INTRODUCING SELECTIVE DEVICES IN THE GREEK TRAWL FISHERIES

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Abstract

The project Netrasel aimed to test a grid system to separate fish from Norway lobster in the Greek bottom trawl fishery. The results show that the grid was proved to be functional and selection of target species and sizes was occurred. The introduction of grids in the commercial trawl fishery should help in the reduction of discard problem in multispecies fisheries.

Keywords : Aegean Sea, Eastern Mediterranean, trawl surveys, Teleostei, Decapoda.

Introduction

Selection grids are now widely used in many commercial fisheries, for both fish and crustacean sorting. They are seen to deliver tangible benefits to conservation and sustainable fisheries development (1,2). The aim of this work was to adapt the grid technology developed in the North Sea fisheries to deal with the specific discard problems associated with the Greek fisheries. Catch comparisons were undertake in order to test and to prove the performance of the western European trawl with the use of a selective grid and two codends in the conditions of Aegean Sea. The purpose was to evaluate the selectivity of the three grids used in the sea trials.

Materials and methods

The grids were manufactured from a semi-flexible polymer and positioned at the front of the extension. The extension of the net had a separator panel and this divides into two codends, the lower and the upper being manufactured from 30mm netting. The grids have the following characteristics : 800mm wide, 850mm length, bar spacing 25/30/35mm and gap 150/200mm. With the grid 35mm/200mm, a netting deflector in the shape of funnel was placed in order to "guide" the catch to the base of the grid, making easier for the crustaceans (Norway lobster and shrimp) to access the gap of the grid.

Two sea trials with a commercial trawler were effectuated in the North Aegean Sea to test the selective grid devices. The vessel used operates a single otter trawl. The first sea trials (A) took place from 8-13 May 2000. Two primary grids (25mm/200mm and 30mm/150mm) were used for fish/Norway lobster selection. The second sea trials (B) took place from 18-23 September 2000, and we use a different grid (35mm/200mm). At the end of each haul, the nets and the cod-ends were taken on board. After the cod-ends were emptied, the catches were separated into species level.

Results

A total of 12 hauls were carried out during the first sea trials (A), at depths ranging from 338-460m. During the second trials (B), 10 hauls were carried out. Depths of the hauls range from 106-400m with mean depth 231m, considerable shallower than the sampling in May. Because of the shallower depth, we found differences in species composition and abundances in relation to the previous sampling.

With the first grid (25mm/200mm), five hauls were completed. A total of 1165 specimens of Norway lobster were caught with this grid, and the percent of retention in the lower cod end were from 70,5-75,9% (mean 73,7%). With the second grid 30mm/150mm, six valid hauls were completed and were fished 1066 specimens of Norway lobster. The percent of retention in the lower cod end were from 58,6-79,5% (mean 73,3%). During the second sea trials, nine hauls have been measured using the grid 35mm/200mm. Only 238 individuals of Norway lobster were fished and the percent of retention in the lower cod end ranged from 66,7-91,7% (mean 83,2%). Generally, the vast majority of Norway lobster was found in the lower codends of all three grids (73,3-83,2% of the total catch). In the upper codend were found fewer specimens and measured more than 50mm of carapace length as seen in Figure 1.

The size selection of Norway lobster seems to be different between the upper and lower cod-end as a result of the selection made by the grids. A significant difference was found in the mean carapace length of Norway lobster between the upper and lower cod-end (1-way ANOVA test, $p<0,05$). Moreover, the higher mean length was found in the upper codend (42,5mm) while in the lower was smaller (35,2mm).

The results obtained for the shrimp *Parapeneus longirostris* show that the average retention in the lower codend was varied from 51,4% (25mm/200mm), to 48,1% (30mm/150mm) and to 70,1% (35mm/200mm). Furthermore, the mean carapace length of shrimp

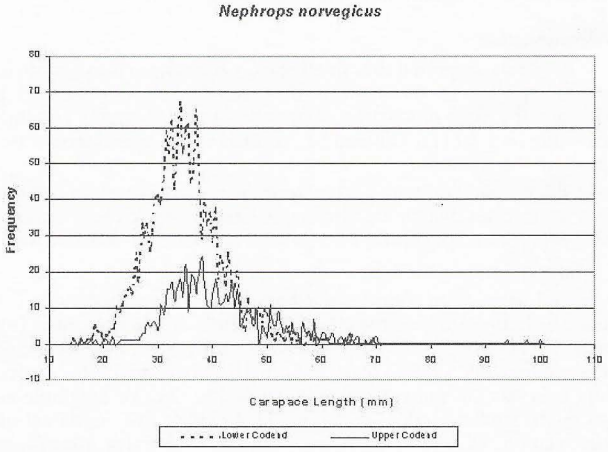

Figure 1.

was found to be statistically different for the upper and lower cod-end in all cases ($p<0,05$).

Hake *Merluccius merluccius* was separated quite acceptable with the use of the grids. The average percent of retention in the upper codend was from 62,1% (25mm/200mm) to 72,2% (30mm/150mm). At the second sea trials, the great majority of fish with TL<200mm (N=1052) was found mainly in the lower codend (mean retention in the upper codend was 31%), while the bigger sizes (TL>200mm, N=361) are located mainly in the upper codend (81% percent retention). The selection pattern of hake over the length classes was found to be statistically different for the upper and lower codend ($p<0,05$).

Discussion

In theory and based on the experience gained in the North Sea (1), with the use of selective grids is possible the separation of fish from Norway lobster. From our results it seems that fish try to avoid the grid and lead to the upper codend, while Norway lobster pass through the gap and through the bars of the grid and direct to the lower codend. The percent of Norway lobster that remains in the lower codend arrives to 92% (haul 5B) - ranged from 59-100% with a mean of 77% at all hauls - a quite remarkable figure for conditions of real fishery. The size classes of Norway lobster are selected with the grid and only few and big individuals are not selected and go toward the upper codend, together with the fish. The other target as *P. longirostris* and *M. merluccius* show a more complex pattern of selectivity; small hake are directed with priority towards the lower codend (69%), while bigger fish are mainly found in the upper codend (81%). Finally, the shrimp was separated with the grid (30%-70% in the upper and lower codend respectively) but not size selection was achieved.

Actually the conclusion of the two sea trials in N. Aegean Sea is that the separation of Norway lobster and fish is quite feasible with the use of selective devises as the one used in the sea trials of the project.

References

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