

First record of *Epinephelus marginatus* (Serranidae: Epinephelinae) in the eastern English Channel

by

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RÉSUMÉ. - Premier signalement de *Epinephelus marginatus* (Serranidae: Epinephelinae) en Manche orientale.

Le premier signalement du mérou noir *Epinephelus marginatus* (Lowe, 1834) en Manche orientale est rapporté. Un spécimen a été capturé le 10 juin 2011 en baie de Seine. Il mesurait 66 cm et pesait 5,5 kg. D'après l'étude des écailles, il s'agissait d'une femelle adulte âgée de 12 ans qui n'avait pas effectué sa croissance dans la Manche, ce qui confirme le fait d'une observation occasionnelle et non le signe d'une extension d'aire de répartition avec une population établie.

Key words. - Serranidae - *Epinephelus marginatus* - Atlantic Ocean - Eastern English Channel - First record.

The subfamily Epinephelinae (Serranidae) comprises 167 valid species (Eschmeyer and Fricke, 2011) mostly distributed in tropical and subtropical seas. Craig and Hastings (2007) have proposed a phylogeny and a new classification of Epinephelini resurrecting some genera previously put in synonymy with *Epinephelus* Bloch, 1793. They assign the species *marginatus* to *Mycteroperca* Gill, 1862, which we do not follow here just like Catalog of Fishes (Eschmeyer and Fricke, 2011) and FishBase (Froese and Pauly, 2011); however, both accept partially and tentatively some of Craig and Hastings conclusions, which makes difficult to give a current number of species in the genus *Epinephelus*.

The dusky grouper *Epinephelus marginatus* (Lowe, 1834) is present in the Southwest Atlantic from northern Argentina to Brazil, in the East Atlantic, from southern France to South Africa (including all Macaronesian Islands, and the entire Mediterranean Sea including Black Sea), and in the Indian Ocean from South Africa to southern Madagascar and Mozambique (Heemstra and Randall, 1993). A number of records from the British Islands were reported on a map by Wheeler (1969: 311) who considers the species as "Excessively rare North of Biscay..." but who listed the species as native in 1992 (Wheeler, 1992), without any further reported records. On this map, the records are from the western Channel, the Irish Sea, and western coast of Ireland. However, he did not give more precision. The point data map given in FishBase (Froese and Pauly, 2011) drawn from various sources showed a point in eastern Channel, but this was an estimation, not a real observation. A number of records eastward in Indo-Pacific are data mistakes and

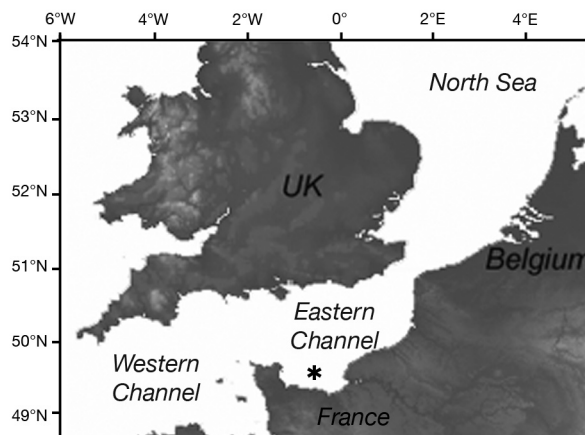


Figure 1. - Location of sampling site (*) of *Epinephelus marginatus* in the Eastern English Channel.



Figure 2. - The specimen of *Epinephelus marginatus* caught in the Eastern English Channel.

misidentifications, except maybe records from Oman (Randall, 1995) that require confirmation. In the European Atlantic (from 36°N to 66°34.5'N), only 5 species are present: *Mycteroperca rubra* (Bloch, 1793), *Epinephelus costae* (Steindachner, 1878), *E. caninus* (Valenciennes, 1843), *E. aeneus* (Geoffroy Saint-Hilaire, 1817) and *E. marginatus* (Lowe, 1834) (Quéro *et al.*, 2003). These species are rarely observed in northern latitudes from Spain.

The dusky grouper is one of the most targeted epinephelin species by fishing activities (including spearfishing). Due to its bio-

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logical features and its high vulnerability to overfishing, the abundance of this species has markedly decreased during the last decade. The total catches had decreased of 88% between 1990 and 2001 (FAO Data). Consequently, *E. marginatus* has been classified as an endangered species. Since 1996, the dusky grouper is part of the IUCN Red List (Berne Convention, Annex 3; Barcelona Convention, Protocol for Mediterranean Biodiversity, Annex 3) where it is listed as "EN A2d," i.e. a taxon currently exposed to a very high risk of extinction in the wild, a consequence of its over-exploitation by most of the Mediterranean countries.

This paper reports the first record of *E. marginatus* in the eastern English Channel.

MATERIEL AND METHODS

The specimen has been caught on 10 June 2011 near the French coast in the English Channel (49°21.5'N latitude and 0°35'W longitude; Fig. 1) at a depth of 8 m on sand bank with sargasso (*Sargassum muticum* (Yendo) Fensholt, 1955) by a French netter from the fishing port of Asnelles, Normandy, France. The measurements and meristic characters were recorded in the fisheries laboratory of IFREMER Institute at Port-en-Bessin. A sample of scales has been sent to the Sclerochronology Centre of IFREMER Institute in Boulogne-sur-Mer, in order to estimate the age. After extraction, the scales were cleaned. The regenerated scales were removed to keep only the readable scales, which are the ones where there is a succession of annuli starting from the *focus*. Scales immersed in water were observed under binocular with transmitted light.

