



Critically endangered fish species of Turkish Seas (Mediterranean and Aegean): Longfin gurnard, *Chelidonichthys obscurus* (Walbaum, 1792)

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Abstract

Longfin gurnard *Chelidonichthys obscurus* (Walbaum, 1792) is reported several times from various researchers in the checklist of Turkish marine fishes. However, last three decades, the species is not occurred in the distributional range, comprising the northeastern Mediterranean Sea and Aegean Sea coast of Turkey. It is possibly critically endangered or absent in the Turkish Seas. Moreover, there has no any biological study been carried out on *C. obscurus* in Turkey. *C. obscurus* is considered to be critically endangered or regionally extinct in the eastern Mediterranean Sea and Aegean Sea coast of Turkey. This species might be recorded as “Critically Endangered” in the Mediterranean and Aegean Sea coast of Turkey in the IUCN Red List of Threatened Species.

Keywords:

Chelidonichthys obscurus, Longfin gurnard, Endangered species, Turkish Seas.

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Introduction

In some cases, several fish species have previously been reported from Turkish Seas where essential information is not available to support their occurrence. If no specimen of a species has yet been collected from a region, they should not be accepted as a part of the local ichthyofauna until a relevant individual specimen has been provided.

The family Triglidae is represented by four genus (*Chelidonichthys*, *Trigla*, *Eutrigla*, and *Lepidotrigla*) with 8 valid species, distributed along the Turkish Seas (Golani *et al.*, 2006, Turan, 2007; Froese and Pauly, 2015). *C. obscurus* was previously considered as a synonym of *Trigla obscura* Bloch & Schneider, 1801. However, the status of both genus still remains doubtful and needs further investigations. *C. obscurus* is commonly found Eastern Atlantic:

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southern coasts of the British Isles to Mauritania, the Azores and Madeira; Mediterranean, but absent in northern Aegean Sea and Black Sea (Golani *et al.*, 2006; Froese and Pauly, 2015).

C. obscurus is first reported from Turkish Seas by Akşiray (1954, 1987) with a key to identification of the species, and then it has been added in the Checklist of the marine fishes of Turkey (Geldiay, 1969; Fischer *et al.*, 1987; Mater and Meriç, 1996; Mater and Bilecenoglu, 1999; Bilecenoglu *et al.*, 2002; Fricke *et al.*, 2007) with a distribution in the Mediterranean and Aegean Sea coast of Turkey. However, there has been no any study or capture record on the occurrence of *C. obscurus* in Turkish marine waters. Therefore, in the present study, we discuss occurrence and conservation status of *C. obscurus* in the Turkish Seas.

Results

Identification

Gurnard species can easily be distinguished by morphological characters. *C. obscurus* (Figure 1) differ from all other known *Trigla* species in large head armored with bony plates with many ridges and spines, but marked occipital sulcus; rostrum slightly indented; cleithrale spine (above pectoral) short. Moreover, three lower most pectoral rays free; the first spine in first fin elongated; lateral line scales plate-like without vertical expansions. Total gill rakers on the first branchial arch are between 7 to 11. Fin rays: D1 X-XI, D2 17-19, A 17-18, V I + 5, P 10+3; lateral line scales: 68-70; Vertebra: 36-37; maximum length of about 40 cm; and usually 10 to 20 cm length (Mediterranean) (Golani *et al.*, 2006). Colour: Body red pink iridescent flanks, belly pale, pectoral fins dark blue, other fins rose.

