

DYNAMICS OF FISH INVASIONS IN THE MEDITERRANEAN: UPDATE OF THE CIESM FISH ATLAS

D. Golani^{1*}, L. Orsi-Relini², E. Massuti³ and J-P. Quignard⁴

¹ Department of Evolution, Systematics and Ecology, The Hebrew University Jerusalem, Israel - * dgolani@cc.huji.ac.il

² Laboratori di Biologia Marina ed Ecologia Animal, Genova, Italy

³ IEO-Centre Oceanografic de les Balears, Palma de Mallorca, Spain

⁴ Laboratoire d'Ichthyologie méditerranéenne, Université Montpellier II, France

Abstract

This paper constitutes an update of exotic fish species that have been recorded in the Mediterranean since the publication of the CIESM *Atlas of Exotic Species in the Mediterranean – Fishes in April 2002*. Five new fish species have been recorded and eight fish species have extended their distribution in the Mediterranean.

Keywords: CIESM, Fish, Exotic, Mediterranean, Update

The CIESM Atlas of Exotic Species in the Mediterranean – Fishes (1), was published in April 2002 and included 90 species recognized as exotic to the Mediterranean. It summarized all the scientific literature to that date. In the two years since its publication, the dynamics of the process of invasions has been demonstrated by the addition of five new fish species to the Mediterranean. Furthermore, eight fish species have extended their Mediterranean distribution.

New Invaders

• Striped eel catfish, *Plotosus lineatus* (Thunberg, 1787) (Family: Plotosidae) – This venomous catfish has been found in large numbers on sandy substrate at depths of 10-35 m along the coast of Israel (2). Several incidents of injury from this species have been reported in its new habitat.

• Seahorse *Hippocampus fuscus* Rüppell, 1838 (Family: Syngnathidae) – This western Indian Ocean and Red Sea species was first recorded in the Mediterranean from the coast of Israel (3). It was found in rocky habitats at depths up to 10 m. This species has already spread to southern Turkey (M. Gokoglu, personal comm.).

• Almaco jack, *Seriola rivoliana* Cuvier, 1833 (Family: Carangidae) – This eastern Atlantic species was recorded from the African continental shelf near Lampedusa Island (4).

• Bluebarred parrotfish, *Scarus ghobban* Forskål, 1775 (Family: Scaridae) – A single specimen was recorded from rocky substrate at Shiqmona near Haifa Bay, Israel (5).

• The ?atfish *Solea (Microchirus) boscanion* Chabanaud, 1926 (Family: Soleidae) – Five specimens were recorded at the Iberian coast of Spain on soft substrate between 45-65 m depth (6).

Range Extensions

• Enchelcore anatine (Lowe, 1839) – A single specimen was recorded from Turkey (7). Previously this eastern Atlantic migrant was known in the Mediterranean only in Israel and Greek waters.

• *Fistularia commersonii* Rüppell, 1835 – This species experience a population explosion along the coast of Israel and subsequently spread westward. It has been recorded at Antalya, Turkey, the island of Rhodes (8) and Cretan waters (Scazzocchio, pers. comm.); it has recently reached the shores of Southern Italy (Azzurro, pers. comm.).

• *Leiognathus klunzingeri* (Steindachner, 1898) – This species was recorded recently in the southern Adriatic (9).

• *Sphyræna chrysaena* Klunzinger, 1884 – the record of this species from the southern Adriatic (10) was published prior to the publication of the CIESM Fish Atlas and should be included.

• *Sphyræna ?avicauda* Rüppell, 1838 – Two specimens of this species have been reported from Antalya Bay, Turkey (11); it was hitherto known only from a single specimen off the coast of Israel.

• *Siganus luridus* Rüppell, 1828 – This species was sighted and photographed from Cretan waters in 2002 (P. Wirtz, pers. comm.).

• *Acanthurus monroviae* Steindachner, 1876 – Several specimens of this west African species were sighted and photographed off the Mediterranean coast of Algeria in late 2001 and August 2002. Previously it was known in the Mediterranean only from a single specimen in Israel and another specimen in southern Spain (F. Hemida pers. comm.).

