



First records of *Lepidorhombus whiffagonis* and *Scophthalmus maximus* (Scophthalmidae) from the Canary Islands (north-eastern Atlantic)

Submitted: 22 May 2023
Accepted: 22 Aug. 2023
Pub. online: 26 Sep. 2023
Editor: R. Causse

José A. GONZÁLEZ* (1), José M. LORENZO (1) & Arthur TELLE (2)

by

Résumé. – Premiers signalements de *Lepidorhombus whiffagonis* et *Scophthalmus maximus* (Scophthalmidae) des îles Canaries (Atlantique nord-oriental).

La capture de plusieurs spécimens de *Lepidorhombus whiffagonis* et l'observation de deux spécimens de *Scophthalmus maximus* représentent les premiers signalements pour ces espèces aux îles Canaries. Il est vraisemblable que ces deux espèces sont présentes dans les eaux canariennes en raison de l'expansion naturelle de leurs aires de répartition depuis les zones environnantes. Ce travail contribue également à la connaissance des caractéristiques morphologiques et méristiques des populations les plus méridionales de ces espèces tempérées-froides de l'Atlantique oriental.

Key words. – Scophthalmidae – Range expansion – Morphology – Meristics – North-eastern Atlantic.

The marine ichthyofauna of the Canary Islands is probably one of the best known in the world, due to the enormous research effort made and the number of lists or catalogues (Valenciennes, 1837-1844; Vinciguerra, 1893; Jordan and Gunn, 1899; Dooley *et al.*, 1985; Brito, 1991; Brito *et al.*, 2002; Báez *et al.*, 2019; Freitas *et al.*, 2019), recent family revisions and first and new records (González *et al.*, 2008, 2021; Otero-Ferrer *et al.*, 2016; González-Lorenzo *et al.*, 2021) published in the scientific literature and in popular books.

Also, the artisanal fisheries practised in Canary Islands waters and their target species, as well as their bycatch, are also well known and have been recently described and characterised (González *et al.*, 2020, 2022; González, 2021).

The research group in Applied Marine Ecology and Fisheries (EMAP-ULPGC), as an advisory team to the Regional Federation of Fishermen's Guilds (2021-2023), carried out a series of surveys on the biodiversity of fish exploited by artisanal fisheries around the Canary Islands. The specimens obtained were identified by the first and second authors and then deposited in reference collections, and turned out to be a *Lepidorhombus* species not previously recorded from to the Canary Islands.

Furthermore, in the last decade, some underwater professional photographers provided ichthyologists with interesting in situ pictures (and sometimes also fish individuals) of shallow-water and sublittoral species from the Canaries. This is the case of the very detailed photographs of a *Scophthalmus* species new to the Canary Islands reported herein.

Both newly recorded specimens, fished (*Lepidorhombus*) or sighted (*Scophthalmus*) in the Canary Islands, were object of an in-depth identification study, resulting in *Lepidorhombus whiffagonis* (Walbaum, 1792) and *Scophthalmus maximus* (Linnaeus, 1758), respectively. The present account records both species of Scophthalmidae for the first time from the Canaries. This study will contribute to enrich the morphology data and geographical distribution of the southern populations of these eastern Atlantic cold-temperate species.

MATERIAL AND METHODS

The taxonomic nomenclature of the taxa involved follows Fish-Base (Froese and Pauly, 2023) and Eschmeyer's Catalog of Fishes (Fricke *et al.*, 2023). Both standard and ichthyological meristic/morphometric measurements (in mm) were made following Hubbs and Lagler (1958), and more specifically Nielsen (1986). TL, total length; SL, standard length.

Both voucher specimens of *L. whiffagonis* were deposited in the collections of the Tenerife Museum of Natural History (TFMC, 'Museo de Ciencias Naturales de Tenerife'). Muscle tissue samples taken from each specimen were stored at the ICCM collections of the University of Las Palmas de Gran Canaria.

