THE STATE OF THE TURKISH FISHERIES

Edited by
Adnan Tokaç
Ali Cemal Gücü
Bayram Öztürk

Publication Number: 34
THE STATE OF THE TURKISH FISHERIES

Edited by
Adnan TOKAÇ – Ege University
Ali Cemal GÜCÜ – Middle East Technical University
Bayram ÖZTÜRK – Istanbul University
Publication No: 34

İstanbul 2012
THE STATE OF THE TURKISH FISHERIES

Bu kitabın bütün hakları Türk Deniz Araştırma Vakfına aittir. İzinsiz basılamaz, çoğaltılamaz. Kitapta bulunan makalelerin bilimsel sorumluluğu yazarlara aittir.

All right are reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without the prior permission from the Turkish Marine Research Foundation (TÜDAV)

Copyright: Türk Deniz Araştırmaları Vakfı (Turkish Marine Research Foundation)

Citation TOKAÇ, A., GÜCÜ, A.C., and ÖZTÜRK, B. (Eds.) 2012. The State of The Turkish Fisheries. Published by Turkish Marine Research Foundation, No: 34 Istanbul, TURKEY.

Available from: Türk Deniz Araştırmaları Vakfı (TÜDAV)

Turkish Marine Research Foundation (TÜDAV)

P.O.Box 10 Beykoz / Istanbul, TURKEY
Tel: +90 216 424 07 72
Belgegeçer: +90 216 424 07 71
e-mail: tudav@superonline.com
web site: www.tudav.org
TÜDAV yayınları SATILAMAZ
This book aims to make a brief introduction to the Turkish fisheries. In this concept, some information related to the fisheries industry in general have been included along with the current status and potential of fisheries in order to construct a comprehensive resource on Turkish fisheries.

“The State of the Turkish Fisheries” which is a publication of the Turkish Marine Research Foundation (TUDAV), reflects in 5 chapters the general characteristics and status of the Turkish fisheries as well as some current topics covered in 33 articles by 44 researchers from various institutions and disciplines such as fishery faculties of different universities around Turkey, institutes of marine sciences and technologies, as well as marine scientists, biologists, agricultural engineers, fishery technologists, nutrition scientists and fishery economists from the national fisheries research institutes of the Turkish Ministry of Food, Agriculture and Livestock.

The first chapter covers the current situation of the live marine resources and a general outlook on the small pelagic fish and fisheries, demersal and deep-sea fisheries resources and alien species in the Turkish seas as well as the Turkish inland fisheries. Chapter 2 discusses the Turkish fisheries sector and covers subject such as classification of gears and methods used in commercial fisheries in Turkey, introduction of fisheries in the seas of Turkey (Black Sea, Sea of Marmara, Aegean Sea and Mediterranean Sea), fisheries management and processing technologies. In Chapter 3, different fisheries are discussed in terms of fishing gears, such as trawls, purse seines and gill nets through which almost the entire span of marine catch production is realized. Chapter 4 provides details on a species-specific fishery such as tuna, sword fish, bluefish, octopus, turbot, eel, sponge, bivalve, mussel, lobster and blue crab on which there are very limited publications to date. The last chapter of the book mentions some special researches and other related topics.

The publication of this book was decided by the editors in the last days of 2009 and the book was completed in two years (2010-2011). We hereby thank all the authors for their full support and contribution.

We also remember and cherish the memory of our dear friend and one of the authors in this book, Mustafa Erdem, whom we lost very shortly before the publication of this book, whose loss deeply, saddens us.

Adnan Tokaç
Ali Cemal Güçü
Bayram Öztürk
April, 2012
1. General Description of Small Scale Fisheries

The species live in littoral zone called littoral resources. This complex marine ecosystem is found along coastlines worldwide. It is rich in nutrients and oxygen and is home to a variety of organisms. Therefore the importance of this zone increased much more than those of others. Sea grass meadows such as *Posidonia oceanica* are take place in littoral zone (Aydın *et al.*, 2008) and also important areas for lots of species (figure 1).