• *Torquigener ?avimaculosus* Hardy and Randall, 1983 – A specimen of this species was photographed in 2002 in Fethiye, Turkey

(M. Bilecenoglu, pers. comm.). Hitherto it was known only from Haifa Bay, Israel.

Increase in abundance

• *Spratelloides delicatulus* (Bennett, 1831) – Formerly known only by two specimens off the Mediterranean coast of Israel, its population has increased greatly in the last two years; many specimens were collected using beach seine along the sandy shore of Israel (12).

Nomenclature changes

The species formerly known in the Mediterranean as *Apogon nigripinnis* Cuvier, 1828, should be referred to as *Apogon pharaonis* Bellotti, 1874. *A. nigripinnis* restricted to the eastern Indian and western Pacific Oceans (13).

References

- 1-Golani D., Orsi-Relini L., Massuti E. and Quignard J.-P., 2002. CIESM Atlas of Exotic Species in the Mediterranean. Vol. 1. Fishes. (F. Briand, ed.). CIESM Pub. Monaco. 254 p.
- 2-Golani D., 2002. The Indo-Pacific striped eel catfish, *Plotosus lineatus* (Thunberg, 1787), (Osteichthyes: Siluriformes) a new record from the Mediterranean. *Scientia Marina*, 66: 321-323.
- 3-Golani D. and Fine M., 2002. On the occurrence of *Hippocampus fuscus* in the eastern Mediterranean. *J. Fish Biol.*, 60: 764-766.
- 4-Castriota L., Grecot S., Marinot G. and Andalaro F., 2002. First record of *Seriola rivoliana* Cuvier, 1833 in the Mediterranean. *J. Fish Biol.*, 60: 486-488.
- 5-Goren M. and Aronov A., 2002. First record of the Indo-Pacific parrotfish *Scarus ghobban* in the eastern Mediterranean. *Cybius*, 26: 239-240.
- 6-Massuti E., Reina-Hervas J.A., Lloris D. and Gil de Sola L., 2002. First record of *Solea (Microchirus) boscanion* (Osteichthyes: Soleidae) in the Mediterranean Sea, with data on other sympatric soleid species. *J. Mar. Biol. Assoc., U.K.*, 82: 907-911.
- 7-Yokes B., Dervisoglu R. and Karacilk B., 2002. An investigation of the marine biological diversity along Likya shores. *Sualti Bilim ve Teknoloji Toplantisi Bildiriler Kitabı Istanbul. 2000: 166-181. (in Turkish)*.
- 8-Corsini M., Kondilatos G. and Economidis P.S., 2002. Lessepsian migrant *Fistularia commersonii* from the Rhodes marine area. *J. Fish Biol.*, 61: 1061-1061.
- 9-Dulcic J and Pallaoro A., 2002. First record of the lessepsian migrant *Leiognathus klunzingeri* (Pisces: Leiognathidae) from the Adriatic Sea. *J. Mar. Biol. Assoc. U.K.*, 82: 523-524.
- 10-Pallaoro A. and Dulcic J., 2001. First record of *Sphyræna chrysaena* (Klunzinger, 1884) (Pisces, Sphyrænidae) from the Adriatic Sea. *J. Fish Biol.*, 59: 179-182.
- 11-Bilecenoglu M., Taskavak E. and Kurt K.B., 2002. Range extension of three lessepsian migrant fish (*Fistularia commersonii*, *Sphyræna ?avicauda*, *Lagocephalus suezensis*) in the Mediterranean. *J. Mar. Biol. Assoc., U.K.*, 82: 525-526.
- 12-Golani D., 2002. Lessepsian fish migration – characterization and impact on the eastern Mediterranean. Pp. 1-9. In: Öztürk B. and Basusta A. (eds.), Workshop on Lessepsian Migration. Turk. Mar. Res. Found. Istanbul.
- 13-Gon O. and Randall J.E., 2003. A Review of the Cardinalfishes (Perciformes: Apogonidae) of the Red Sea. *Smithiana. Pub. Aquat. Biodiv.* 1, 1-46.