANGUILLIFORMES

Family Anguillidae

**Anguilla anguilla* (Linnaeus, 1758) — European eel

Family Muraenidae

Muraena helena Linnaeus, 1758 — Mediterranean moray

Family Synphobranchidae

Synphobranchus kaupii Johnson, 1862 — Kaup's arrowtooth eel

Family Ophichthidae

Ophisurus serpens (Linnaeus, 1758) — Serpent eel

Pisodonophis semicinctus (Richardson, 1848) — Saddled snake eel

Not mentioned for the Atlantic European waters by Bauchot in Whitehead *et al.* (1986). Recorded from Galicia by Bañón *et al.* (2002) (figure 3).

Family Congridae

**Conger conger* (Linnaeus, 1758) — European conger



FIGURE 3. *Pisodonophis semicinctus* (photo R. Bañón).

Family Nemichthyidae

Nemichthys scolopaceus Richardson, 1848 — Slender snipe eel

Family Serrivomeridae

Serrivomer beanii Gill & Ryder, 1883 — Bean's sawtoothed eel

Family Nettastomatidae

Nettastoma melanurum Rafinesque, 1810 — Blackfin sorcerer

Not mentioned for Galicia by Saldanha in Whitehead *et al.* (1986). Recorded by Bañón *et al.* (1997) based on six specimens caught between 806 and 1139 m depth.

Facciolella oxyrhyncha (Bellotti, 1883) — Facciola's sorcerer

One specimen of 56 cm TL caught during the survey “Demersales 06” at 436 m depth.

ORDER SACCOPHARYNGIFORMES

Family Eurypharyngidae

Eurypharynx pelecanooides Vaillant, 1882 — Pelican eel

ORDER CLUPEIFORMES

Family Cupleidae

**Sardina pilchardus* (Walbaum, 1792) — European pilchard

Alosa fallax (Lacepède, 1803) — Twaité shad

Alosa alosa (Linnaeus, 1758) — Allis shad

**Sprattus sprattus* (Linnaeus, 1758) — European sprat

Family Engraulidae

Engraulis encrasicolus (Linnaeus, 1758) — European anchovy

ORDER OSMERIFORMES

Family Argentinidae

**Argentina sphyraena* Linnaeus, 1758 — Argentine

**Argentina silus* (Ascanius, 1775) — Greater argentine

Family Alepocephalidae

Alepocephalus rostratus Risso, 1820 — Risso's smooth-head

Alepocephalus bairdii Goode & Bean, 1879 — Baird's smooth-head

**Xenodermichthys copei* (Gill, 1884) — Bluntnout smooth-head

Family Platytroctidae

Holtbyrnia macrops Maul, 1957 — Bigeye searsid

Two specimens caught at 680 m depth during the survey “Demersales 96”.

Mentodus rostratus Günther, 1878 — No common name

ORDER SALMONIFORMES

Family Salmonidae

**Salmo trutta* Linnaeus, 1758 — Sea trout

**Salmo salar* Linnaeus, 1758 — Atlantic salmon

ORDER STOMIIFORMES

Family Gonostomatidae

Sigmops bathyphilus (Vaillant, 1884) — Spark anglemouth

Gonostoma elongatum Günther, 1878 — Elongated bristlemouth fish

Cyclothone braueri Jespersen & Tåning, 1926 — Garrick

Cyclothone microdon (Günther, 1878) — No common name

Family Sternoptychidae

Sternoptyx diaphana Hermann, 1781 — Diaphanous hatchet fish

Argyropelecus hemigymnus Cocco, 1829 — Half-naked hatchetfish

**Argyropelecus olfersii* (Cuvier, 1829) — No common name

Argyropelecus aculeatus Valenciennes, 1850 — Lovely hatchetfish

One single specimen of 7 cm TL caught during the survey “Demersales 07”.

Argyropelecus gigas Norman, 1930 — Hatchetfish

Four specimens between 7 and 9 cm TL caught during “Demersales 83 and 91” surveys

**Mauroliticus muelleri* (Gmelin, 1789) — Pearlsides

Family Phosichthyidae

Vinciguerria poweriae (Cocco, 1838) — Power's deep-water bristle-mouth fish

Ichthyococcus ovatus (Cocco, 1838) — Lightfish

One specimen of 4 cm TL caught during the survey “Demersales 03”

Polymetme corythaeola (Alcock, 1898) — Rendezvous fish

Family Stomiidae

Rhadinesthes decimus (Zugmayer, 1911) — Slender snaggletooth

**Stomias boa* (Risso, 1810) — Scaly dragonfish

Chauliodus sloani Bloch & Schneider, 1801 — Sloane's viperfish

Leptostomias gladiator (Zugmayer, 1911) — No common name

Melanostomias bartonbeani Parr, 1927 — Scaleless black dragonfish

One specimen of 16 cm TL caught at 688 m depth during the survey “Demersales 08”

ORDER ATELEOPODIFORMES

Family Ateleopodidae

Ijimaia loppei Roule, 1922 — Loppe's tadpole fish

ORDER AULOPIFORMES

Family Chlorophthalmidae

**Chlorophthalmus agassizi* Bonaparte, 1840 — Shortnose greeneye

Family Ipnopidae

Bathypterois dubius Vaillant, 1888 — Spiderfish

Family Paralepididae

Arctozenus risso (Bonaparte, 1840) — Ribbon barracudina

Paralepis coregonoides Risso, 1820 — Sharpchin barracudina

Three specimens of 16–20 cm TL caught between 360–564 m depth during the surveys “Demersales 83, 03 and 08”

Family Alepisauridae

Alepisaurus ferox Lowe, 1833 — Longnose lancetfish

Sudis hyalina Rafinesque, 1810 — No common name

ORDER MYCTOPHIFORMES

Family Neoscopelidae

Neoscopelus macrolepidotus Johnson, 1863 — Large-scaled lantern fish

Not mentioned for Galicia by Hulley in Whitehead *et al.* (1986). Recorded from Galicia by Bañón *et al.* (2002).

***Neoscopelus microchir* Matsubara, 1943 — No common name

Not mentioned for Galicia by Hulley in Whitehead *et al.* (1986). Recorded from the Galicia Bank (Bañón *et al.*, 1997).