The present work follows the best practice approach to overcome unverified and unverifiable "first records" as proposed by Bello *et al.* (2014). The citation of non-native species (*i.e.*, introduction, migration or range extension) are classified into three categories according to driving forces: "established" – with at least three records, spread over time and space, known for the region (Zenetas *et al.*, 2005; Golani *et al.*, 2017); "first record" – when at least one individual from an identified species is recorded for the first time in the area (Iglésias *et al.*, 2019); and "new records" – additional records whose observation is posterior to the "first record" (Iglésias *et al.*, 2019).

RESULTS

Lepidorhombus whiffagonis (Walbaum, 1792) – Megrim

(Fig. 1; Tab. I)

Material examined. Two unsexed adults, 508 mm TL, 423 mm SL (TFMCBM-VP/01958), 480 mm TL, 408 mm SL (TFMCBM-VP/01959), off La Santa, Tinajo, west of the island of Lanzarote, 29°10'N 13°40'W, 280-290 m, 28 Jan. 2023, soft substrate, bottom trammel net.

(1) Ecología Marina Aplicada y Pesquerías, i-UNAT, Universidad de Las Palmas de Gran Canaria (ULPGC), Campus de Tafira, 35017 Las Palmas de Gran Canaria, Spain. pepe.solea@ulpgc.es, josemaria.lorenzo@ulpgc.es

(2) Professional Underwater Photographer, Lomo de la Herradura, 35200 Telde, Las Palmas, Spain.arturotelle@hotmail.com

* Corresponding author



Figure 1. – *Lepidorhombus whiffagonis* from the Canary Islands. Top, TFMCBM-VP/01958, 508 mm TL, 423 mm SL; bottom, TFMCBM-VP/01959, 480 mm TL, 408 mm SL (Credits: the authors, 2023).

Morphometrics, selected body proportions, and meristics of the Canarian megrims studied are shown in Table I and compared with data from the literature (Nielsen, 1986; Munroe and Chanet, 2016). Body proportions and meristic data from the specimens examined herein agree in all respects with published data (Table I). However, our material (the smallest specimen) extends the range of pectoral-fin rays on ocular side (11-12 in lit., this work 10, TFMCBM-VP/01959) (Table I).

Maximum published length, 60 cm TL (Bauchot, 1987; Munroe and Chanet, 2016). The material studied therefore corresponds to large-sized adult specimens (480 and 508 mm TL), larger than those commonly obtained by Atlantic and Mediterranean fisheries.

Table I. – Morphometrics, body proportions, and counts of *Lepidorhombus whiffagonis*. * From eyed side to blind side. ** Nielsen (1986) and Munroe and Chanet (2016).

	TFMCBM-VP/01958	TFMCBM-VP/01959	References**
	Morphometrics (mm / %TL / %SL)		
Total length	508 / - / -	480 / - / -	-
Standard length	423 / 83.3 / -	408 / 85.0 / -	-
Max. body depth (at pectoral fin level)*	168 / 33.1 / 39.7	166 / 34.6 / 40.7	-
Head length	130 / 25.6 / 30.7	112 / 23.3 / 27.5	-
	Weight (g)		
Total weight (g)	1066	891	-
	Meristics (n)		
Dorsal-fin rays	84	83	80-94
Anal-fin rays	66	62	61-75
Pectoral-fin rays (eyed side)	12	10	11-12
Pectoral-fin rays (blind side)	8	8	-
Pelvic-fin rays (eyed side)	6	6	-
Pelvic-fin rays (blind side)	6	6	-
Upper gill rakers (1 st arch)	3	3	-
Lower gill rakers (1 st arch)	14	14	14-20
Total gill rakers (1 st arch)	17	17	-
Scales along lateral line (curved portion)	35	35	-
Scales along lateral line (straight portion)	61	61	-
Scales along lateral line (total)	96	96	95-109



Figure 2. – Detail of freshly landed megrim *Lepidorhombus whiffagonis*. Lanzarote, 28 Jan. 2023 (Credits: the authors, 2023).

