

## Uncommon fishes from Rhodes and nearby marine region (SE Aegean Sea, Greece)

MARIA CORSINI-FOKA

*Hellenic Centre for Marine Research / Hydrobiological Station of Rhodes,  
Cos Street, 85100 Rhodes, Greece*

Received: 26 January 2009

Accepted after revision: 10 July 2009

Uncommon fish species, some caught in deep waters, occurred in the last fifteen years at Rhodes and other Dodecanese Islands (SE Aegean Sea, Greece) and their findings are reported. They concern the cartilaginous fish *Odontaspis ferox*, *Dalatias licha*, *Rhinobatos cemiculus*, *Rhinobatos rhinobatos*, *Gymnura altavela* and the bony fish *Sudis hyalina*, *Nemichthys scolopaceus*, *Chlopsis bicolor*, *Apterichthys anguiformis*, *Apterichthys caecus*, *Regalecus glesne*, *Diplodus cervinus cervinus*, *Brama brama*, *Lampris guttatus* and *Luvarus imperialis*. Information on the findings of other eleven species, with a poorly known local occurrence, like *Galeus melastomus*, *Oxynotus centrina*, *Torpedo nobiliana*, *Dipturus oxyrinchus*, *Pteromylaeus bovinus*, *Mobula mobular*, *Ariosoma balearicum*, *Hoplostethus mediterraneus*, *Aphia minuta*, *Parablennius incognitus* and *Mola mola* is also given. The records add knowledge on the Hellenic ichthyofauna diversity and on the distribution of these species in the Eastern Mediterranean.

**Key words:** uncommon fish, diversity, record, Aegean Sea, Eastern Mediterranean.

### INTRODUCTION

According to Quignard & Tomasini (2000) the Mediterranean specific biodiversity comprehends a total of 664 fish species while in the Eastern Mediterranean 470 species have recently been reported (Golani *et al.*, 2006a). In the Greek waters of the Aegean and Ionian seas, 447 species of fishes have been listed (Economidis, 1973; Papakonstantinou, 1988). This number has increased in the last twenty years to more than 480 according to the records of autochthonous species (Kaspiris & Ondrias, 1984; Papaconstantinou, 1990a; Sinis & Koukouras, 1995; Papaconstantinou *et al.*, 1997; Sinis, 2004; Mytilineou *et al.*, 2005; Megalofonou *et al.*, 2005) and alien species (Papaconstantinou, 1990b; Golani *et al.*, 2002, 2006b; Corsini-Foka & Economidis, 2007; Corsini-Foka & Kalogirou, 2008; ELNAIS, 2008).

Fifteen not common native cartilaginous and bony fish species collected or observed in the last fifteen years in the Hellenic waters of the southeastern Ae-

gean Sea, are listed, some of which captured in deep waters. These findings, along with those of other eleven species little known in the area, contribute to the improvement of the knowledge on the distribution of these fishes in a marine region characterized by intense hydrological phenomena and complex geomorphology (Papathanassiou & Zenetos, 2005), located between the Aegean and the Levantine Seas. In this region, the large number of islands with a great complexity of the shelf and bottom conformation (Papaconstantinou, 1988), create a variety of underwater habitats, often present in the same island and not easy to discover or exploit.

### MATERIALS AND METHODS

Findings were reported between 1992 and 2008 in the marine area around Rhodes and the adjacent islands during local fishery activities (trawlings, boat-seinings, longline hooks, fishing nets) (Fig. 1). The major part of small or medium sized samples was deposited to the collection of the Hydrobiological Station of Rhodes (HSR) of the Hellenic Centre for Marine Research for identification and measurements. In other

