French ichthyological records for 2019

Samuel P. Iglesias, Michel Bariche, Florent Beau, Lucas Berenger, Renaud Beucher, Antoine Chabrolle, Jean-Michel Cottalorda, Bertrand Cousin, Amelia Curd, Valentin Danet, et al.

Regular paper

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by

Samuel P. IGLÉSIAS* (1), Michel BARICHE (2), Florent BEAU (3), Lucas BÉRENGER (4), Renaud BEUCHER (5), Antoine CHABROLLE (6), Jean-Michel COTTALORDA (7), Bertrand COUSIN (8), Amelia CURD (9), Valentin DANET (10), Erwan DUHAMEL (11), Audrey DUVAL (12), Pierre-André FARQUE (13), Nicolas GOASCOZ (11), Angélique JADAUD (14), Pascal LARNAUD (11), Mathieu LE BOUTER (15), Yvan LE BRAS (16), Sylvain LE BRIS (17), Laurent LOMBARD (18), Patrick LOUISY (19), Alain MANDINE (20), Lise MAS (21), Thomas MENUT (4), Luisa METRAL (14), Pierre POUSSARD (22), Jean-Claude QUÉRO (23), Virginie RAYBAUD (7), Julien P. RENOULT (24), Thomas RICHARD (25), Jérôme SPITZ (26), Quentin TERNON (10), Pierre THIRIET (27) & Ruben TOURNIER-BROER (28)

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Abstract. – Uncommon fish records may reflect local or global changes of fish composition resulting from environmental changes or anthropogenic activities. Significant records of uncommon marine fishes, including migrant, non-native, cryptic, rare and threatened species, collected in French waters or by French vessels in European waters, observed by scuba divers or beachgoers, are reported for the year 2019. They include first, new, rare and unusual records for the following 33 species: *Tetronarce nobiliana*, *Gymnothorax unicolor*, *Maulisia mauli*, *Salmo trutta*, *Grammonus ater*, *Photostomias guernei*, *Ijimaia loppei*, *Echiodon drummondii*, *Holocentrus adscensionis*, *Nerophis lumbriciformis*, *Scorpaena scrofa*, *Lepidotrigla dieuzeidei*, *Eutelichthys leptochirus*, *Liparis montagui*, *Mycteroperca rubra*, *Serranus cabrilla*, *Remora remora*, *Caranx crysos*, *Naucrates ductor*, *Trachurus picturatus*, *Seriola rivoliana*, *Argyrosomus regius*, *Parablennius pilicornis*, *Pseudoscopelus astronesthidens*, *Deltentosteus collonianus*, *Didogobius schlieweni*, *Didogobius splechtnai*, *Gobius couchi*, *Gobius gasteveni*, *Lebetus guilleti*, *Synapturichthys kleinii*, *Lagocephalus lagocephalus* and *Mola mola*, among which *I. loppei*, *H. adscensionis* and *P. astronesthidens* represent first records for the French waters and additions to the *Checklist of the marine fishes from metropolitan France*. *Photostomias guernei* is a first record for the Bay of Biscay, found close the French EEZ.

Key words
First record
New record
Distribution
Fishes
North eastern Atlantic
Mediterranean

Résumé. – Signalements ichtyologiques français pour 2019.

Les signalements inhabituels de poissons peuvent témoigner de changements locaux ou globaux résultants de modifications environnementales ou d'activités anthropiques. Des signalements remarquables de poissons marins, comprenant des espèces migrantes, non natives, cryptiques, rares et menacées, collectés dans les eaux françaises ou bien par des navires français dans les eaux européennes, observées par des plongeurs sous-marins ou des promeneurs, sont mentionnés pour l'année 2019. Ils comprennent des premiers et nouveaux signalements ainsi que des signalements rares et inhabituels pour les 33 espèces suivantes : *Tetronarce nobiliana*, *Gymnothorax unicolor*, *Maulisia mauli*, *Salmo trutta*, *Grammonus ater*, *Photostomias guernei*, *Ijimaia loppei*, *Echiodon drummondii*, *Holocentrus adscensionis*, *Nerophis lumbriciformis*, *Scorpaena scrofa*, *Lepidotrigla dieuzeidei*, *Eutelichthys leptochirus*, *Liparis montagui*, *Mycteroperca rubra*, *Serranus cabrilla*, *Remora remora*, *Caranx crysos*, *Naucrates ductor*, *Trachurus picturatus*, *Seriola rivoliana*, *Argyrosomus regius*, *Parablennius pilicornis*, *Pseudoscopelus astronesthidens*, *Deltentosteus collonianus*, *Didogobius schlieweni*, *Didogobius splechtnai*, *Gobius couchi*, *Gobius gasteveni*, *Lebetus guilleti*, *Synapturichthys kleinii*, *Lagocephalus lagocephalus* et *Mola mola*, parmi lesquelles *I. loppei*, *H. adscensionis* et *P. astronesthidens* représentent des premiers signalements pour les eaux françaises et des additions à la *Liste des poissons marins de France métropolitaine*. *Photostomias guernei* est un premier signalement pour le golfe de Gascogne, trouvé proche de la ZEE française.

INTRODUCTION

Records of uncommonly observed fish primarily document their geographic and bathymetric distribution in an area at a specific date. These observations (or verified absences) over long time series may evidence local or global changes in fish composition resulting from environmental changes (*e.g.* increasing seawater temperature) or anthropogenic activities (*e.g.* overfishing). These first, new or unusual records of species in the Northeastern Atlantic and in the Mediterranean over the last decades are mainly due to poleward range expansions, non-native species introductions or immigrations (*i.e.* tropicalisation) or significant increases in abundance. Changes in fish community composition can also result from the local disappearance of certain species (*e.g.* Quéro and Cendrero, 1996; Quéro *et al.*, 1997, 1998,

(1) Institut de Systématique, Evolution, Biodiversité (ISYEB), Muséum national d'Histoire naturelle, CNRS, Sorbonne Université, EPHE, Université des Antilles ; Station Marine de Concarneau, Place de la Croix, 29900 Concarneau, France. samuel.iglesias@mnhn.fr
(2)-(28) See at the end of the article
* Corresponding author

2007; Quéro, 1998). Observations by underwater naturalists also contribute to record poorly documented species, since they are often associated with cryptic habitats inaccessible to fishing gears. The current records contribute to document and extend national inventories (*e.g.* Béarez *et al.*, 2017) and to improve ecological knowledge of marine fishes. Significant records of uncommon marine fishes collected in French waters, by French vessels in European waters or recorded in coastal waters, including observations by scuba divers, are reported here for 2019. They include first, new or unusual records for 33 species.

MATERIAL & METHODS

The present records were collated from the following sources: two French fishery surveys, EVHOE 2019 aboard the research vessel *Thalassa* (Garren *et al.*, 2019), and MEDITS 2019 aboard the research vessel *Europe* (Jadaud, 2019), in French, Spanish or Irish waters; by fishery observers on commercial fishing boats, fishery control officers, marine protected area officers, professional or recreational fishermen, naturalist scuba divers and beachgoers. A non-native species (*i.e.* range extension, vagrancy or introduction) is classified as "established" if at least three records, spread over time and space, are known for the considered area (Zenetos *et al.*, 2005; Golani *et al.*, 2017). An individual from an identified species represents a "first record" when it is recorded for the first time in an area. "New records" are additional records that are posterior to the "first record". The relative abundance of species is classified into five categories: very common, common, uncommon/occasional, rare and very rare. When available, voucher specimens were preserved and deposited into the ichthyological collection of the Muséum national d'Histoire naturelle (MNHN-IC), and tissue samples for genetic analyses were recorded with the acronym BPS in a biobank of marine fishes (as defined by Astrin *et al.*, 2013) curated by S.P. Iglésias at Concarneau Marine Station. The following abbreviations are used: TL = total length; FL = fork length; SL = standard length; HL = head length; DL = disc length; DW = disc width; A = anal fin; D = dorsal fin; P = pectoral fin; V = pelvic fin. Terminology of groups of photophores for the species of the genus *Pseudoscopelus* follows Prokofiev and Kukuev (2006) and Melo (2010). Most of the underwater observations were first recorded on the Fish Watch Forum (http://www.fish-watch.org), an online citizen observatory of European and Mediterranean marine fishes.

RESULTS

All fish records with accurate geographical coordinates are plotted on a map (Fig. 1). The voucher specimens preserved into ichthyological collection are listed in Table I.

***Tetronarce nobiliana* (Bonaparte, 1835)**

A Black electric ray, Torpedinidae (Fig. 2A), was collected on 25 Nov 2019 during the EVHOE survey, using a bottom trawl. The specimen was collected in the Celtic Sea (southern Ireland), at Station X0557 (50.4535/50.4335°N, 8.1973/8.2337°W), at 117-118 m depth. The fresh specimen, an adult male, measured 699 mm TL, 367 mm DL, 482 mm DW, calcified claspers 98 mm long. Fresh weight 5.50 kg, liver 848.8 g, spleen 8.0 g, pancreas 11.8 g, stomach content 69.0 g including a digested *Micromesistius poutassou* (Risso, 1827) about 20 cm long. Testis was very thin. Jaws and vertebrae were preserved. Recorded by T. Richard. The species is uncommonly recorded in European Atlantic waters and its life history is poorly known. In the Bay of Biscay, on 15 Jul 1985, a large specimen (48 kg) was collected south west of *La Coubre*, off the mouth of the Gironde estuary, at about 45.6°N, 1.3°W, at 50 m depth (Quéro *et al.*, 1986). Another individual (117 cm TL, 22.6 kg) was collected on 24 Oct 2003 at 45.50°N, 3.13°W, at 150 m depth; individuals of *Scomber scombrus* Linnaeus, 1758 were present in its stomach (Quéro *et al.*, 2004).

***Gymnothorax unicolor* (Delaroche, 1809)**

A Brown moray, Muraenidae (Fig. 2B), was observed and photographed by S. Le Bris while scuba diving on 16 Mar 2019 in the Cambrettes cove, Pomègues, Frioul archipelago (43.2621°N, 5.2904°E, Mediterranean Sea) at 8 m depth. It was observed in a deep dark crack. The individual measured ca. 40 cm TL (Le Bris *et al.*, 2019a). The species is uncommonly recorded in the Mediterranean Sea.

