

SMALL-SCALE FISHERIES IN THE NORTHERN ADRIATIC SEA

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Abstract

Sampling of small-scale fishery landings at four harbours of the northern Adriatic Sea was carried out from 1999 to 2005 to study fishing capacity, fishing effort and qualitative composition of retained catches. Landing data evidenced a strong seasonality of five fishing gears (sole gillnet, gillnet, trammel net, basket trap for gastropods and trap for cuttlefish) used on the basis of the target species' eco-ethology. The landings of both types of traps included only few species and were dominated by the target one in biomass. In contrast, the retained catches of set nets consisted of a wide pool of species, but the highest yields were obtained only for the target species and a few kept by-catch ones.

Keywords : *Adriatic Sea, Coastal Management, Fisheries.*

Introduction

In Italy set gear fisheries play an important role at the social level, although they do not compete with trawling in economical terms. The small-scale fishery uses many different gears on the basis of the area, period of the year and target species, and vessels are usually spread out in several small mooring places, so making difficult to draw a complete picture of the actual situation in terms of catch composition, fishing effort and fishing activity. In order to increase the knowledge on this fishing sector, data on technical features of gears, fishing areas, landings, fishing effort, fishing yields and qualitative composition of landings were collected over 7 years at four harbours of the northern Adriatic Sea.

Materials and Methods

During 1999-2005 the small-scale fleets of Senigallia, Ancona, Portonovo and Numana harbours consisted of 77 operating vessels having the following features: 0.57-8.57 GRT, 5.44-298 HP and 3.88-13.01 m Loa. The daily landings of randomly chosen vessels were analysed for a total of 587 sampling days and 1,494 census. At each time the following parameters were recorded: technical parameters of the employed vessels and gears, fishing areas, fishing time, and qualitative composition of landings.

Results and Discussion

During the study period the number of active vessels fluctuated seasonally from 35 (winter 2003) to 73 (spring 2002), usually reaching the highest values in spring (Fig. 1). Five types of set gear were observed: basket trap for gastropods, sole gillnet, gillnet targeting grey mullets and sparids, trap for cuttlefish and trammel net (Fig. 1) [1]. Basket traps were used to catch *Nassarius mutabilis* from fall to spring on the coastal sandy and muddy bottoms. From 200 to 500 traps per vessel were lowered at sea at the beginning of the fishing season and hauled at 1-2 day intervals to collect the catch. At each time the traps were baited with dead fish. Landings mainly consisted of the target species accounting for 99% in biomass, while kept by-catch included only 4 species. Sole gillnet was employed all year-round on the coastal soft bottoms within 3 nm offshore following a seasonal trend with the highest values in summer and the lowest ones in winter. This net was characterised by a low height (1.6-2.5 m) and buoyancy of floats allowing it to lay partially on the seabed thus favouring the capture of benthic fish. The most commonly used mesh sizes were 64 and 68 mm (stretched) [2]. Landings included 59 taxa, but were dominated by *Solea solea*, *Squilla mantis* and *Chelidonichthys lucernus*, which made up 37%, 38% and 11% of the total biomass, respectively. The gillnet used for nekto-benthic and pelagic fish had a larger mesh size (80-100 mm stretched) and a higher net panel (3-5 m) with respect to the sole gillnet. This gear was mainly employed in fall and winter on the rocky bottoms close to the shore. Landings included 48 species, but *Liza ramado* (63%) and *Lithognathus mormyrus* (18%) were the most important ones in terms of biomass. Traps for cuttlefish were represented by fyke nets and pots baited with laurel branches acting as spawning substrate for *Sepia officinalis*. This fishing activity was carried out mainly in spring in correspondence with the reproductive season of the target species on the sandy and muddy bottoms of the coastal zone. Each vessel set 200-500 traps in late winter and collected the catch at 2-3 day intervals. Only 8 species were observed in landings and cuttlefish made up 99% of the total catch. Trammel nets were characterised by a wide variety of technical parameters: panel colour (transparent, white, brown, red, black), line type (poliamide monofilament, twisted poliamide) and diameter, height and

mesh sizes of inner and outer panels. They were generally used to catch cuttlefish (60% in weight) in spring on the coastal rocky bottoms close to the shore and *L. mormyrus* (9% in weight) in winter inside the coastal area. The most important by-catch species was *S. mantis*, accounting for 11% of the total catch. A total of 41 species were observed in the landings but, beyond the three above-mentioned species, only *L. ramado* gave an appreciable contribution to the total landed biomass (8%).

The study evidenced the great dynamism of the investigated small-scale fisheries, due to their capacity of changing gear according to the target species' eco-ethology. The used gears were characterised by a high species selectivity, although sometimes kept by-catch made up a discrete portion in biomass contributing to the fishermen' overall income. The information gathered from this study may be used for the management of the fishing activities in the coastal area.

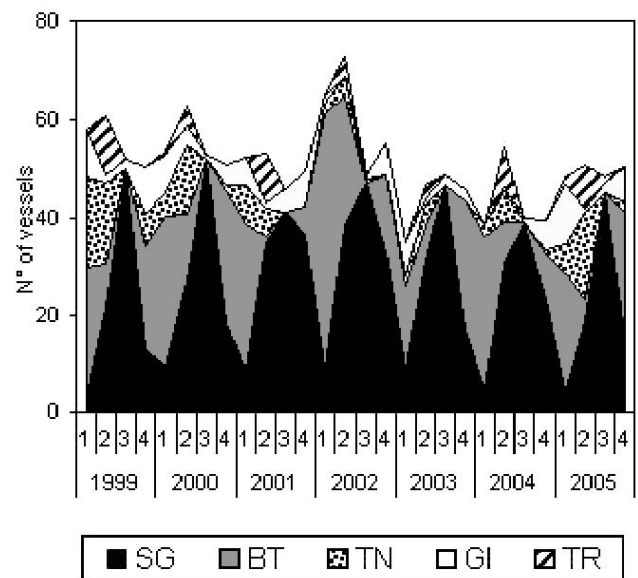


Fig. 1. Seasonal number of vessels belonging to the Senigallia, Ancona, Portonovo and Numana small-scale fisheries subdivided into fishing activities. BT = basket trap; SG = sole gillnet; GI = gillnet; TR = traps; TN = trammel net; 1 = winter; 2 = spring; 3 = summer; 4 = fall.

References

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