Family Myctophidae

Myctophum punctatum Rafinesque, 1810 — Spotted lanternfish

Diaphus dumerilii (Bleeker, 1856) — No common name

Ten specimens between 4 and 8 cm TL caught at 365–563 m depth during “Demersales 97 and 06” surveys

Ceratoscopelus maderensis (Lowe, 1839) — No common name

Ceratoscopelus warmingii (Lütken, 1892) — No common name

Uncertain status. Reported by Hulley in Whitehead *et al.* (1986) to south of 35°N and it is unreported by Quéro *et al.* (2003). Recorded for Galicia by Lozano y Rey (1947) as *Lampanyctus townsendi*, a synonym of *C. warmingii*. A revision of new specimens is needed.

Lampadena urophaos atlantica Maul, 1969 — No common name

Uncertain status. Not mentioned for Galicia neither by Hulley in Whitehead *et al.* (1986) nor by Quéro (2003). Recorded from Galicia by Arté (1952) and Anadón (1957) as *L. nitida*. Questionable as a synonym of *L. urophaos atlantica* (Solórzano *et al.*, 1988). A revision of new specimens is required.

Lampadena speculigera Goode & Bean, 1896 — Mirror lanternfish

One specimen of 4 cm TL caught at 228 m depth during the survey “Demersales 93”

Lampanyctus crocodilus (Risso, 1810) — Jewel lanternfish

Lampanyctus photonotus Parr, 1928 — No common name

Lampanyctus intricarius Taning, 1928 — No common name

One specimen of 17 cm TL caught during the survey “Demersales 02”

Notoscopelus kroeyeri (Malm, 1861) — Lancet fish

Reported from Galicia by Solórzano *et al.* (1988) as *N. elongatus*.

Benthoosema glaciale (Reinhardt, 1838) — Glacier lanternfish

ORDER LAMPRIFORMES

Family Trachipteridae

Trachipterus arcticus (Brünnich, 1788) — Deal fish

ORDER GADIFORMES

Family Macrouridae

Gadomus longifilis (Goode & Bean, 1885) — Treadfin grenadier

**Trachyrincus scabrurus* (Rafinesque, 1810) — Roughsnout grenadier

Hymenocephalus italicus Giglioli, 1884 — Glasshead grenadier

Coelorinchus caelorinchus (Risso, 1810) — Hollow nosed rattail

Occasional catches mainly between 300–650 m depth in various “Demersales” surveys

Coelorinchus labiatus (Koelher, 1896) — Spearsnouted grenadier

Reported from Galicia as *C. vaillanti* by Arté (1952).

Coryphaenoides rupestris Gunnerus, 1765 — Roundhead rat-tail

Cetonurus globiceps (Vaillant, 1884) — Globehead grenadier

**Malacocephalus laevis* (Lowe, 1843) — Rough rat-tail

**Nezumia aequalis* (Günther, 1878) — Common Atlantic grenadier

Nezumia sclerorhynchus (Valenciennes, 1838) — Roughtip grenadier

Family Moridae

Antimora rostrata (Günther, 1878) — Blue antimora

Gadella maraldi (Risso, 1810) — Gadella

Recorded for Galicia based on one specimen of 11 cm TL caught to 570 m depth during the survey “Demersales 09”

Halargyreus johnsonii Günther, 1862 — Slender codling

Physiculus dalwigki Kaup, 1858 — Black codling

Not mentioned for Galicia by Cohen in Whitehead *et al.* (1986). Recorded from the Galicia Bank (Bañón *et al.*, 2002) (Figure 4).

Mora moro (Risso, 1810) — Common mora

**Lepidion eques* (Günther, 1887) — North Atlantic codling

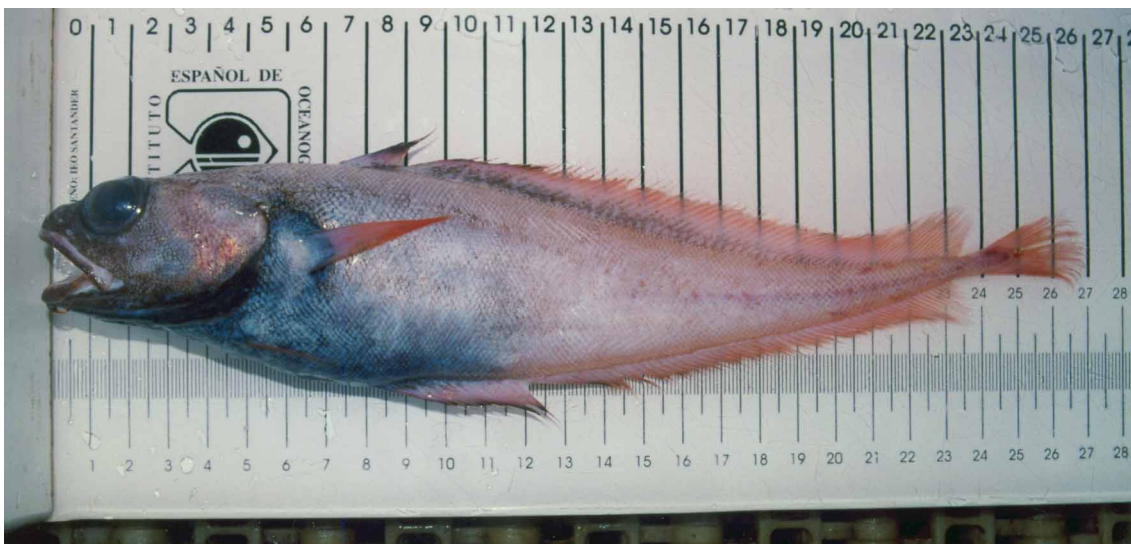


FIGURE 4. *Physiculus dalwigki* (photo R. Bañón).

Family Melanonidae

Melanonus zugmayeri Norman, 1930 — Arrowtail

Family Gadidae

**Raniceps raninus* (Linnaeus, 1758) — Tadpole fish

**Trisopterus luscus* (Linnaeus, 1758) — Bib

**Trisopterus minutus* (Linnaeus, 1758) — Poor cod

Gadus morhua Linnaeus, 1758 — Cod

**Micromesistius poutassou* (Risso, 1827) — Blue whiting

**Gadiculus argenteus argenteus* Guichenot, 1850 — Silvery pout

**Merlangius merlangus* (Linnaeus, 1758) — Whiting

**Pollachius pollachius* (Linnaeus, 1758) — Pollack

Family Lotidae

Gaidropsarus macrophthalmus (Günther, 1867) — Big-eyed rockling

Gaidropsarus granti (Regan, 1903) — Azores rockling

Recorded from the Galicia Bank (Bañón *et al.*, 2002). Recorded again in 2009 in the same area (Figure 5), confirming its presence. This species has never been caught in the continental shelf of the Atlantic area and their distribution seems to be restricted to islands and seamounts.