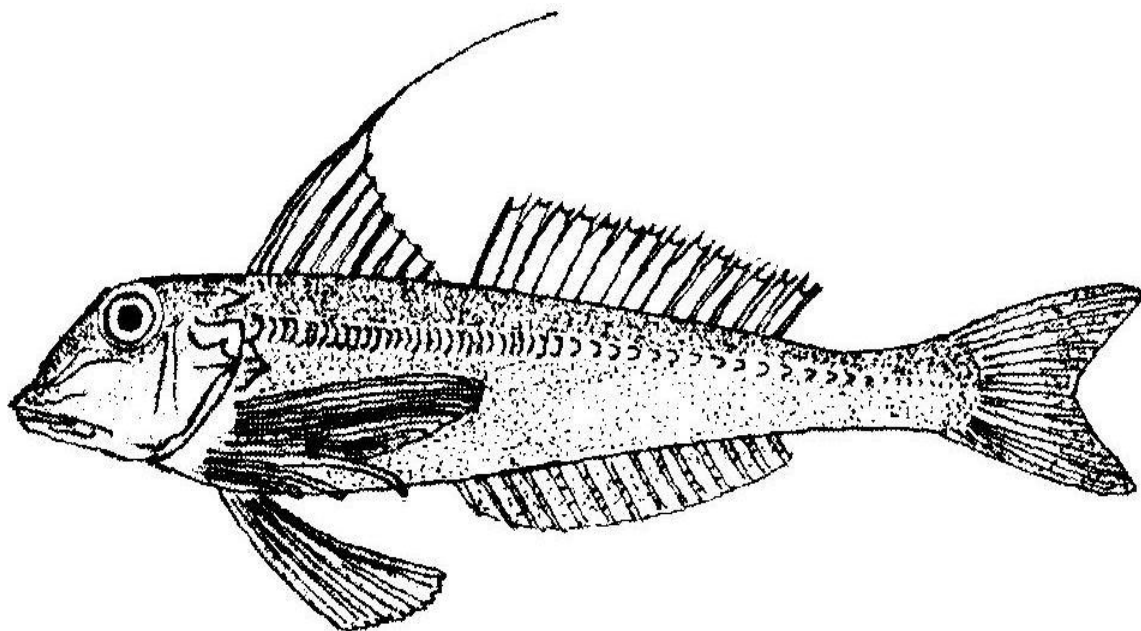


Figure 1. *Chelidonichthys obscurus* (Walbaum, 1792)

Habitat and ecology

C. obscurus is found sandy, muddy or rocky substrate at depths of 170 m (Hureau, 1986; Richards and Saksena, 1990; Froese and Pauly, 2015). It feeds on benthic invertebrates, mainly shrimps, mysids and other crustaceans (Boudaya *et al.*, 2007). Eggs and larvae are planktonic (Golani *et al.*, 2006).

Threats

Over-fishing pressure, habitat degradation and pollution are the main threat of declines of gurnard species. Especially, the climate change and lessepsian migration from Indo-Pacific have resulted to environmental changes in the Mediterranean, and thus serious shifts have occurred in the Mediterranean and Aegean ecosystem in the last 20 years (Turan, 2010; Ozturk and Turan, 2012). The ecosystem has also been affected by bottom trawling, which destroys the seabed communities and affects the links between the benthic and pelagic components of the system.

Conservation action

No current conservation action has been implemented. *C. obscurus* is probably endangered or extinct from the Turkish coasts comprising the Mediterranean and Aegean Sea.

Discussion and Conclusion

Conservation recommendations

Up to date, last three decades, *C. obscurus* is not occurred in the Turkish Seas. Also, there has been no any biological study and fishery data (trawl, purse seiner, nets, and ext.) given in Turkish coasts. Moreover, we had personal communication with scientists who are well experienced at fishery in the Aegean and Mediterranean Sea that they have never seen *C. obscurus* in their field work. Furthermore, we have had tens of field works in the Mediterranean and Aegean Sea Coasts of Turkey for sampling gurnards and asked all fishermen for this species for two years, but we could not observe this species. Therefore, the species is critically endangered or regionally extinct in the Aegean Seas and northeastern Mediterranean coast of Turkey.