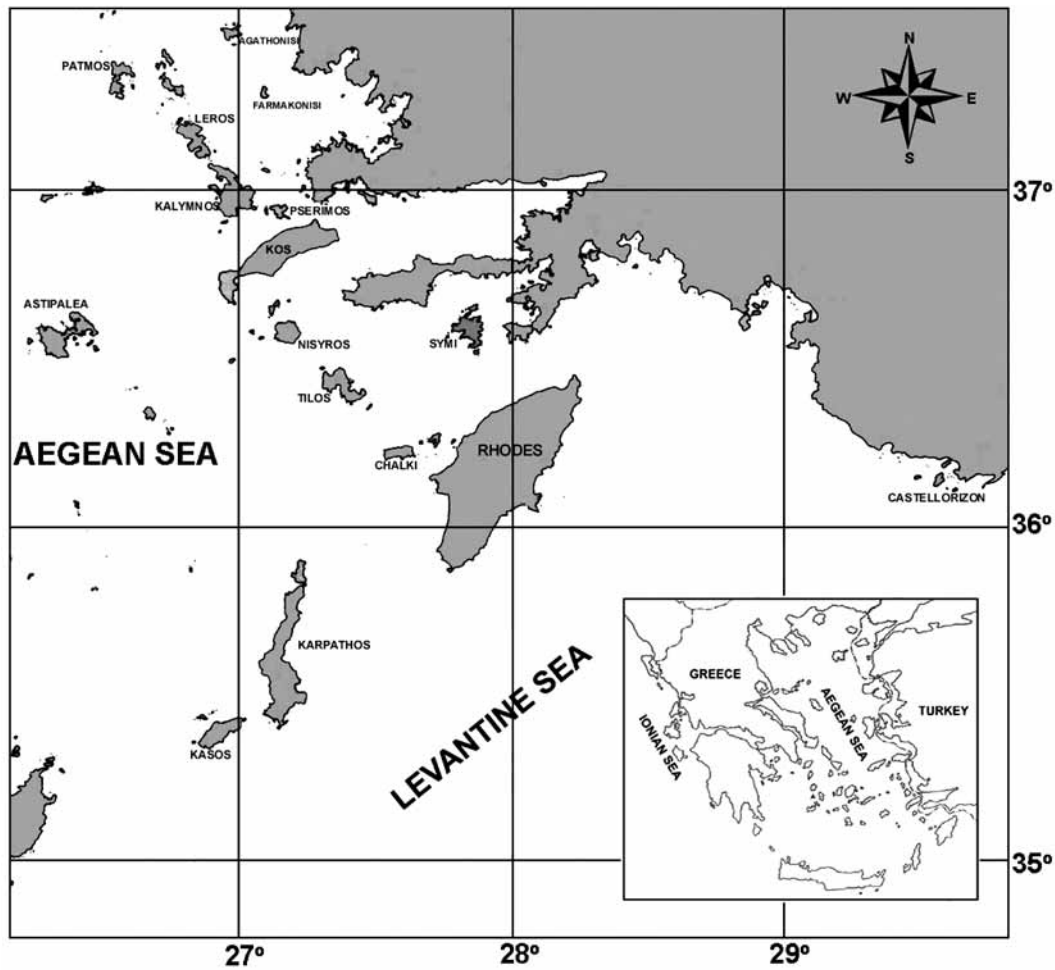


FIG. 1. Map of the Dodecanese Islands.

cases, mainly for large sized specimens, species identification was performed directly *in situ* or through photos, and as a result some of them lack basic measurements.

Species were identified following Quèro (1984), Nielsen (1986), Saldanha (1986), Bauchot & Saldanha (1986), Bauchot (1986), Maul (1986), Zander (1986), Fischer *et al.* (1987), Serena (2005), Golani *et al.* (2006a) and Froese & Pauly (2008).

## RESULTS

Details on the findings of species of major interest and remarks on their distribution and environment are given below. Information on the occurrence of species widely distributed in the Greek waters but poorly known as inhabitants of the Dodecanese Islands, is given in Table 1.

### Cartilagineous fish

*Odontaspis ferox* (Risso, 1810). One specimen, 250 cm TL and 180 Kg approximately, was captured on 16 September 2007, by trawling, 1.5 miles off the southern coasts of Rhodes, at 70 m of depth. It was identified after examination of the underside of the head, the disposition of teeth in the upper jaw and the characteristic shape of the teeth, composed by a central large cusplet and two smaller ones at its sides, since the specimen was already cut to pieces and sold (Fig. 2).

The smalltooth sandtiger *O. ferox* is a cosmopolitan species (Froese & Pauly, 2008), benthopelagic and epipelagic, distributed also along the Mediterranean coasts (Fischer *et al.*, 1987; Golani *et al.*, 2006a). Concerning the eastern Mediterranean, it was recorded in the waters of Israel (Golani, 1996; Golani, 2004), in

TABLE 1. Additional findings of species poorly known in the Dodecanese waters (N: number of specimens)

Species	Year	Fishing method	Location	Depth m	N
<b>Cartilaginous fish</b>					
<i>Galeus melastomus</i> Rafinesque, 1810	2004	Longline	Rhodes	550-750	6
<i>Oxynotus centrina</i> (Linnaeus, 1758)	1992		Kassos		1
	1993		Rhodes		1
	2006	Fishing net	Rhodes	40	2
	1998	Boat-seining	Rhodes	20-50	1
<i>Torpedo nobiliana</i> Bonaparte, 1835	1998	Boat-seining	Rhodes	20-50	1
<i>Dipturus oxyrinchus</i> (Linnaeus, 1758)	2004	Longline	Rhodes	300-400	6
<i>Pteromylaeus bovinus</i> (Geoffroy Saint-Hilaire, 1817)	2001	Boat-seining	Rhodes	70	1
<i>Mobula mobular</i> (Bonnaterre, 1788)	1995	Longline	Rhodes	30	1
<b>Bony fish</b>					
<i>Ariosoma balearicum</i> (Delaroche, 1809)	2003	Boat-seining	Rhodes	20-50	1
<i>Hoplostethus mediterraneus</i> Cuvier, 1829	2004	Boat-seining	Rhodes	70	1
<i>Aphia minuta</i> (Risso, 1810)	2004	*	Rhodes		
<i>Parablennius incognitus</i> (Bath, 1968)	2007	Boat-seining	Rhodes	0-25	1
<i>Mola mola</i> (Linnaeus, 1758)	1992		Kalymnos		1
	2005	Boat-seining	Rhodes	50	1
	2008		Karpathos	Surface	1

\*Diet item of *Fistularia commersonii* (see Kalogirou *et al.*, 2007)



FIG. 2. The disposition of teeth of an *Odontaspis ferox* specimen (250 cm TL approximately) from South Rhodes, 16 September 2007 (Photo: author).

the Greek waters, the Aegean Sea included (Economidis, 1973; Papakonstantinou, 1988) and in the Mediterranean and Aegean Turkish waters (Bilecenoglu *et al.*, 2002). The species was recently reported from the central and north Aegean waters and in the Levantine Basin (Fergusson *et al.*, 2008). This finding, which occurs forty years after the previous one, [a female (340 cm TL approximately), caught on 20 June 1968 at Karpathos Island by demersal longline and conserved stuffed in the HSR collection (see Fergus-

son *et al.*, 2008)], could sustain the rare occurrence of the species in the Mediterranean, as assessed by Fergusson (1997) and Serena (2005). *O. ferox* is a species potentially threatened in the Mediterranean (Notarbartolo di Sciara & Bianchi, 1998; Schembri *et al.*, 2003; Cavanagh & Gibson, 2007).

