

New Records of the Opah *Lampris guttatus* (Brünnich, 1788) (Lampriformes: Lampridae) from Chile

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Abstract: New distribution records of the conspicuous epi- and mesopelagic oceanodromous fish *Lampris guttatus* (Brünnich, 1788) are presented. Specimens were captured as bycatch in the fisheries of the swordfish *Xiphias gladius* between January and August 2016 off Tocopilla (22°S) to Caldera (27°S), northern Chile. Although this is one of the largest fishes found in the area with a deep and colourful oval body decorated with white spots and long vermillion fins, its scientific records in the South-Eastern Pacific are scarce. The examined specimens represent the second confirmed record for this species in Chilean continental waters, extending its known distribution in the country by about 1000 km to the north and filling a gap in its range throughout the Eastern Pacific.

Key words: New record, Pez Emperador, Pez Sol, Lampridae, bycatch.

Introduction

The family Lampridae includes a single genus, *Lampris* Retzius, 1799. It is represented by two species of large-bodied fishes, both of them epipelagic oceanic fishes: *L. immaculatus* Gilchrist, 1904, a species restricted to cold waters in the Atlantic and Pacific Oceans in the Southern Hemisphere, and *L.s guttatus* (Brünnich, 1788), widespread but with patchy distribution in epipelagic to bathypelagic waters in the Indian, Atlantic and Pacific Oceans (NELSON et al. 2016). *Lampris guttatus* is characterised by its large, colourful and deep-shaped body, decorated with whitish spots (HAWN & COLLETTE 2012). Its horizontally-inserted pectoral fins are also characteristic: opahs use these to “fly” through the water flapping their wings like penguins (SMITH & HEEMSTRA 1986).

Although *L. guttatus* is one of the most striking large fishes found in the area and in spite of the presence of this species at local fish markets in northern Chile (Fig. 1), there are only two works mentioning this species for the country. PARIN & KUKUYEV (1983) registered *L. guttatus* from Russian studies conduct-

ed in international open waters offshore Chile and southern Peru. RUÍZ & FIGUEROA (2006) presented the first confirmed record for the species in Chile based on specimens collected in the Golfo de Arauco (37°S). In this work, as part of an ongoing research documenting marine biodiversity of northern Chile (ARAYA & ARAYA 2015, ARAYA 2016, ARAYA et al. 2016a, b, 2017, 2018, ARAYA & RÜTZLER 2016, *inter alia*), we present the first records of *L. guttatus* in waters of northern Chile. The examined specimens represent the second confirmed record for this species in the country, extending its known distribution in continental Chile, about 1000 km to the north and filling a gap in its range throughout the Eastern Pacific.

Materials and Methods

From about 30 specimens of *Lampris guttatus* captured as bycatch in the swordfish fisheries (*Xiphias gladius* Linnaeus, 1758) and landed at the port of Caldera in northern Chile, three were measured and examined (Table 1). Most of the specimens were



Fig. 1. *Lampris guttatus* (Brünnich, 1788). Specimens landed at Caldera (27°04'S; 70°49'W), Región de Atacama, Chile.

collected from March 2016 to August 2016 in offshore waters between Caldera (27°04'S; 70°49'W) and Tocopilla (22°04'S; 70°12'W) in northern Chile. Measurements follow SMITH & HEEMSTRA (1986). Tissue samples were deposited in the collections of the Museo de Zoología de la Universidad de Concepción (MZUC 35778), Concepción, Chile.

Results

Family Lampridae Gill, 1862

Genus *Lampris* Retzius, 1799

Lampris guttatus (Brünnich, 1788)

(Figs. 1A–1E, Table 1)

Zeus guttatus Brünnich, 1788: 398. *Lampris guttatus* Smith & Heemstra 1986: 398, pl. 15, Fig. 117.1. DiSALVO et al. 1988: 461. BEAREZ 1996: 734. CASTRO-AGUIRRE et al. 2001: 139, Fig. 1. LEET 2001: 348. HEEMSTRA & HEEMSTRA 2004: 129. RUIZ & FIGUEROA 2006: 253, Fig. 1. HAWN & COLLETTE 2012: 272, Fig. 1. WEGNER et al. 2015: 786, Figs. 1-3. NELSON et al. 2016: 282, Fig. 224.

Description of examined specimens: Body oval and deep, about 1 m in length (TL = 93.1 to 137.9 cm), laterally compressed; lateral line highly arched in front. Length of pectoral fin about half body height; dorsal and anal fins long (dorsal with 42–56 rays and anal with 33–42 rays); pelvic fin with rays 12–17. Base of insertion of pectoral and pelvic fins horizontal; caudal fin forked. Body bluish to pink-orange, darker dorsally, silver bluish below, pinkish areas more common ventrally; covered with round or oval white spots (often coalescent, especially towards the

dorsal side; spots present also on fins), fins and front of snout bright reddish to orange. Deciduous minute (3–5 mm) cycloid scales (Fig. 1d) of pearly pinkish-orange colour.