Although, *C. obscurus* relatively common in some parts of the Mediterranean Sea to the Atlantic coasts of northern Spain and south-west France (Quero *et al.*, 1989; Sanches *et al.*, 2002), and it is recorded rarely in British waters. It was reported from the western English Channel in the 19th Century (Yarrell, 1841; Couch, 1877; Day, 1880-1884; Holt *et al.*, 1898), but was absent from lists of the regional ichthyofauna compiled during the 20th Century (Le Danois, 1913; Le Mao, 2009). Gary and Ellis (2014) obtained a total of 82 specimens of *C. obscurus* that were caught in the English Channel, all from 2004 to 2013. To date, little is known about the biology of *C. obscurus*, and most published data are from the western Mediterranean Sea, where there have been studies of their reproductive biology (Munoz *et al.*, 2003, as *Aspitrigla obscura*) and feeding habits (Moreno-Amich 1996; Morte *et al.*, 1997; Boudaya *et al.*, 2007) and parasites (Serecca *et al.*, 2013). Genetic analysis should also be conducted on these existent populations to determine their genetic structure as defined for other marine species (Turan, 2006; Turan, 2008).

This species should be recorded in the IUCN Red List of Threatened Species as Endangered (EN) for Mediterranean and as Critically Endangered (CR) for Turkish Mediterranean coast.

Remarks

Fishing pressures, pollution, lessepsian invasion and climate change effects may be reasons for this extinction. *C. obscurus* may be very fragile species against these anthropogenic effects and lost in the nature.

These anthropogenic effects and excessive harvesting of commercial fish populations in the Mediterranean region will most probably result in further declines in the occurrence and species diversity in the Turkish marine waters.

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References

- Aksiray, F. 1954. Türkiye Deniz Balıkları Tayin Anahtarı. İstanbul Üniversitesi Fen Fakültesi Hidrobioloji Araştırma Enstitüsü Yayınları, İstanbul, 277 p. [in Turkish].
- Aksiray, F. 1987. Türkiye Deniz Balıkları ve Tayin Anahtarı 2nd edition, I.U. Rektörlüğü Yayınları, İstanbul. 811 p. [in Turkish].
- Bilecenoglu, M., Taskavak, E., Mater, S., Kaya, M. 2002. Checklist of the marine fishes of Turkey. *Zootaxa* 113: 1-194.
- Boudaya, L., Neifar, L., Taktak, A., Ghorbel, M., Bouain, A. 2007. Diet of *Chelidonichthys obscurus* and *Chelidonichthys lastoviza* (Pisces: Triglidae) from the Gulf of Gabes (Tunisia). *Journal of Applied Ichthyology* 23: 646-653.
- Couch, J. 1877. A History of the Fishes of the British Islands. Vol. II, George Bell & Sons, London.
- Day, F. 1880–1884. The Fishes of Great Britain and Ireland, Vol. I, Williams & Norgate, London.
- Fischer, W., Bauchot, M.L., Schneider, M., 1987. Fiches FAO de identification des espèces pour les besoins de la pêche, Méditerranée et mer Noire. Zone de pêche 37, FAO and EEC, Rome. 761-1530 pp.
- Fricke, R., Bilecenoglu, M., Sarı, H.M. 2007. Annotated checklist of fish and lamprey species (Gnathostomata and Petromyzontomorpha) of Turkey, including a Red List of threatened and declining species. *Stuttgarter Beiträge zur Naturkunde Serie A (Biologie)* 706: 1-169.
- Froese, R., Pauly, D. (Eds) 2015. Fishbase, World Wide Web Electronic Publication, Available at: <http://www.fishbase.org>, version (01/2015).
- Gary, J.B., Ellis, J.R. 2014. The reappearance of long-finned gurnard *Chelidonichthys obscurus* (Scorpaeniformes: Triglidae) in the western English Channel. *Marine Biodiversity Records* 7: e47.
- Geldiay, R. 1969. İzmir Körfezi'nin Başlıca Balıkları ve Muhtemel Invasionları, Ege Üniversitesi Fen Fakültesi Monografileri, İzmir, 135 p. [in Turkish].
- Golani, D., Öztürk, B., Başusta, N. 2006. Fishes of the Eastern Mediterranean, Turkish Marine Foundation, TUDAV, Publication Number 24, İstanbul, 259 p.

