

STATUS OF ANGELSHARK, *SQUATINA SQUATINA* (ELASMOBRANCHII:
SQUATINIFORMES: SQUATINIDAE) IN THE SEA OF MARMARA*Hakan KABASAKAL & Özgür KABASAKAL*Ichthyological Research Society, Tantavi Mahallesi, Montesoglu Caddesi, Idil Apt., No: 30, D: 4, Umraniye, TR-34764 Istanbul, Turkey
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ABSTRACT

On 4 January 2014, a female specimen of *Squatina squatina* was entangled in trammel-net, at a depth of about 50 m. The specimen was 174 cm long (total length) and weighed approximately 35 kg. The recent single capture of *S. squatina* in the southeastern Sea of Marmara confirms the contemporary presence of the species in this land-locked small marine region; however, the paucity of the species in the fishing records of Marmaric fishes since 2000, confirms its rarity in the studied marine area.

Keywords: Angelshark, *Squatina squatina*, Sea of Marmara, status, endangered, protection

STATO DELL'ANGELO DI MARE, *SQUATINA SQUATINA* (ELASMOBRANCHII:
SQUATINIFORMES: SQUATINIDAE), NEL MARE DI MARMARA

SINTESI

Il 4 gennaio 2014, una femmina di *Squatina squatina* è rimasta impigliata in una rete tramaglio, ad una profondità di circa 50 metri. La lunghezza totale dell'esemplare era pari a 174 cm per circa 35 kg di peso. La recente singola cattura di *S. squatina* nella parte sud-orientale del mare di Marmara conferma la presenza temporanea della specie in questa piccola semichiusa regione marina. Tuttavia, la scarsità di segnalazioni della specie nei registri di cattura della fauna ittica del mare di Marmara dal 2000, conferma la sua rarità nell'area marina studiata.

Parole chiave: angelo di mare, *Squatina squatina*, mare di Marmara, stato, specie in via di estinzione, protezione

INTRODUCTION

The angelshark, *Squatina squatina* (Linnaeus, 1758) is a temperate-water bottom-dwelling shark of the European and North African continental shelves, present on or near the bottom from the close inshore, littoral zone to at least 150 m depth (Ebert & Stehmann, 2013). Its distribution range extends from North Eastern and Central Eastern Atlantic coasts to the entire Mediterranean and Black Seas (Serena, 2005; Ebert & Stehmann, 2013). Presence of *S. squatina* has been well documented both in historical (Ninni, 1923; Devociyan, 1926; Rhasis Erazi, 1942) and contemporary records (Akşiray, 1987; Kabasakal, 2002, 2003; Kabasakal & Kabasakal, 2004); however, in a recent ichthyological survey of Turkey, *S. squatina* is considered as a severely declined shark in Turkey's seas (Fricke *et al.*, 2007).

Although the occurrence of *S. squatina* in the Sea of Marmara is well-documented in historical records and in the ichthyological inventories of the last quarter of the 20th century, the paucity of the species in the fishing records since 2000 necessitates an update of its status in Marmaric waters. With this aim, in the present article, authors report a recent catch of *S. squatina* in the Sea of Marmara, which confirms the contemporary occurrence of the species in marmaric waters.

MATERIAL AND METHODS

Since 2000, *S. squatina* has been studied by members of the Ichthyological Research Society (IRS), as part

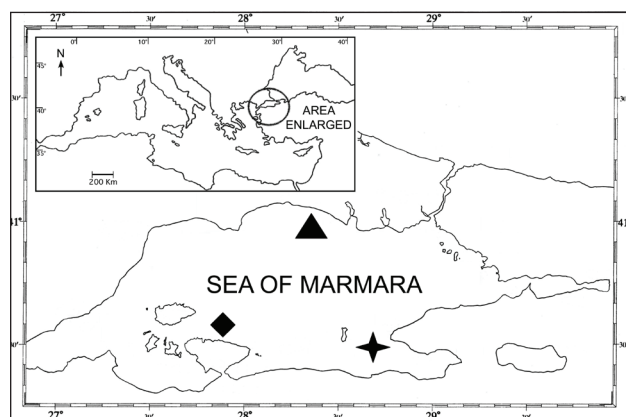


Fig. 1: Map showing positions in the Sea of Marmara where *S. squatina* specimens were caught: present specimen caught on 4 January, 2014 (✦), the female caught in November 1995 (◆) and the specimen of *Squatina* spp. harpooned in 1950's (▲).