Most probably the specimens are females as the males do not attain a so large size.

The specimens studied come from an artisanal fishery practised by a single boat (8 m in length) which, in the cold season (November to February), operates with gillnets set on sand and muddy sandy bottoms between 200 and 350 m deep off the west coast of Lanzarote, targeting John dory (*Zeus faber*) and anglerfishes (*Lophius* spp.). When the first author interviewed the skipper, a fisherman with years of experience in this type of fishing, he informed me that he has been catching megrim, a bycatch with relatively high commercial value, in this fishery for the last seven years (Fig. 2). He also noted that the megrims caught by him year after year, although not in large numbers, are between 900 and 1500 g total individual weight (Fig. 2).

Remarks. An eastern Atlantic cold-temperate species, ranging from 50 m to 800 m of depth, usually between 100 m and 300 m, living on the inner continental shelf (Munroe and Chanet, 2016). Adult megrims occur on soft bottom. They are voracious diurnal predators feeding primary on small bottom-living fishes, but also including squids and crustaceans in its diet (Nielsen, 1986; Munroe and Chanet, 2016). For more information on biological, ecological and fisheries data on this species, see Munroe and Chanet (2016) and Froese and Pauly (2023). Distribution: Eastern Atlantic. Known from Scandinavia (Iceland, Norway, and Sweden) (64°N), Baltic Sea and Faeroe Islands and southward to off the coasts of western Europe and northwestern Africa to about Cape Bojador, Western Sahara (26°N), including the Azores Islands; also western, central, and eastern Mediterranean Sea (Munroe and Chanet, 2016; Froese and Pauly, 2023).

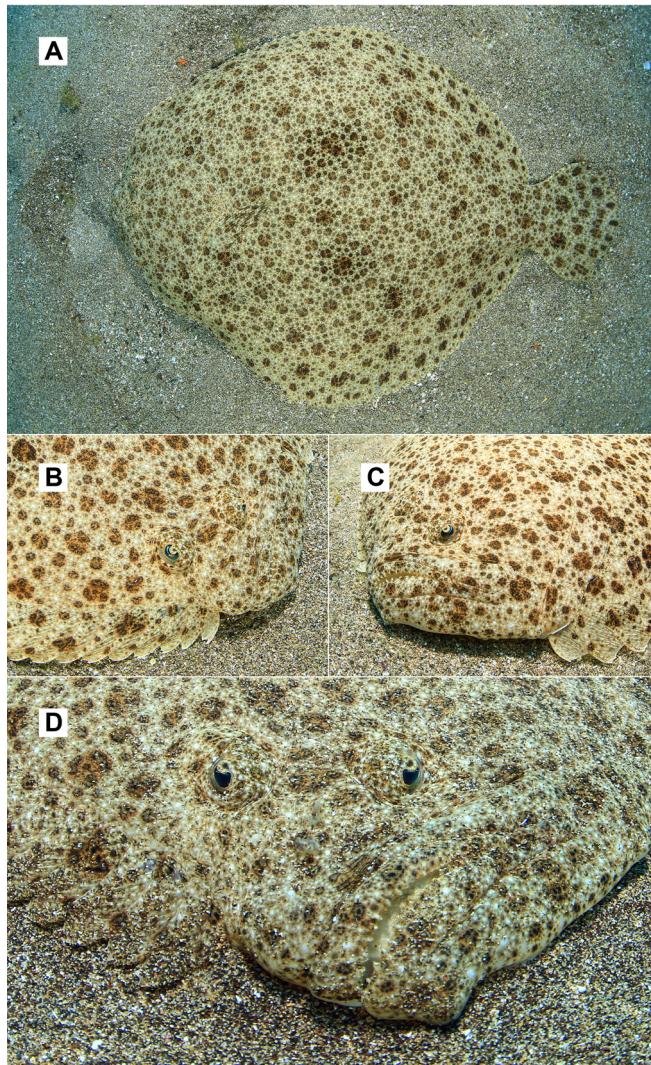


Figure 3. – *Scophthalmus maximus* observed in the Canary Islands (about 35 cm TL). A: Full body; B-D: Detail of the head. (Credits: A. Telle, 2023).