Distribution: widespread in all tropical and temperate waters (HEEMSTRA & HEEMSTRA 2004). In the Eastern Pacific, this species has been found off the coasts of Alaska and Mexico (CASTRO-AGUIRRE et al. 2001, LEET 2001). Along the South American coast, there has been sporadic records off Ecuador and Peru (CAVIEDES 1984, BEAREZ 1996) and in Chile, off the Golfo de Arauco (RUIZ & FIGUEROA 2006), in the Easter Island (DiSALVO et al. 1988) and in offshore waters (PARIN & KUKUYEV 1983). The present record is the northernmost in the country and fills a gap in the distribution of this species in the Eastern Pacific.

Discussion

The examined specimens presented some morphological variability, especially on the proportion of the fins and body depth and in characteristics of the snout (Table 1). Body colour was also variable, although this was perhaps related to the loss of scales, which give a pearly shiny and a pinkish-orange body colour, which is otherwise grey (Fig. 1d). Healed bite marks, which could be attributed to Cookiecutter sharks (*Isistius* sp.), were noted in a few specimens (Fig. 1c). Similar marks have already been noticed on opahs and on swordfishes in Hawaii (PAPASTAMATIOU et al. 2010). Opahs are captured in Chile as bycatch in the fisheries of the swordfish *Xiphias gladius*, this species is readily consumed after its landing in ports

Table 1. Comparative metrical and meristic characters of examined specimens of *Lampris guttatus* captured off northern Chile. Measurements are in cm, weight is in kg.

	Specimen 1 (Tocopilla)	Specimen 2 (Caldera)	Specimen 3 (Caldera)
Total length	106	93.1	137.9
Fork length	92.5	89.5	129.6
Standard length	82.16	77.2	110.1
Body depth	52.26	51.4	75.8
Caudal fin length	36.6	42.7	52.7
Caudal peduncle depth	6.34	6.94	7.8
Eye orbit diameter	6.5	5.1	7.7
Head length	33.5	28.14	31.8
Snout length	11.9	11.6	10.9
Dorsal fin length	15.8	19.11	24.4
Pectoral fin length	26.7	25.38	-
Pelvic fin length	21.35	22.34	40.6
Dorsal fin rays (N°)	42	42	42
Pectoral fin rays (N°)	17	17	-
Anal fin rays (N°)	40	-	-
Weight	35	48	-

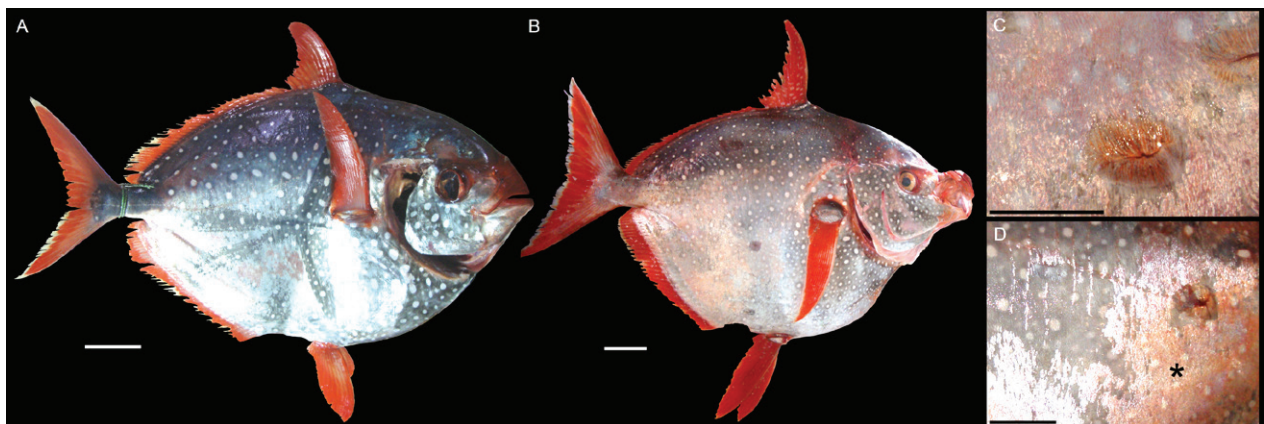


Fig. 2. *Lampris guttatus* (Brünnich, 1788). A. Specimen caught off Tocopilla (22°04'S; 70°12'W), Región de Antofagasta, Chile (TL = 106 cm); B. Specimen caught off Caldera (27°04'S; 70°49'W), Región de Atacama, Chile (TL = 137.9 cm); C. detail of healed scar; D. detail of area with remaining scales (denoted with asterisk *). Scale-bars: 10 cm (A and B), 5 cm (C and D).

and, thus, almost never recorded, with no further records in the South-Eastern Pacific since the work of RUIZ & FIGUEROA (2006). Opahs are known as potential hosts for anisakid nematodes, specifically for *Anisakis physeteris* and for cestodes and trematodes (CAVALLERO et al. 2012). Even if no parasites have been observed on the examined specimens, further studies are necessary to document on possible threats as a result of the human consumption of the meat of this species.

