TIME OF FISHING - AREA EFFECTS ON BOAT SEINE CATCHES IN GREEK WATERS

George Petrakis [1]*, Sandra Mosquera Montes [1] and Anna Cheilari [2]

[1] Hellenic Centre for Marine Research, Institute of Marine Biological Resources, Aghios Kosmas, Hellinikon 16610 Athens, Greece - gpetr@ath.hcmr.gr

[2] European Commission, Joint Research Centre (JRC); Institute for the Protection and Security of the Citizen (IPSC)-JRC.G.4. Maritime Affairs Unit, Via E. Fermi 2749 (TP 051), 21027 Ispra (Va), Italy

Abstract

Data from boat seine fishery in Greek waters have been analyzed to examine the effects of the time of fishing (before and after sunrise) and of the area on the catches. Data were collected on a monthly basis during the fishing period of the gear (10/2008-03/2009) in 14 different areas. The catch of *Spicara smaris*, the main target species of the gear, during hauls that took place before sunrise was 16%, whereas after sunrise was 48% of the total catch by weight. The catch of *Boops boops* and of all the "other species" before sunrise was 20% and 64% and after sunrise was 20% and 32%, respectively.

Keywords: Fisheries, Ionian Sea, Aegean Sea

Introduction

Boat seine is a traditional fishing gear which operates in the Greek waters. Now days, there are about 475 vessels with license, 400 of which are active [1]. The fleet is composed of rather small and old vessels. In 2008, the average age of the fleet was 44 years old and 84% of the vessels were smaller than 13 m. The main target species of the fishery are *Spicara smaris*, *Boops boops*, and *Sardina pilchardus* [1, 2]. According to the Greek legislation, fishing is allowed only during daytime, extending one hour before sunrise until one hour after sunset. Fish behavior differs on a daily cycle and consequently the quantity and the composition of the catch is affected by the time of fishing [3]. In this study the catch composition of boat seine fishery before and after sunrise in Greece was examined in order to investigate if differences in the catch due to the time of fishing could be used for managerial purposes.

Material and Methods

From October 2008 to March 2009, observers accompanied professional boat seine fishing vessels on a monthly basis in 14 areas around Greece. The observers without interfering with the fishing operations recorded the number, the weight and measured the lengths of all the species. In total, 239 hauls were sampled, 25 of them took place before and 214 after sunrise. In all areas, 30 different vessels were sampled. The contribution of *S. smaris*, *B. boops* and of all the "other species" in the total catch by number and by weight, before and after sunrise, was estimated combining all the areas. For the areas with observations before and after sunrise, the composition of the catch by weight was estimated as well. As "before sunrise hauls" were considered these hauls when more than 50% of the tow took place before sunrise.

Results and Discussion

A total of 490,990 individuals (466,732 after and 24,258 before sunrise) were caught, weighting 7,323 Kg (6,800 Kg after and 523 Kg before sunrise).The proportion of *S. smaris* in the catch of the hauls before sunrise was 16.4% (by weight) and 28.1% (by number), of *B. boops* was 19.8% (by weight) and 13.7% (by number) and of the "other species" 63.8% (by weight) and 58.2% (by number) (Fig. 1). During the after sunrise hauls, the proportion of *S. smaris* was 48.1% (by weight) and 64.7% (by number), of *B. boops* 20.0% (by weight) and 12.9% (by number) and of the "other species" 31.8% (by weight) and 22.4% (by number).

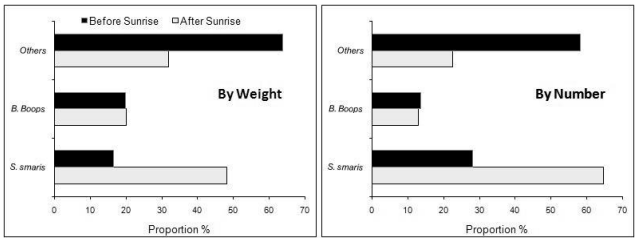

Fig. 1. Boat seine catch composition before and after sunrise by weight and by number in all areas.

The contribution of the "other species" to the total catch of the before sunrise hauls was higher than after sunrise, in all areas except Leykada (Fig. 2). In the latter, one of the main target species is *S. pilchardus* which was caught during the day. The contribution of *S. smaris* was higher in the after sunrise hauls in all areas except Lesvos. *B. boops* catch was higher in three areas before sunrise and in the other three after sunrise.

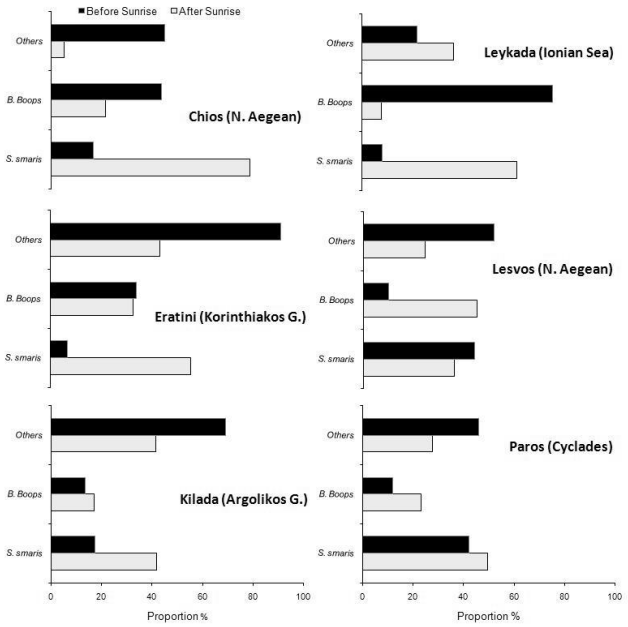

Fig. 2. Boat seine catch composition before and after sunrise by weight per area.

Boat seine fishery operates in coastal waters (maximum distance from the coast about 800 m according to the Greek legislation) using a mesh size of 16 mm in the cod-end, which is not size selective. However, each haul, takes place in a restricted area and only above appropriate bottoms. Consequently, the gear could operate in a species selective way in order to reduce the fishing mortality on the stocks of species like *Mullus spp., Pagellus spp., Diplodus spp.* According to this study, restriction of the time of fishing, during only daytime, could result in an important reduction on the catch of the "other species" (32% by weight, 36% by number, and between 18% and 38% per area by weight).

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References

1 - Anon., 2009. Assessment of the impact of boat seine fishery in the fisheries resources. Ed. G. Petrakis, Final Report, HCMR, 2009.

2 - Petrakis, G., Chilari, A. and Kavadas, S. 2004. Retained and discarded catches from commercial boat seines in Greek waters. *Rapp. Comm. Int. Mer Medit.*, Vol. 37: 419.

3 - Petrakis, G., MacLennan, D.N. and Newton, A.W., 2001. Day-night and depth effects on catch rates during trawl surveys in the North Sea. *ICES J. Mar. Sci.*, 58: 50-60.