Turkish Journal of Science & Technology
14(1),37-40, 2019

A Study on the Occurrence of Egg Capsule and Juvenile Individuals of Thornback Skate, *Raja clavata*, Captured from Northeastern Mediterranean Sea

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(Geliş/Received: 11/02/2019; Kabul/Accepted: 18/02/2019)

Abstract: In this study, the egg capsules and juveniles of thornback skate (*Raja clavata* Linnaeus, 1758) were collected as by-catch from a commercial trawl fishing at depths between 220-298 m in the international waters of Northeastern Mediterranean Sea. Juvenile specimens and egg capsule of thornback skate were identified for the first time in this area.

Keywords: *Raja clavata*, thornback skate, egg capsule, juvenile, Northeastern Mediterranean

Kuzeydoğu Akdeniz'den Yakalanan Dikenli Vatoz (*Raja clavata*)'un Yumurta Kapsülleri ve Juvenilleri Görünürlüğü Üzerine bir Çalışma

Özet: Bu çalışmada Kuzeydoğu Akdeniz'in uluslararası sularında yapılan ticari trol avcılığında 220-298 m arası derinlikten dikenli vatoz (*Raja clavata* Linnaeus, 1758) yumurta kapsülleri ve juvenilleri hedef dışı olarak toplanmıştır. Dikenli vatoza ait yumurta kapsülü ve juvenil bireyler bu bölgeden ilk kez tanımlanmıştır.

Anahtar Kelimeler: *Raja clavata*, dikenli vatoz, yumurta kapsülü, juvenil, Kuzeydoğu Akdeniz.

1. Introduction

Thornback skate, *Raja clavata*, is Atlanto-Mediterranean species and distributed from Norway-Iceland to South Africa, extending to Madagascar. Thornback skate is a bottom species that is found on sandy or muddy substrate to depths of 300m. Females of this species lay 150 horny capsule rectangular eggs of 5x8 cm with horn-like extension on each corner [1]. *R. clavata* is common along the Turkish coasts, mainly in the Black Sea. This species is a very important component of demersal fisheries and it is captured by trawl and gillnet particularly as by catch [2]. This species is currently listed under "Near Threatened" on the IUCN Red List of Threatened Species, because there is evidence to indicate the population has declined significantly [3]. *R. clavata* is under protection in Turkish seas. However, little information is still available on its reproduction biology in the North-eastern Mediterranean. This study is to report the existence of egg capsule and juveniles of *R. clavata* captured in the international waters of North-eastern Mediterranean.

2. Materials and Methods

Juveniles and egg capsules of *R. clavata* have been collected as bycatch from commercial trawl fishing at 220-298 m depths in the international waters of North-eastern Mediterranean (between 36º 11'012 N -35º 32'732 E and 36º 03'131 N -35º 39'770 E) (Figure 1.) during the season (15 April-15 July 2015) in which fishing is prohibited in the continental shelf on the 5th of June 2015. Fish samples were transported to the eco-physiology laboratory in Faculty of Fisheries, Firat University and then they were identified, sexed and photographed. Morphometric measurements (total length and disc width) of the juveniles were taken to the nearest 1 mm and the weight of each specimen was measured with a digital scale to the nearest 0.01 g (Figure 2). Juveniles of *R. clavata* were preserved at the Museum of Fisheries Faculty, Firat University.

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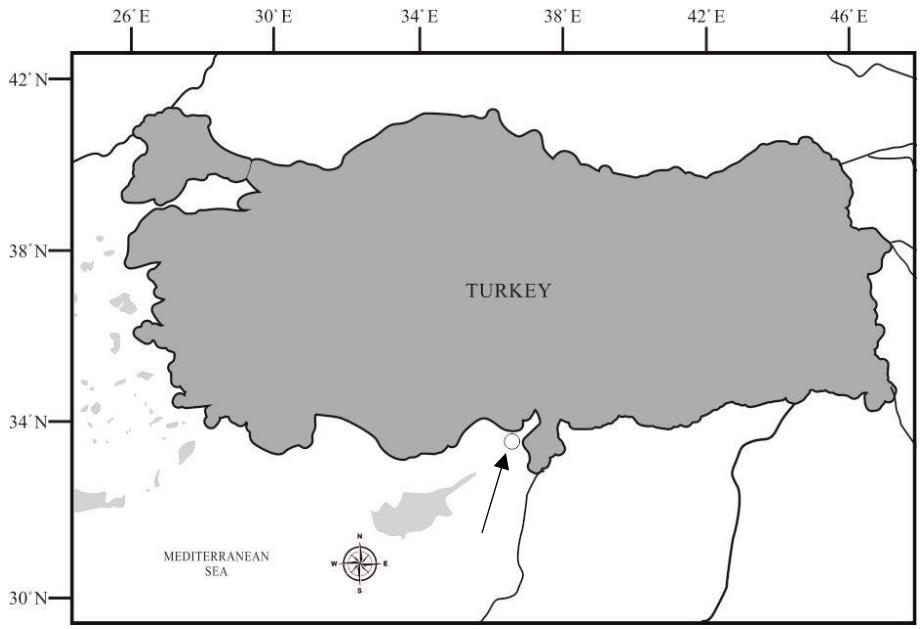