![Figure 1. A view from *P. oceanica* meadows.](image)

Specialized methods and gears used to catch these high economical valued species frequently with small fishing fleets and number of them were given in table 1 below. But the bigger fishing fleets sail all of the Turkish waters, especially Black Sea trawlers generally come for having trips in the international waters of the Aegean Sea. The regulation of them and all of the other rules about fisheries are fixed in “fisheries regulation for marine and freshwater fishery” publication by Ministry of Agriculture and Rural Affair of Turkey, Protect and Control General Office.
fishing areas, fishing gears, seasons and length limits for species are explained in this publication properly. These inhibitions are controlled by Turkish Coast Guard fleets.

2. The Fishing Fleet

The fisheries can be separated into three main categories in the Turkish waters: small scale fisheries, trawling and seining fisheries. The term “small scale fisheries”, attempting to integrate aspects of the “coastal” and “artisanal” fisheries and to avoid the vagueness, inconsistencies and differences of definitions, is virtually absent from the official terminology of most Mediterranean countries (Papaconstantinou and Conides, 2007). It also has an argue platform for Turkish waters too. Not only about type of the fishing gears, but also the fishing methods have different point of views for small scale fisheries, according region to region. Because of this, it’s difficult to have a collective terminology for fisheries.

There are 16845 formal commercial fishing vessels in Turkish waters. Totally 15201 small scale fishery vessels are used to realize longline, trammel net and gillnet operations and the distribution of them according to regions is seen in table 1 (TUIK, 2009).

<table>
<thead>
<tr>
<th>Region</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Black Sea</td>
<td>3066</td>
</tr>
<tr>
<td>West Black Sea</td>
<td>2165</td>
</tr>
<tr>
<td>Sea of Marmara</td>
<td>2578</td>
</tr>
<tr>
<td>Aegean Sea</td>
<td>5468</td>
</tr>
<tr>
<td>Mediterranean Sea</td>
<td>1924</td>
</tr>
</tbody>
</table>
3. Small Scale Fishing Gears and Methods

We can summarize generally the commercial small scale fishing gears used in Turkish coastal zone as follows:

* Gillnets, trammel nets and combined nets
* Long lines, angles and jigs
* Pots, fykes and traps (Lagoon entrapments)

Beach seining and boat seining is forbidden for all over the Turkish waters (Anonymous 2009). Also trawl fishery is forbidden for some bays such as Izmir Bay (Middle Eastern Aegean Sea). According to this, small scale fishing activities are very popular in this region. Therefore alternative fishing gears are used for capture high economical valued demersal products such as, prawn and sole trammel nets, red mullet gillnets, long lines, jigging lines and fyke nets. Also a traditional fishing method called “dönek” is used frequently in Izmir Bay too. It’s a kind of trammel net, set like in Figure 3 below through the water column from bottom to surface. This method is based on the migration of fishes such as stripped bream (*Litgognatus mormyrus*), gilthead seabream (*Sparus aurata*), flathead mullet (*Mugil cephalus*), sea bass (*Dicentrarchus labrax*), atlantic bonito (*Sarda sarda*) and etc.
Jigging for squid is also very common fishery method in coastal waters (Figure 4). Different colors of jigs are used very frequently (Ulaş and Aydın, 2011). Cuttlefishes and sometimes octopuses are caught as by-catch species in this fishery (Figure 5).