***Maulisia mauli* Parr, 1960**

A Maul's searsid, Platytroctidae (Fig. 2C), was collected on 25 Oct 2019 during the EVHOE survey, using a pelagic trawl. It was collected in the Southern Bay of Biscay, at Station X0458 (45.1768/45.1427°N, 3.3584/3.4266°W), at 701-756 m depth above a 785-2213 m deep continental slope. The fresh specimen measured 95 mm TL, 89 mm FL, 85 mm SL, 30 mm HL. It was preserved with the collection No. MNHN-IC 2021-0140 and a tissue sample was preserved under No. BPS-4264. Recorded by J. Spitz and S.P. Iglésias. This species is uncommonly recorded in the Bay of Biscay (Iglésias *et al.*, 2020) where it was first recorded in 1967-68 (Quéro, 1970).

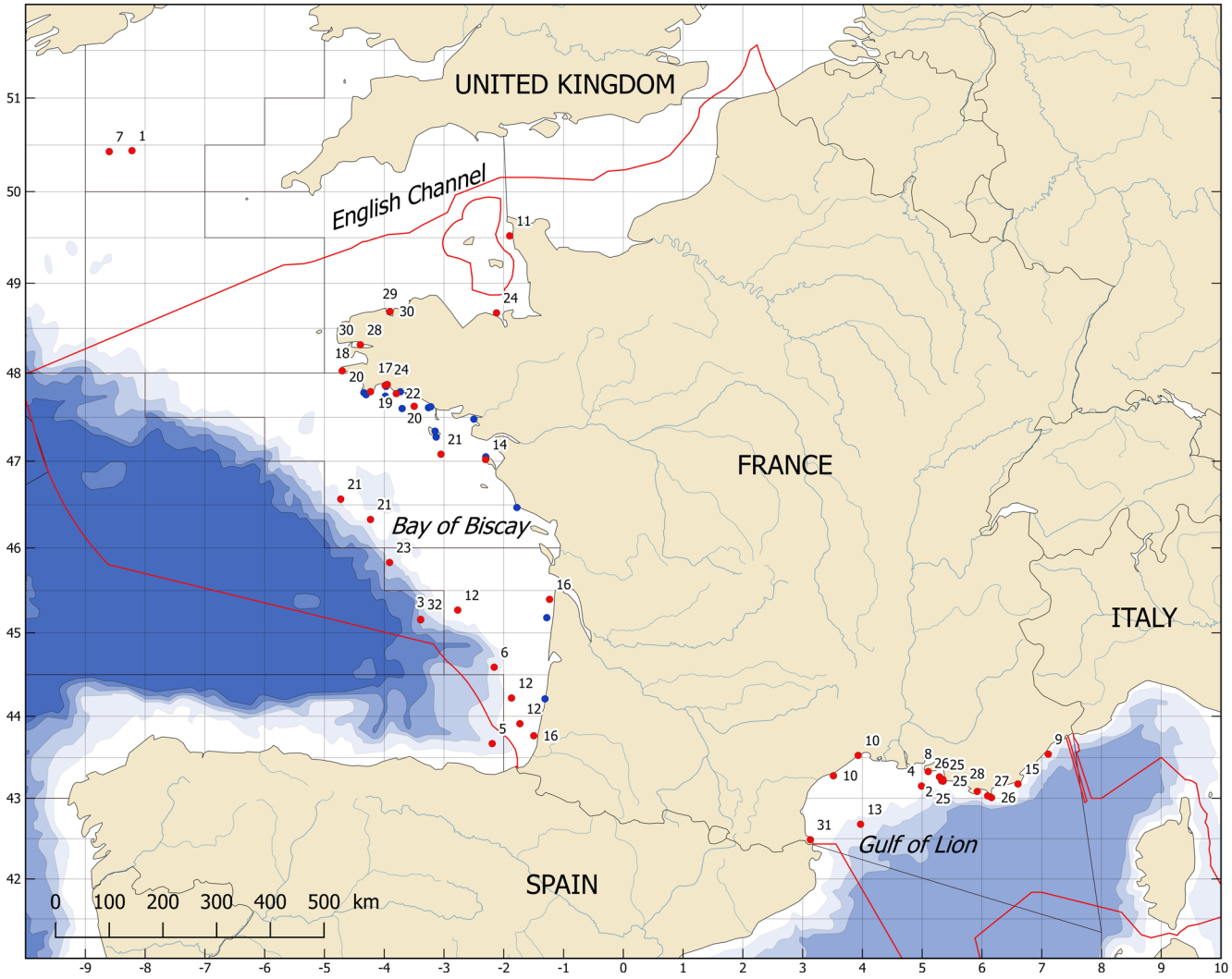

Figure 1. – Location of the significant French ichthyological records for 2019 (red dots). **1**: *Tetronarce nobiliana*; **2**: *Gymnothorax unicolor*; **3**: *Maulisia mauli*; **4**: *Salmo trutta*; **5**: *Photostomias guernei*; **6**: *Ijimaia loppei*; **7**: *Echiodon drummondii*; **8**: *Grammonus ater*; **9**: *Holocentrus adscensionis*; **10**: *Nerophis lumbriciformis*; **11**: *Scorpaena scrofa*; **12**: *Lepidotrigla dieuzeidei*; **13**: *Eutelichthys leptochirus*; **14**: *Liparis montagui*; **15**: *Mycteroperca rubra*; **16**: *Serranus cabrilla*; **17**: *Remora remora*; **18**: *Caranx crysos*; **19**: *Naucrates ductor*; **20**: *Seriola rivoliana*; **21**: *Trachurus picturatus*; **22**: *Argyrosomus regius*; **23**: *Pseudoscopelus astronesthidens*; **24**: *Parablennius pilicornis*; **25**: *Deltentosteus collonianus*; **26**: *Didogobius schlieweni*; **27**: *Didogobius splechtnai*; **28**: *Gobius couchi*; **29**: *Gobius gasteveni*; **30**: *Lebetus guilleti*; **31**: *Synapturichthys kleinii*; **32**: *Mola mola*; **blue dots**: *Lagocephalus lagocephalus*. Dots = location of collected or observed individuals; Red lines = Exclusive Economic Zone boundaries; Black lines = FAO fishing areas.

***Salmo trutta* Linnaeus, 1758**

A Sea trout, Salmonidae (Fig. 2D), was collected on 17 Jun 2019 during the MEDITS survey, using a bottom trawl. It was collected off the Rhône River in the Gulf of Lion (Mediterranean Sea), Station G309 (43.156/43.137°N, 4.996/4.975°E), at 114-115 m depth. Seawater bottom temperature was 13.67-13.70°C and salinity was 35.17-35.30‰. The individual measured ca. 23 cm TL and weighed 268 g. It looked underweight and unhealthy. Recorded by L. Metral and A. Jadaud. Sea trout are rare in the Mediterranean Sea and considered stray specimens.

***Grammonus ater* (Risso, 1810)**

A Black brotula, Bythitidae (Fig. 2E), was observed and photographed by S. Le Bris while scuba diving on 24 Aug 2019 at Jardin de Sausset (Sausset-les-Pins, 43.3278°N, 5.1016°E, Mediterranean Sea) at 14 m depth. This individual measured about 6 cm TL. Other observations were also regularly made at night between 5 and 15 m depth in the Marseille area. This speleophilic species is uncommonly observed and the scarcity of records may be related to its cryptic habitat and nocturnal activity.

Table I. – List of specimens preserved as vouchers recorded in 2019. (The table indicates the collection number at MNHN-IC, the type of preservation of the voucher, the collection number of the tissue sample used for DNA analyses, the date of collection, the locality of collection).

Species	MNHN-IC No.	Preservation	DNA coll. No.	Date	Locality
Maulisia mauli	2021-0140	Ethanol	BPS-4264	25 Oct 2019	Southern Bay of Biscay
Photostomias guernei	2021-0141	Ethanol	BPS-4269	27 Oct 2019	Southern Bay of Biscay
Ijimaia loppei	2021-0142	Ethanol	BPS-4268	27 Oct 2019	Southern Bay of Biscay
Scorpaena scrofa	2021-0143	Ethanol	BPS-4271	6-12 May 2019	English Channel
Eutelichthys leptochirus	2021-0144	Ethanol	BPS-4290	30 May 2019	Gulf of Lion
Caranx crysos	2021-0145	Taxidermized	BPS-4272	13 Sep 2019	Finistère
Trachurus picturatus	2021-0146	Ethanol	BPS-4260	23 Oct 2019	Northern Bay of Biscay
	2021-0147	Ethanol	BPS-4292	03 Nov 2019	Northern Bay of Biscay
Pseudoscopelus astronesthidens	2021-0148	Ethanol	BPS-4262	24 Oct 2019	Southern Bay of Biscay
Gobius couchi	2021-0149	Ethanol	BPS-4280	15 Sep 2019	Bay of Brest
Gobius gasteveni	2021-0150	Ethanol	BPS-4288	30 Aug 2019	Bay of Morlaix
Lebetus guilleti	2021-0151	Ethanol	BPS-4277	30 Aug 2019	Bay of Morlaix
	2021-0152	Ethanol	BPS-4278	30 Aug 2019	Bay of Morlaix
	2021-0153	Ethanol	-	30 Aug 2019	Bay of Morlaix
	2021-0154	Ethanol	BPS-4279	15 Sep 2019	Bay of Brest
	2021-0155	Ethanol	-	15 Sep 2019	Bay of Brest
Lagocephalus lagocephalus	2021-0156	Taxidermized	-	22 Aug 2019	Bay of La Fôret
Mola mola	2021-0157	Taxidermized	BPS-4263	25 Oc. 2019	Southern Bay of Biscay