***Dalatias licha* (Bonnaterre, 1788).** One specimen, male, 88 cm TL, was caught on 4 December 2004, by longline, off Lindos Bay, along the eastern coasts of Rhodes, at 550-750 m of depth.

The kitefin shark *D. licha* is a cosmopolitan bathydemersal species, common in the central and western Mediterranean (Fischer *et al.*, 1987; Froese & Pauly, 2008), while it is considered a rare deep-sea shark in the eastern part of this basin (Golani *et al.*, 2006a). It was reported from the Mediterranean coasts of Israel (Golani, 2004) and Turkey (Bilecenoglu *et al.*, 2002), from the northeastern Aegean Sea (Kabasakal & Kabasakal, 2002) and generally from the Aegean and Ionian seas (Mytilineou *et al.*, 2005; Peristeraki & Megalofonou, 2007); its presence was recently documented in the Turkish waters, in front of Rhodes Island (Özik & Yilmaz, 2006). It is listed among the vulnerable species in Hellas (Thessalou-Legaki & Legakis, 2005).

***Rhinobatos cemiculus* Geoffroy Saint-Hilaire, 1817.** One specimen, caught in 1995 by fishing net, at Fali-

raki, along the northeastern coasts of Rhodes, at 40 m of depth, was hosted in the Aquarium of the HSR, but lost before measurements.

The blackchin guitarfish is a subtropical demersal species distributed along the eastern Atlantic, the western and eastern Mediterranean, including the Aegean waters of Greece and Turkey (Whitehead *et al.*, 1984-1986; Fischer *et al.*, 1987; Papakonstantinou, 1988; Bilecenoglu *et al.*, 2002; Golani *et al.*, 2006a). *R. cemiculus* is relatively rare and probably at a high risk of threat in the Mediterranean (Serena, 2005; Notarbartolo di Sciara *et al.*, 2007a).

***Rhinobatos rhinobatos* (Linnaeus, 1758).** One specimen female, 175 cm TL, 30 Kg approximately, was caught on 6 February 2008, by longline, in the area of Kamiros, northwestern coast of Rhodes, at 40 m of depth.

The common guitarfish *R. rhinobatos* is a subtropical demersal inhabitant of the eastern Atlantic and Mediterranean coasts (Fischer *et al.*, 1987; Papakonstantinou, 1988; Golani *et al.*, 2006a). It is probably rare in the area under study, as in the whole Mediterranean (Notarbartolo di Sciara & Bianchi, 1998), even if, besides the recent capture, another specimen was caught in the region of Rhodes during the '70s, and it is conserved stuffed in the HSR collection (133 cm TL approximately). It is a threatened species, according to the 2008 IUCN Red List (Notarbartolo di Sciara *et al.*, 2007b).

***Gymnura altavela* (Linnaeus, 1758).** One specimen, female (31 cm TL, 47 cm disc width, 24.5 cm disc length) was captured on 1999, by boat-seining, at Trianda Bay, northwestern coasts of Rhodes, at 60 m of depth.

*G. altavela* is a subtropical benthic species that occurs along the eastern and western coasts of the Atlantic and also in the Mediterranean (Fischer *et al.*, 1987; Golani *et al.*, 2006a; Froese & Pauly, 2008). It is not infrequently caught by trawlings in the North Aegean Sea (Basusta *et al.*, 2002; Filiz & Bilge, 2004; Doganyilmaz Ozbilgin *et al.*, 2006) and in the northeastern Mediterranean, Cilician Basin (Yeldan & Avsar, 2006), while it is rare in the Italian waters (Pso-madakis *et al.*, 2006). The spiny butterfly ray is considered a threatened species in the 2008 IUCN Red List (Vooren *et al.*, 2007).

### Bony fish

***Sudis hyalina* Rafinesque, 1810.** One specimen (37.7 cm TL), was caught on 14 December 2004, by

longline, at Prasonisi, southern coasts of Rhodes, at 700 m of depth.

The barracudina *S. hyalina* is a mesopelagic to bathypelagic fish, that occurs in the Atlantic and is considered as a rare deep water species in the western and eastern Mediterranean Sea (Fischer *et al.*, 1987; Bilecenoglu *et al.*, 2002; Golani *et al.*, 2006a). The first record of the species in the Hellenic Aegean waters was reported by Papaconstantinou (1990a).

***Nemichthys scolopaceus* Richardson, 1848.** One specimen (120.4 cm TL) (Fig. 3), was captured between the islands of Saria (Karpathos) and Rhodes on 13 September 2002, by longline, at 640 m of depth.

The bathypelagic species *N. scolopaceus* is worldwide distributed in tropical and temperate seas, known also in the western Mediterranean (Nielsen, 1986; Froese & Pauly, 2008). The first occurrence of *N. scolopaceus* in the Eastern Mediterranean has been recently signalled by Bilecenoglu *et al.* (2006), based on a specimen collected in the Turkish waters, north to Rhodes Island. The slender snipe eel has been also recorded in the Greek part of the Ionian Sea (Mytilineou *et al.*, 2005) and the Mediterranean coasts of Turkey, at Antalya Bay (Gökoglu *et al.*, 2008).

***Chlopsis bicolor* Rafinesque, 1810.** One specimen (27 cm TL) was collected along the coasts of the island of Symi in 2004.