RESULTS AND DISCUSSION

The specimen measured 66 cm (total length \pm 1 cm) and weighed 5.5 kg (total weight \pm 50 g). The fins rays meristics were: dorsal spines: 11; dorsal soft rays: 15; anal spines: 3; anal soft rays: 8. A scaly cutaneous fold is present at the base of the pectoral fins. Based on a photo of this specimen (Fig. 2), the brownish background coloration is speckled with irregular black points on the flanks. The caudal fin is rounded and presented a white edge. All these characters closely correspond to those listed by Quéro *et al.* (2003). In addition, the absence of blue or white stripes on the cheek and operculum indicates that it is not *Epinephelus aeneus*. The macroscopic observation of its sexual organs showed the specimen was a female.

There are few publications of data north to 45°N latitude. In addition to the records mentioned by Wheeler (1969), three additional catches were identified in the Bay of Biscay (Quéro, 1973; Harambillet *et al.*, 1976). This is the first record of *Epinephelus marginatus* in the eastern English Channel.

The presence of this adult specimen in the North latitudes of cold waters is hardly explained because the nearest known population resides in the Portugal coasts. Migrations of this species were explained by feeding or reproduction needs, although they remained geographically limited (Harmelin and Harmelin-Vivien, 1999). At least we can suppose that it could use the remains of the floating harbour built during the second world war near Arromanches as a proper habitat: these wrecks constitute artificial reefs where acceptable food would be available.

The age of *Epinephelus marginatus* has been estimated from scales. Growth differences were observed between study sites but the growth rate of *E. marginatus* is always high during the first year and decreases progressively (Harmelin and Harmelin-Vivi-

en, 1999). The age of this 66 cm-long female was estimated at 12 years. Compared to established growth models in various areas, this age falls down in the mean value of the growth model from the Mediterranean Sea (Harmelin and Harmelin-Vivien, 1999; Renones *et al.*, 2007). As fish growth in shallow waters is principally influenced by seawater temperature (Wootton, 1990), which explains growth differences between areas or latitudes (Renones *et al.*, 2007; Pauly, 2010), it seems that this specimen did not spent its life in cold waters, and thus is not part of an established population in the Eastern Channel.

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REFERENCES

- CRAIG M.T. & HASTINGS P.A., 2007. - A molecular phylogeny of the groupers of the subfamily Epinephelinae (Serranidae) with a revised classification of the Epinephelini. *Ichthyol. Res.*, 54(1): 1-17.
- ESCHMEYER W.N. & FRICKE R. (eds), 2011. - Catalog of Fishes electronic version (14 July 2011). <http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>.
- FROESE R. & PAULY D. (eds), 2011. - FishBase. World Wide Web electronic publication. <http://www.fishbase.org>, version (08/2011).
- HARAMBILLET G., PERCIER A. & QUERO J.C., 1976. - Remarques sur la faune ichthyologique de la côte basque française. *Bull. Cent. Etud. Rech. Sci. Biarritz*, 11(1): 23-34.
- HARMELIN J.G. & HARMELIN-VIVIEN M., 1999. - A review on habitat, diet and growth of the dusky grouper, *Epinephelus marginatus* (Lowe, 1834). *Mar. Life*, 9: 11-20.
- HEEMSTRA P.C. & RANDALL J.E., 1993. - Groupers of the World (Family Serranidae, Subfamily Epinephelinae): An annotated and illustrated catalogue of the grouper, rockcod, hind, coral grouper and lyretail species known to date. *FAO Fish. Synop.*, 125(16): 1-382.
- PAULY D., 2010. - Gasping Fish and Panting Squids: Oxygen, Temperature and the Growth of Water-Breathing Animals. 216 p. Excellence in Ecology. Book 22. Oldendorf/Luhe: International Ecology Institute.
- QUÉRO J.C., 1973. - Observations françaises sur les poissons rares en 1971. *Cons. Int. Explor. Mer, Ann. Biol.*, 28: 223-224.
- QUÉRO J.C., PORCHÉ P. & VAYNE J.J., 2003. - Guide des Poissons de l'Atlantique européen. 465 p. Neuchâtel: Delachaux & Niestlé.
- RANDALL J.E., 1995. - Coastal Fishes of Oman. 439 p. Honolulu, Hawaii, USA: Univ. of Hawaii Press.
- RENONES O., PINEIRO C., MAS X. & GONI R., 2007. - Age and growth of the dusky grouper *Epinephelus marginatus* (Lowe 1834) in an exploited population of the western Mediterranean Sea. *J. Fish Biol.*, 71: 346-362.
- WHEELER A., 1969. - The Fishes of the British Isles and North-west Europe. 613 p. East Lansing, Michigan, USA: Michigan State Univ. Press.
- WHEELER A., 1992. - A list of the common and scientific names of fishes of the British Isles. *J. Fish Biol.*, 41(A): 1-37.
- WOOTTON R.J., 1990. - Ecology of Teleost Fishes. 404 p. New York (USA): Chapman & Hall.

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