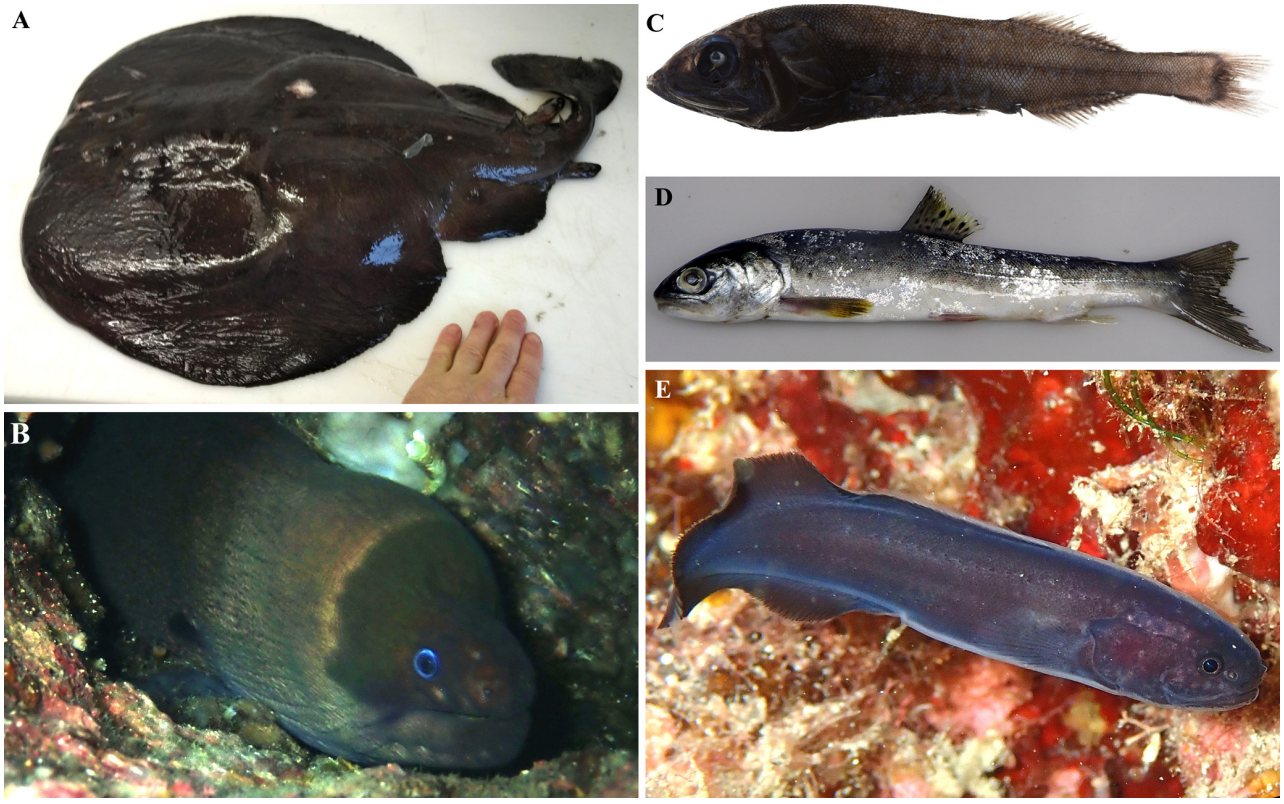

Figure 2. – Significant French ichthyological records for 2019. **A**: *Tetronarce nobiliana*, 699 mm TL, 25 Nov 2019 (© T. Richard); **B**: *Gymnothorax unicolor*, ~40 cm TL, 16 Mar 2019 (© S. Le Bris); **C**: *Maulisia mauli*, 95 mm TL, 25 Oct 2019 (© S.P. Iglésias); **D**: *Salmo trutta*, ~23 cm TL, 17 Jun 2019 (© L. Metral); **E**: *Grammonus ater*, ~6 cm TL, 24 Aug 2019 (© S. Le Bris).

***Photostomias guernei* Collett, 1889**

A Loosejaw, Stomiidae (Fig. 3A), was collected on 27 Oct 2019 during the EVHOE survey, using a pelagic trawl. It was collected in the Bay of Biscay (Spain), at Station X0476 (43.7029/43.6343°N, 2.1974/2.1887°W), at 703-754 m depth above a 1225 m deep continental slope. The fresh specimen, a female according to head photophore size, measured 135 mm TL, 132 mm FL, 127 mm SL, 14 mm HL, and weighed 8.0 g. D: 25, A: 27; two pairs of tooth patches on the basibranchial; postorbital organ (PO) 10.0% upper jaw length and 56.7% fleshy orbit. This specimen was preserved with the collection No. MNHN-IC 2021-0141 and a tissue sample was preserved under No. BPS-4269. Recorded by J. Spitz and S.P. Iglésias. Three species of *Photostomias* are currently known in the Atlantic Ocean, *P. atrox* Alcock, 1890, *P. guernei* Collett, 1889 and *P. goodyeari* Kenaley & Hartel, 2005. These species are distinguished mainly on the basis of the count of the dorsal and anal fin rays, the number of pairs of tooth patches on the basibranchial and the relative size of PO (Kenaley and Hartel, 2005). The present specimen may be the northernmost record of this bathypelagic species for the Atlantic Ocean and the first record for the Bay of Biscay. As it was collected in Spanish waters, close to the border of the French EEZ, it is not an addition to the "Checklist of the marine fishes from metropolitan France" (Béarez *et al*., 2017). It can nevertheless be assumed that the species is present in the French EEZ.

***Ijimaia loppei* Roule, 1922**

A Loppe's tadpole fish, Ateleopodidae (Fig. 3B), was collected on 27 Oct 2019 during the EVHOE survey, using a bottom trawl. It was collected in the Southern Bay of Biscay, at Station X0468 (44.5763/44.6063°N, 2.1530/2.1617°W), at 440-447 m depth. The fresh specimen measured 740+ mm long (it was severed at about mi-body; probably about 150 cm TL unsevered), 448 mm pre-anal length, 210 mm HL and weighed 3.048+ kg. This specimen was preserved with the collection No. MNHN-IC 2021-0142 and a tissue sample was preserved under No. BPS-4268. Recorded by S.P. Iglésias. In the European Atlantic waters, the species was recorded first in the Celtic Sea, off Brittany, in the UK EEZ, based on a specimen collected in Apr 1988, at 48.33°N, 9.17°W, at 600 m depth (Du Buit and Quéro, 1989). Later two specimens were recorded off the Iberian Peninsula, in the Basque Country waters (Bay of Biscay) and in Galician Atlantic waters, in May and June 1997, at 43.933°N, 2.383°W, at 300-370 m depth, and at 43.733°N, 8.750°W, respectively (Punzón and Serrano, 1998). A fourth specimen, the northernmost record for the species, was collected on 12 Mar 2013 by a French commercial trawler off NW Scotland, at 59.217/59.300°N, 6.933/6.633°W, at 290-330 m depth (Iglésias, 2014). The present specimen of this typically West African species represents the second record for the Bay of Biscay and the first record for the French EEZ. The species had nevertheless already been added to the "Checklist of the marine fishes from metropolitan France" (Béarez *et al*., 2017) because of the proximity of the previous record to the French waters.

***Echiodon drummondii* Thompson, 1837**

An Atlantic pearlfish, Carapidae (Fig. 3C), was collected on 25 Nov 2019 during the EVHOE survey, using a bottom trawl. It was collected in the Celtic Sea (southern Ireland), at Station X0558 (50.4339/50.4166°N, 8.5809/8.6151°W), at 127-128 m depth. The fresh specimen measured 268 mm TL, 28 mm HL and weighed 9.6 g. This specimen was preserved for osteology by Nalani Schnell and a tissue sample was preserved under No. BPS-4270. Recorded by T. Richard

Figure 3. – Significant French ichthyological records for 2019 (continued). **A**: *Photostomias guernei*, 135 mm TL, 27 Oct 2019, MNHN-IC 2021-0141 (© S.P. Iglésias); **B**: *Ijimaia loppei*, 740+ mm long, 27 Oct 2019, MNHN-IC 2021-0142 (© S.P. Iglésias); **C**: *Echiodon drummondii*, 268 mm TL, 25 Nov 2019 (© S.P. Iglésias).

and N. Goascoz. A specimen, 262 mm TL, was previously recorded on 16 Apr 2006 from southern Finistère (Iglésias, 2009b). The species is rarely recorded because its slender body usually slips through fishing gear.

***Holocentrus adscensionis* (Osbeck, 1765)**

A Squirrelfish, Holocentridae (Fig. 4A), was regularly observed by scuba-divers from Aug 2019 to Feb 2020 in the same shady cave at Cap d'Antibes (43.54°N, 7.11°E, Mediterranean Sea) at about 4 m depth. This individual measured about 20 cm TL. It was first recorded by L. Lombard, confirmed by V. Raybaud and J.M. Cottalorda, and the taxonomic identification was done by M. Bariche on the basis of high-resolution pictures. This species is an addition to the "Checklist of the marine fishes from metropolitan France" (Béarez *et al*., 2017) and the present record is the second one for the Mediterranean Sea. Three years earlier, on 24 Aug 2016, a 301 mm TL individual was recorded from the eastern

Figure 4. – Significant French ichthyological records for 2019 (continued). **A**: *Holocentrus adscensionis*, ~20 cm TL, Aug 2019 (© L. Lombard); **B**: *Nerophis lumbriciformis*, ~10 cm TL, 26 Jan 2019; the black arrow indicates the head of the individual (© L. Bérenger); **C**: *Scorpaena scrofa,* 345 mm TL, 6-12 May 2019, MNHN-IC 2021-0143 (© S.P. Iglésias); **D**: *Lepidotrigla dieuzeidei*, 150 mm TL, 26 Oct 2019 (© S.P. Iglésias); **E**: *Eutelichthys leptochirus*, 63 mm TL, 30 May 2019, MNHN-IC 2021-0144 (© L. Metral); **F**: *Liparis montagui*, ~3 cm TL, 10 Jan 2019 (© J.P. Renoult); **G**: *Mycteroperca rubra*, ~20 cm TL, 25 Jul 2019 (© F. Beau); **H**: *Serranus cabrilla*, ~25 cm TL, 11 Oct 2019 (© F. Bernard).

coast of Malta (Vella *et al*., 2016). This reef-associated species is known from subtropical western and eastern Atlantic waters. No hypothesis is currently favoured to explain its presence in the Mediterranean: natural movement through the Strait of Gibraltar or introductions due to anthropogenic activities such as ballast water renewal or aquarium release.

