

THE STATUS OF THE DEMERSAL FISH COMMUNITY IN THE GULF OF ANTALYA, TURKEY (LEVANTINE SEA)

T. Kebapçıoğlu^{1*}, E. Özgür özbek¹, M. Çardak², M. Gökoglu¹ and C. R. Begburs¹

¹ Akdeniz University, Faculty of Fisheries - turhank@akdeniz.edu.tr

² Istanbul University, Faculty of Fisheries

Abstract

This paper presents the results of the bottom trawl survey carried out in the Gulf of Antalya in the summer period of 2009 in order to determine the catch composition, abundance and biomass of the demersal fish stocks. A total of 84 fish species were identified. *Gymnura altavela* (Linnaeus, 1758), *Mullus barbatus* Linnaeus, 1758, *Dasyatis pastinaca* (Linnaeus, 1758), *Pagellus erythrinus* (Linnaeus, 1758) and *Epinephelus aeneus* (Geoffroy Saint-Hilarie, 1817) are the species that have the highest biomass index values.

Keywords: Trawl Surveys, Demersal, Fishes, Biomass, Eastern Mediterranean

Introduction

The Gulf of Antalya locates in the Northeastern Levantine Basin and is characterized by high temperature, salinity and oligotrophy. Few studies concerning the demersal fish community of the shallow continental shelf area of the Northeastern Levant Sea are available [1,2,3]. This paper presents the first detailed information on the demersal fish community of the Gulf of Antalya.

Material and Methods

This research was carried out in August 2009, in the Gulf of Antalya, between the depths of 25-200 m, using a commercial bottom trawl net. The cod-end mesh size was 22 mm (knot to knot). The samples were collected day time with 2.5 n.m/h average trawling speed. The geographical coordinates of 30 trawling stations vary between N36° 52' 48.5 - 36° 23' 00.0'' - E31° 32' 32.2' - E30° 31' 11.3''. The total catch from each haul was identified to species, counted, weighed and standardized to unit trawling hour. The stock amount is calculated according to the swept area method; the catch weight (Cw) divided by the swept area (a) for each species and for each haul [4]. The swept area (a) for each hauling was estimated thus: $a = D.h.X$ (h: length of the head-rope, D: cover of distance, X: fraction of the headrope length which is equal to the width of the path swept by the trawl (accepted as 0.5)).

Results

A total of 30 hauls were carried out at the depths of 25, 50, 75, 100, 150, 200 m. The average catch was 83.38±15.54 kg/hour (±se), average biomass 4188.77±797.93 kg/nm² (±se) or 1221.25±232.64 kg/km² (±se) and average abundance 63049±8181 ind./nm² (±se) or 18382±2385 ind./km² (±se) (Tab.1).

Tab. 1. The number of hauls, average catch (kg/hour (±se)), biomass (kg/nm² (±se)), abundance (ind./nm² (±se)), and number of species at six depth levels in the Gulf of Antalya.

Depth (m)	Number of hauls	Average catch kg/hour (±se)	Average biomass kg/nm ² (±se)	Average abundance ind./nm ² (±se)	Number of Species
25	6	122.8±54.11	6294.99±2906.27	88997±22156	56
50	6	92.37±28.49	4641.18±1452.14	54819±13728	61
75	6	55.82±7.99	2814.59±389.04	54117±11807	54
100	6	98.89±44.93	4838.31±2179.65	60775±25678	38
150	4	60.92±27.82	3047.09±1365.52	70345±22946	40
200	2	19.21±6.21	970.15±310.00	28924±5703	22
Total	30	83.38±15.54	4188.77±797.93	63049±8181	84

Among the total of 84 fish species identified, 75 were osteichthyes, and 9 chondrichthyes. The 26 species, that have higher biomass index than 15 kg/nm² are given in Table 2. *Gymnura altavela* (Linnaeus, 1758), *Mullus barbatus* Linnaeus, 1758, *Dasyatis pastinaca* (Linnaeus, 1758), *Pagellus erythrinus* (Linnaeus, 1758) and *Epinephelus aeneus* (Geoffroy Saint-Hilarie, 1817) are the species that have the highest biomass index values and *M. barbatus* Linnaeus, 1758, *P. erythrinus* (Linnaeus, 1758), *Bothus podas* (Delaroche, 1809), *Citharus linguatula* (Linnaeus, 1758), and *Lepidotrigla cavillone* (Lacepède, 1801) have the highest abundance.