- Holt, E.W.L., Garstang, W., Byrne, L.W. 1898. Notes and memoranda. *Journal of the Marine Biological Association of the United Kingdom* 5: 193-198.
- Hureau, J.C. 1986. Triglidae. 1230-1238. In: PJP. Whitehead, ML. Bauchot, JC. Hureau, J Nielsen and E Tortonese (Eds.). *Fishes of the North-Eastern Atlantic and the Mediterranean*. Vol. 3, UNESCO, Paris.
- Le Danois, E. 1913. Contribution a l'étude systématique et biologique des poissons de la Manche Occidentale. PhD thesis. Faculté des Sciences de Paris, Paris, France.
- Le Mao, P. 2009. Inventaire de la Biodiversité Marine dans le golfe normano-breton: Agnathes, Condrichtyens et Osteichtyens. IFREMER, St Malo, 107 p.
- Mater, S., Bilecenoglu, M. 1999. Türkiye Deniz Balıkları. 790-808. In: A. Demirsoy (Ed.). Genel Zoocoğrafya ve Türkiye Zoocoğrafyası. Meteksan Matbaası, Ankara.
- Mater, S., Meriç, N. 1996. Deniz balıkları, 129-172. In: A. Kence and C.C. Bilgin (Eds.). Türkiye Omurgalılar Tür Listesi, Nurol Matbaacılık A.S., Ankara. [in Turkish].
- Moreno-Amich, R. 1996. Feeding habits of longfin gurnard, *Aspitrigla obscura* (L. 1764), along the Catalan coast (north-western Mediterranean). *Hydrobiologia* 324: 219-228.
- Morte, M.S., Redon, M.J., Sanz-Brau, A. 1997. Trophic relationships between two gurnards *Trigla lucerna* and *Aspitrigla obscura* from the western Mediterranean. *Journal of the Marine Biological Association of the United Kingdom* 77: 527-538.
- Munoz, M., Hernandez, M.R., Sabat, M., Casadevall, M. 2003. Annual reproductive cycle and fecundity of *Aspitrigla obscura* (Teleostei, Triglidae). *Vie et Milieu* 53: 123-129.
- Ozturk, B., Turan, C. 2012. Alien Species in the Turkish Seas. In: The State of the Turkish Fisheries. Turkish Marine Research Foundation (TÜDAV) Publications, No: 35, İstanbul, Turkey.
- Quero, J.C., Dardignac, J., Vayne, J.J. 1989. Les poissons du Golfe de Gascogne. Brest: IFREMER, 229 p.
- Richards, W.J., Saksena, V.P. 1990. Triglidae. 680-684. In: JC. Quero, JC. Hureau, C. Karrer, A. Post and L. Saldanha (Eds.). Check-list of the Fishes of the Eastern Tropical Atlantic (CLOFETA). Vol. 2, JNICT, Lisbon; SEI, Paris; and UNESCO, Paris.
- Sanches, F., Blanco, M., Gancedo, R. 2002. Atlas de los peces demersales y de los invertebrados de interés comercial de Galicia y el Cantábrico, Otoño 1997-1999. Instituto Español de Oceanografía, Madrid, 158 p.
- Serecca, L., Cencetta, E., Battistini, R., Rossinia, I., Prearob, M., Pavolettib, E., Fioravantic, L.M., Righettib, M., Donfrancescob, B.D., Ercolini, C. 2013. Survey on the presence of *Anisakis* and *Hysterothylacium* larvae in fishes and squids caught in Ligurian Sea. *Veterinary Parasitology* 196: 547-551.
- Turan, C. 2006. Phylogenetic relationships of Mediterranean Mullidae species (Perciformes) inferred from genetic and morphologic data. *Scientia Marina* 70 (2): 311-318.
- Turan, C. 2007. Atlas and Systematic of Marine Bony Fishes of Turkey. Nobel Publishing House, Adana, 549 p.
- Turan, C. 2008. Molecular Systematic Analyses of Mediterranean Skates (Rajiformes). *Turkish Journal of Zoology* 32: 437-442.
- Turan, C. 2010. Status and Trend of Lessepsian Species in Marine Waters of Turkey. FAO-EastMed Technical Document 4 (GCP/INT/041/EC – GRE – ITA/TD-04). 109-118.
- Yarrell, W. 1841. A History of British Fishes. 2nd edition, John Van Voorst, London.