Figure 1. Fish sampling area (O) in Northeastern Mediterranean Sea.

3. Results

Total lengths and disc width range of *R. clavata* specimens were 9.5-19.5 cm and 5.2-11.5 cm, respectively. Total weights were between 1.96 and 17.2 g (Table 1). Egg case length and egg case width were 4.5 and 3.1 cm, respectively. The fresh color of egg case was reddish brown (Figure 3). The presence of juvenile individuals and adult females of *R. clavata* in May and June, in the same area suggests that there is egg laying and nursery in the North-eastern Mediterranean.

Table 1. Morphometric measurements of juvenile *Raja clavata* captured from Northeastern Mediterranean Sea

Sample No	Total length (cm)	Disc width (cm)	Weight (g)
1	17.6	10.1	15.53
2	15.7	8.7	7.68
3	19.5	11.5	17.12
4	16.2	8.7	8.84
5	9.5	5.2	2.04
6	10.5	5.7	1.96
7	16.3	9.1	8.23

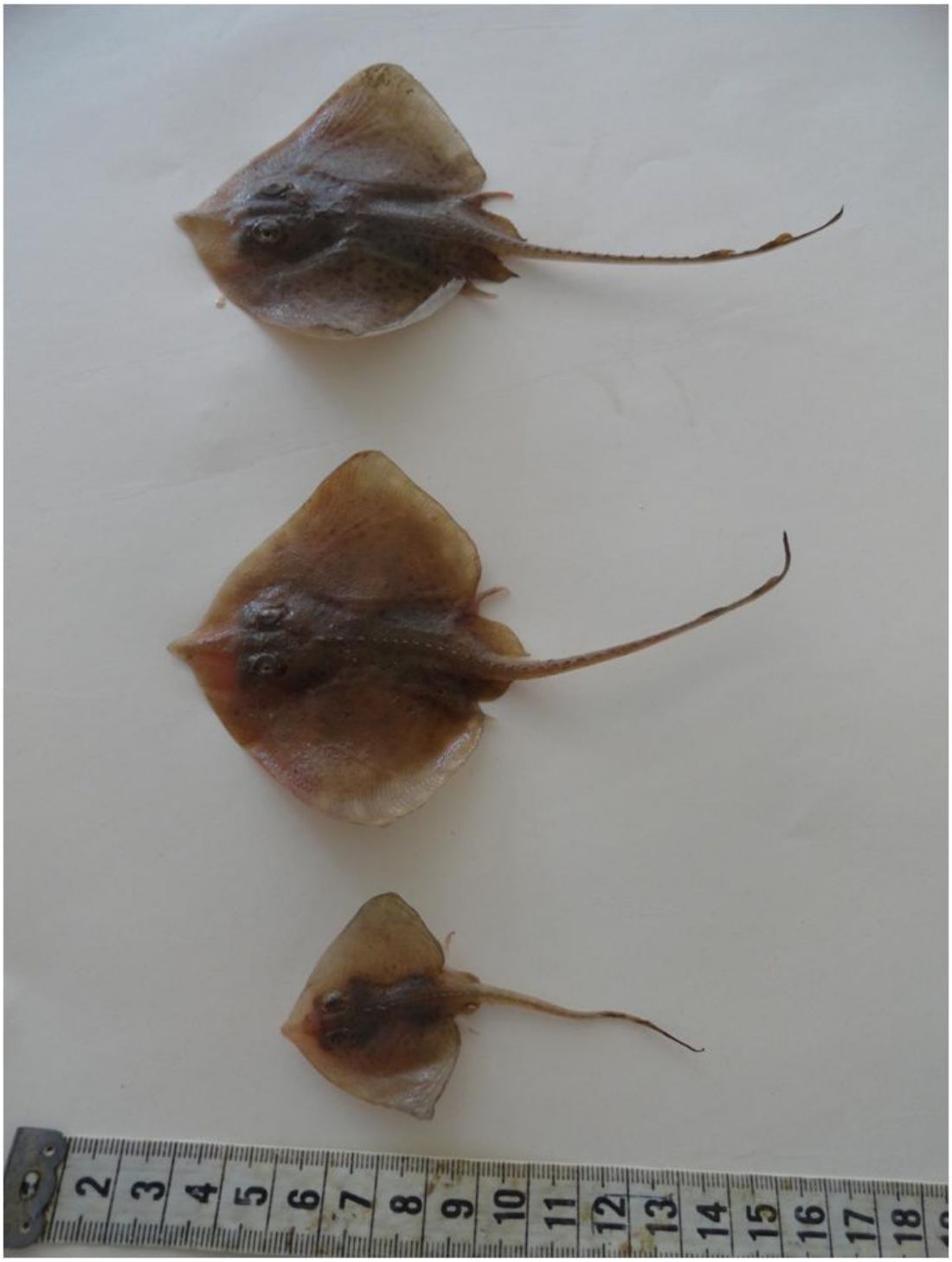

Figure 2. Juveniles of *Raja clavata* captured from Northeastern Mediterranean Sea

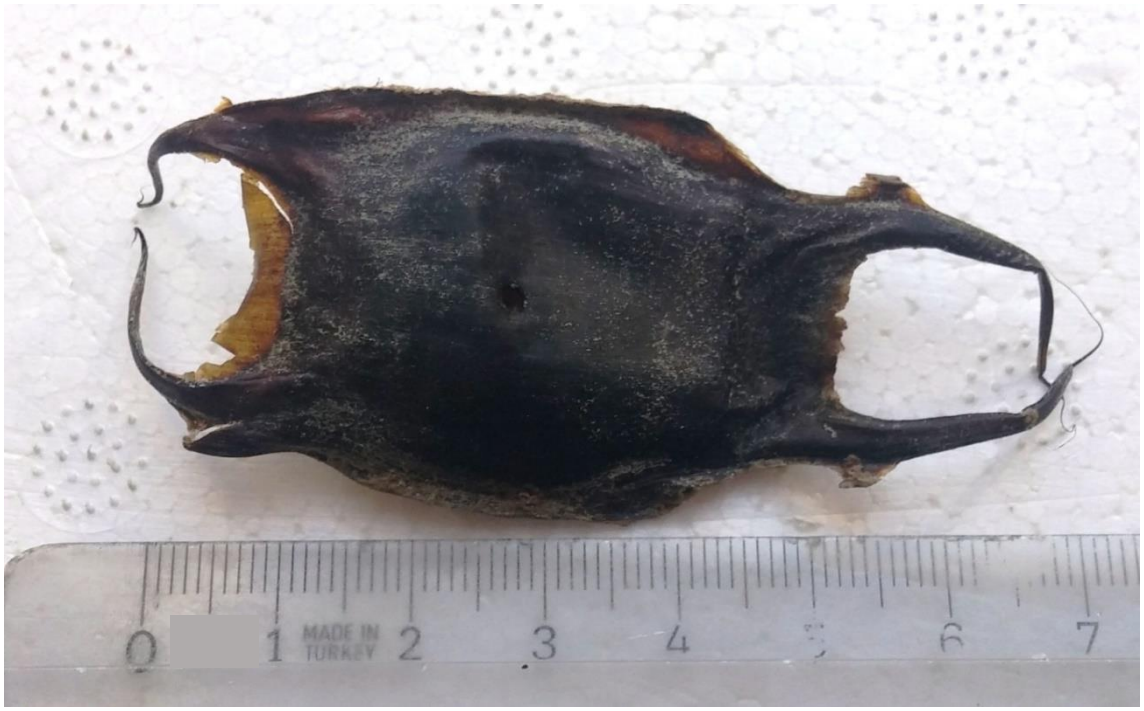

Figure 3. Egg capsule of *Raja clavata* captured from Northeastern Mediterranean Sea

4. Discussion

The morphological description of the egg case of thornback skate was done according to Porcu et al. (2017) [4]. It is reported that the decision regarding the use of the study area as a nursery by a given species was made considering the presence of egg capsules, small juveniles and mature females [5]. The juveniles and mature individuals of *R. clavata* in same area has also been observed in the following years (personnel observation).

These findings show that thornback skate may use this area for mating, egg laying and nursery area. It is possible to say that the generation of cartilaginous fishes that produce limited number of eggs or juveniles are under threat in this region because of using for fishing by fishermen.

Thus, this study ensures the first report of juveniles and egg case of thornback skate from the Northeastern Mediterranean.

Acknowledge

This study was presented as a poster in the Third International Symposium on Euro-Asian Biodiversity 05-08 July 2017, Minsk - BELARUS

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