ABUNDANCE AND DISTRIBUTION ELASMOBRANCHS IN SAROS BAY, NORTH AEGEAN SEA

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Abstract
The aim of this study is to identify elasmobranch species present in the Saros Bay, to describe their abundance and distribution. The trawl surveys were carried out from September 2006 to September 2008. During the trawl surveys a total of 22 elasmobranch species belonging to the Scyliorhinidae, Squalidae, Squatinidae, Rajidae, Dasyatidae, Triakidae, Myliobatidae, Torpedinidae, Gymnuridae and Oxynotidae were recorded. The data showed that, the catch per unit area (CPUA, kg/km^2) of belonging to Scyliorhinidae and Rajidae family were the dominant groups in the Saros Bay.

Keywords: Aegean Sea, Saros Bay, Biomass, Elasmobranchii

Due to their vulnerable life cycle characterized by slow growth rates, late maturity and low fecundity, elasmobranch fishes are highly susceptible to fishing mortality In these animals, overexploitation can occur even with low levels of fishing mortality once they begin to decline, populations may need decades to recover [3]. In the Mediterranean, elasmobranch landings have decreased from 25 000 tonnes in the 1980's to 7 000 tonnes in recent years and there is evidence that elasmobranchs are declining in abundance and diversity [1]. In Turkey, indicates that Elasmobranch landings reduced from 1535 tonnes in 2005 to 300 tonnes in 2014 with 43% of landings coming from the Aegean Sea [5]. The North Aegean Sea elasmobranch species have been investigated with respect to their occurrence and biology while very little is known on their distribution and assemblages. Our study aimed to determine the species composition, catch per unit effort (CPUE)(kg/h), catch per unit area (CPUA)(kg/km^2) and to described the depth related trends, the distributions of the most abundant species in Saros Bay, the North Aegean Sea. The sampling was carried out by using commercial bottom trawl between September 2006 and September 2008 in the Saros Bay (40° 30'0" N-26 °30'0" E), the North Aegean Sea. A total of 175 bottom trawls were carried out at depths at ranged in average from 0 to 500 m. The trawl was equipped with a 44 mm stretched mesh size net at the cod-end. Trawl times lasted for approximately 30 minutes with trawl speeds moderated to 2.5 knots. The species identification of all specimens refers to the FNAM keys [4] and to the taxonomic organization proposed by [2]. For all the captured skates the catch per unit effort (CPUE) and the catch per unit area (CPUA), expressed by kg/h and kg/km^2 respectively, were calculated. Our results indicated that especially depth and season were the key determinants of the presence of the examined species. During the study a total of 22 elasmobranch species, belonging to the Scyliorhinidae, Squalidae, Squatinidae, Rajidae, Dasyatidae, Triakidae, Myliobatidae, Torpedinidae, Gymnuridae and Oxynotidae (Table 1) were identified.

Tab. 1. Species caught from the Saros Bay (the North Aegean Sea) between depths of 0 m. and 500 m. C:Catch amount (kg), CPUE: Catch Per Unit Effort (kg/h) and C: Catch Per Unit Area (kg/km^2) are shown by species for each.

Family	Species	C (kg)	CPUE (kg/h)	CPUA (kg/km^2)
Scyliorhinidae	*Galeus melastomus*	94.07	0.90	16.58
	Scyliorhinus canicula	1056.92	15.07	191.03
	Scyliorhinus stellaris	103.34	1.04	19.80
Squalidae	*Etmopterus spinax*	0.25	0.00	0.05
	Squalus acanthias	177.99	1.90	30.13
	Squalus blainvillei	10.39	0.26	3.81
Squatinidae	*Squatina squatina*	3.64	0.04	0.79
Rajidae	*Dipturus oxyrinchus*	70.39	0.74	13.45
	Leucoraja naevus	1.16	0.01	0.20
	Rostroraja alba	225.57	3.45	45.32
	Raja clavata	143.53	1.71	27.16
	Raja radula	98.37	3.08	19.31
	Raja miraletus	13.84	0.36	2.74
Dasyatidae	*Dasyatis centroura*	31.48	0.34	6.85
	Dasyatis pastinaca	127.21	2.39	26.36
Triakidae	*Mustelus asterias*	14.79	0.15	2.65
	Mustelus mustelus	65.59	1.02	14.13
Myliobatidae	*Myliobatis aquila*	42.38	0.34	6.24
	Pteromylaeus bovinus	1.45	0.02	0.31
Torpedinidae	*Torpedo marmorata*	5.71	0.04	0.77
Gymnuridae	*Gymnura altavela*	9.65	0.11	2.09
Oxynotidae	*Oxynotus centrina*	5.42	0.05	1.02

The data indicated that, the CPUA of 3 species (*Galeus melastomus*, *Scyliorhinus canicula*, *Scyliorhinus stellaris*) belonging to Scyliorhinidae family increased in relation to depth; whereas the CPUA of the members of the Rajidae family decreased as a factor of depth (Figure 1). *Scyliorhinus canicula* (CPUE: 15.07 kg/h; CPUA: 191.03 kg/km^2) and *Rostroraja alba* (CPUE: 3.45 kg/h; CPUA: 45.32 kg/km^2) are the dominant species in the captures and well distributed in the whole area. The two species was followed by *Squalus acanthias*, Raja clavata and *Dasyatis pastinaca* with CPUE of 1.9 kg/h; 1.7 kg/h and 2.4 kg/h and CPUA of 30.1 kg/km^2; 27.2 kg/km^2 and 26.4 kg/km^2, respectively. During years 2006-2008, the mean CPUA of elasmobranchs was 421.42 kg/km^2 in Autumn. In winter, the mean CPUA of elasmobranchs was 466.23 kg/km^2, in spring the mean CPUA 436.50 kg/km^2 was composed of elasmobranchs. In summer, elasmobranchs were determined as 434.71 kg/km^2. Also, winter is the most abundant season for elasmobranchs.

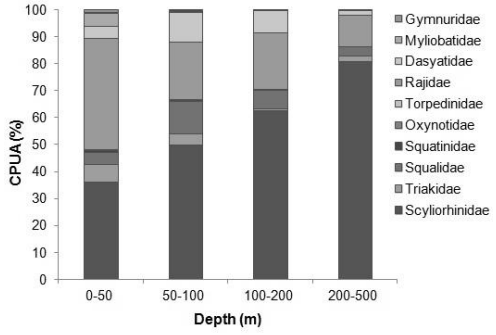

Fig. 1. The percentage of CPUA (kg/km^2) index for elasmobranchs by depths.

This study provides a base for future research on elasmobranchs in the North Aegean Sea in order to prevent the extinction of species before we understand their full importance in the marine ecosystem.

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