***Nerophis lumbriciformis* (Jenyns, 1835)**

A Worm pipefish, Syngnathidae (Fig. 4B), was observed and photographed by L. Bérenger while scuba diving on 26 Jan 2019 (Bérenger *et al*., 2019a) at the *Conque* cove in Agde (43.2763°N, 3.5157°E, Mediterranean Sea) at 2 m depth, on a rocky bottom covered by coralline algae. A second individual was observed and photographed by R. Tournier-Broer while snorkelling on 06 Jul 2019 off the beach located at the west of the harbour of Palavas-les-Flots (43.5247°N, 3.9295°E) at 0.5 m depth, in an agglomerate of algae detached from the substrate (Tournier-Broer *et al*., 2019). These individuals were about 10 and 9 cm TL, respectively. The species was previously recorded in the French Mediterranean in 2001 and again on 11 Oct 2011 at Agde (P. Louisy, pers. obs.). Other observations were recorded in the *Hippo-ATLAS* and Fish Watch Forum programs, on 31 Jul 2010 at Sète (Benjamin Adam), on 25 Jun 2011 and 06 Jul 2013 at Sausset-les-Pins (Nicolas Adam, B. Adam), on 15 Sep 2018 at Narbonne-Plage (Xavier Lefèvre de la Houplière / Vanessa Meric). The species was first recorded in the Mediterranean at Sète by Carus (1893). It was subsequently considered doubtful due to the lack of new records. The scarcity of records for this species in the Mediterranean may be related to its cryptic habitat and its geographic distribution limits. The species is only known in the western Mediterranean basin, along the Spanish and French coasts.

***Scorpaena scrofa* Linnaeus, 1758**

A red scorpionfish, Scorpaenidae (Fig. 4C), was collected between the 6 and 12 May 2019 by the fisherman Mr Yann Delaplace on the coastal trawler *Notre Dame des Sables* from Saint-Vaast-la-Hougue, with a bottom trawl. It was collected off the Saint Marcouf Islands in the Seine Bay (ca. 49.52°N, 1.9°W, English Channel) at about 25 m depth. The fresh specimen measured 345 mm TL, 270 mm SL, 123 mm HL and weighed 910.6 g. This specimen was preserved with the collection No. MNHN-IC 2021-0143 and a tissue sample was preserved under No. BPS-4271. Recorded by B. Cousin and N. Goascoz. This species is rarely recorded in the English Channel and the North Sea.

***Lepidotrigla dieuzeidei* Blanc & Hureau, 1973**

Thirteen Spiny gurnards, Triglidae (Fig. 4D), were collected during the EVHOE survey, using a bottom trawl in the Bay of Biscay (France). Two individuals were collected on 26 Oct 2019, at Station X0459, at 45.2852/45.2636°N, 2.7894/2.7591°W, at 130-133 m depth. These specimens were preserved for osteology by Nalani Schnell. Nine other individuals were collected on 28 Oct 2019 at Station X0471, at 44.2480/44.2186°N, 1.8843/1.8652°W, at 125-128 m depth. The fresh specimens measured 135-158 mm TL. Two other individuals were collected on 29 Oct 2019, at Station X0478, at 43.9289/43.8976°N, 1.7272/1.7376°W, at 113-115 m depth. Recorded by S.P. Iglésias. This species was recorded for the first time in Galician waters in 2002 by Bañón (2004) and currently the species is considered established in the Bay of Biscay (Punzón *et al*., 2016; Iglésias *et al*., 2020).

***Eutelichthys leptochirus* Tortonese, 1959**

A specimen of this Liparidae (Fig. 4E) was collected on 30 May 2019 during the MEDITS survey, using a bottom trawl. It was collected in the Gulf of Lion (Mediterranean Sea) at Station G503 (42.696/42.656°N, 3.953/3.991°E), at 762-814 m depth. Seawater bottom temperature was 13.34-13.53°C and salinity was 32.18-32.32‰. The fresh specimen measured 63 mm TL and weighed 1.93 g. It was preserved with the collection No. MNHN-IC 2021-0144 and a tissue sample was preserved under No. BPS-4290. Recorded by L. Metral and A. Jadaud. This species, known only in the western Mediterranean, is very uncommonly recorded. It was recorded for the first time in the Gulf of Lion in 2017 (Iglésias *et al*., 2019).

***Liparis montagui* (Donovan, 1804)**

A Montagu's seasnail, Liparidae (Fig. 4F), was observed and photographed by the beachgoers Charlotte Francesiaz and J.P. Renoult on 10 Jan 2019, at L'Herbaudière, Noirmoutier (47.0189°N, 2.3035°W), in a tide pool. It measured roughly 3 cm TL. The present individual represents the fifth record of the species south of the Loire River estuary. The species was previously recorded once in 1927, twice in 1975 off Gironde estuary (Cuenot, 1927; Cazaux *et al*., 1975; Chapoulie, 1975) and once again on 10 Sep 2008, off Charente Maritime at 46.2333°N, 1.4333°W (Quéro *et al*., 2009). Scarcity of records could be mostly related to its cryptic habitat and small size making its observations rare. The species is commonly observed inside the hollow holdfast of the seaweed *Saccorhiza polyschides* Batters, 1902 in Brittany at 0-10 m depth.

***Mycteroperca rubra* (Bloch, 1793)**

A Mottled grouper, Serranidae (Fig. 4G), was observed and photographed by F. Beau while snorkelling on 25 Jul 2019 (Beau *et al*., 2019). It was observed over a rocky bottom covered by algae, off Jovat beach at La Croix Valmer (43.1757°N, 6.6032°E, Mediterranean Sea), at 4 m depth. The individual measured about 20 cm TL. It was observed for three weeks in the same locality. The species is mostly

known from western Africa, southern and eastern Mediterranean. It is only rarely recorded from French Mediterranean waters and northwestern Mediterranean (Heemstra and Randall, 1993).

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

A Comber, Serranidae (Fig. 4H), was collected on 11 Oct 2019 by the fishers Mr Jean-Christophe Guillaud and Mrs Florence Bernard on the longliner *Lithomer* from Marennes, with a gillnet. It was collected off Montalivet (45.3967°N, 1.2333°W, Bay of Biscay), at about 20-25 m depth. The fresh specimen measured roughly 25 cm TL. It was released alive. Recorded by L. Mas. Two other Combers were collected on 29 Oct 2019 during the EVHOE survey, using a bottom trawl. They were collected off northern Capbreton at Station X0480 (43.7483/43.7792°N, 1.5006/1.4942°W, Bay of Biscay), at 46.3-47.2 m depth. The fresh specimens measured 206 and 189 mm TL and weighed 95, and 72 g, respectively. Recorded by S.P. Iglésias. This typically Mediterranean and warm East Atlantic is only occasionally recorded in French Atlantic waters (*e.g.* Fabre-Domergue, 1902; Guérin-Ganivet, 1912; Dantan, 1928; Quéro *et al.*, 1994; Iglésias *et al.*, 2019, 2020).

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

A Shark sucker, Echeneidae (Fig. 5A), was collected along with three Pilotfishes (see this article), by Mr Pascal Malejacq on 09 Sep 2019 on the beach close to the slipway of Beig Meil (Baie de la Forêt, Finistère), at 47.8608°N, 3.9832°W. The fish was estimated to about 45 cm TL. It was accompanying an adult Leatherback sea turtle, *Dermochelys coriacea* (Vandelli, 1761), about 150-200 cm long, which crawled onto the beach and then returned to the water two hours later. Probably initially attached to the turtle, the fish was left on the beach. Recorded by A. Chabrolle. The species is rarely recorded in French waters. On 18 Aug 1930, in the same bay, north of the Île aux Moutons, at about 47.79°N, 4.3°W, a large Leatherback sea turtle, 180 cm TL and estimated to about 300 kg, was captured by a fisherman. It was followed by about 40 Shark suckers and about a hundred Pilotfishes (three Shark suckers, 25, 29 and 37 cm TL and a Pilotfish, 31 cm TL, were examined and preserved at the Marine Station of Concarneau by Bouxin *et al.*, 1930).

***Caranx crysos* (Mitchill, 1815)**

Two Blue runners, Carangidae, were collected on 13 Sep 2019 by the fisherman Mr Anthony Landrin on the coastal gillnetter *L'Iroise* from Audierne. They were collected off Pointe de Feunteun Aod (48.0258°N, 4.7027°W, Pendreff, Finistère), at 15 m depth. One of the specimens (Fig. 5B) measured 422 mm TL, 365 mm FL, 340 mm SL, 94 mm HL and weighed 883 g. It was taxidermized by Bernard Bourles and preserved with the collection No. MNHN-IC 2021-0145. A tissue sample was preserved under No. BPS-4272. Recorded by P. Poussard. The species is uncommon in the Bay of Biscay, with only seven records since its first record in 1902 (Fabre-Domergue, 1902; Quéro *et al.*, 1994, 2001, 2005, 2007; De Casamajor and Morandeau, 2013). The species was recorded in 2018 for the first time in the French waters of the English Channel (Iglésias *et al.*, 2020). Two specimens, 29 and 37 cm TL, were also recorded for the first time in the UK in 1992 in Portland Harbour, Dorset (English Channel) and in 1993 in Saint Ives Bay, Cornwall (Swaby *et al.*, 1996).

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

Three Pilotfishes, Carangidae (Fig. 5C), were collected along with a Shark sucker (see this article), by Mr Pascal Malejacq on 09 Sep 2019 on the beach close to the slipway of Beig Meil (47.8608°N, 3.9832°W, Baie de la Forêt, Finistère). The individuals were estimated to about 30-35 cm TL. They were accompanying a Leatherback sea turtle and were probably beached following the turtle hauling itself out of the water. Recorded by A. Chabrolle. The present specimens are new records for the Bay of Biscay where the species is uncommonly recorded (Bouxin *et al.*, 1930; Legendre, 1950; Quéro *et al.*, 1982, 2007; Iglésias *et al.*, 2019).

