



MINOUW

Case study results

1.4 Sea Bottom trawl, Catalonia

Contact person:

Francesc Maynou, CSIC,
maynouf@icm.csic.es

<http://minouw-project.eu/>



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RESEARCH & INNOVATION

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SUMMARY

In the Catalan Sea, experiments were performed to establish whether a modified trawl (including T90) improves species selectivity and reduces regulated or non-regulated unwanted catches, with special attention to European hake and red mullet, which are species defining the fishery, and both fall under the remit of the Landings Obligation since January 2017. The results showed an important reduction in the undersized fraction of European hake (52%). In essence, the modification of the net is simple and practical to adopt, and contributes to the implementation of the landing obligation.

CASE STUDY RESULTS

Type of intervention

To test the use of a modification to the extension of the trawl net in Mediterranean mixed demersal fisheries

Aim of the experiment

To establish whether the modified trawl improves species selectivity and reduces regulated or non-regulated unwanted catches, with special attention to European hake and red mullet, which as species defining the fishery, fall under the remit of the Landings Obligation since January 2017.

Main activities carried out

The sampling design consisted of paired hauls using a single, local commercial fishing vessel. The study area comprises commercial fishing grounds of the continental shelf from 60 to 120 m depth, routinely operated by the trawl fleet of Blanes (NE Spain). Trawling was carried out for 1 hour at 2.7 – 2.9 knots speed over ground. Hauls alternated between a control trawl with an extension constructed of standard diamond mesh (53 mm stretched mesh, “DM53”) and a modified design with extension constructed of 50 mm mesh turned 90° (“T90”). Identical 40 mm square mesh codends were fitted to both extensions and the trawl used is the standard design used in the area and complies with the Mediterranean fisheries regulation (EC 1967/2006). The field trials were conducted on consecutive days over the same geographical coordinates. For each species, a catch comparison analysis was carried out. The empirical catch ratio by length class was computed and tested statistically against the expected catch ratio by length class. For each length class, if both the standard and the modified fishing gear would have the same catchability the catch ratio would be 1:1.

Main result

- The catch ratio curve estimated for hake shows that the experimental net catches significantly less individuals smaller than 16 cm TL approximately
- The proportion of undersize hake (< 20 cm TL) in the catches of the modified net was 52% of that found in the standard configuration
- The catch ratio curve for red mullet and striped red mullet did not provide conclusive results, mainly because no undersize red mullets were caught during the experiments

The proportion of non-regulated unwanted catches in both nets was similar (47.6 and 48.8% of the total catch)

Discussion of the results

T90 netting has interesting properties regarding species and size selection, when used in codends. For instance, Deval et al. (2016) tested codends with T90 meshes in four commercial shrimps of East Mediterranean trawl fisheries and showed that the percentage of escapes for all four species increased, due to an increase in L50. In North European fisheries T90 codends have been subject to comprehensive studies that show a clear improvement in selectivity (Hansen 2004), as well as the quality of the fish landed. Despite the number of studies carried out with T90 codends, we are not aware of existing studies testing T90 mesh in the trawl extension to improve selectivity.

This study compared the catch by size in an experimental trawl fitted with an extension piece made of 90° turned mesh T90 against a standard trawl using 53 mm diamond T0 mesh for three species of high commercial interest in Mediterranean fisheries under the remit of the first phase of the Landings Obligation in 2017-2018 (“demersal species defining the fishery”). The results show that a simple modification in the trawl extension piece significantly decreases the amount of undersize European hake, *Merluccius merluccius*, but has a negligible effect on the catches of two red mullets, *Mullus barbatus* and *M. surmuletus*.

How practical is it for a fisherman to implement this improvement, technically and financially?

The modification to the extension is as easy to mount as the standard net and has the same economic cost.

Is there sufficient evidence to support wider adoption of the method/technology?

Yes, this modification can be immediately recommended for demersal mixed fisheries operating on continental shelves. Further tests on other trawl fisheries targeting crustaceans would be necessary.

CONCLUSION

The results show an important reduction in the undersized fraction of European hake (52%), but no effect on other types of unwanted catches, particularly no effect on unregulated unwanted catches

ADDITIONAL RELEVANT RESOURCES OR LINKS

EU Common Fisheries Policy (CFP) Reform: https://ec.europa.eu/fisheries/cfp_en

International Guidelines on Bycatch Management and Reduction of Discards:

<http://www.fao.org/fishery/nems/40157/en>

Deval, M.C., Özgen, G., Özbilgin, H. 2016. Selectivity of 50 mm T0 and T90 codends for commercial shrimp species in the Turkish deepwater trawl fishery, Eastern Mediterranean. *Journal of Applied Ichthyology*, 32 6, 1041-1057.

Hansen, U. J. 2004. Performance of a Trawl Made From 90° Turned Netting T90 Compared With That of Traditional Codends. Gdynia: ICES Fishing Technology and Fish Behaviour Working Group Meeting.

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