Scophthalmus maximus (Linnaeus, 1758) – Turbot (Fig. 3)

Material observed. – Two unsexed individuals. Both sighted off Puerto del Carmen, Tías, eastern coast of the island of Lanzarote. The larger specimen (about 35 cm TL) was photographed by the third author on a sandy bottom at 12 m depth at 28°55'9.3"N 13°40'13.7"W, 26 Jun. 2021, 19:00 (at sunset). The smallest specimen (about 30 cm TL) was recently observed by another diver on a sandy clearing surrounded by rocks at 5 m depth at 28°55'9.1"N 13°40'10.1"W, 6 May 2023, 21:30 (nocturnal), about 50 m away from the previous one.

Maximum published size, 100 cm TL (Nielsen, 1986) and 25 kg (Frimodt, 1995); common length up to 50-70 cm TL (Muus and Dahlstrøm, 1989; Frimodt, 1995; Munroe and Chanet, 2016). The individuals observed therefore correspond to adult or subadult specimens.

Remarks. – It is an eastern Atlantic cold-temperate species, inhabiting on sandy, rocky or mixed substrata in coastal waters, from 1 m to about 70 m (Muus and Dahlstrøm, 1989; Munroe and

Chanet, 2016). A marine and brackish species. Adult turbots feed primarily on other bottom-living fishes including gobies, sand eels, herrings, young soles, and occasionally consuming decapod crustaceans and bivalve molluses (Munroe and Chanet, 2016; Froese and Pauly, 2023). For more information on biological, ecological and fisheries data on this species, see Munroe and Chanet (2016) and Froese and Pauly (2023). Distribution: Eastern Atlantic; from coastal waters of Norway above Arctic Circle (about 70°N) and Iceland, most of Baltic Sea, along western European coasts including Great Britain and western Ireland, south to off Cape Bojador, Western Sahara (26°N); also, throughout the Mediterranean, Black Sea and Azov Sea. A single capture from Caspian Sea (Munroe and Chanet, 2016; Froese and Pauly, 2023).

DISCUSSION

The present catch of megrim *Lepidorhombus whiffagonis* and sighting of turbot *Scophthalmus maximus* constitutes the first records for these species from the Canary Islands waters.

It is well known that scophthalmids, being benthic from shallow to moderate deep waters (Munroe and Chanet, 2016), have never been cited as part of the ichthyofauna of the Canary Islands. On the other hand, being the species reported here robust diurnal predators and reaching large sizes (Munroe and Chanet, 2016), as well as sinistral flatfishes (a striking feature), it seems unlikely that they would have gone unnoticed by zoologists and underwater photographers. It seems clear that both colonisations started from new seeding events, and both species now recorded are present in Canarian waters due, very probably, to natural range expansions from nearby areas. In this regard, both eastern Atlantic cold-temperate species have been reported from eastern (Atlantic Morocco and Western Sahara, Munroe and Chanet, 2016; Froese and Pauly; 2023) waters adjacent to the Canaries, therefore the occurrence of both scophthalmids in the north-eastern sector of this archipelago should be considered neither surprising nor difficult to explain. This is also the case in terms of proximity to the African continent and regional hydrography facilitating the transport of marine organism larvae to the archipelago from the Northwest African coast (Barton *et al.*, 1998; Rodríguez *et al.*, 2004; Bé cognée *et al.*, 2009). The Canary Islands-African coastal transition zone shows intense oceanographic activity, with numerous cyclonic and anti-cyclonic eddies, as well as upwelling filaments, which produce a complex scenario of larval transport, connecting the populations of the archipelago with those of the neighbouring coasts of northwest Africa (Landeira *et al.*, 2017).