***Trachurus picturatus* (Bowdich, 1825)**

Three Blue jack mackerels, Carangidae (Fig. 5D), were collected in the Bay of Biscay (France) during the EVHOE survey, using a bottom trawl. The first specimen was collected on 23 Oct 2019, at Station X0445, at 46.5760/46.5516°N, 4.7292/4.7273°W, at 179-182 m depth. The fresh specimen measured 182 mm TL, 166 mm FL, 41 mm HL and weighed 44.5 g. This specimen was preserved with the collection No. MNHN-IC 2021-0146 and a tissue sample was preserved under No. BPS-4260. The second specimen was collected on 24 Oct 2019, at Station X0448, at 46.3313/46.3208°N, 4.2468/4.2292°W, at 172-175 m depth. The fresh specimen measured 166 mm TL, 147 mm FL, 31 mm HL and weighed 38.7 g. This specimen was preserved for osteology by Nalani Schnell. The third specimen was collected on 03 Nov 2019, at Station X0500, at 47.0798/47.0459°N, 3.0500/3.0514°W, at 59-61 m depth. The fresh specimen measured 161 mm TL and weighed 30.0 g. This specimen was preserved with the collection No. MNHN-IC 2021-0147 and a tissue sample was preserved under No. BPS-4292. Recorded by S.P. Iglésias. A Blue jack mackerel was previously collected with a pelagic trawl on 17 May 2013 during the survey PELGAS (Doray *et al.*, 2013) on the Research Vessel *Thalassa*, Station R0260, at 46.45°N, 4.62°W, at 18 m depth close to the bottom. This unpreserved specimen was 36 cm TL and weighed 370 g. Recorded by E. Duhamel. The species was previously recorded only once in the French waters of the southern Bay of Biscay in 1965/1966 (Guichet, 1966; Quéro

Figure 5. – Significant French ichthyological records for 2019 (continued). **A**: *Remora remora*, ~45 cm TL, 09 Sep 2019 (© P. Malejacq); **B**: *Caranx crysos*, 422 mm TL, 13 Sep 2019, MNHN-IC 2021-0145 (© S.P. Iglésias); **C**: *Naucrates ductor*, ~30-35 cm TL, 09 Sep 2019, reversed image (© P. Malejacq); **D**: *Trachurus picturatus*, 182 mm TL, 23 Oct 2019, MNHN-IC 2021-0146 (© S.P. Iglésias); **E**: *Seriola rivoliana*, ~45 cm TL, 24 Aug 2019 (© L. Alexandre); **F**: *Seriola rivoliana*, 45 cm TL, 13 Sep 2019 (© R. Beucher); **G**: *Argyrosomus regius*, 155 cm TL, 17 Aug 2019 (© V. Ravel); **H**: *Parablennius pilicornis*, ~8 cm TL, 09 Sep 2019 (© P. Thiriet).

et al., 2007). This very rare species in the area can be confused with the very common *T. trachurus* (Linnaeus, 1758) and the common *T. mediterraneus* (Steindachner, 1868). The 2019 records are the first ones for the French Bay of Biscay supported by voucher specimens. Blue jack mackerel can now be considered established in the area.

***Seriola rivoliana* Valenciennes, 1833**

An Almaco jack, Carangidae (Fig. 5E), was collected on 24 Aug 2019 by the fisherman Mr Alexandre Le Corre on the coastal gillnetter *Ukie 2* from Lesconil. It was collected off the *Skividen* rock (47.791°N, 4.229°W, Lesconil, Finistère), at 6-7 m depth. The fish measured ca. 45 cm TL and weighed 1.06 kg. Recorded by M. Le Bouter. A second Almaco jack (Fig. 5F), was spearfished on 13 Sep 2019 by Mr Renaud Beucher, from the boat *Penn Pesked*, off *Pen-Men*, Groix Island (Morbihan, northern Bay of Biscay), at 47.653°N, 3.514°W, at 10 m depth. The fish was in a group of three or four individuals. It measured 45 cm TL and weighed 1.2 kg gutted. The species is uncommon in the Bay of Biscay where its records may be related to warmer waters as a consequence of climate change (Quéro *et al*., 1992, 2007, 2008b; Iglésias,

2009a; De Casamajor and Morandeau, 2013; Iglésias *et al*., 2019) and as also noticed in Galician waters (Bañón *et al*., 2020).

***Argyrosomus regius* (Asso, 1801)**

A Meagre, Sciaenidae (Fig. 5G), was spearfished on 17 Aug 2019 by Mr Vincent Ravel off Île Verte and Raguénez (ca. 47.769°N, 3.798°W, Névez, Finistère), at about 10 m depth (Dembele, 2019). The catch was filmed (Ravel, 2019). The specimen measured 155 cm TL and may have weighed 30-35 kg. Its head has been prepared for the fisher by the taxidermist Bernard Bourles (Gentric, 2019). Recorded by S.P. Iglésias. Previously, on 14 Aug 2017, a Meagre of 155 cm, estimated to weigh about 25-35 kg, was spearfished by Mr Godefroy Arnaud off Groix Island (Brittany, northern Bay of Biscay) (Anonymous, 2017). Another individual 150 cm long, 32 kg was spearfished on 27 Aug 2016 by Mr Emmanuel Prigent at a hundred meters off the rocks of Saint-Guénolé at Penmarc'h (47.818°N, 4.385°W, Finistère), at 10-12 m depth (Anonymous, 2016). Meagre captures are nowadays uncommon in Brittany and the capture of large individuals is exceptional, whereas the species was considered locally "quite common" in the early 20th century (Fabre-Domergue, 1902; Guérin-Ganivet, 1912; Burban, 2019). Its rarefaction may reflect the vulnerability of this large species to overfishing.

***Parablennius pilicornis* (Cuvier, 1829)**

Two Ringneck blennies, Blenniidae, were observed by S.P. Iglésias while scuba diving on 01 Sep 2019 close to the *Pladen* rocks in the Bay of La Forêt (47.8716°N, 3.9483°W, Concarneau), at 4.7 m depth (at low tide). The fishes were observed on rocks surrounded by a maerl seabed. The individuals, about 7 cm TL, showed the typical immature color pattern with longitudinal black stripe along the body. A total of eight additional Ringneck blennies were observed by P. Thiriet, Q. Ternon and V. Danet, while scuba diving, on 09 Sep (n = 1, Fig. 5H), on 13 Sep (n = 5) and on 17 Oct 2019 (n = 2), at *Les Buharats* in Saint-Malo Bay (48.6723°N, 2.1208°W, North Brittany). The individuals were observed in a subtidal rocky reef, at 7-17 m depth (tide corrected) on rocks covered by faunal-dominated circalittoral biocenoses. They were about 8 cm TL and showed the typical marbled brown colour pattern. The Ringneck blenny was first recorded in the southern Bay of Biscay, in French waters, in 1957 (Bath, 1977). It was later considered as common in the Basque country (De Casamajor, 2004). It was then recorded in the northern Bay of Biscay, at Groix Island on 16 Oct 2009 (Quéro *et al*., 2010). Numerous records were gathered in 2008 in northern Bay of Biscay and North Brittany in the English Channel where the species is now considered established (Iglésias *et al*., 2020). The present record off Saint-Malo represents a northward geographic range expansion of the species in French waters and may be related to warming waters as a consequence of climate change.

***Pseudoscopelus astronesthidens* Prokofiev & Kukuev, 2006**

A linebelly, Chiasmodontidae (Fig. 6), was collected on 24 Oct 2019 during the EVHOE survey, using a pelagic trawl. The specimen was collected in the southern Bay of Biscay (45.8346/45.7998°N, 3.8477/3.9131°W), at Station X0453, at 670-716 m depth above a 1506-1758 m depth continental slope. The fresh specimen measured 220 mm TL, 202 mm FL, 185 mm SL, 58 mm HL and weighed 58.5 g. It is characterized by a relatively elongate head. D1: VIII, D2: 27, P: 12, V: I+5, A: 29. Orobranchial cavity dark; teeth in the marginal row on the premaxilla inclined and increased in size in the postorbital portion of the bone; teeth on the tongue present (Fig. 6C); maxillary (suborbital) photophores (*mxf*) well developed, *mxf* disconnected with anteropreopercular photophores (*apf*), *apf* and posteropreopercular photophores (*ppf*) well developed (Fig. 6B), transverse ventral (interventral) photophores (*trf*) absent, isthmus photophores (*if*) present, prepelvic-fin photophores (*prvf*) well developed, ventral axillary photophores (*vaf*) and postpelvic-fin photophores (*ptvf*) well developed, anal-fin photophores (*saf*) forms Y-shaped aggregation of organs behind the anus, disconnected from the linear groups of organs along the base of the anal fin (Fig. 6D); precaudal (infracaudal) photophores (*prcf*) in a well-developed horseshoe shaped group of organs (Fig. 6E); mandibular photophores consist of two groups: a short group of anteromaxillary photophores (*amf*) at the level of second and third pores of the mandibular laterosensory canal, and a long posterior group of posteromandibular photophores (*pmf*) (Fig. 6F); cranial roofing bones thin, group of three pores above the second nare (Fig. 6G); upper jaw long, 67.0% head length; pectorals moderately long, 16.9% SL; The specimen was preserved with the collection No. MNHN-IC 2021-0148 and a tissue sample was preserved under No. BPS-4262. Recorded by J. Spitz and S.P. Iglésias. The present species is clearly distinct from *Pseudoscopelus altipinnis* Parr, 1933 recorded for the first time in French waters in 2018 (Iglésias *et al*., 2020), *Pseudoscopelus obtusifrons* (Fowler, 1934) listed in the "Checklist of the marine fishes from metropolitan France" (Béarez *et al*., 2017) and *Pseudoscopelus pierbatus* Spitz, Quéro & Vayne, 2007 described from the Bay of Biscay, all of them characterized by a relatively round head. The maximum-recorded length for the species was 170.2 mm SL (Melo, 2010). Thus, the present specimen constitutes a new maximum size for the species. *Pseudoscopelus astronesthidens* is mostly known from the western North Atlantic Ocean, off USA and Canada. The current specimen is the second record for European waters and the northeastern Atlantic Ocean. A specimen (paratype, AtlantNIRO nr. 26) was previous-

Figure 6. – Significant French ichthyological records for 2019 (continued). **A**: *Pseudoscopelus astronesthidens*, 220 mm TL, 24 Oct 2019, MNHN-IC 2021-0148; **B**: Detail of Head, *apf* = anteropreopercular photophores, *mxf* = maxillary (suborbital) photophores, *pof* = postorbital photophores, *ppf* = posteropreopercular photophores, *vnf* = ventronasal photophores (photo reversed); **C**: Inside the mouth; **D**: Lower side of trunk, *if* = isthmus photophores, *prvf* = prepelvic-fin photophores, *ptvf* = postpelvic-fin photophores, *saf* = anal-fin photophores, *vaf* = ventral axillary photophores; **E**: Lower side of caudal peduncle, *prcf* = precaudal (infracaudal) photophores; **F**: Lower side of head, *amf* = anteromaxillary photophores, *pmf* = posteromandibula photophores; **G**: Upper side of head with a group of three pores above the second nare (© S.P. Iglésias).

ly recorded at Rockall Bank, in the UK EEZ (57.6250°N, 15.7861°W), at 610 m depth (Prokofiev and Kukuev, 2006). This species is an addition to the "Checklist of the marine fishes from metropolitan France" (Béarez *et al*., 2017).

