

ANALYSIS OF BOAT SEINE CATCHES OF *MULLUS BARBATUS*, *M. SURMULETUS*, *PAGELLUS ERYTHRINUS* AND *TRACHURUS MEDITERRANEUS* IN GREEK WATERS

Anna Chilari * and George Petrakis

National Centre for Marine Research, Aghios Kosmas, Hellinikon, 16610, Athens, Greece - * annachil@ncmr.gr

Abstract

A scientific observer programme was used to study boat seine catches taken in three areas of Greece: Ionian Sea, Cyclades Islands, Pagassitikos Gulf, between October 2000 and May 2001. Discarding practices concerning four species, red mullet (*Mullus barbatus*), striped red mullet (*M. surmuletus*), common red pandora (*Pagellus erythrinus*) and mediterranean horse mackerel (*Trachurus mediterraneus*), for which minimum landing size (MLS) restrictions are currently enforced, were analysed in order to quantify the capture of undersized individuals of the target species and to assess the possible negative impact of the fishery on the stocks.

Keywords: boat seine, catches, minimum landing size, Greece

Introduction

Fishing activities result in the capture of non-target species and undersized individuals of target species (1). Although boat seine is considered to have a negative impact on the stocks due to the capture of large numbers of juveniles or under-sized individuals of many commercial species, related studies are very scarce.

The boat seine fishery in Greek waters is managed by technical measures including spatial and temporal closures, gear restrictions including minimum mesh sizes, distance from the coast and minimum landing size restrictions (2). In this study, the catches and the length frequency distributions of four of the most important target species (red mullet, striped red mullet, common pandora and mediterranean horse mackerel), for which MLS restrictions are currently enforced, caught by boat seining in three different areas of Greece, were analysed in order to quantify the capture of undersized individuals and to evaluate the impact of the gear on the resources.

Materials and methods

Scientific observers accompanied commercial boat-seine crews on 17 fishing trips (94 hauls) between October 2000 and May 2001 in three different regions of Greece: Ionian Sea, Aegean Sea-Cyclades Islands and Pagassitikos Gulf. The mesh size used was 16 mm and fishing took place in depths 15-47 m. For each haul, the total catch was sorted into the retained and discarded components by the commercial fishers. The total weights and numbers of each individual species (retained and discarded) were recorded, as were the lengths (to the nearest cm) of all the species.

Results and discussion

Data on the catch composition of the boat seine and the mean total numbers of retained and discarded individuals are presented elsewhere (3). Retained catch rates of horse mackerel were estimated to be greater than 100 individuals per haul in Pagassitikos Gulf (Table 1). Red mullet and common pandora had estimated retained catch rates greater than 10 individuals per haul in the Ionian Sea and Pagassitikos Gulf, while striped red mullet in Aegean and Ionian Sea. Red mullet and striped red mullet and horse mackerel (except in Pagassitikos Gulf) had estimated discarded rates of less than 1 individual per haul. Common pandora had greater discard rates (>3 individuals per hauls) with more than 100 individuals discarded per haul in Pagassitikos Gulf.

Table 1. Mean numbers of retained and discarded individuals of the four main target species caught in the boat seine fishery in each of the sampling areas for the period between October 2000 and May 2001.

	Species	Cyclades	Ionian Sea	Pagassitikos Gulf
Retained	<i>Mullus barbatus</i>	1.04	29.34	28.59
	<i>Mullus surmuletus</i>	18.86	25.38	0.43
	<i>Pagellus erythrinus</i>	4.64	19.55	39.16
	<i>Trachurus mediterraneus</i>	0.04	1.17	274.51
Discarded	<i>Mullus barbatus</i>	0.04	0.34	
	<i>Mullus surmuletus</i>		0.31	
	<i>Pagellus erythrinus</i>	3.00	14.48	117.19
	<i>Trachurus mediterraneus</i>	0.11	0.90	17.24

Analysis of the sizes of retained and discarded individuals of the four species is presented in Table 2. None or very few individuals of red mullet and striped red mullet were discarded in the three areas. In

the Ionian Sea 33% of the retained individuals of both species were undersized (<11 cm), as were 97% of the retained individuals of red mullet and 14% of striped red mullet in Cyclades Islands. Almost 99% of the discarded individuals of common pandora in the three areas were below the MLS (<12 cm), while 4.8% and 12.6% of undersized individuals were retained in Ionian Sea and Pagassitikos Gulf. Almost 14% of the retained horse mackerel in Pagassitikos Gulf were undersized (<12 cm), while on the other hand 18% and 53.8% of the discarded individuals were above the MLS in the same area and in Ionian Sea, respectively.

Table 2. Total, retained and discarded numbers in relation with MLS for the four species, in the boat seine fishery in Greek waters between October 2000 and May 2001.

Species	Total		Retained		Discards		
	Number	%<MLS	Number	%<MLS	Number	%<MLS	
Cyclades	<i>M. barbatus</i>	30	96.7	29	96.6	1	100.0
	<i>M. surmuletus</i>	528	13.8	528	13.8	-	
	<i>P. erythrinus</i>	214	38.8	130	0.0	84	98.8
	<i>T. mediterraneus</i>	4	75.0	1	0.0	3	100.0
Ionian Sea	<i>M. barbatus</i>	861	34.4	851	33.6	10	100.0
	<i>M. surmuletus</i>	745	34.2	736	33.2	9	100.0
	<i>P. erythrinus</i>	987	44.6	567	4.8	420	98.3
	<i>T. mediterraneus</i>	60	20.0	34	0.0	26	46.2
Pag. Gulf	<i>M. barbatus</i>	1058	2.3	1058	2.3	-	
	<i>M. surmuletus</i>	16	6.3	16	6.3	-	
	<i>P. erythrinus</i>	5785	78.0	1449	12.6	4336	99.8
	<i>T. mediterraneus</i>	10795	17.8	10157	13.8	638	82.0

The retention of undersized specimens of individuals of *Mullus* spp. is explained by their high commercial value. In contrast, individuals larger than the MLS of the low commercial value horse mackerel were also returned to the sea. In conclusion, except for common pandora in Pagassitikos Gulf, the operation of the gear showed no significant impact on the juveniles of these species.

References

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