Figure 3. The settlement of dönek trammel nets

Figure 4. Different colors of jigs in squid fishing
After the prohibition of beach seines from 1999, the older pieces of prawn trammel nets used to catch squid (*Loligo vulgaris*) at the end of the autumn addition to jigging line (Gökçe et al., 2005). Not only prawns (*Melicertus kerathurus, Metapenaeus affinis*) (Figure 6) and squid, but also red mullet (*Mullus barbatus*), and sole (*Solea solea*) hake (*Merluccius merluccius*), mackerel, horse mackerel (*Scomber spp.*), are the important high economical valued by-catch species (Figure 7) with high amounts of discard ones which takes lots of deck time for cleaning them from nets (Figure 8) (Aydin and Metin 2010).
Red mullet (*Mullus* spp.) gillnets are set generally sandy and muddy areas which are boundaries of seagrass meadows called apoşi (Figure 9). The dawn and dusk times are preferred for setting gillnets (Aydin and Metin, 2008, a). The higher nets have 50 or 70 meshes through depth are also used in different seasons too. These nets are used to catch sardine (*Sardina pilchardus*), bogue (*Bogue bogue*) and blotched picarel (*Spicara maena*) together with target species (Aydin and Metin, 2008, b).
Fyke nets (Figure 10) are forbidden in Turkish coasts except for north-east of Izmir Bay. They are used to catch octopus and cuttlefish by connections each other with an orientation net and set on the sea bottom from boat. A typical mechanized collection system is used to pick up them from water.

Long line fishing is a very common activity of the Aegean Sea. Different types and sizes of hooks are used with attaching mud shrimp as a bait to capture generally grouper species (*Epinephelus* sp.), common dentex (*Dentex dentex*), and common seabream (*Pagrus pagrus*) in south regions. Seabass is an also important species captured in the north regions of Aegean Sea. Longlining (Figure 11) is realized not only by professionals, but also amateur recreational fishermen too like pot fishing. Sardine (*Sardina pilchardus*), onyx (*Solen vagina*) are the most abundant baits that both longline and recreational angling fishery in Aegean coasts of Turkey (Aydin, 2011).
Pot fishing is not common for professional fisheries in the Aegean Sea. They are used generally in shores by recreational fishermen. Annular sea bream (*Diplodus annularis*), two banded seabream (*Diplodus vulgaris*), salema (*Sarpa salpa*), thicklip grey mullet (*Mugil cheleon*), are some of the captured species with these kinds of fish pots (Figure 12).

The trap shown in figure 13 is used to catch octopus (*Octopus vulgaris*) which has high economic value in the markets. Lots of them are tied each other one by one, then set into water like a long line. Before the usage of plastic types, ones that made up of clay were used mostly. The stronger structure of plastic material extends the life of the trap and this is the most important reason of this exchange.
The blanket net is a traditional fishing method used entries and exits in small bays (Aydin et al., 2009). The aim of this method focused on migration of some fishes such as, grey mullet, sea bass, and bluefish. A rectangular net is tied between two settled iron or wooden pipes. Rest of it is set on the sea bottom and two thick ropes extended from observation tower on the land are tied to two corner of the net (Fig 14). These ropes profit to lift the net at fish migration.

Spearfishing is a very common activity for Turkish coasts (Figure 15). It is realized amateur way and the sale of caught species are forbidden. Daily catching amount of some species categorized as their weight and some of them to number of their individuals in Turkish Amateur Fishery Regulations (ANONYMUS, 2009).
Figure 15. Spear fishing is also a common fishing activity can realize in amateur way in Turkish coast.

In addition to those of other fishing gears, lagoon fishery is also important for commercial marine production in the Aegean Sea (figure 16, figure 17, figure 18, figure 19). Lagoons are particularly important for fisheries in many areas of the world, since marine fish species migrate towards the lagoons which provide favorable conditions for feeding and shelter (Colombo, 1977). There are 5 lagoons in the Turkish coast of Aegean Sea which are active. Generally grey mullet, gilthead seabream (Sparus aurata), sole, sea bass (Dichentracus labrax) and eel (Anguilla anguilla) are the captured species from lagoons (figure 20).

Figure 16. A view from above for Köyceğiz lagoon. Source: Muğla province cultural and tourism administration
**Figure 17.** Permanent fish entrapment devices separated with wire cage of Köyceğiz lagoon (Photo: A. GÜLŞAHİN)

**Figure 18.** Homa lagoon in Izmir Bay
Figure 19. Fishing boats using cane nets inner part of Homa lagoon.

Figure 20. Some of the lagoon fishes caught from permanent fish entrapment devices.

References