Gaidropsarus guttatus (Collet, 1890) — No common name

**Gaidropsarus vulgaris* (Cloquet, 1824) — 3-bearded rockling

**Gaidropsarus mediterraneus* (Linnaeus, 1758) — Shore rockling

**Ciliata mustela* (Linnaeus, 1758) — 5-bearded rockling

Molva molva (Linnaeus, 1758) — Ling

Molva macrophtalma (Linnaeus, 1758) — Common ling

Previously reported as *M. dypterigia* (Solórzano *et al.*, 1988)

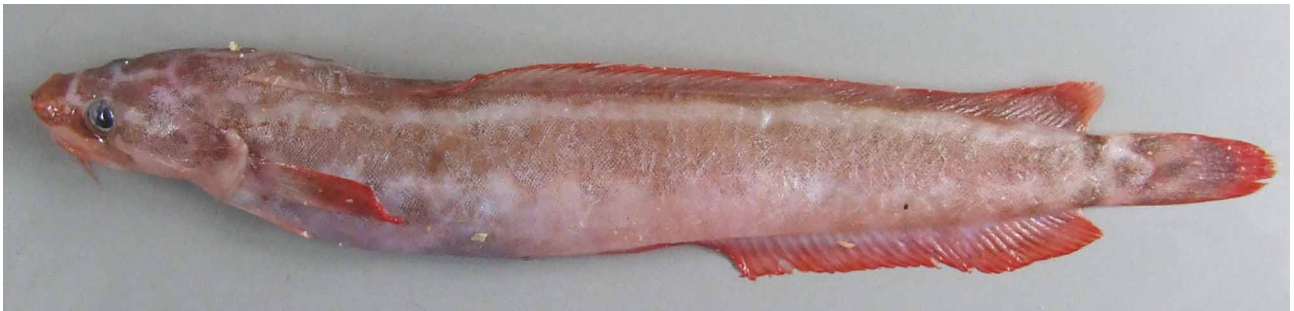


FIGURE 5. *Gaidropsarus granti* (photo R. Bañón).

Family Phycidae

Phycis phycis (Linnaeus, 1766) — Forkbeard

**Phycis blennoides* (Brünnich, 1768) — Greater forkbeard

Family Merluccidae

**Merluccius merluccius* (Linnaeus, 1758) — European hake

ORDER OPHIDIIFORMES

Family Ophidiidae

Ophidion barbatum Linnaeus, 1758 — Snake blenny

Family Aphyonidae

Sciadonus cryptophthalmus (Zugmayer, 1911) — No common name

Family Carapidae

Carapus acus (Brünnich, 1768) — Pearl fish

Echiodon drummondii Thompson, 1837 — Pearlfish

**Echiodon dentatus* (Cuvier, 1829) — No common name

ORDER LOPHIIFORMES

Family Lophiidae

Lophius budegassa Spinola, 1807 — Black-bellied anglerfish

**Lophius piscatorius* Linnaeus, 1758 — Anglerfish

Family Chaunacidae

Chaunax pictus Lowe, 1846 — Pink frogmouth

Family Ceratiidae

Ceratias holboelli Krøyer, 1845 — Kroyer's deep sea anglerfish

One female of 560 mm TL (Figure 6) caught by the vessel “Ría de Cedeira” on 19th December 2006 at 676 m depth in the north of Galicia (“As Paredes”: 44° 07' N – 08° 07' W)



FIGURE 6. *Ceratias holboelli* (photo R. Bañón).

Family Linophrynidae

***Lynophryne coronata* Parr, 1927 — Deep-sea anglerfish

Not mentioned for Galicia by Cohen in Whithead *et al.* (1986). Recorded from the Galicia Bank by Bañón *et al.*, (2006): one female of 223 mm TL with an attached parasitic male of 29 mm TL (Figure 7), at 762–764 m depth.

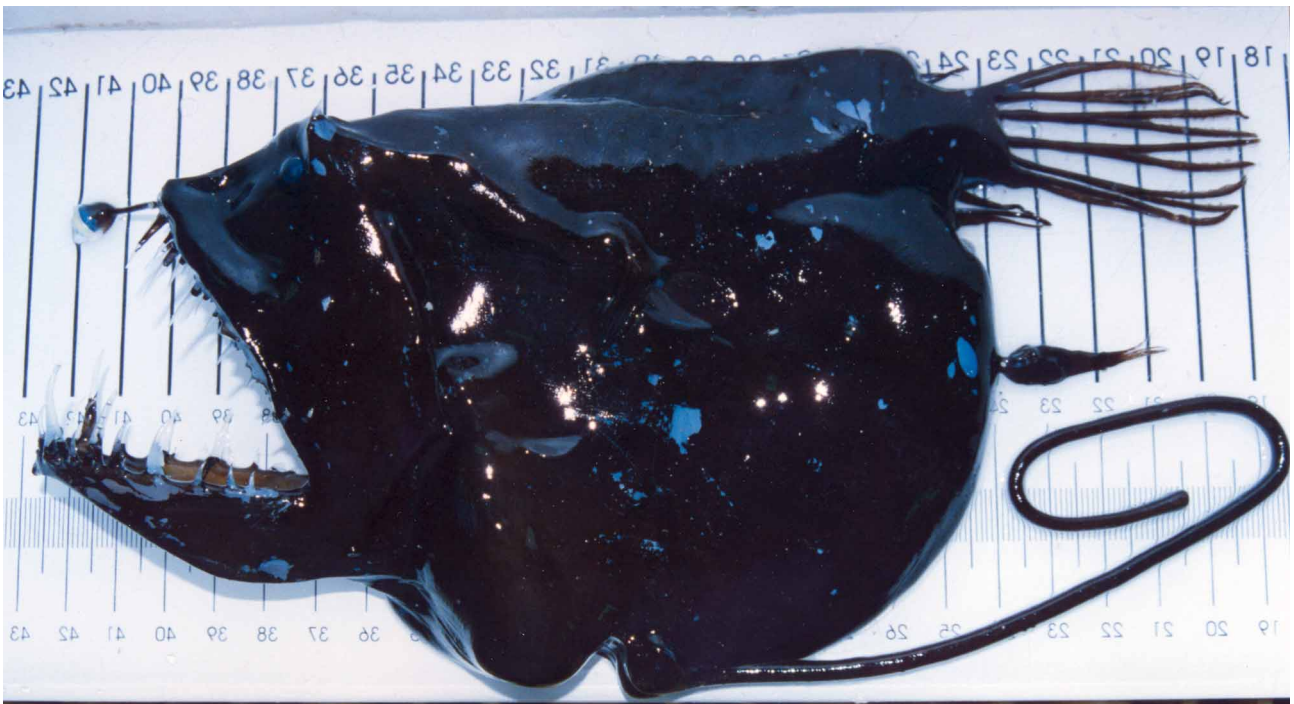


FIGURE 7. *Lynophryne coronata* (photo R. Bañón).