The bicoloured false moray *C. bicolor* is a subtropical demersal species which occurs in the western and



FIG. 3. *Nemichthys scolopaceus* (120.4 cm TL) from Saria Island, 13 September 2002 (Photo: G. Kondylatos).





FIG. 4. *Apterichthys anguiformis* (22.5 cm TL) from NW Rhodes, December 2004 (Photo: G. Kondylatos).

eastern Atlantic and western Mediterranean (Froese & Pauly, 2008). It is present also in the eastern Mediterranean (Golani, 1996; Kaya & Bilecenoglu, 2000; Golani *et al.*, 2006a), while, concerning the Hellenic waters, it was reported in the western Aegean Sea (Saldanha, 1986) and in the Ionian Sea (Papaconstantinou, 1990a). Although listed for the Dodecanese region in Zachariou-Mamalinga (1990, 2000), it is a species not commonly encountered in the area.

***Apterichthys anguiformis* (Peters, 1877).** One specimen (22.5 cm TL) (Fig. 4), was caught on December 2004, by boat-seining, in Trianda Gulf, north-western coast of Rhodes, at 20-50 m of depth.

***Apterichthys caecus* (Linnaeus, 1758).** Two specimens (54.3 cm TL and 39.8 cm TL) were caught respectively on October 2003 and November 2006, by boat-seining, in Trianda Gulf, northwestern coast of Rhodes, between 20 and 50 m of depth.

The slender finless eel *A. anguiformis* and the European finless eel *A. caecus* are subtropical demersal species known from the eastern Atlantic and the western and eastern Mediterranean (Fischer *et al.*, 1987; Golani *et al.*, 2006a). *A. caecus* has recently been reported for the first time in the Mediterranean Turkish waters, from Antalya, by Fricke *et al.* (2007) and successively by Gökoglu *et al.* (2008). Both species result unrecorded before in the Greek waters of the Aegean Sea (cfr. Economidis, 1973; Papakonstantinou, 1988), while *A. anguiformis* occurs in the Ionian Sea (Papaconstantinou, 1990a).

***Regalecus glesne* Ascanius, 1772.** One specimen, 194 cm TL, was captured on 14 August 1993, by boat-seining, off Gennadi, southeastern coasts of Rhodes, at 50 m of depth. *R. glesne* is a pelagic fish, found from surface to 1000 m of depth, cosmopolitan in all tropical and subtropical seas (Froese & Pauly, 2008). The King of herrings is a rare species in the Mediterranean (Palmer, 1986a; Fischer *et al.*, 1987), including the Aegean Sea (cfr. Papakonstantinou, 1988; Papaconstantinou, 1990a; Bilecenoglu *et al.*, 2002), while no

records are reported from the Levant (Golani *et al.*, 2006a).

***Diplodus cervinus cervinus* (Lowe, 1841).** One specimen, 26.8 cm TL, was caught on August 2003, by boat-seining along the coasts of the island of Tilos.

The zebra seabream is a subtropical fish of the eastern Atlantic and Mediterranean (Froese & Pauly, 2008). Although it inhabits the Aegean waters (Whithead *et al.*, 1984-86; Fischer *et al.*, 1987) and it is generally discarded in Greek fishery (Machias *et al.*, 2001; Vassilopoulou *et al.*, 2007), its occurrence is not common in the Dodecanese area.

***Brama brama* (Bonnaterre, 1788).** Four specimens were captured by longlines: one specimen (47 cm TL, 1.2 Kg) caught on 16 May 2005, at Examili-Lindos, eastern coast of Rhodes, at 400-500 m of depth, one specimen (70 cm TL, 4.5 Kg) caught on 19 October 2007, at Nisyros Island, at 350 m of depth, another one (3.5 Kg), collected on 8 December 2007, at Kalymnos Island. The last specimen (46.5 cm TL, 1 Kg) was captured on 5 February 2009 off Faliraki Gulf, north-eastern coasts of Rhodes, at 350 m of depth.

*B. brama*, an oceanic and epipelagic migrating fish that descends down to 400 m, is a cosmopolitan species distributed in the Atlantic, Indian and South Pacific oceans (Golani *et al.*, 2006a). It inhabits the western and central Mediterranean Sea and the Aegean Sea as well (Economidis & Bauchot, 1976; Fischer *et al.*, 1987; Siapatis & Somarakis, 2007), while it is considered rare in the eastern Mediterranean (Golani *et al.*, 2006a).

***Lampris guttatus* (Brünnich, 1788).** One specimen (105 cm TL, 45 Kg) was captured on 28 March 2008, by longline, three miles off Pigadi, Karpathos Island, at surface.

The opah *L. guttatus* is an epipelagic and mesopelagic species, worldwide distributed in tropical to temperate waters (Froese & Pauly, 2008). Concerning the Mediterranean, it is an uncommon fish, more frequent in the western part of the basin (Palmer, 1986b; Fisher *et al.*, 1987), where recent records have been added (Psomadakis *et al.*, 2006), while it is not listed for the eastern Mediterranean (cfr. Golani *et al.*, 2006a). *L. guttatus* is rare in the Greek seas (Belloc, 1948; Ondrias, 1971; Economidis, 1973; Palmer, 1986b; Papakonstantinou, 1988), where its first well-documented record from Chalkidiki, North Aegean Sea, is deeply discussed in Sinis (2004).

***Luvarus imperialis* Rafinesque, 1810.** One specimen, 180 cm TL, 120 Kg, was caught on 11 September 2001, by longline at Kavourakia, northeastern coasts

of Rhodes, at 92 m of depth.

