

A new record of the Lessepsian invasive fish *Etrumeus teres* (Osteichthyes: Clupeidae) in the Mediterranean Sea (Aegean, Greece)

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Received 6 March 2007; accepted in revised form 11 May 2007

Abstract

The Lessepsian invasive fish *Etrumeus teres* was recorded for the first time off Crete, Greece in July 2005. Their abundance suggests that the species may become of commercial importance in the south Aegean Sea.

Key words: *Etrumeus teres*, Lessepsian invasive fish, Mediterranean, Aegean, new record

The opening of the Suez Canal in 1869 connected the Red Sea to the Mediterranean and allowed the introduction of numerous Indo-Pacific species into the Mediterranean (Golani 1998a, 1998b), including *Etrumeus teres* (Whitehead 1963). This is the first record of the species off Crete, Greece (Figure 1).

Etrumeus teres (round herring) is a pelagic, mainly inshore clupeid fish, found in the Red Sea, eastern Africa, Japan, Southern Australia, eastern Pacific and western Atlantic (Golani et al. 2002). In the Mediterranean it was first recorded in Haifa Bay, Israel in 1961 (Whitehead 1963), and successively in Egypt (El Sayed 1994), Iskenderum, Turkey, (1994-1996, Basusta et al. 1997), Antalya, Turkey (1997, Yılmaz and Hoşsucu 2003), Cyprus (1999, Golani 2000), Rhodes (2003, Corsini et al. 2005) and the Cyclades (2004, Kallianiotis and Lekkas 2005) (Figure 2). In September 2005 a single specimen was found off Lampedusa Island in the Straits of Sicily (Falautano et al. 2006).

In July 2005, 360 specimens of *E. teres*, weighing 2.5 kg, were collected in Malia Bay, Crete (35°19'30" N - 25°25'32" E) (Figure 2) at depth 59-62 m, on sandy bottom covered by algae. The total length of 50 of the specimens

ranged from 83-110 mm. Local fishermen reported that the species is occasionally abundant in the western Cretan Sea, with a haul of 2500 kg taken by a purse-seine in Chania Bay in June 2004. They refer to the species as "gavrofrisa", a combination of the common Greek names for anchovy and round sardinella. The suggested Greek common name is "stroggulosardela" (round sardine) (Economidis and Koutrakis 2001).

During its invasion in the Mediterranean Sea, *E. teres*, extended its range in a pattern similar to many other Red Sea aliens, i.e. from Suez Canal eastwards, along the Levantine coast and then westwards along the south Turkish coast to Rhodes Island and the Aegean. The expansion of *E. teres* seems to accelerate in the past decade. Following its first record in Haifa Bay, *E. teres* was rare until the early 1990s, when it reappeared in large quantities in the Israeli commercial catches (Golani 2000) and soon spread across the Levantine basin. The recent observation of a single specimen in Central Mediterranean may represent a different invasion route along the North African coast. We believe the quick succession of records is not an artefact of increased scientific interest in marine

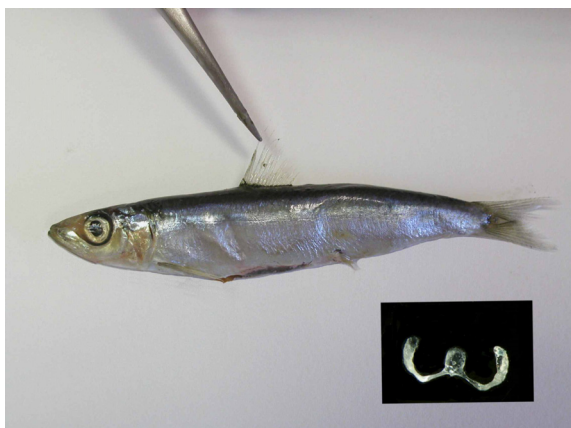


Figure 1. *Etrumeus teres* specimen from Malia Bay, Crete (Photo: P. Peristeraki). The characteristic W-shaped scute at the base of the pelvic fin is shown in magnification

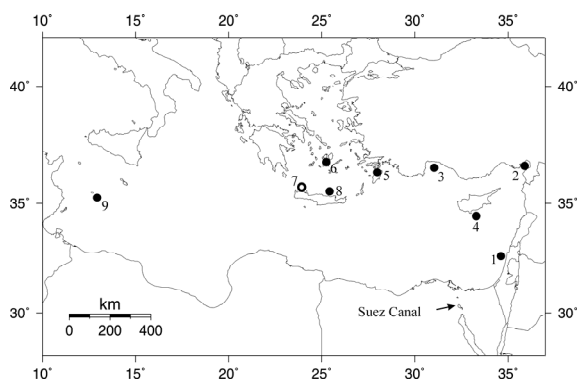


Figure 2. First records of *Etrumeus teres* in the Mediterranean. The open circle represents record for which no samples has been provided (see also Annex)

invasions in recent years. Accelerated rates of expansion have been also observed in other Red Sea alien fish, like in *Fistularia commersonii* Rüppell, 1835 (Karachle et al. 2004). The causes of the expansion have yet to be studied, and explanations may include environmental changes in the Mediterranean (e.g. possible increase of sea temperature) and/or adaptation of the species to local conditions.