Finally, as a second hypothesis, it is also possible that some larvae or post-larvae were transported to the Canaries in the ballast water of ships.

Acknowledgements. – The authors are indebted to the fishing boat skipper Meme Olivero and family, as well as to the sports divers Jaime Romero and Débora Colombo, for skilful assistance and useful comments. Our gratitude also goes to Dr. José M. Landeira (ULPGC) for his valuable comments and bibliography on larval transport. The authors thank two anonymous reviewers for their useful comments.

REFERENCES

- BÁEZ J., RODRÍGUEZ-CABELLO C., BAÑÓN R., BRITO A., FALCÓN J., MAÑO T., BARO J., MACÍAS D., MELÉNDEZ M., CAMIÑAS J., ARIAS-GARCÍA A., GIL J., FARIAS C., ARTEXE I. & SÁNCHEZ F., 2019. – Updating the national checklist of marine fishes in Spanish waters: an approach to priority hotspots and lessons for conservation. *Medit. Mar. Sci.*, 20(2): 260-270. <https://doi.org/10.12681/mms.18626>
- BARTON E.D., ARISTEGUI J., TETT P., CANTÓN M., GARCÍA-BRAUN J., HERNÁNDEZ-LEÓN S., NYKJAER L., ALMEIDA C., ALMUNIA J., BALLESTEROS S., BASTERRETXE A.G., ESCÁNEZ J., GARCÍA-WEILL L., HERNÁNDEZ-GUERRA A., LÓPEZ-LATZEN F., MOLINA R., MONTERO M.F., NAVARRO-PÉREZ E., RODRÍGUEZ J.M., VAN LENNING K., VÉLEZ H. & WILD K., 1998. – The transition zone of the Canary Current upwelling region. *Prog. Oceanogr.*, 41: 455-504. [https://doi.org/10.1016/S0079-6611\(98\)00023-8](https://doi.org/10.1016/S0079-6611(98)00023-8)
- BAUCHOT M.L., 1987. – Poissons osseux. In: Fischer W., Bauchot M.L. & Schneider M. (Eds), *Fiches FAO d'Identification pour les Besoins de la Pêche*. (rev. 1). Méditerranée et mer Noire. Zone de pêche 37, vol. 2. Bruxelles, Commission des Communautés Européennes; Rome, FAO: 891-1421.
- BÉCOGNÉE P., MOYANO M., ALMEIDA C., RODRÍGUEZ J.M., FRAILE-NUEZ E., HERNÁNDEZ-GUERRA A. & HERNÁNDEZ-LEÓN S., 2009. – Mesoscale distribution of clupeoid larvae in an upwelling filament trapped by a quasi-permanent cyclonic eddy off Northwest Africa. *Deep-Sea Res. I*, 56: 330-343. <https://doi.org/10.1016/j.dsr.2008.10.008>
- BELLO G., CAUSSE R., LIPEJ L. & J. DULČIĆ, 2014. – A proposed best practice approach to overcome unverified and unverifiable “first records” in ichthyology. *Cybium*, 38(1): 9-14. <https://doi.org/10.26028/cybium/2014-381-002>
- BRITO A., 1991. – Catálogo de los Peces de las Islas Canarias. La Laguna, Tenerife: F. Lemus Editor: 231 p.
- BRITO A., PASCUAL P.J., FALCÓN J.M., SANCHO A. & G. GONZÁLEZ, 2002. – Peces de las Islas Canarias. Catálogo comentado e ilustrado. La Laguna, Tenerife: F. Lemus Editor: 419 p.
- DOOLEY J.K., VAN TASSELL J.L. & BRITO A., 1985. – An annotated checklist of the shorefishes of the Canary Islands. *Am. Mus. Novit.*, 2824: 1-49.
- FREITAS R., ROMEIRAS M., SILVA L., CORDEIRO R., MADEIRA P., GONZÁLEZ J.A., WIRTZ P., FALCÓN J.M., BRITO A., FLOETER S.R., AFONSO P., PORTEIRO F., VIERA-RODRÍGUEZ M.A., NETO A.I., HAROUN R., FARMINHÃO J.N.M., REBELO A.C., BAPTISTA L., MELO C.S., MARTÍNEZ A., NÚÑEZ J., BERNING B., JOHNSON M.E. & ÁVILA S.P., 2019. – Restructuring of the ‘Macaronesia’ biogeographic unit: a marine multitaxon biogeographical approach. *Sci. Rep.*, 9: e15792. <https://doi.org/10.1038/s41598-019-51786-6>
- FRICKE R., ESCHMEYER W.N. & VAN DER LAAN R. (eds), 2023. – Eschmeyer’s catalog of fishes: genera, species, references. <https://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (Accessed May 2023).
- FRIMODT C. (ed.), 1995. – Multilingual Illustrated Guide to the World’s Commercial Coldwater Fish. Oxford, England, Fishing News Books: 244 p.
- FROESE R. & PAULY D. (eds), 2023. – FishBase. World Wide Web electronic publication. www.fishbase.org (Accessed Feb. 2023).