Sl. 1: Zemljevid z označenimi lokalitetami v Marmarskem morju, kjer so bili ujeti navadni sklata (*S. squatina*): obravnavani primerek, ulovljen 4. januarja 2014 (✦), samica, ulovljena v novembru 1995 (◆) in harpunirani primerek sklata v petdesetih letih prejšnjega stoletja (▲).

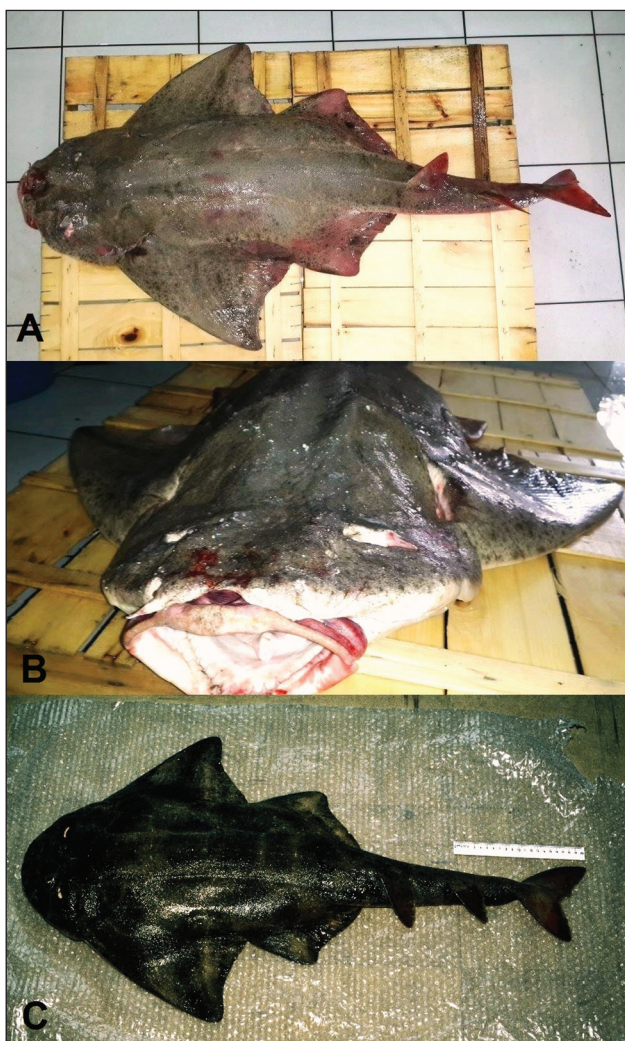
of an extensive survey of sharks occurring in Turkey's seas. The actions of the society have been supported by local fishermen and divers, who have helped researchers in reporting sightings and collection of by-caught specimens. In the framework of this collaboration, the authors were informed on the recent and seldom captures or sightings of *S. squatina* from the several parts of the Sea of Marmara. Identification and nomenclature of the present specimen is based on Serena (2005) and Ebert & Stehmann (2013). Total length (TL) was measured to the nearest 0.5 cm with a measurement tape, and the weight of the specimen was recorded by means of a scale at the fishmarket to the nearest 0.1 kg. Morphological characters of the present angel shark were examined at the fishing port on fresh specimen. Photographs of the examined specimen are kept in the archives of IRS and available for inspection on request.

RESULTS AND DISCUSSION

On 4 January 2014, a female specimen of *S. squatina* was entangled in trammel-nets, at a depth of about 50 m (Fig. 1). The specimen measured 174 cm in total length and weighed approximately 35 kg (Figs. 2A, B). The following characters are based on the present specimen: trunk is broad; origin of first dorsal fin is in line with pelvic fin rear extremity; 35 teeth were counted on the upper jaw and 42 on the lower jaw; simple tips were observed on nasal barbels and anterior nasal flaps are weakly fringed; a single triangular lobe is present on lateral head folds on each side; dorsal surface is very rough due to very sharp, hook-shaped and closely spaced dermal denticles; entire ventral surface is also covered with dermal denticles; patches of small thorns are present on snout and on interorbital space; dorsal surface is uniformly dark greyish brown with small blackish spots scattered on the background coloration, and ventral surface is whitish.