It is an oceanic and epipelagic species, in the temperate and tropical waters of the Atlantic, Indian and Pacific oceans; it occurs also in the western Mediterranean, while it is rare in the eastern Mediterranean (Whitehead *et al.*, 1984-86; Fischer *et al.*, 1987; Froese and Pauly, 2008) and absent from the Levant (Golani *et al.*, 2006a). The luvax is listed in the Aegean Turkish waters (Bilecenoglu *et al.*, 2002), while in the Hellenic waters it has been reported only from the northern and southern coasts of the island of Crete (cfr. Economidis, 1973; Papakonstantinou, 1988) and from the Patraikos Gulf, Ionian Sea (Kaspiris & Ondrias, 1984).

## DISCUSSION

Due to the temperate climate and the temperature ranges of the Greek marine coastal environment, the Hellenic ichthyofauna considered in its whole, is typically temperate (Papaconstantinou *et al.*, 2007), showing a higher percentage of thermophilic species in the warmer South Aegean Sea, including the Dodecanese continental shelf, as compared with the North Aegean Sea (Tortonese, 1947; Papakonstantinou, 1988; Labropoulou, 2007). In particular, the coastal zone of the Dodecanese continental shelf, especially around Rhodes, is characterized by a subtropical open-sea environment and it is influenced essentially by the neighboring Levantine basin, since it is embraced by the warm Asia Minor Current through the strait of Rhodes in the north and the straits of Kassos and Karpathos in the south (Pancucci-Papadopoulou *et al.*, 1999). It offers consequently suitable environmental conditions for the establishment of thermophilous organisms.

The marine ichthyofauna in this region is not well-known yet, although more than 300 species have been listed (Maldura, 1938; Tortonese, 1947; Belloc, 1948; Ondrias, 1971; Economidis, 1973; Whitehead *et al.*, 1984-1986; Fischer *et al.*, 1987; Papakonstantinou, 1988; Papaconstantinou, 1990b; Zachariou-Mamalinga, 1990, 2000; Papaconstantinou *et al.*, 1998; Corsini-Foka & Economidis 2007; Corsini & Zava, 2007; Corsini-Foka & Kalogirou, 2008; Corsini-Foka & Sioulas, 2009).

Even though the marine region considered is limited, the documented presence of uncommon fish described from Rhodes and the nearby islands enlarges the knowledge on the diversity of the fish community in the area, and may be furthermore useful to fill a

lack of information on their distribution in the Hellenic waters located at the limits between the Aegean and Levantine seas.

The major part of the fish considered in this work were subtropical species of Atlanto-Mediterranean character, while *O. ferox*, *D. licha*, *N. scolopaceus*, *R. glesne*, *B. brama*, *L. guttatus*, *L. imperialis*, *H. mediterraneus* and *M. mola* were cosmopolitan (Froese & Pauly, 2008). Four uncommon fish, namely *D. licha*, *S. hyalina*, *N. scolopaceus* and *B. brama*, and two others, more common, like *G. melastomus* and *D. oxyrinchus* (see Table 1), were deep-water species, all caught by longlines, while the remaining were captured at depths up to 90 m, or at surface, like *L. guttatus* and one specimen of *M. mola*, using various methods (boat-seining, trawling and longline).

Considering the Hellenic ichthyofauna in its whole, the records of *N. scolopaceus*, *A. anguiformis* and *A. caecus* from the Dodecanese waters here documented, are new for the Aegean Sea; it is interesting to note the closeness in time and place of the new records of *N. scolopaceus* and *A. caecus* both in the Turkish and Hellenic waters. The species *S. hyalina*, *L. imperialis* and *L. guttatus* are recorded in the Greek Aegean waters for the second time: the previous records of the first two species date many years back, while the occurrence of the opah was ascertained only a few years ago (Sinis, 2004). Five of the remaining uncommon fish species, *D. licha*, *R. cemiculus*, *G. altavela*, *R. glesne* and *B. brama*, represent new records for the Hellenic waters of the southeastern Aegean Sea while the report of other species, like *C. bicolor* and *D. cervinus cervinus*, ascertain their occurrence in the area (cfr. Economidis, 1973; Papakonstantinou, 1988; Papaconstantinou *et al.*, 1998; Zachariou-Mamalinga, 1990, 2000). The finding of *R. glesne* in the Rhodes waters remains the unique one until today in the area, confirming the rarity of the species. Furthermore, remarkable are the four recent and consecutive findings of *B. brama* in three different islands of the Dodecanese, because they may indicate a sort of “population explosion” in the area, similar to that described for the north-east Atlantic in Golani *et al.* (2006a).

Some other recent findings, in particular those of *O. ferox* and *R. rhinabatos*, confirm the existence of these rarely encountered species, many years after previous local captures.

Although the species *G. melastomus*, *O. centrina*, *D. oxyrinchus* and *M. mola* are widely distributed in the whole Mediterranean (Whitehead *et al.*, 1984-86;

Fischer *et al.*, 1987; Golani *et al.*, 2006a), the Aegean Sea included (Papakonstantinou, 1988; Papaconstantinou *et al.*, 1998; Bilecenoglu *et al.*, 2002; Peristeraki & Megalofonou, 2007), the various records reported, indicate that these species could also be considered usual inhabitants of the Dodecanese waters, less uncommon than it was generally assumed at local level.

Moreover, the species *H. mediterraneus*, *A. minuta* and *P. incognitus*, common in the Greek seas, are listed for the first time at local level (Rhodes) (cfr. Economidis, 1973; Economidis & Bauchot, 1976; Papaconstantinou & Tsimenidis, 1979; Fischer *et al.*, 1987; Papakonstantinou, 1988; Papaconstantinou *et al.*, 1998), while *A. balearicum* was recorded long time ago in the same island by Tortonese (1947).