ORDER GOBIESOCIFORMES

Family Gobiesocidae

Lepadogaster lepadogaster* (Bonnaterre, 1788) — Shore clingfishLepadogaster candolii* Risso, 1810 — Connemarra clingfish*Lepadogaster purpurea* (Bonnaterre, 1788) — Cornish suckerRecorded from Galicia by Henriques *et al.* (2002), who separated the two species *L. lepadogaster* and *L. purpurea* previously considered as two subspecies.**Diplecogaster bimaculata* (Bonnaterre, 1788) — Two-spotted clingfish**Apletodon dentatus* (Facciola, 1887) — Small-headed Clingfish**ORDER ATHERINIFORMES**

Family Atherinidae

Atherina presbyter* Cuvier, 1829 — Sand smeltORDER BELONIFORMES**

Family Scomberesocidae

Scomberesox saurus (Walbaum, 1792) — Saurey pike

Family Belonidae

**Belone belone* (Linnaeus, 1761) — Eastern Atlantic garpike

Family Exocoetidae

Cheilopogon heterurus* (Rafinesque, 1810) — Atlantic flying fishORDER STEPHANOBERYCIFORMES**

Family Melamphaidae

Melamphaes microps (Günther, 1878) — No common name**ORDER BERYCIFORMES**

Family Trachichthyidae

**Hoplostethus mediterraneus* Cuvier, 1829 — Mediterranean slimehead*Hoplostethus atlanticus* Collett, 1889 — Orange roughy*Hoplostethus cadenati* Quérou, 1974 — Black slimehead

Family Diretmidae

Diretmichthys parini (Post & Quérou, 1981) — Parin's spiny fin

Recorded for Galicia based on one unreported specimen caught by the pair-trawl "Bautista Pino-Nuevo Socio" (Celeiro) on 2006, at the western of Estaca de Bares Cap (Arronte, unpublished data). Recorded again in 2010 in the Galician Bank, confirming its presence in Galician waters.

Diretmus argenteus Johnson, 1864 — Silver spinyfin

Family Anoplogasteridae

Anoplogaster cornuta (Valenciennes, 1833) — Common fangtooth

Family Berycidae

Beryx splendens* Lowe, 1834 — Splendid alfonsinoBeryx decadactylus* Cuvier, 1829 — Beryx**ORDER ZEIFORMES**

Family Parazenidae

Cyttopsis rosea (Lowe, 1843) — Rosy dory

Family Zeidae

Zenopsis conchifera (Lowe, 1852) — Silvery John Dory

**Zeus faber* Linnaeus, 1758 — John Dory

Family Oreosomatidae

Neocyttus helgae (Holt & Byrne, 1908) — False boarfish

Family Caproidae

**Capros aper* (Linnaeus, 1758) — Boar fish

ORDER GASTEROSTEIFORMES

Family Gasterosteidae

Gasterosteus aculeatus Linnaeus, 1758 — 3-spined stickleback

**Spinachia spinachia* (Linnaeus, 1758) — 15-spined stickleback

ORDER SYNGNATHIFORMES

Family Fistulariidae

**Fistularia petimba* Lacepède, 1803 — red cornetfish

Not mentioned for Galicia by Tortonese in Whitehead *et al.* (1986) nor Quéro *et al.* (2003). One specimen of 140 cm TL (Figure 8) caught on 11 May 2006, in Laxe, at the north-west coast of Galicia (Bañón & Sande, 2008).



FIGURE 8. *Fistularia petimba* (photo C. Sande).

Family Centriscidae

**Macroramphosus scolopax* (Linnaeus, 1758) — Snipe-fish

Family Syngnathidae

**Hippocampus guttulatus* Cuvier, 1829 — Sea horse

**Entelurus aequoreus* (Linnaeus, 1758) — Snake pipefish

**Nerophis lumbriciformis* (Jenyns, 1835) — Worm pipefish

**Nerophis ophidion* (Linnaeus, 1758) — Straight-nosed pipefish

Syngnathus typhle Linnaeus, 1758 — Deep-snouted pipefish

Syngnathus phlegon Risso, 1827 — No common name

Not mentioned for Galicia neither by Dawson in Whitehead *et al.* (1986) nor by Quéro *et al.* (2003).

Recorded by Lozano y Rey (1947).

**Syngnathus acus* Linnaeus, 1758 — Great pipefish

Syngnathus abaster Risso, 1827 — Black-striped pipefish

ORDER SCORPAENIFORMES

Family Sebastidae

**Helicolenus dactylopterus* (Delaroche, 1809) — Blackbelly rosefish

Trachyscorpia cristulata (Koehler, 1896) — Spiny scorpionfish

Family Scorpaenidae

Pontinus kuhlii (Bowdich, 1825)

Scorpaena scrofa Linnaeus, 1758 — Largescaled scorpionfish

Scorpaena porcus Linnaeus, 1758 — Black scorpionfish

**Scorpaena notata* Rafinesque, 1810 — Small red scorpionfish

Scorpaena loppei Cadenat, 1943 — Cadenat's rockfish

Occasional catches between 100–250 m depth in several “Demersales” surveys.

Family Triglidae

**Lepidotrigla cavillone* (Lacepède, 1801) — Large-scaled gurnard

**Lepidotrigla dieuzeidei* Blanc & Hureau, 1973 — Spiny gurnard

Not mentioned for Galicia neither by Hureau in Whitehead *et al.* (1986) nor by Quéro *et al.* (2003).

Recorded from Galicia by Bañón (2004).