Maximum total length of *S. squatina* can reach up to 250 cm (Serena, 2005), and females are sexually mature at 126 to 167 cm (Ebert & Stehmann, 2013). According to Capapé *et al.* (1990) females of *S. squatina* reaches sexual maturity at 128 cm in the Mediterranean Sea. Based on these facts and the total length of aforementioned female, it can be assumed that it was sexually mature. According to Capapé *et al.* (1990), the duration of the reproductive cycle of species of the genus *Squatina* is probably 2 years. Same authors assumed that in adult females oocyte growth might span also a 2-year period. Capapé *et al.* (1990) also reported a remarkably low fecundity (7 to 18 uterine ova or embryos) for *S. squatina*, based on pregnant females caught off Tunisia's coasts.

Basic data collected following the search of old literature, published documents, interviews with fisherman, as well as personal observations, revealed that *S. squatina* has historically occurred in Turkey's marine waters,



**Fig. 2: Two specimens of *S. squatina* from the Sea of Marmara. (A) Dorsal view of the present female caught on 4 January, 2014, while it was displaying in the fish market; (B) anterior view of the present female; (C) female *S. squatina* caught in November 1995 (TL 87 cm; ◆ in Fig. 1), details of this specimen are given in Kabasakal (2003).
Sl. 2: Primerka navadnega sklata (*S. squatina*) iz Marmarskega morja. (A) Zgornji del samice, ulovljene 4. januarja 2014 in fotografirane na ribji tržnici; (B) sprednji del samice; (C) samica sklata, ujeta novembra 1995 (TL 87 cm; ◆ na sliki 1), podrobnosti o tej samici je podal Kabasakal (2003).**

while a clear decline is obvious in recent decades. First account on the presence of the angelshark in the seas of Turkey was recorded by Ninni (1923; reported as *S. angelus*), in which the species was considered by the author as a common and abundant species of shark in the Sea of Marmara. In addition to Ninni's account, records of *S. squatina* have also been reported by Deveciyan (1926) and Rhasis Erazi (1942). Recently, a single sub-

adult female was caught at a depth of 50 m in southern Sea of Marmara (Kabasakal, 2003; Fig. 2C).

Besides those records, the species has also been recorded along the Aegean and Mediterranean coasts of Turkey. *S. squatina* comprised 1.1 % of total number of elasmobranchs ($n = 4632$) caught in the seas of Turkey during an extensive survey of elasmobranchs carried out between 1995 and 1999 (Kabasakal, 2002). The same species represented 0.46 % of total shark catches ($n = 1068$) recorded during fishery surveys carried out between 1995 and 2004 in the northern Aegean Sea (Kabasakal & Kabasakal, 2004). In a recent survey of the Marmaric fish fauna, Keskin & Eryilmaz (2010) considered *S. squatina* as a rare shark in the Sea of Marmara.

The rarity of *S. squatina* in different parts of the Mediterranean Sea has been highlighted by several authors in recent literature on sharks of this area. According to Lipej *et al.* (2004), *S. squatina*, once common and abundantly caught in the Adriatic Sea, is now considered to be rare throughout the region. A preliminary analysis of MEDITS data shows clear evidence of decline for most sharks and rays, as well as the risk of localised extirpation for some species which in the past were considered common, among which *S. squatina* is comprised (Serena & Relini, 2006). According to Hadjichristophoru (2006), *S. squatina* is an occasional shark in waters off Cyprus. Moreover, *S. squatina* is considered to be a rare shark also off the Mediterranean coast of Israel (Golani, 2006). Baştusta *et al.* (2006) reported that the angelshark is included in the list of main species rarely observed, endangered or protected in the Mediterranean. During a survey of abundances of demersal sharks conducted in Central Mediterranean Sea between 1994 and 2009

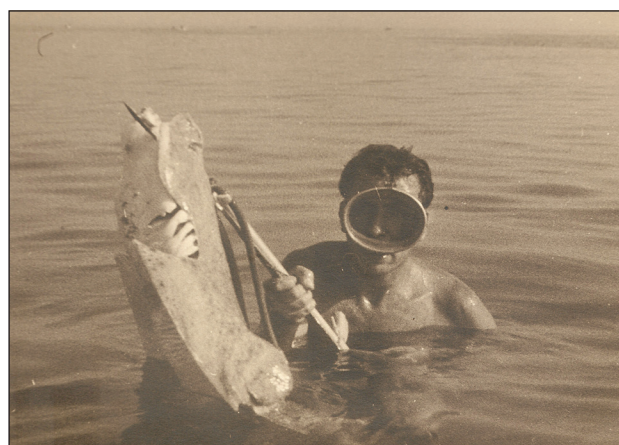


Fig. 3: A large specimen of *Squatina* sp., harpooned by a free-diver off Selimpaşa coast (▲ in Fig. 1), northern Sea of Marmara, in 1950's.