***Deltentosteus collonianus* (Risso, 1820)**

Three Toothed gobies, Gobiidae (Fig. 7A-C), were observed and photographed in 2019 by S. Le Bris, L. Bérenger and T. Menut while scuba diving on 15, 19 and 27 Feb in the Callelongue Creek and in the Saména Creek in Marseille (43.2104°N, 5.3506°E; 43.2112°N, 5.3513°E; and 43.2289°N, 5.3481°E, respectively, Mediterranean Sea) at 13-20 m depth. The individuals, ca. 6-7 cm TL, were observed lying on or swimming above fine sands (Bérenger *et al*., 2019b; Le Bris *et al*., 2019b, 2019c; Menut *et al*., 2020). This poorly known species is uncommonly recorded by underwater observers.

Figure 7. – Significant French ichthyological records for 2019 (continued). **A**: *Deltentosteus collonianus*, ~6 cm TL, 15 Feb. 2019 (© S. Le Bris); **B**: *D. collonianus*, ~7 cm TL, 19 Feb. 2019 (© L. Bérenger); **C**: *D. collonianus*, ~6 cm TL, male, 27 Feb. 2019 (© S. Le Bris); **D**: *Didogobius splechtnai*, ~4 cm TL, 16 Jun 2019 (© S. Le Bris); **E**: *D. schlieweni*, ~4 cm TL, 26 Jun 2019 (© A. Mandine); **F**: *D. schlieweni*, ~5 cm TL, 19 Jul 2019 (© S. Le Bris); **G**: *Didogobius schlieweni*, ~4 cm TL, 19 Aug 2019 (© S. Le Bris).

***Didogobius schlieweni* Miller, 1993**

Six Andromeda gobies, Gobiidae, were observed while scuba diving at night along the Var and Bouches-du-Rhône coasts (Mediterranean Sea) during targeted excursions. A first individual was observed and photographed by I. Poncet on 31 May 2019, at the Cimentier wreck at Hyères (43.0075°N, 6.1603°E), at 12 m depth (*DORIS*). A second individual (Fig. 7E) was observed and photographed by A. Mandine on 26 Jun 2019, at Tiboulen de Maïre, off Marseille (43.2138°N, 5.3283°E), at 5 m depth. The individual measured about 4 cm TL (Mandine *et al*., 2019). Four additional individuals (Fig. 7F-G) were observed and photographed by S. Le Bris, L. Bérenger and T. Menut on 02 and 19 Jul, 19 Aug and 19 Sep 2019, in the Saména cove in Marseille (43.2289°N, 5.3480°E), at 7-11 m depth. The habitat where these observations were made was mostly characterized by pebble screes or occasionally algal mats. The individuals measured about 4-5 cm TL. All observations were performed at night between 22:00 and 23:30 p.m. (Bérenger *et al*., 2019c; Le Bris *et al*., 2019d, 2019e; Menut *et al*., 2020). With only nine previous published records (Kampouris *et al*., 2019) and some additional records on internet websites (DORIS, Fishbase, Fish Watch Forum), the Andromeda goby is very uncommonly observed due to its small size, cryptobenthic habitat and mostly nocturnal activity, which makes its detection very difficult by scuba divers. The species was previously recorded four times in French waters in 1993, 1996, 1997 and 2016, off Banyuls-sur-Mer and Marseille (Ballesta *et al*., 1998; Francour, 2008; Mandine *et al*., 2016).

***Didogobius splechtnai* Ahnelt & Patzner, 1995**

A Splechtna's goby, Gobiidae (Fig. 7D), was observed and photographed on 16 Jun 2019 by S. Le Bris while scuba diving in the Blé cove at Giens Peninsula (43.0294°N, 6.0948°E, Mediterranean Sea) at 33 m depth. The individual, ca. 4 cm TL, was observed lying on coarse sand close to a coralline wall (Le Bris *et al*., 2019f). The species was first described from Ibiza (Balearic Islands) and was first recorded in French waters in 2005 in the Cap Roux Marine Reserve and La Ciotat. It was again observed in 2006 at Port-Cros and Villefranche-sur-Mer, and in 2007 at Antibes. The observations were performed at 11-42 m depth within caves or cavities of coralligenous concretions (Francour, 2008). The species was also mentioned by Iglésias *et al*. (2020). The scarcity of records of the species may be related to its cryptic habitat.

***Gobius couchi* Miller & El-Tawil, 1974**

Several Couch's gobies, Gobiidae (Fig. 8A-B), were observed and photographed by L. Bérenger, S. Le Bris and J.P. Renoult while scuba diving on 15 Jun and 19 Aug 2019 at Plage de la Vieille, Saint-Mandrier-sur-Mer (43.0837°N, 5.9219°E), at 5-6 m depth. The individuals were found on muddy sands or coarse sands beside dead *Posidonia* mats in a very sheltered bay (Le Bris *et al*., 2019g; Bérenger *et al*., 2019d). This observation represents the second record of a Couch's goby population in French Mediterranean waters, after its first record at Port-Vendres in 2004 (Louisy, 2005). Several Couch's gobies (Fig. 8C) were observed and collected by S.P. Iglésias while scuba diving on 15 Sep 2019 off Porz Kerid in the Bay of Brest (48.3170°N, 4.3989°W, Finistère), at 4.3 m depth at low tide, during an excursion targeting fishes inhabiting maerl beds. Seawater bottom temperature was 17°C. These immature individuals were about 30 mm TL. A specimen 26 mm TL, 23 mm SL, 6 mm HL, was preserved with the collection No. MNHN-IC 2021-0149 and a tissue sample was preserved under No. BPS-4280. The species was recorded in 2018 for the first time on the French coast of the English Channel (Iglésias *et al*., 2020). In this area, this goby seems to be associated with sheltered bays and estuaries. It is poorly known and probably often confused with similar species living in these habitats such as *G. niger* (Linnaeus, 1758) or *G. paganellus* (Linnaeus, 1758) (Baldock and Kay, 2012).

***Gobius gasteveni* Miller, 1974**

Seven Steven's gobies, Gobiidae (Fig. 8D), were observed and collected by S.P. Iglésias while scuba diving on 30 Aug 2019 during an excursion targeting fishes inhabiting maerl beds, about 2 km off the Kelenn beach at Carantec, Bay of Morlaix (48.688°N, 3.903°W, Finistère), at 3.5-5.1 m depth at low tide. Seawater bottom temperature was 17°C. The immature individuals were about 25-30 mm TL. A specimen 27 mm TL, 23 mm SL, was preserved with the collection No. MNHN-IC 2021-0150 and a tissue sample was preserved under No. BPS-4288. Adult Steven's gobies have occasionally been recorded in the English Channel and the southern North Sea in 2017 (Iglésias *et al*., 2019), but the ecology and life history of the species are still poorly known. Maerl seabeds in open bays could be a favoured gathering area for the species. Rare to occasional coastal observations of the species were also recorded in 2008-2010 in Plymouth, Bigbury Bay and Lyme Bay (England) (Baldock and Kay, 2012).

***Lebetus guilleti* (Le Danois, 1913)**

Three Guillet's gobies, Gobiidae (Fig. 8G), were observed and collected by S.P. Iglésias while scuba diving on 30 Aug 2019 during an excursion targeting fishes inhabiting maerl beds, about 2 km off the Kelenn beach at Carantec, Bay of Morlaix (48.688°N, 3.903°W, Finistère), at 4.6-5.9 m depth at low tide. Seawater bottom temperature was 17°C. The specimens, two adult males of 21 mm TL and an adult female of 18 mm TL were preserved with the collection Nos. MNHN-IC 2021-0151, 2021-0153 and 2021-0152