**Trigla lyra* Linnaeus, 1758 — Piper gurnard

**Chelidonichthys obscurus* (Bloch & Schneider, 1801) — Longfin gurnard

**Chelidonichthys lucernus* (Linnaeus, 1758) — Tub gurnard

Chelidonichthys lastoviza (Bonnaterre, 1788) — Streaked gurnard

**Aspitrigla cuculus* (Linnaeus, 1758) — East Atlantic red gurnard

**Eutrigla gurnardus* (Linnaeus, 1758) — Grey gurnard

Family Peristediidae

**Peristedion cataphractum* (Linnaeus, 1758) — African armoured searobin

Family Cottidae

**Taurulus bubalis* (Euphrasen, 1786) — Longspined bullhead

Family Psychrolutidae

Cottunculus thomsonii (Günther, 1882) — Pallid sculpin

Family Cyclopteridae

**Cyclopterus lumpus* Linnaeus, 1758 — Lumpsucker

A boreal species occasionally present in Galician waters (Figure 9), mainly during the first semester of the year, when a migration to shallow waters for reproduction takes place (Bañón *et al.*, 2008a).

Family Liparidae

Liparis montagui (Donovan, 1804) — Montagu's sea snail

Paraliparis membranaceus Günther, 1887 — No common name

Occasional catches between 500–700 m depth in several “Demersales” surveys.

ORDER PERCIFORMES

Family Moronidae

**Dicentrarchus labrax* (Linnaeus, 1758) — European seabass

Family Polyprionidae

Polyprion americanus (Bloch & Schneider, 1801) — Wreckfish



FIGURE 9. *Cyclopterus lumpus* (photo R. Bañón).

Family Serranidae

**Anthias anthias* (Linnaeus, 1758) — Swallowtail seaperch

Epinephelus marginatus (Lowe, 1834) — Dusky grouper

Serranus scriba (Linnaeus, 1758) — Painted comber

Reported by De Buen (1935b); there are no posterior records of this species.

**Serranus cabrilla* (Linnaeus, 1758) — Comber

Family Callanthiidae

**Callanthias ruber* (Rafinesque, 1810) — Parrot seaperch

Family Epigonidae

Epigonus telescopus (Risso, 1810) — Bulls-eye

Family Pomatomidae

Pomatomus saltatrix (Linnaeus, 1766) — Bluefish

Not mentioned for Galician waters by Tortonese in Whitehead *et al.* (1986). Recorded by Lozano y Rey (1952), based on a picture of one specimen landed in the port of Vigo, erroneously identified by De Buen (1935b). There are reports of sporadic catches by game fishers from 1969 to approximately 1994. The last reported specimen of 76 cm TL was caught on 3 June 2007 in Portosin (Bañón *et al.*, 2008b).

Family Echeneidae

Remora brachyptera (Lowe, 1839) — Spearfish remora

Not mentioned for Galician waters neither by Lachner in Whitehead *et al.* (1986) nor by Quéro *et al.*, (2003). Recorded from Galicia by Solórzano *et al.* (1988), as specimens attached to swordfish individuals caught by the longliners. We consider this a doubtful record, probably out of the study area.

**Remora remora* (Linnaeus, 1758) — Common remora

Two specimens of 10 and 11 cm TL caught during the survey “Demersales 00” at 267 m depth.

Family Carangidae

**Trachurus trachurus* (Linnaeus, 1758) — Atlantic horse mackerel

**Trachurus picturatus* (Bowdich, 1825) — Blue jack mackerel

Trachurus mediterraneus (Steindachner, 1868) — Mediterranean horse mackerel

Pseudocaranx dentex (Bloch & Schneider, 1801) — White trevally

Not mentioned for Galician waters by Smith-Vaniz in Whitehead *et al.* (1986). Reported by Fernández and Bañón (1997).

Caranx crysos (Mitchill, 1815) — Blue runner

Not mentioned for Galician waters by Smith-Vaniz in Whitehead *et al.* (1986). Recorded from Galicia by Bañón and Casas (1997). A new unreported specimen of 52 cm TL was caught on 30th November 2009 in the Ensenada de Corcubión, at 33 m depth (Figure 10).

**Naucrates ductor* (Linnaeus, 1758) — Pilotfish

**Seriola rivoliana* Valenciennes, 1833 — Almaco jack

**Seriola fasciata* (Bloch, 1793) — Lesser amberjack

Not mentioned for Galician waters neither by Smith-Vaniz in Whitehead *et al.* (1986) nor by Quéro *et al.* (2003). Recorded from Galicia by Bañón and Mucientes (2009), one specimen of 32 cm TL caught on 19th September 2008 in the Ría de Arousa (South Galicia) at 12 m depth.

Campogramma glaycos (Lacepède, 1801) — Vadigo

Lichia amia (Linnaeus, 1758) — Leerfish

Trachinotus ovatus (Linnaeus, 1758) — Derbio



FIGURE 10. *Caranx crysos*. (photo R. Bañón).

Family Coryphaenidae

Coryphaena hippurus Linnaeus, 1758 — Common dolphinfish

Coryphaena equiselis Linnaeus, 1758 — Pompano dolphinfish

Family Bramidae

Pterycombus brama Fries, 1837 — Atlantic fanfish

**Taractes asper* Lowe, 1843 — Rough pomfret

Taractichthys longipinnis (Lowe, 1843) — Bigscale pomfret

**Brama brama* (Bonnaterre, 1788) — Atlantic pomfret

Family Sparidae

Dentex gibbosus (Rafinesque, 1810) — Pink dentex

Reported by López-Seoane (1866); there are no posterior records of this species.

Dentex macrophthalmus (Bloch, 1791) — Large-eye dentex

- Dentex dentex* (Linnaeus, 1758) — Common dentex
Pagrus caeruleostictus (Valenciennes, 1830) — Bluespotted seabream
 Reported by Fernández *et al.* (1978) as *Sparus caurelosticus*.
 **Pagrus pagrus* (Linnaeus, 1758) — Common seabream
Diplodus annularis (Linnaeus, 1758) — Annular seabream
 **Diplodus cervinus* (Lowe, 1838) — Zebra seabream
 **Diplodus sargus* (Linnaeus, 1758) — White seabream
 **Diplodus vulgaris* (Geoffroy Saint-Hilaire, 1817) — Common two-banded seabream
Diplodus puntazzo (Cetti, 1777) — Sharpnout seabream
 **Pagellus acarne* (Risso, 1827) — Axillary seabream
 **Pagellus bogaraveo* (Brünnich, 1768) — Blackspot seabream
 **Pagellus erythrinus* (Linnaeus, 1758) — Common pandora
 **Sparus aurata* Linnaeus, 1758 — Gilthead seabream
 **Boops boops* (Linnaeus, 1758) — Bogue
Oblada melanura (Linnaeus, 1758) — Saddled seabream
 **Sarpa salpa* (Linnaeus, 1758) — Salema
 **Spondyliosoma cantharus* (Linnaeus, 1758) — Black seabream
 **Lithognathus mormyrus* (Linnaeus, 1758) — Striped seabream

Family Centracanthidae

- Spicara maena* (Linnaeus, 1758) — Blotched picarel
 Reported by López-Seoane (1866); there are no posterior records of this species.