- GOLANI D., MASSUTI E., ORSI-RELINI L., QUIGNARD J.P., DULČIĆ J. & AZZURRO E., 2017. – CIESM atlas of exotic fishes in the Mediterranean. <http://www.ciesm.org/atlas/appendix1.html> (Accessed May 2023).
- GONZÁLEZ J.A. (ed.), 2021. – El Mercado Pesquero de Canarias. Guía del consumidor de pescado. Las Palmas de Gran Canaria: Universidad de Las Palmas de Gran Canaria. INTERREG V-A MAC 2014-2020, MARISCOMAC (MAC/2.3d/097): 180 p. <https://bit.ly/3umZSRd>
- GONZÁLEZ J.A., SANTANA J.I., GARCÍA-MEDEROS A.M., TUSET V.M., LOZANO I.J., JIMÉNEZ S. & BISCOITO M., 2008. – New data on the family Moridae (Gadiformes) from the Canary Islands (northeastern Atlantic Ocean), with first record of *Laemonema robustum*. *Cybium*, 32(2): 173-180. <https://doi.org/10.26028/cybium/2008-322-011>
- GONZÁLEZ J.A., GONZÁLEZ-LORENZO G., TEJERA G., ARENAS-RUIZ R., PAJUELO J.G. & LORENZO J.M., 2020. – Artisanal fisheries in the Canary Islands (eastern-central Atlantic): description, analysis of their economic contribution, current threats, and strategic actions for sustainable development. *Acta Ichthyol. Piscat.*, 50(3): 269-289. <https://doi.org/10.3750/AIEP/02963>
- GONZÁLEZ J.A., CORREIA S., JIMÉNEZ S., MONTEIRO C.A., DELGADO J., PINHO M.R., LORENZO J.M. & GONZÁLEZ-LORENZO G., 2021. – The fish family Muraenidae – an ideal group to test at small-scale the coherency of Macaronesia as a biogeographic unit, with first report on separate statistics. *Sci. Mar.*, 85(3): 157-171. <https://doi.org/10.3989/scimar.05096.014>
- GONZÁLEZ J.A., LORENZO D., GONZÁLEZ VALDERAS L. & MONREAL I., 2022. – Revitalización del patrimonio cultural gastronómico. Héroes sociales de Tías. Ayuntamiento de Tías (Lanzarote) y Universidad de Las Palmas de Gran Canaria, Las Palmas de Gran Canaria: 348 p. <https://mdcx.ulpgc.es/s/mdct/item/324332>
- GONZÁLEZ-LORENZO J.G., GONZÁLEZ-JIMÉNEZ J.F. & GONZÁLEZ J.A., 2021. – Review of the family Serranidae (Perciformes) from the Canary Islands (eastern-central Atlantic), with the first records of *Serranus hepatus* and *Epinephelus aeneus*. *Cybium*, 45(2): 141-154. <https://doi.org/10.26028/cybium/2021-452-006>
- HUBBS C.L. & LAGLER K.F., 1958. – Fishes of the Great Lakes region. *Cranbrook Inst. Sci. Bull.*, 26: 1-213.
- IGLÉSIAS S.P., BOUCHE L., COSQUER P., GOASCOZ N., GUYADER S., LAZARD C., MAS L., METRAL L., QUÉRO J.C. & SPITZ J., 2019. – French ichthyological records for 2017. *Cybium*, 43(3): 213-293. <https://doi.org/10.26028/cybium/2019-433-008>
- JORDAN D.S. & GUNN J.A., 1899. – List of fishes collected at the Canary Islands by Mr. O. F. Cook, with descriptions of four new species. *Proc. Acad. Nat. Sci. Philad.*, 1898(1899), 50: 339-347.
- LANDEIRA J.M., BROCHIER T., MASON E., LOZANO-SOLDEVILLA F., HERNÁNDEZ-LEÓN S. & BARTON E.D., 2017. – Transport pathways of decapod larvae under intense mesoscale activity in the Canary-African coastal transition zone: implications for population connectivity. *Sci. Mar.*, 81(3): 299-315. <https://doi.org/10.3989/scimar>
- MUNROE T.A. & CHANET B., 2016. – Scophthalmidae. Turbots, megrims, brills. In: Carpenter K.E. & De Angelis N. (Eds), *The Living Marine Resources of the Eastern Central Atlantic. Bony Fishes. Part 2 (Perciformes to Tetraodontiformes) and Sea turtles. FAO Species Identification Guide for Fishery Purposes*, vol. 4. Rome, FAO: 2960-2972.
- MUUS B.J. & DAHLSTRØM P., 1989. – Havfisk og Fiskeri i Nordvesteuropa. GEC Gads Forlag, København: 244 p. [in Danish].
- NIELSEN J.G., 1986. – Scophthalmidae. In: Whitehead P.J.P., Bauchot M.L., Hureau J.C., Nielsen J. & Tortonese E. (Eds), *Fishes of the North-Eastern Atlantic and the Mediterranean FNAM*, vol. 3. Paris, UNESCO: 1287-1293.