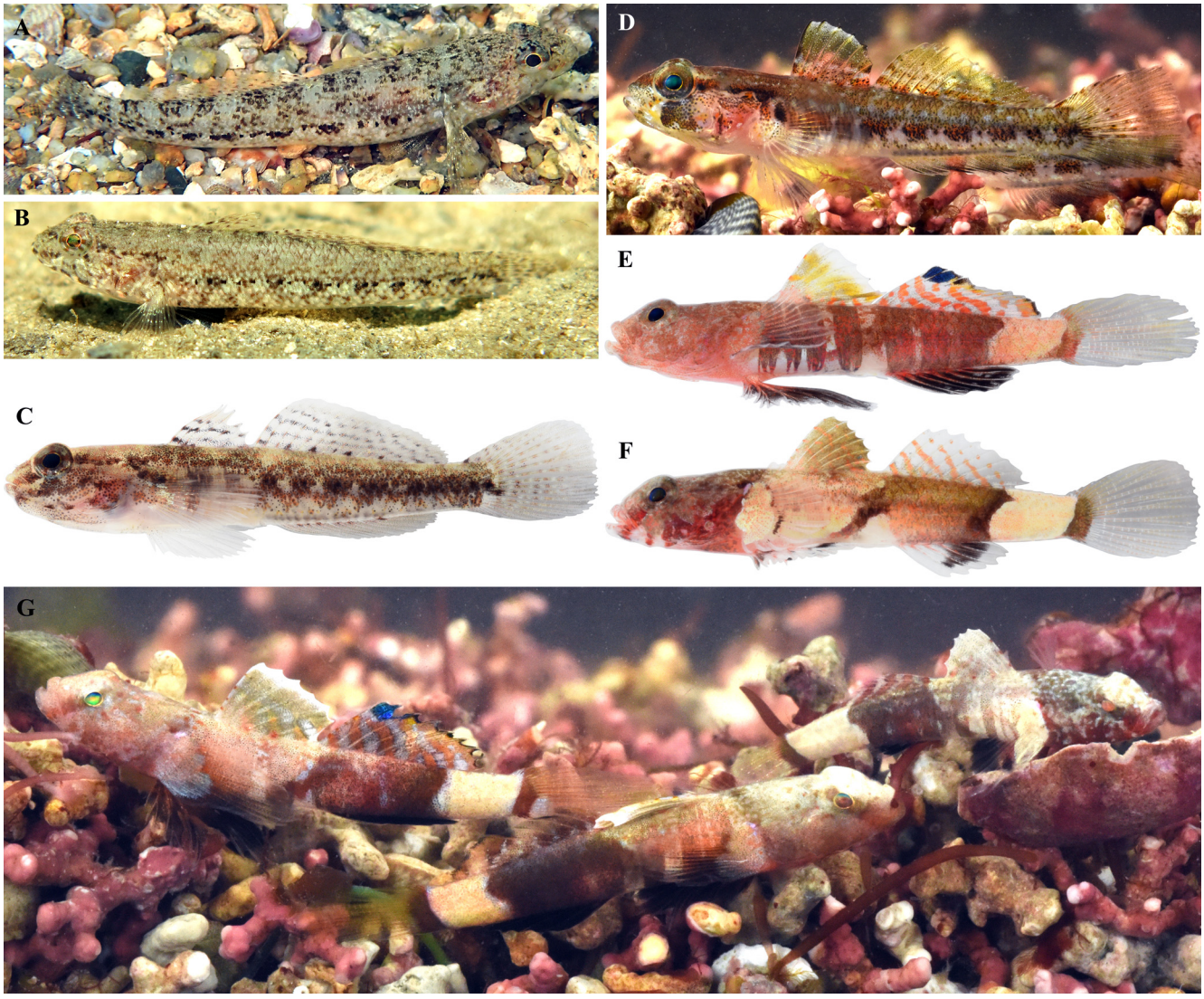

Figure 8. – Significant French ichthyological records for 2019 (continued). **A**: *Gobius couchi*, ~7 cm TL, 15 June 2019 (© S. Le Bris); **B**: *G. couchi*, ~8 cm TL, 19 Aug 2019 (© L. Bérenger); **C**: *G. couchi*, 26 mm TL, 15 Sep 2019, MNHN-IC 2021-0149 (© S.P. Iglésias); **D**: *Gobius gasteveni*, 27 mm TL, 30 Aug 2019 MNHN-IC 2021-0150, in aquarium, reversed image (© S.P. Iglésias); **E**, **F**: *Lebetus guilleti*, 19.5 and 19 mm TL, male and female, 15 Sep 2019, MNHN-IC 2021-0154, and 2021-0155, respectively (© S.P. Iglésias); **G**: *L. guilleti*, 21 and 18 mm TL, two males and a female, 30 Aug 2019, MNHN-IC 2021-0151, 2021-0153 and 2021-0152 from left to right respectively, in aquarium (© S.P. Iglésias).

and tissue samples were preserved under Nos. BPS-4277 and 4278. The individuals were found on a flat maerl seabed, the same bottom type of the Bay of Morlaix, where the species was first observed (Le Danois, 1910). The habitat, mostly composed by the variety *minimum* (according to Cabioch, 1966, 1970) of the coralline seaweed *Lithothamnion corallioides* (P.L Crouan & H.M. Crouan) P.L. Crouan & H.M. Crouan, 1867 form in maerl, was largely dominated by the species *Pomatoschistus pictus* (Malm, 1865) and immature *Callionymus lyra* (Linnaeus, 1758). The species *Diplecogaster bimaculata* (Bonnaterre, 1788) and immature *Gobius gasteveni* (this article) were more rarely observed. Guillet's goby was observed on maerl colonized by very small epiphyte red seaweeds. Two other specimens were observed and collected in the same conditions on 15 Sep 2019 off Porz Kerid, Bay of Brest (48.3170°N, 4.3989°W, Finistère), at 3.7 and 4.1 m depth at low tide. Seawater bottom temperature was 17°C. The adult specimens, a male and a female, measuring 19.5 and 19 mm TL, respectively (Fig. 8E-F) were preserved with the collection Nos. MNHN-IC 2021-0154 and 2021-0155, respectively and a tissue sample from the male was preserved under No. BPS-4279. The specimens were found on a maerl bed forming dunes composed of mixed live and dead *L. corallioides* coralline sea-

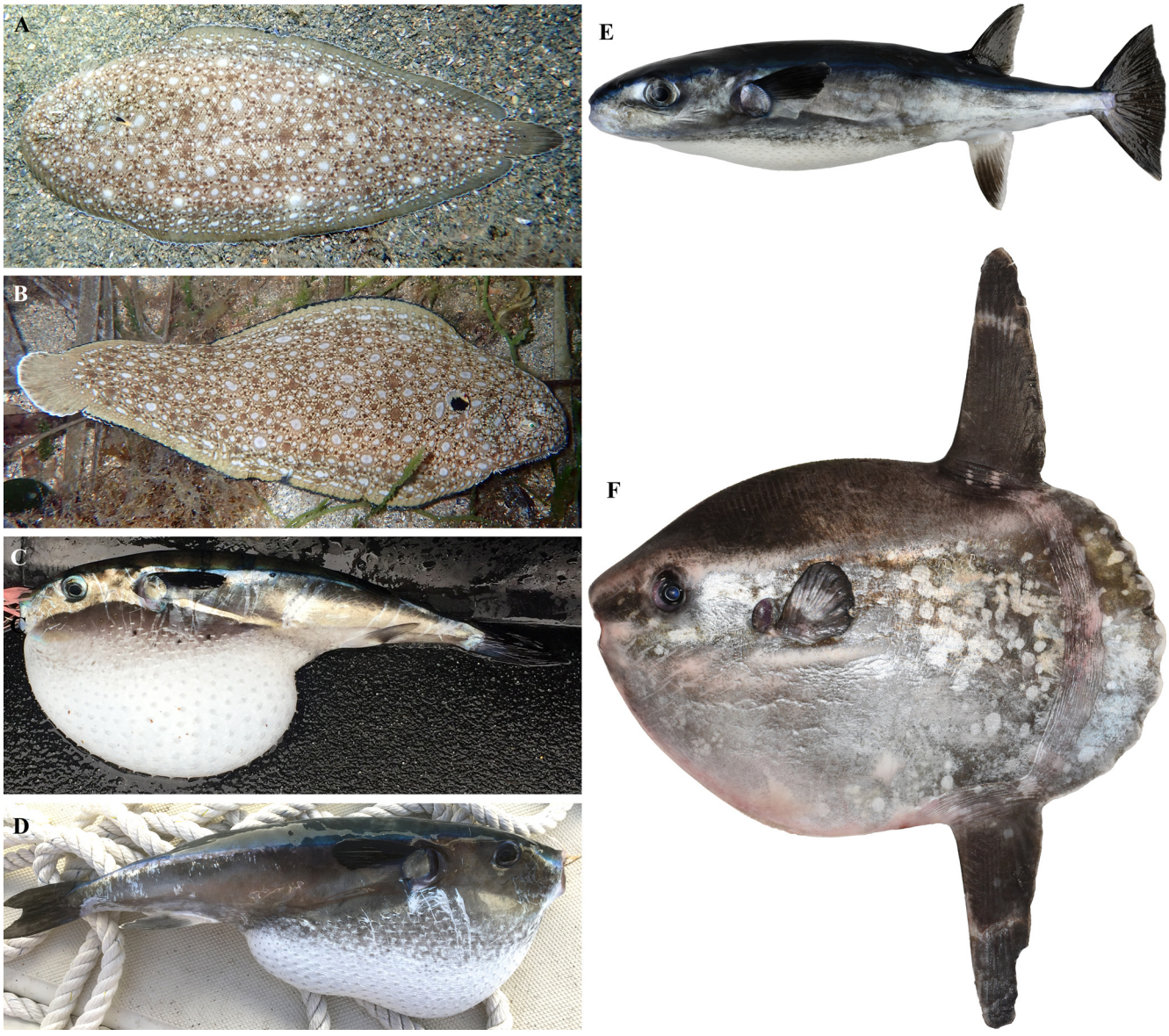

Figure 9. – Significant French ichthyological records for 2019 (continued). **A**: *Synapturichthys kleinii*, ~20 cm TL, 10 Aug 2019 (© J.P. Renoult); **B**: *S. kleinii*, ~20 cm TL, 27 Oct 2019 (© S. Le Bris); **C**: *Lagocephalus lagocephalus*, ~30 cm TL, 15 Aug 2019 (© J.P. Brenneisen); **D**: *L. lagocephalus*, 23 Aug 2019 (© A. Le Breton); **E**: *L. lagocephalus*, ~34 cm TL, 22 Aug 2019, MNHN-IC 2021-0156 (© S.P. Iglésias); **F**: *Mola mola*, 595 mm TL, 25 Oct 2019, MNHN-IC 2021-0157 (© S.P. Iglésias).

weeds of small diameter, sheltering a high variety of small invertebrates. After some minutes in an aquarium, the two specimens showed the typical motion of the first dorsal fin as described by Schliewen *et al*. (2019). Guillet's goby is very uncommonly recorded, due to its very small size which avoids its capture by most fishing gears and to its cryptic coloration which makes its detection by scuba divers very difficult. The species is known in very few localities from Norway to the Adriatic Sea (Riolo and Betti, 2015; Schliewen *et al*., 2019). In French waters it has been recorded only in the Bay of Morlaix (Le Danois, 1910, 1913) and Banyuls-sur-Mer, in the Mediterranean (Zander, 1982). The species has been regularly recorded in unpublished observations in the Bay of Morlaix, Bay of Brest and at Trévignon (south Finistère) over the last 25 years during surveys on maerl seabeds dominated by *L. corallioides* (Jacques Grall, pers. comm.).

***Synapturichthys kleinii* (Risso, 1827)**

A Klein's sole, Soleidae (Fig. 9A), was observed and photographed on 10 Aug 2019 by J.P. Renoult and T. Menut at Plage des Elmes (42.4878°N, 3.1298°E, Banyuls-sur-Mer, Mediterranean Sea), at 6 m depth. The individual, ca. 20 cm TL, was observed on coarse sand (Menut *et al*., 2020). A sec-

ond individual (Fig. 9B) was observed and photographed on 27 Oct 2019 by S. Le Bris while scuba diving in the Saména cove at Marseille (43.2296°N, 5.3476°E), at 12 m depth. The individual, ca. 20 cm TL, was observed on coarse sand and Posidonia debris (Le Bris *et al*., 2019h). This species is uncommonly recorded in French waters.