Family Sciaenidae

- Umbrina cirrosa* (Linnaeus, 1758) — Shi drum
Sciaena umbra Linnaeus, 1758 — Brown meagre
Umbrina canariensis Valenciennes, 1843 — Canary drum
 One specimen of 369 mm TL caught on 11 March 2009 in the Ría de Viveiro.
Argyrosomus regius (Asso, 1801) — Meagre

Family Mullidae

- **Mullus surmuletus* Linnaeus, 1758 — Striped red mullet
Mullus barbatus barbatus Linnaeus, 1758 — Red mullet

Family Kyphosidae

- Kyphosus sectator* (Linnaeus, 1758) — Bermuda sea chub
 Not mentioned for the Atlantic European waters neither by Tortonese in Whitehead *et al.* (1986) nor by Quéro *et al.* (2003). Recorded from Galicia by Bañón (2004) (Figure 11) but previously observed by scuba divers, at least since 2001. Since 2005 the capture of three specimens has been recorded.

Family Cepolidae

- **Cepola macrophthalma* (Linnaeus, 1758) — Red bandfish

Family Mugilidae

- **Chelon labrosus* (Risso, 1827) — Thicklip grey mullet
Mugil cephalus Linnaeus, 1758 — Flathead mullet
 **Liza aurata* (Risso, 1810) — Golden grey mullet
Liza ramada (Risso, 1810) — Thinlip mullet



FIGURE 11. *Kyphosus sectator* (photo R. Bañón).

Family Labridae

**Coris julis* (Linnaeus, 1758) — Mediterranean rainbow wrasse

**Acantholabrus palloni* (Risso, 1810) — Scale-rayed wrasse

**Centrolabrus exoletus* (Linnaeus, 1758) — Rock cook

**Labrus bergylta* Ascanius, 1767 — Ballan wrasse

**Labrus mixtus* Linnaeus, 1758 — Cuckoo wrasse

Labrus merula Linnaeus, 1758 — Brown wrasse

Reported by López-Seoane (1866); there are no posterior records of this species.

Labrus viridis Linnaeus, 1758 — Green wrasse

Reported by López-Seoane (1866); there are no posterior records of this species.

**Ctenolabrus rupestris* (Linnaeus, 1758) — Goldsinny

**Symphodus bailloni* (Valenciennes, 1839) — Baillon's wrasse

**Symphodus cinereus* (Bonnaterre, 1788) — Grey wrasse

Symphodus tinca (Linnaeus, 1758) — East Atlantic peacock wrasse

**Symphodus melops* (Linnaeus, 1758) — Corkwing

Symphodus ocellatus (Forskål, 1775) — No common name

Family Chiasmodontidae

Chiasmodon niger Johnson, 1864 — Black swallower

Family Ammodytidae

**Gymnammodytes semisquamatus* (Jourdain, 1879) — Smooth sandeel

**Ammodytes tobianus* Linnaeus, 1758 — Sandeel

**Hyperoplus lanceolatus* (Le Sauvage, 1824) — Great sandeel

Hyperoplus immaculatus (Corbin, 1950) — Immaculate sandeel

Not mentioned for Galician waters neither by Reay in Whitehead *et al.* (1986) nor by Quéro *et al.* (2003).

Recorded from Galicia by Franco and Sola (1985).

Family Trachinidae

**Trachinus draco* Linnaeus, 1758 — Greater weever fish

**Echiichthys vipera* (Cuvier, 1829) — Lesser weever fish

Trachinus araneus Cuvier, 1829 — Spotted weever

Identified by a photo of one specimen captured by gill-net in May 2008 in the Ría de Muros (Figure 12).



FIGURE 12. *Trachinus araneus* (photo UTPB-Xunta de Galicia).

Family Uranoscopidae

Uranoscopus scaber Linnaeus, 1758 — Atlantic stargazer

Family Tripterygiidae

**Tripterygion delaisi* Cadenat & Blache, 1971 — Black-faced blenny

Family Blenniidae

**Parablennius ruber* (Valenciennes, 1836) — Portuguese blenny

**Parablennius gattorugine* (Brünnich, 1768) — Tompot blenny

**Parablennius sanguinolentus* (Pallas, 1811) — Rusty blenny

**Parablennius pilicornis* (Cuvier, 1829) — Ringneck blenny

**Salaria pavo* (Risso, 1810) — Peacock blenny

**Coryphoblennius galerita* (Linnaeus, 1758) — Montagu's blenny

**Blennius ocellaris* Linnaeus, 1758 — Butterfly blenny

**Lipophrys pholis* (Linnaeus, 1758) — Shanny

**Paralipophrys trigloides* (Valenciennes, 1836) — No common name

Family Callionymidae

**Callionymus lyra* Linnaeus, 1758 — Common dragonet

**Callionymus maculatus* Rafinesque-Schmaltz, 1810 — Spotted dragonet

**Callionymus reticulatus* Valenciennes, 1837 — Reticulate dragonet

Family Gobiidae

Crystallogobius linearis (Düben, 1845) — Crystal goby

**Gobius niger* Linnaeus, 1758 — Black goby

**Gobius paganellus* Linnaeus, 1758 — Rock Goby

**Gobius cobitis* Pallas, 1814 — Giant goby

Gobius cruentatus Gmelin 1789 — Red-mouthed goby

**Gobius xanthocephalus* Heymer and Zander, 1992 — No common name

Recorded by De Buen (1918, 1935) and Iglesias (1981) as *G. auratus*. Recent studies have confirmed that these records are in fact *G. xanthocephalus* (Figure 13) (Villegas-Ríos and Bañón, in press).

Gobius gasteveni Miller, 1974 — Steven's goby

Not recorded from Galicia neither by Miller in Whitehead *et al.* (1986) nor by Quéro (2003). However it is recorded from Galicia by Alberto *et al.* (1999). Although it is seldom caught by fishery gears, it is usually observed by scuba divers in the Rías Baixas of Galicia where it is a common species (Figure 14).