- OTERO-FERRER F., GONZÁLEZ J.A., FREITAS M., ARAÚJO R., AZEVEDO J.M.N., HOLT W. & HAROUN R., 2016. – First revision of the current status of seahorses (Syngnathidae) and their distribution throughout the Macaronesia (NE Atlantic). *Arquipélago – Life Mar. Sci.*, Suppl. 9: 53-54.
- RODRÍGUEZ J.M., BARTON E.D., HERNÁNDEZ-LEÓN S. & ARÍSTEGUI J., 2004. – The influence of mesoscale physical processes on the larval fish community in the Canaries CTZ, in summer. *Prog. Oceanogr.*, 62: 171-188. <https://doi.org/10.1016/j.pocean.2004.07.006>
- VALENCIENNES A., 1837-1844. – Ichthyologie des îles Canaries ou histoire naturelle des poissons rapportés par mm. P.B. Webb et S. Berthelot et décrits par M. A. Valenciennes. In: Webb P.B. & Berthelot S. (Eds), *Histoire naturelle des îles Canaries*, 2(2). Paris: 1835-1850.
- VINCIGUERRA D., 1893. – Catalogo dei pesci delle Isole Canarie. *Atti Soc. Ital. Sci. Nat.*, 1892 (1893), 34: 293-334.
- ZENETOS A., CINAR M.E., PANCUCCI-PAPADOPOLOU M.A., HARMELIN J.G., FURNARI G., ANDALORO F., BELLOU N., STREPTARIS N. & ZIBROWIUS H., 2005. – Annotated list of marine alien species in the Mediterranean with records of the worst invasive species. *Medit. Mar. Sci.*, 6(2): 63-118. <https://doi.org/10.12681/mms.186>