Etrumeus teres is the most important species in the Gulf of Suez fishery (Sanders and Kedidi 1984). Since 1990 it is caught in large numbers off the Israeli coast and it is caught regularly in the Gulf of Antalya (Yılmaz and Hossucu 2003). If it continues to expand, *E. teres* may become an important species for the Greek fisheries as well.

Acknowledgements

We would like to thank the two anonymous reviewers for their useful comments on the manuscript.

References

- Basusta N, Erdem Ü and Mater S (1997) Iskenderun körfezi'nde yeni bir Lessepsiyan göçmen bahk türü; Kizilgözlü Sardalya, *Etrumeus teres* (DeKay, 1842). Mediterranean Fisheries Congress, 9-11 April, 1997, Izmir, pp 921-924
- Corsini M, Margies P, Kondilatos G and Economidis PS (2005) Lessepsian migration of fishes to the Aegean Sea: First record of *Tylerius spinosissimus* (Tetraodontidae) from the Mediterranean and six more fish records from Rhodes. *Cybium* 29: 347-354
- Economidis PS and Koutrakis E (2001) Common names of commercially important Hellenic marine organisms. Aristotle University of Thessaloniki, Greece. Unpublished Technical Report
- El-Sayed RS (1994) Check-list of Egyptian Mediterranean fishes. National Institute of Oceanography and Fisheries, Alexandria, Egypt
- Falautano M, Castriota L and Andaloro F (2006) First record of *Etrumeus teres* (Clupeidae) in the Central Mediterranean Sea. *Cybium* 30: 287-288
- Golani D (1998a) Impact of Red Sea fish migrants through the Suez Canal on the aquatic environment of the eastern Mediterranean. *Bulletin of Yale School of Forestry and Environmental Studies* 103: 375-387
- Golani D (1998b) Distribution of Lessepsian migrant fish in the Mediterranean. *Italian Journal of Zoology* 65 (Supplement): 95-99
- Golani D (2000) The Lessepsian migrant, the Red-eye round herring *Etrumeus teres* (DeKay, 1842), a new record from Cyprus. *Zoology in the Middle East* 20: 61-64
- Golani D, Orsi-Relini L, Massuti E and Quignard J-P (2002) Fishes. In: *CIESM Atlas of Exotic Species in the Mediterranean Vol. 1*. (Briand F, ed.), p. 256. Monaco: CIESM Publishers.
- Kallianiotis A and Lekkas V (2005) First documented report on the Lessepsian migrant *Etrumeus teres* De Kay, 1842 (Pisces: Clupeidae) in the Greek Seas. *Journal of Biological Research* 4: 225-229
- Karachle PK, Triantaphyllidis C and Stergiou KI (2004) Bluespotted cornetfish, *Fistularia comersonii* RÜPPELL, 1838: A Lessepsian sprinter. *Acta Ichthyologica et Piscatoria* 34 (1): 103-108
- Sanders MJ and Kedidi M (1984) Stock assessment for the round herring (*Etrumeus teres*) caught by purse seine in the Gulf of Suez. FAO, document no RAB/81/002/13, Rome, pp 36
- Whitehead PJP (1963) A revision of the recent round herrings (Pisces: Dussumieriidae). *Bulletin of British Museum of Natural History (Zoology)* 10: 305-380
- Yılmaz R and Hoşsucu B (2003) Some Biological Parameters of Round Herring, *Etrumeus teres* (De Kay, 1842) in the Gulf of Antalya (Mediterranean Sea). *E.U. Journal of Fisheries & Aquatic Sciences* 20 (1-2): 1-8

AnnexRecords of *Etrumeus teres* in the Mediterranean Sea

Site No. (Map Ref.)	Location	Record coordinates		Record date	Reference
		Latitude °N	Longitude °E		
1	Haifa Bay, Israel	-	-	1961	Whitehead 1963
2	Iskenderun, Turkey	-	-	1994-1996	Basusta et al. 1997
3	Antalya Gulf, Turkey	-	-	November 1997	Yılmaz and Hoşsucu 2003
4	Limassol, Cyprus	-	-	22 July 1999	Golani 2000
5	Rhodes	-	-	27 December 2003	Corsini et al. 2005
6	Cyclades	-	-	May 2004	Kallianiotis and Lekkas 2005
7	Chania Bay, Crete	-	-	June 2004	current paper
8	Malia Bay, Crete	35°19'30"	25°25'32"	4 July 2005	current paper
9	Lampedousa	35°29'21.0"	12°39'42.5"	2 September 2005	Falautano et al. 2006