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Gobiusculus flavescens (Fabricius, 1779) — Two-spotted goby

**Aphia minuta* (Risso, 1810) — Transparent goby

Lesueurigobius suerii (Risso, 1810) — Lesueur's goby

**Lesueurigobius friesii* (Malm, 1874) — Fries's goby

**Deltentosteus quadrimaculatus* (Valenciennes, 1837) — Four-spotted goby

**Pomatoschistus minutus* (Pallas, 1770) — Sand goby

**Pomatoschistus microps* (Kroyer, 1838) — Common goby

Pomatoschistus norvegicus (Collett, 1902) — Norwegian goby

Not recorded from Galicia neither by Miller in Whitehead *et al.* (1986) nor by Quéro (2003). Reported by De Buen (1935b) as *P. fagei*. A total of 11 specimens were captured again between 140–180 m depth in “Demersales 86” and “Demersales 01” surveys.

**Pomatoschistus pictus* (Malm, 1865) — Painted goby

Pomatoschistus lozanoi (De Buen, 1923) — Lozano's goby

Zosterisessor ophiocephalus (Pallas, 1814) — Grass goby

Not recorded from Galicia neither by Miller in Whitehead *et al.* (1986) nor by Quéro (2003). Reported by De Buen (1935b); we consider this as a doubtful record.

Thorogobius ephippiatus (Lowe, 1839) — Leopard-spotted goby

Unrecorded from Galicia but many underwater images confirm their presence (Figure 15).



FIGURE 13. *Gobius xanticeps* (photo D. Villegas-Ríos).



FIGURE 14. *Gobius gasteveni* (photo D. Villegas-Ríos).



FIGURE 15. *Thorogobius ephippiatus* (photo D. Villegas-Ríos).

Family Luvaridae

Luvarus imperialis Rafinesque, 1810 — Luvar

Family Scombrolabracidae

Scombrolabrax heterolepis Roule, 1921 — Longfin escolar

Family Sphyraenidae

Sphyraena sphyraena (Linnaeus, 1758) — European barracuda

Family Gempylidae

Nesiarchus nasutus Johnson, 1862 — Black gemfish

Ruvettus pretiosus Cocco, 1833 — Oilfish

Family Trichiuridae

Trichiurus lepturus Linnaeus, 1758 — Largehead hairtail

**Lepidopus caudatus* (Euphrasen, 1788) — Scabbard fish

Aphanopus carbo Lowe, 1839 — Black scabbardfish

Benthodesmus simonyi (Steindachner, 1891) — Simony's frostfish

Family Xiphiidae

Xiphias gladius Linnaeus, 1758 — Swordfish

Family Istiophoridae

Tetrapturus albidus Poey, 1860 — Atlantic white marlin

Family Scombridae

Scomber colias Gmelin, 1789 — Chub mackerel

**Scomber scombrus* Linnaeus, 1758 — Atlantic mackerel

Thunnus thynnus (Linnaeus, 1758) — Blue-fin tunny

Thunnus alalunga (Bonnaterre, 1788) — Albacore

Katsuwonus pelamis (Linnaeus, 1758) — Skipjack tuna

Auxis rochei (Risso, 1810) — Frigate mackerel

Sarda sarda (Bloch, 1793) — Bonito

Family Centrolophidae

**Centrolophus niger* (Gmelin, 1789) — Blackfish

Family Nomeidae

Cubiceps gracilis (Lowe, 1843) — Driftfish

Family Stromateidae

Stromateus fiatola Linnaeus, 1758 — Blue butterfish

ORDER PLEURONECTIFORMES

Family Citharidae

Citharus linguatula (Linnaeus, 1758) — Atlantic spotted flounder

Fifteen specimens ranging between 6 and 10 cm TL caught at 130–160 m depth during several “Demersales” surveys.

Family Scophthalmidae

**Scophthalmus rhombus* (Linnaeus, 1758) — Brill

**Psetta maxima* (Linnaeus, 1758) — Turbot

**Zeugopterus punctatus* (Bloch, 1787) — Topknot

**Zeugopterus regius* (Bonnaterre, 1788) — Eckström's topknot

**Phrynorhombus norvegicus* (Günther, 1862) — Norwegian topknot

Not recorded from Galicia neither by Nielsen in Whitehead *et al.* (1986) nor by Quéro (2003). However it is recorded by Iglesias (1981) and posteriorly by Bañón *et al.* (2008b) (Figure 16), confirming its presence in Galician waters and extending to the south its known distribution range.

Lepidorhombus boscii (Risso, 1810) — Fourspotted megrim

Lepidorhombus whiffiagonis (Walbaum, 1792) — Megrim

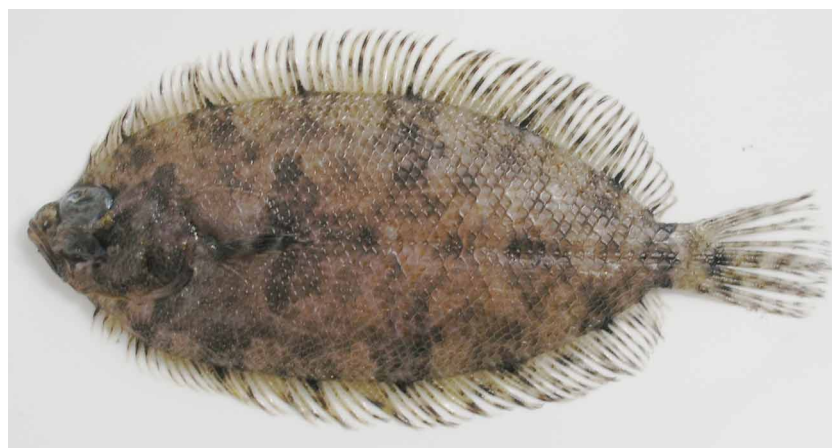


FIGURE 16. *Phrynorhombus norvegicus* (photo R. Bañón).

Family Bothidae

**Arnoglossus imperialis* (Rafinesque, 1810) — Imperial scald fish

**Arnoglossus thori* Kyle, 1913 — Thor's scaldfish

**Arnoglossus laterna* (Walbaum, 1792) — Scald fish

Family Pleuronectidae

Microstomus kitt (Walbaum, 1792) — Lemon sole

Two specimens of 43 cm TL caught at 96 and 96.5 m depth during the surveys “Demersales 95” and “Demersales 96” respectively.