Sl. 3: Velik primerek sklata (*Squatina* sp.), ki ga je harpuniral potapljač na dah v vodah obale Selimpaşa (▲ na sliki 1), v severnem delu Marmarskega morja v petdesetih letih prejšnjega stoletja.

only one specimen of *S. squatina* was caught off Malta's coast in 2005. Ragonese *et al.* (2013) concluded that rarity of the species is now confirmed in that region.

In the monumental work of Deveciyan (1926), the author reported that during the 1920's *S. squatina* was abundantly caught in Turkey's waters, particularly in June and July. Based on historical photographs of the species, now it is known that *Squatina* spp. has also been targeted by spearfishermen in Marmaric waters (Fig. 3). Serena (2005) considered *S. squatina* as a target species for demersal fishery in some parts of the Mediterranean. In addition to Serena's consideration, Bradai *et al.* (2006) reported that *S. squatina* is a regularly observed shark in Gulf of Gabès (Western Mediterranean). Contrary to the above statements, recent reports have pointed out a serious decline of angelshark populations in several parts of the Mediterranean (Lipej *et al.*, 2004; Başusta *et al.*, 2006; Golani, 2006; Hadjichristophoru, 2006; Serena & Relini, 2006; Ragonese *et al.*, 2013); however, this decline does not mean that *S. squatina* was not caught. A similar trend in the decline of *S. squatina* catches has been observed in Bay of Biscay, where the annual catches of the species has been around 25,000 tons in 1850's off Arcachon coast and drastically declined to less than 300 kg in late 1990's (Quéro, 1998).

According to FAO status evaluation for conservation and exploitation status of sharks and rays, *S. squatina* is categorized in B1, which means that it is a directly exploited or caught as bycatch species, that cannot be placed in any of the FAO status categories due to lack of data (Serena, 2005). Same author also stated that *S. squatina* is a vulnerable species in the entire Mediterranean. Regarding the status of the species in the seas of Turkey, *S. squatina* is a critically endangered shark in the aforementioned region, which is considered very sensitive to human activities (Fricke *et al.*, 2007). Due to the severe decline of the species, Fricke *et al.* (2007)

also considered *S. squatina* as a high priority species for conservation action in Turkey's waters.

CONCLUSIONS

The recent single capture of *S. squatina* in the south-eastern Sea of Marmara confirms the contemporary presence of the species in this land-locked small marine region. However, the paucity of the species in the fishing records of Marmaric fishes since 2000, confirms its rarity in the studied marine area. Due to life history parameters of *S. squatina*, such as low fecundity, long reproductive cycle (2 year) and large size at which females at sexual maturity (128 cm, which equals 51.2 % of reported maximum total length, 250 cm), this species is considered as highly vulnerable either to targeted or untargeted fisheries. Although, *S. squatina* is reported to be a high priority species for conservation action (Fricke *et al.*, 2007), currently there are no regulatory measures regarding the fishing of the species implemented in the Turkey fisheries act. Therefore, immediate precautions should be taken for the release of specimens caught alive, such as the adult female of the present study, as a first step for the protection of *S. squatina* in the Sea of Marmara.

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STATUS NAVADNEGA SKLATA (*SQUATINA SQUATINA*) (ELASMOBRANCHII:
SQUATINIFORMES: SQUATINIDAE) V MARMARSKEM MORJU

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POVZETEK

Četrtega januarja 2014 je bila na globini približno 50 m ujeta samica navadnega sklata (*Squatina squatina*) v trislojno stoječo mrežo. Primerek je meril 174 cm v dolžino in tehtal približno 35 kg. Novejši podatek o ujetju sklata v jugovzhodnem delu Marmarskega morja potrjuje prisotnost te vrste v tem majhnem in zaprtem morju. Kakorkoli že, maloštevilnost podatkov v ribiških zapisih kaže, da je vrsta v tem morju redka.

Ključne besede: navadni sklat, *Squatina squatina*, Marmarsko morje, status, ogrožena vrsta, varovanje

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