Tab. 2. The frequency of occurrence (%), biomass index (kg/nm² (±se)), and abundance (ind./nm² (±se)) of the species caught in the Gulf of Antalya.

	Biomass index		Abundance		Freq. of occur. (%)
	kg/nm ²	se	Ind./nm ²	se	
CHONDRICHTHYES					
<i>Dasyatis pastinaca</i>	524.5	173.60	271.3	78.76	60.00
<i>Gymnura altavela</i>	1106.3	558.65	145.5	48.22	50.00
<i>Mustelus mustelus</i>	49.0	27.64	31.4	11.56	26.67
<i>Raja clavata</i>	41.6	11.85	89.9	22.35	56.67
<i>Rhinobatos rhinobatos</i>	49.0	24.35	31.1	15.46	20.00
OSTEICHTHYES					
<i>Boops boops</i>	23.0	11.66	483.3	173.74	50.00
<i>Bothus podas</i>	52.5	23.46	5892.1	2627.46	70.00
<i>Chelidontichthys lucerna</i>	24.7	8.77	461.9	171.48	66.67
<i>Citharus linguatula</i>	104.9	27.65	5562.0	1714.84	86.67
<i>Dentex dentex</i>	16.5	5.92	248.5	105.17	30.00
<i>Diplodus annularis</i>	65.2	30.92	1895.9	860.29	50.00
<i>Epinephelus aeneus</i>	204.5	64.88	191.4	78.15	60.00
<i>Lagocephalus sceleratus</i>	17.8	6.12	69.1	21.19	36.67
<i>Lagocephalus suezensis</i>	31.7	19.31	724.1	392.17	36.67
<i>Lepidotrigla cavillone</i>	52.4	17.60	4355.4	1438.61	63.33
<i>Lithognathus mormyrus</i>	17.2	9.85	232.1	147.10	20.00
<i>Merluccius merluccius</i>	15.5	11.15	103.7	59.06	16.67
<i>Mullus barbatus</i>	856.7	199.80	22484.3	4361.92	100.00
<i>Pagellus acarne</i>	17.0	8.55	734.0	259.13	46.67
<i>Pagellus erythrinus</i>	415.4	107.11	6197.5	1556.22	93.33
<i>Saurida undosquamis</i>	112.6	31.40	726.0	208.29	83.33
<i>Serranus cabrilla</i>	24.1	7.19	604.7	159.76	83.33
<i>Spicara sp.</i>	91.5	42.42	4214.5	1705.47	70.00
<i>Trigloporus lastoviza</i>	53.0	22.22	1495.7	679.26	50.00
<i>Upeneus moluccensis</i>	47.7	18.21	797.1	223.15	83.33
<i>Uranoscopus scaber</i>	24.5	11.59	187.3	86.11	53.33

Discussion

This research was conducted in the "pre-fishing" season both in the fishing-prohibited and open areas and will continue for four seasons. The aim of the research is to determine the seasonal and spatial distribution of the demersal species in the Gulf of Antalya. This paper presents the preliminary data of the research but this is the first detailed information on the demersal fish community of the Gulf of Antalya. In the Gulf of Antalya, the catch composition of bottom trammel nets at max.10 m depth was studied by [3] and 73 fish species were reported. The 84 fish species found in this study is far below the number of fish species (165), given by [1] for the Gulfs of Iskenderun and Mersin. Thus long-term approaches are required for the completion of the species list; determine the distribution and status of the stocks, if the lack of relevant literature from this region is concerned.

References

- Gücü A.C. and Bingel F., 1994. Trawlable species assemblages on the continental shelf on the North Eastern Levant Seas (Mediterranean) with an emphasis on Lessepsian migration. *Acta Adriat.*, 35: 83-100.
- Begburs C.R. and Kebapçıoğlu T., 2007. An investigation on catch composition of bottom trammel nets used in Antalya Bogazkent. *E.U. J. Fish. Aquat. Sci.*, 24 (3-4): 283-286.
- Mutlu E. and Ergev M.B., 2008. Spatio-temporal distribution of soft-bottom epibenthic fauna on the Cilician shelf (Turkey), Mediterranean Sea. *Rev. Biol. Trop.* 56 (4): 1919-1946.
- Spare P. and Veneme S.C. 1992. Introduction to Tropical Fish Stock Assessment (Part 1). *FAO Fish. Tech. Pap.*, Rome.