- **Platichthys flesus* (Linnaeus, 1758) — Flounder
 **Pleuronectes platessa* Linnaeus, 1758 — European plaice
Glyptocephalus cynoglossus (Linnaeus, 1758) — Witch

Family Soleidae

- Microchirus azevia* (de Brito Capello, 1867) — Bastard sole
 **Microchirus variegatus* (Donovan, 1808) — Thickback sole
Monochirus hispidus Rafinesque, 1814 — Whiskered sole
 Reported by López-Seoane (1866); there are no posterior records of this species.
 **Solea solea* (Linnaeus, 1758) — Sole
Solea senegalensis Kaup, 1858 — Senegalese sole
 **Pegusa lascaris* (Risso, 1810) — Sand sole
 **Bathysolea profundicola* (Vaillant, 1888) — Deepwater sole
Dicologlossa cuneata (Moreau, 1881) — Wedge sole
 **Buglossidium luteum* (Risso, 1810) — Solenette

Family Cynoglossidae

- Symphurus nigrescens* Rafinesque, 1810 — Tonguesole

ORDER TETRAODONTIFORMES

Family Balisitidae

- Balistes capriscus* Gmelin, 1789 — Grey trigger fish

Family Tetraodontidae

- Lagocephalus lagocephalus* (Linnaeus, 1758) — Puffer fish
Lagocephalus laevigatus (Linnaeus, 1758) — Smooth puffer

Not mentioned for Galicia neither by Tortonese in Whitehead *et al.* (1986) nor by Quéro *et al.* (2003).
 Known by a single specimen of 51 cm TL (Figure 17) caught in July 2009 in the Cies Islands, in the mouth of the Ría de Vigo (South Galicia) (Bañón & Santás, in press).



FIGURE 17. *Lagocephalus laevigatus* (photo R. Bañón).

Family Diodontidae

- Diodon hystrix* Linnaeus, 1758 — Spot-fin porcupinefish

Family Molidae

- Mola mola* (Linnaeus, 1758) — Sunfish
Ranzania laevis (Pennant, 1776) — Truncated sunfish

Discussion

Since the 16th century, Galicia has kept a long tradition in fish fauna studies, whose results however have had scarce divulgation beyond our frontiers, probably as a result of a limited dissemination and a relative isolation of the local researchers.

The present checklist includes 398 species of marine fishes from Galicia which represents approximately 42 % of the 955 species listed for European Atlantic waters by Quéro *et al.* (2003).

The European Atlantic coast has a sharp north to south temperature gradient, which restricts the distribution of many species and leads to a biogeographic subdivision of the eastern Atlantic into two provinces: the boreal Atlantic and the subtropical Lusitanian. The Lusitanian province, which extends from Gibraltar to Brittany, has been subdivided in two sub-provinces, whose frontier was established in Finisterre Cap, in the western Galician coast. Thus, the fauna of Galicia are mixed with groups of boreal and subtropical origin. This fact, together with the variety of coastal habitats of the study area (such as rocky cliffs, shingle, rocky, sandy and muddy shores, coastal lagoons and estuaries) is behind the observed diversity of many faunal groups in Galicia, including marine fishes.

The Galician Atlantic coast constitutes the northernmost limit of the Eastern North Atlantic Upwelling System. Upwelling favourable winds prevail from March to October and cause the entry of great flows of North Atlantic Central Water, a salty cold water mass (Álvarez-Salgado *et al.*, 1993). Upwelling is intensified off Cape Finisterre and the Rías Baixas, where water temperature is sensibly lower in comparison with the northern Galician coast and the Bay of Biscay. These surface waters, colder than the surrounding ocean, are probably the reason behind the biogeographical anomaly found in the distribution of some fish in the Atlantic Galician coasts. As a result, cool water species, well represented to the south of the British Isles, are newly present in Galicia, about all in the western of Galicia, from A Guarda to Finisterre Cap (Rías Baixas), but scarce or absent in the northern coast and the Bay of Biscay. This is the case for example of *G. morhua*, *G. cynoglossus* and *P. norvegicus*, among others. In the same way, warm water species that are scarce or absent in the Atlantic front of Galicia are present in the coast of Lugo (north Galicia) and in the Bay of Biscay. This is the case for example of several sparids such as *L. mormyrus* or *D. cervinus*.

This traditional distribution pattern seems to have been altered in the last decades with the arrival of numerous southern tropical fish species to the Galician coasts, probably linked to global warming. The inexistence of a previous specific monitoring program prevents us to know the origin of this trend. The first two species related with this phenomenon were probably the grey triggerfish *B. carolinensis* and the flatfish *S. senegalensis*, previously unknown and now with a relevant biomass in Galician waters. Since 1996, increasing monitoring, divulgation and contact to the fishing sector have led to register numerous tropical affinity species in Galicia, most of them setting a new northern limit of distribution for the NE Atlantic.

Community studies in regions of overlapping 'polar' and 'temperate' species, as it's the case of Galicia, base their climate change attribution on differential responses of these two categories. Among polar marine fish species have tended to be stable or decline in abundance, whereas temperate species at the same site have increased in abundance and/or expanded their distributions (Parmesan & Yohe, 2003).

The last studies in Galicia seem to confirm this hypothesis (Bañón, 2009). Colder species such as *P. flesus* have decreased their catches in the last decades whereas warm species have increased considerably their number and biomass. Carangids increased from four species at the beginning of the 20th century to eleven in the present days, due to the arrival of several tropical species such as *C. crysos*, *P. dentex* and *S. fasciata*. Another carangid, *T. picturatus* has greatly increased its abundance in very few years, and has become a commercially important species. Rare species of the genus *Seriola*, mainly *S. rivoliana* and other unexpected species such as *S. sphyraena* and *K. sectator* are becoming more and more frequent. Finally, surprising tropical species such as *F. petimba* and *L. laevigatus* have been recently recorded. All these new records represent in fact a tropicalization of the marine fish fauna of Galicia, what in our opinion confirms this hypothesis.

Biogeographical analysis revealed that the Lusitanian group included 204 species (51.3%), followed by 149 species of the Atlantic (37.4%), the 28 species of the Boreal (7%), and 17 species (4.3%) of the African

group. While Boreal species are in general terms well known since a long time ago, the knowledge of the African group is very recent, mainly due to the arrive of new species during the last decades. This fact also supports the idea that the recent discovery of tropical species of African origin is more a consequence of natural changes than a result of an increased in the sampling effort.

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