The report on the occurrence of various cartilaginous fish, like *O. ferox*, *O. centrina*, *D. licha*, *R. cemiculus*, *R. rhinobatos*, *G. altavela*, *T. nobiliana*, *D. oxyrinchus*, *P. bovinus* and *M. mobular*, may furthermore provide a contribution to the monitoring of threatened elasmobranch species in the Greek seas and the Mediterranean Sea as well (Thessalou-Legaki & Legakis, 2005; Notarbartolo di Sciara & Bianchi, 1998; Serena, 2005).

Due to the recent dynamic changes and distribution extension of many species in the Mediterranean, some findings described in this work may be useful for future comparisons on the distribution and abundance of these species.

Finally, the new findings demonstrate the existence of previously unexplored niches, which are visited and exploited in the last years through modern trawling vessels and more extensive fishing efforts (Papakonstantinou, 1988; Kaya & Bilecenoglu, 2000; Bilecenoglu *et al.*, 2006).

#### ACKNOWLEDGEMENTS

The author is grateful to the Port Authority of the Dodecanese and to Mrs. M. Fotaki, Fishery Department of the Dodecanese Regional Government, for collaboration. She also wishes to thank the captains M. Mastromichalis and T. Karaosman and the fishermen Kostantinos, Roland (named “Captain Cousteau”), N. Kambanis, V. Mandikos, H. Kazilieris, I. Tsavolakis, D. Kazilieris who provided specimens. A special thank goes also to the following persons: G. Kondylatos, G. Karagiannis, E. Zachariou-Mamalinga, P. Maries, V. Seitis and E. Christodoulou for providing further samples and documentation. Finally, the author wishes to acknowledge two anonymous re-

viewers who offered useful and constructive suggestions for improving the final manuscript.

#### REFERENCES

- Basusta N, Kumlu M, Gökçe MA, Göçer M, 2002. Seasonal change and productivity index of species trawled in Yumurtalik Bay. *Ege university journal of fisheries and aquatic sciences*, 19: 29–34.
- Bauchot ML, 1986. Ophichthidae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol. 2*. UNESCO, Paris: 577-585.
- Bauchot ML, Saldanha L, 1986. Congridae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol. 2*. UNESCO, Paris: 567-574.
- Belloc G, 1948. *Inventory of the Fishery Resources of Greek waters*. Washington, D.C., Fisheries Division, FAO: 1-135.
- Bilecenoglu M, Taskavak E, Mater S, Kaya M, 2002. Checklist of the marine fishes of Turkey. *Zootaxa*, 113: 1-194.
- Bilecenoglu M, Kaya M, Irmak E, 2006. First record of the slender snipe eel, *Nemichthys scolopaceus* (Nemichthyidae), and the robust cusk-eel, *Benthocometes robustus* (Ophidiidae), from the Aegean Sea. *Acta ichthyologica et piscatoria*, 36: 85-88.
- Cavanagh RD, Gibson C, 2007. *Overview of the Conservation Status of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea*. IUCN, Gland, Switzerland and Malaga, Spain.
- Corsini M, Zava B, 2007. Recent capture of *Squatina oculata* and *Squatina aculeata* from Dodecanese Islands (SE Aegean sea, Eastern Mediterranean). *Biologia marina mediterranea*, 14: 352-353.
- Corsini-Foka M, Economidis PS, 2007. Allochthonous and vagrant ichthyofauna in Hellenic marine and estuarine waters. *Mediterranean marine science*, 8: 67-89.
- Corsini-Foka M, Kalogirou S, 2008. On the finding of the Indo-Pacific fish *Scomberomorus commerson* in Rhodes (Greece). *Mediterranean marine science*, 9:167-171.
- Corsini-Foka M, Sioulas A, 2009. On two old specimens of *Alopias superciliosus* (Chondrichthyes: Alopiidae) from the Aegean waters. *JMBA2 Biodiversity records*, 6422.
- Doğanyılmaz Özbilgin Y, Tosunoğlu Z, Özbilgin H, 2006. By-catch in a 40 mm PE demersal trawl codend. *Turkish journal of veterinary and animal sciences*, 30: 179-185.
- Economidis PS, 1973. Catalogue des poissons de la Grèce. *Hellenic oceanology and limnology*, 11: 421-598.
- Economidis PS, Bauchot ML, 1976. Sur une collection de