***Lagocephalus lagocephalus* (Linnaeus, 1758)**

About seventy-seven Oceanic puffers, Tetraodontidae, were recorded from 15 Aug to 03 Sep 2019 by professional fishermen, sport fishermen or beachgoers (Fig. 9C-E; Tab. II). The individuals were collected in the Bay of Biscay, mostly in southern Brittany, by line, long-line, net or purse seine. A single specimen was found beached alive. They were collected in coastal waters less than 50 m depth. Several specimens have been kept alive in public aquariums from southern Brittany (Oceanopolis in Brest, Aquashow in Audierne, Marinarium in Concarneau) where they generally died after a few weeks. A specimen, ca. 34 cm TL, collected on 22 Aug and kept in the Marinarium died on 04 Oct 2019 and has been taxidermized with the collection No. MNHN-IC 2021-0156. Many of these records were relayed by local media, often including erroneous information, mainly on the alleged exotic origin of the species. Recorded by A. Duval, P.A. Farque, S.P. Iglésias, P. Larnaud, Y. Le Bras & J. Spitz. Oceanic puffers are occasional visitors of the Bay of Biscay in the late warm season (Aug-Sep). They most probably use warm oceanic currents to migrate northward seasonally. The high number of records in 2019 appears exceptional. The increase in records of this species since the end of the 19th century may be related to global warming (Quéro *et al*., 2008a).

***Mola mola* (Linnaeus, 1758)**

Two Ocean sunfish, Molidae, were collected on 25 Oct 2019 during the EVHOE survey, using a pelagic trawl. They were collected at Station X0458 (45.1768/45.1427°N, 3.3584/3.4266°W, Southern Bay of Biscay), probably close to the sea surface, during the gear hauling in from 701-756 m depth above a 785-2213 m deep continental slope. One of the two individuals, which were of similar size, was preserved. The fresh specimen (Fig. 9F) measured 595 mm TL, 809 mm H and weighed 12.36 kg. It has been taxidermized (by B. Bourles) and preserved with the collection No. MNHN-IC 2021-0157 and a tissue sample was preserved under No. BPS-4263. Recorded by S.P. Iglésias and J. Spitz. Sunfishes are regular visitors to the Bay of Biscay in the warm season (Quéro *et al*., 1982). Dell'Amico (2020) records 72 sea sightings of sunfish for 2019 in the Bay of Biscay and English Channel. In the general literature on European ichthyology, only *M. mola* is listed. Recently Sawai *et al*. (2017) revised the taxonomy of the genus, revealing the presence of a second species in European waters, the Bumphead sunfish *Mola alexandrini* (Ranzani, 1839). The present

Table II. – 2019 records of ~77 individuals of *Lagocephalus lagocephalus* from the French waters of the Bay of Biscay.

Date (2019)	n	Size (cm)	Record type	Gear	Locality	Lat. N	Long. W	Depth (m)
15 Aug	1	30	Sport fishing	Line	Belle–Ile	47.276	3.131	30
19 Aug	1	25–30	Beached alive	–	Ramonette beach, Belle–Ile	47.343	3.149	0
20 Aug	1	?	Professional fishing	Long–line	Guilvinec	47.757	4.304	?
21 Aug	4	?	Professional fishing	Long–line	Guilvinec	47.757	4.304	?
21 Aug	1	40	Professional fishing	?	La Jument, Kérity, Kervilly	47.78	4.34	?
21 Aug	1	35	Professional fishing	Net	Etel	47.61	3.26	?
22 Aug	2	34 & 38	Sport fishing	Line	Concarneau	47.87	3.96	?
23 Aug	1	?	Sport fishing	Line	Off Penestin beach, La Mine d'Or	47.48	2.5	?
24 Aug	1	?	Sport fishing	Line	La Blanche, Bay of Bourgneuf	47.05	2.3	?
24 Aug	4	?	Professional fishing	Long–line	Off Pors–Poulhan, Plouhinec	47.98	4.47	15
25 Aug	1	35	Professional fishing	Line	Aven–Belon	47.79	3.73	50
25 Aug	1	?	Sport fishing	?	Glénan archipelago	47.74	3.98	?
26 Aug	3	?	Professional fishing	Long–line	Guilvinec	47.757	4.304	?
26 Aug	1	?	Sport fishing	Line	Mimizan	44.21	1.31	14
27 Aug	1	?	Professional fishing	Long–line	Guilvinec	47.757	4.304	?
29 Aug	1	?	Sport fishing	Line	Porsac'h, Clohars–Carnoët	47.76	3.59	0
29 Aug	10	?	?	?	Beg Meil	47.85	3.97	?
30 Aug	1	?	Sport fishing	Line	Pierres–noires, Etel	47.62	3.22	?
30 Aug	1	30–35	Sport fishing	Line	Les Sables d'Olonnes	46.47	1.78	9
~02 Sep	Sep	?	Professional fishing	Purse seine	Southern Brittany	47.6	3.7	?
03 Sep	1	15?	Professional fishing	?	South Gironde river, off Carcans	45.18	1.28	?

specimen of *M. mola* shows a wavy or lobed clavus margin (*vs* not wavy in *M. alexandrini*) with eight clavus ossicles (*vs* ~12). Careful attention will be required in the future for the identification of sunfishes in European waters in order to distinguish these two cryptic species.

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(2) Department of Biology, American University of Beirut, 11-0236 Beirut, Lebanon. michel.bariche@aub.edu.lb – (3) Communauté de communes du golfe de St-Tropez, Service Espaces maritimes, 2 rue Blaise Pascal, 83310 Cogolin, France. fbeau@cc-golfedesainttropez.fr – (4) Biotope, Agence Méditerranée, 24 rue Paul Doumer, 34140 Mèze, France. lberenger@biotope.fr, tmenut@biotope.fr – (5) 3 rue des Genets, 56690 Landaul, France. renbeuch@gmail.com – (6) Muséum national d'Histoire naturelle, Station Marine de Concarneau, Place de la Croix, 29900 Concarneau, France. antoine.chabrolle@mnhn.fr – (7) Université Côte d'Azur – CNRS, UMR 7035 ECOSEAS, Parc Valrose, 28 avenue Valrose, 06108 Nice cedex, France. jean-michel.cottalorda@univ-cotedazur.fr, virginie.raybaud@univ-cotedazur.fr – (8) Lycée professionnel maritime et aquacole, Rue Matignon, 50100 Cherbourg, France. bertrancousin@hotmail.fr – (9) DYNECO – Dynamiques des Ecosystèmes Côtiers, Laboratoire d'Écologie Benthique Côtière LEBCO, Centre de Brest, ZI de la Pointe du Diable, CS 10070, 29280 Plouzané, France. amelia.curd@ifremer.fr – (10) Muséum National d'Histoire Naturelle, Station Marine de Dinard, CRESCO, 38 rue de Port-Blanc, 35801 Dinard, France. quentin.ternon@mnhn.fr, valentin.danet@mnhn.fr – (11) Institut Français de Recherche pour l'Exploitation de la Mer (Ifremer), Laboratoire de Technologie et Biologie Halieutiques, 8 Rue François Toullec, 56100 Lorient, France. Erwan.Duhamel@ifremer.fr, Nicolas.Goascoz@ifremer.fr, Pascal.Larnaud@ifremer.fr – (12) Laboratoire Environnement Ressources de Bretagne Occidentale (PDG-ODE-LITTORAL-LERBO), Station Ifremer de Concarneau, Place de la Croix, 29900 Concarneau, France. Audrey.Duval@ifremer.fr – (13) Sinay, 14 rue Alfred Kastler, 14000 Caen, France. pierre-andre.farque@sinay.fr – (14) MARBEC, Univ Montpellier, CNRS, Ifremer, IRD, Sète, France. Angelique.Jadaud@ifremer.fr, Luisa.Metral@ifremer.fr – (15) Guide moniteur pêche, 44 bis Vallée du Jet, 29500 Ergué-Gabéric, France. m.lebouter.peche@gmail.com – (16) Muséum national d'Histoire naturelle, PatriNat UMS 2006, Place de la Croix, 29900 Concarneau, France. yvan.le-bras@mnhn.fr – (17) 9 Résidence Lopofa, 13009 Marseille, France. lebris.sylvain@gmail.com – (18) 5 avenue de la Baronne, 06400 Cannes, France. ecolombard@gmail.com – (19) Association Peau-Bleue, 46 rue des Escais, 34300 Agde, France. patrick.louisy@wanadoo.fr – (20) 92 allée Granados, 13009 Marseille, France. alainmandine@free.fr – (21) Institut des Milieux Aquatiques (IMA), 1 rue de Donzac, BP 106, 64101 Bayonne cedex, France. l.mas@institutdesmilieuxaquatiques.fr – (22) L'Aquashow, Rue du Goyen, 29770 Audierne, France. servicebio@orange.fr – (23) SSNCM, Muséum d'Histoire naturelle, 30 rue Albert 1er, 17000 La Rochelle, France. jcmquero@wanadoo.fr – (24) CEFE – Univ Montpellier, CNRS, EPHE, IRD, Univ Paul-Valery Montpellier 3, Montpellier, France. julien.renoult@cefe.cnrs.fr – (25) Institut Méditerranéen d'Océanologie – MIO, Faculté de Luminy, 13009 Marseille, France. thomas.richard@mio.osupytheas.fr – (26) Centre d'Etudes Biologiques de Chizé (CEBC), UMR 7372 La Rochelle Université – CNRS, 79360 Villiers-en-Bois, France. jerome.spitz@univ-lr.fr – (27) UMS 2006 Patrimoine Naturel – OFB, CNRS, Muséum national d'Histoire naturelle – Station Marine de Dinard, CRESCO, 38 rue de Port-Blanc, 35801 Dinard, France. pierre.thiriet@mnhn.fr – (28) 11 rue Rhin et Danube, 34560 Poussan, France. ruben@vtbroer.com