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References

- ARAYA J. F. 2016. New records of deep-sea sea spiders (Chelicerata: Pycnogonida) in the southeastern Pacific. *Marine Biodiversity* 46 (3): 725-729.
- ARAYA J. F. & ARAYA M. E. 2015. The southernmost record of the amphipod *Hyperia curticephala* (Crustacea: Amphipoda: Hyperidae) in the Pacific Ocean. *Marine Biodiversity Records* 8: e40.
- ARAYA J. F. & RÜTZLER K. 2016. The first record of *Terpios fugax* Duchassaing and Michelotti, 1864 (Demospongiae: Suberitidae) in the Eastern Pacific. *New Zealand Journal of Zoology* 44 (1): 86-90.
- ARAYA J. F., ALIAGA J. A. & ARAYA M. E. 2016a. On the distribution of *Physalia physalis* (Hydrozoa: Physaliidae) in Chile. *Marine Biodiversity* 46 (3): 731-735.
- ARAYA J. F., ARAYA M. E. & CAIRNS S. D. 2016b. First record of the azooxanthellate coral genus *Coenocyathus* Milne-Edwards and Haime, 1848 (Anthozoa: Scleractinia) in the southeastern Pacific Ocean. *Spixiana* 39: 23-27.

- ARAYA J. F., ALIAGA J. A. & OPRESKO D. 2017. First record of *Alternatipathes bipinnata* (Cnidaria: Antipatharia) in the Southern Hemisphere. *Zootaxa* 4312 (1): 189-193.
- ARAYA J. F., ALIAGA J. A. & ARAYA M. E. 2018. First record of *Lillipathes ritamariae* Opresko and Breedy, 2010 (Cnidaria: Antipatharia) in the southeastern Pacific Ocean. *Marine Biodiversity* 48 (3): 1601–1605.
- BEAREZ P. 1996. Lista de los peces marinos del Ecuador continental. *Revista de Biología Tropical* 44: 731–741.
- CASTRO-AGUIRRE J. L., DE LA CRUZ-AGÜERO G., DE LA CRUZ-AGÜERO J. & GONZÁLEZ ACOSTA A. F. 2001. A second record of *Lampris guttatus* (Pisces: Lamprididae) from the Southwestern Coast of the Golfo de California, México. *Océánides* 16: 139-141.
- CAVALLERO S., LIGAS A., BRUSCHI F. & D'AMELIO S. 2012. Molecular identification of *Anisakis* spp. from fishes collected in the Tyrrhenian Sea (NW Mediterranean). *Veterinary Parasitology* 187: 563-566.
- CAVIEDES C. N. 1984. El Niño 1982-83. *Geographical Review* 74 (3): 267–290.
- DISALVO L. H., RANDALL J. E. & CEA A. 1988. Ecological reconnaissance of the Easter Island sublittoral marine environment. *National Geographic Research* 4: 451-473.
- HAWN D. R. & COLLETTE B. B. 2012. What are the maximum size and live body coloration of opah (Teleostei: Lampridae: *Lampris* species)? *Ichthyological Research* 59: 272-275.
- HEEMSTRA P. C. & HEEMSTRA E. 2004. Coastal fishes of southern Africa. NISC (PTY) LTD.
- LEET W. S. 2001. California's living marine resources: A Status Report. UCANR Publications.
- NELSON J. S., GRANDE T. & WILSON M. V. H. 2016. Fishes of the world, fifth edition. Hoboken, New Jersey.
- PAPASTAMATIOU Y. P., WETHERBEE B. M., O'SULLIVAN J., GOODMANLOWE G. D. & LOWE C. G. 2010. Foraging ecology of Cookiecutter Sharks (*Isistius brasiliensis*) on pelagic fishes in Hawaii, inferred from prey bite wounds. *Environmental Biology of Fishes* 88: 361-368.
- PARIN N. V. & KUKUYEV E. I. 1983. Reestablishment of validity of *Lampris immaculata* Gilchrist and the geographic distribution of opahs (Lampridae). *Voprosy Ikhtiologii* 23: 3-14. (In Russian)
- RUIZ V. H. & FIGUEROA R. 2006. Primer registro de *Lampris guttatus* (Pisces: Lamprididae) en el Golfo de Arauco, VIII Region, Chile. *Gayana* 70: 252-254.
- SMITH M. M. & HEEMSTRA P. C. 1986. *Smiths' Sea Fishes*. Johannesburg: Macmillan. 1047 p.

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