- poissons des mers helléniques (mers Egée et Ionienne) déposée au Muséum National d'Histoire Naturelle. *Bulletin du muséum national d'histoire naturelle, Paris, 3e sér., n° 392, Zoologie*, 274: 871-903.
- ELNAIS. Ellenic Network on Aquatic Invasive Species: <http://www.elnais.ath.hcmr.gr>
- Fergusson IK, 1997. Shark gallery. Shark species of the Mediterranean. <http://sharks-med.netfirms.com/med/smallst.htm>
- Fergusson IK, Graham KJ, Compagno LJV, 2008. Distribution, abundance and biology of the smalltooth sandtiger shark *Odontaspis ferox* (Risso, 1810) (Lamniiformes: Odontaspidae). *Environmental biology of fishes*, 81: 207-228.
- Filiz H, Bilge G, 2004. Length-weight relationships of 24 fish species from the North Aegean Sea, Turkey. *Journal of applied ichthyology*, 20: 431-432.
- Fischer W, Bauchot ML, Schneider M, 1987. *Fiches FAO d'identification des espèces pour les besoins de la pêche. (Révision 1). Méditerranée et Mer Noire. Zone de pêche 37*. FAO, Rome.
- Fricke R, Bilecenoglu M, Sari HM, 2007. Annotated checklist of fishes and lamprey species (Gnathostomata and Petomyzontomorphi) of Turkey, including a Red List of threatened and declining species. *Stuttgarter Beiträge zur Naturkunde, series A*, 706: 1-169.
- Froese R, Pauly D, 2008. FishBase. World Wide Web electronic publication: [www.fishbase.org](http://www.fishbase.org).
- Golani D, 1996. The Marine Ichthyofauna of the Eastern Levant – History, inventory and characterization. *Israel journal of zoology*, 42: 15-55.
- Golani D, 2004. Checklist of the Mediterranean Fishes of Israel. *Zootaxa*, 947: 1-90.
- Golani D, Orsi-Relini L, Massutí E, Quignard JP, 2002. *CIESM Atlas of exotic species in the Mediterranean. Fishes*. CIESM Publishers, Monaco.
- Golani D, Öztürk B, Basusta N, 2006a. *Fishes of the eastern Mediterranean*. Turkish Marine Research Foundation, Istanbul.
- Golani D, Orsi-Relini L, Massutí E, Quignard JP, 2006b. CIESM Atlas of Exotic fishes in the Mediterranean: <http://www.ciesm.org/atlas/>.
- Gökoglu M, Güven O, Balci BA, Çolak H, Golani D, 2008. First record of *Nemichthys scolopaceus* and *Nemipterus randalli* and second record of *Apterichthys caecus* from Antalya Bay, Southern Turkey. *JMBA2 Biodiversity records*, 6234.
- Kabasakal H, Kabasakal E, 2002. Morphometrics of young kitefin sharks, *Dalatias licha* (Bonnaterre, 1788), from the northeastern Aegean Sea, with notes on its biology. *Annales (Annals for istran and mediterranean studies), Series historia naturalis*, 12: 161-166.
- Kalogirou S, Corsini M, Kondilatos G, Wennhage H, 2007. Diet of the invasive piscivorous fish *Fistularia commersonii* in a recently colonized area of the eastern Mediterranean. *Biological invasions*, 9: 887-896.
- Kaspiris P, Ondrias J, 1984. Some rare fishes from the Greek sea waters. *Bilješke-Notes, Institute of oceanography and fisheries, Split*, 61: 1-4.
- Kaya M, Bilecenoglu M, 2000. New records of deep-sea fish in Turkish Seas and the Eastern Mediterranean. *Journal of ichthyology*, 40: 543-547.
- Labropoulou M, 2007. Fish community structure and diversity of demersal species. In: Papaconstantinou C, Zenetos A, Vassilopoulou V, Tserpes G, eds. *State of Hellenic Fisheries (SoHelFi)*. HCMR publications, Athens, 35-42.
- Machias A, Vassilopoulou V, Vatsos D, Bekas P, Kallianiotis A, Papaconstantinou C, Tsimenides N, 2001. Bottom trawl discards in the northeastern mediterranean Sea. *Fisheries research*, 53: 181-195.
- Maldura CM, 1938. La pesca nelle Isole Italiane dell'Egeo. *Bollettino di pesca, piscicoltura e idrobiologia*, 4: 1-24.
- Maul GE, 1986. Trachichthyidae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol.2*. UNESCO, Paris: 749-752.
- Megalofonou P, Damalas D, Yannopoulos C, 2005. Composition and abundance of pelagic shark by-catch in the eastern Mediterranean Sea. *Cybium*, 29: 135-140.
- Mytilineou C, Politou CY, Papaconstantinou C, Kavadas S, D'Onghia G, Sion L, 2005. Deep-water fish fauna in the Eastern Ionian Sea. *Belgian journal of zoology*, 135: 229-233.
- Nielsen JG, 1986. Nemichthyidae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol. 2*. UNESCO, Paris: 551-554.
- Notarbartolo di Sciarra G, Bianchi I, 1998. *Guida degli squalli e delle razze del Mediterraneo*. Muzio Editore, Padova.
- Notarbartolo di Sciarra G, Bradai MN, Morey G, Ibrahim K, Camara L, Litvinov F, Dulvy N, Doumbouya F, Ducrocq M, Heenan A, Sidi N, 2007a. *Rhinobatos cemiculus*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species: [www.iucnredlist.org](http://www.iucnredlist.org).
- Notarbartolo di Sciarra G, Bradai MN, Morey G, Marshall AD, Compagno LJV, Mouni A, Hicham M, Bucal D, Dulvy N, Heenan A, Rui Coelho, 2007b. *Rhinobatos rhinobatos*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. [www.iucnredlist.org](http://www.iucnredlist.org)
- Ondrias JC, 1971. A list of the fresh and sea water fishes of Greece. *Hellenic oceanology and limnology*, 10: 23-96.
- Öztik F, Yilmaz F, 2006. An investigation of demersal fishes of Gökova Bay in Aegean Sea. *Ekoloji*, 58: 16-20.
- Palmer G, 1986a. Regalecidae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol. 2*. UNESCO, Paris: 727-728.
- Palmer G, 1986b. Lamprididae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds.



- Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol.2.* UNESCO, Paris: 725-726.
- Pancucci-Papadopoulou MA, Simboura A, Zenetos A, Thessalou-Legaki M, Nicolaidou A, 1999. Benthic invertebrate communities of NW Rodos (Rhodes) Island (SE Aegean Sea) as related to hydrological regime and geographical location. *Israel journal of zoology*, 45: 371-393.
- Papaconstantinou C, 1990a. Some rare mesopelagic and bathyal fish caught in the Greek seas. *Thalassographica*, 13: 35-39.
- Papaconstantinou C, 1990b. The spreading of Lessepsian fish migrant into the Aegean Sea (Greece). *Scientia marina*, 54: 313-316.
- Papakonstantinou K, 1988. *Check-List of Marine Fishes of Greece. FAUNA GRAECLIAE IV.* National Center for Marine Research, Hellenic Zoological Society, Athens.
- Papaconstantinou C, Tsimenidis N, 1979. Some uncommon fishes from the Aegean Sea. *Cybium*, 7: 3-14.
- Papaconstantinou C, Anastassopoulou K, Caragitsou E, 1997. Comments on the mesopelagic fauna of the North Aegean Sea. *Cybium*, 21: 281-288.
- Papaconstantinou C, Petrakis G, Caragitsou E, La-bropoulou M, Karakani M, Vassilopoulou V, Mytilineou Ch, Lefkaditou E, Siapatis A, Kavadas S, Chatzinikolaou P, Anastassopoulou A, Kpiris K, Terrats A, Dogrammatzi A, Bekas P, Christidis G, Fourtouni A, 1998. Development of the Greek fisheries-Assessment of the demersal fisheries resources of commercial interest in the South Aegean Sea. Technical Report, National Center for Marine Research, Athens.
- Papaconstantinou C, Zenetos A, Vassilopoulou V, Tserpes G, 2007. *State of Hellenic Fisheries, SoHelFi.* HCMR publications, Athens.
- Papathanassiou E, Zenetos A, 2005. *State of the Hellenic Marine Environment, SoHelME.* HCMR Publications, Athens.
- Peristeraki P, Megalofonou P, 2007. Sharks and rays. In: Papaconstantinou C, Zenetos A, Vassilopoulou V, Tserpes G, eds. *State of Hellenic Fisheries (SoHelFi).* HCMR Publications, Athens: 433- 439.
- Psomadakis PN, Scacco U, Vacchi M, 2006. Recent findings of some uncommon fishes from the central Tyrrhenian Sea. *Cybium*, 30: 297-304.
- Quèro JC, 1984. Odontaspidae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol.1.* UNESCO, Paris: 78-81.
- Quignard JP, Tomasini JA, 2000. Mediterranean fish biodiversity. *Biologia marina mediterranea*, 7: 1-66.
- Saldanha L, 1986. Xencongridae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol. 2.* UNESCO, Paris: 555-556.
- Schembri T, Fergusson IK, Schembri PJ, 2003. Revision of the records of sharks and ray species from the Maltese Islands (Chordata: Chondrichthyes). *The central mediterranean naturalist*, 4: 71-104.
- Serena F, 2005. *Field identification guide to the sharks and rays of the Mediterranean and Black Sea. FAO Species Identification Guide for Fishery Purposes.* FAO, Rome.
- Siapatis A, Somarakis S, 2007. Early life history of fish. In: Papaconstantinou C, Zenetos A, Vassilopoulou V, Tserpes G, eds. *State of Hellenic Fisheries (SoHelFi).* HCMR Publications, Athens: 54-61.
- Sinis AI, 2004. First documented record of *Lampris guttatus* (Brünnich, 1788) opah, in Greek seas. *Journal of biological research-Thessaloniki*, 2: 101-104.
- Sinis AI, Koukouras AS, 1995. New information on the Aegean Sea ichthyofauna. *Cybium*, 19: 421-424.
- Thessalou-Legaki M, Legakis A, 2005. Conservation of the Hellenic marine biodiversity. In: Papathanassiou E, Zenetos A, eds. *State of the Hellenic Marine Environment (SoHelME),* HCMR publications, Athens: 285-294.
- Tortonese E, 1947. Ricerche zoologiche nell'isola di Rodi (Mar Egeo). *Pesci. Bollettino di pesca piscicoltura e idrobiologia*, 23: 143-192.
- Vassilopoulou V, Machias A, Tsagarakis K, 2007. By-catch and discards in multi-species fisheries and their impact in the Hellenic waters. In: Papaconstantinou C, Zenetos A, Vassilopoulou V, Tserpes G, eds. *State of Hellenic Fisheries (SoHelFi).* HCMR Publications, Athens: 251-260.
- Vooren CM, Piercy AN, Snelson Jr FS, Grubbs RD, Notarbartolo di Sciarra G, Serena S, 2007. *Gymnura altavela.* In: IUCN 2008. 2008 IUCN Red List of Threatened Species: [www.iucnredlist.org](http://www.iucnredlist.org)
- Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, 1984-1986. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM). Vol. 1, 2, 3.* UNESCO, Paris.
- Yeldan H, Avsar D, 2006. Length-weight relationship for five elasmobranch species from the Cilician Basin shelf waters (Northeastern Mediterranean). *Journal of applied ichthyology*, 23: 713-714.
- Zachariou-Mamalinga E, 1990. The fishes of Symi, Dodecanese. *Annales musei goulandris*, 8: 309-416.
- Zachariou-Mamalinga E, 2000. *The fishes of Symi, Rhodes, Dodecanese. Rhodes.* International Center of Mediterranean Studies, Rhodes, Greece. (In Greek)
- Zander CD, 1986. Blennidae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E, eds. *Fishes of the North-Eastern Atlantic and the Mediterranean (FNAM) Vol.3.* UNESCO, Paris: 1096-1112.