



MINOUW

Case study results

1.2 - Algarve deep-water crustacean fishery, Portugal

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RESEARCH & INNOVATION

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SUMMARY

The Portuguese crustacean trawl fishery off Algarve is targeting the Norway lobster, and deep waters shrimps. This fishery is often accompanied by high by-catches of non- or low-commercial value fishes, usually discarded. Developing new technology to reduce bycatch and discards in this trawl fisheries is especially important. Experiments were conducted with professional bottom trawler to test the effectiveness of artificial lights set in the center of the headline. So far, results made impossible to assess real impact of lights.

CASE STUDY RESULTS

Type of intervention

Using artificial lights in deep-water crustacean fishery

Aim of the experiment

To establish whether lights could be used to induce avoidance behaviour.

Main activities carried out

The Portuguese crustacean trawl fishery off Algarve (south coast) is characterized by targeting the Norway lobster, *Nephrops norvegicus*, the deep-water rose shrimp, *Parapenaeus longirostris*, and the red-and-blue shrimp, *Aristeus antennatus*. This fishery is often accompanied by high by-catches of non- or low-commercial value fishes, such as the blue whiting, *Micromesistius poutassou*, the boarfish, *Capros aper*, or the longspine snipefish, *Macroramphosus scolopax*.

In opposition to their use as an attracting mechanism, the use of lights to induce avoidance behaviour has a small corpus of research, often with contradictory outcomes. Nevertheless, if a positive effect could be achieved, it would constitute an easy to install, inexpensive, way of minimizing by-catches and subsequent discards.

The system consisted of a set of off-the-shelf CENTRO fishing lights, whose original electronics was altered by MINOUW partner SNTECH. The original lamp was substituted by a blue one (about 470 nm) and able to pulse at different chosen rates, 10, 20 and 30 Hz.

Experiments were carried out on board the commercial trawler 'Toni Pires', who at he occasion was fishing for the blue-and-red shrimp, at depths of about 700 m. Hauls lasted for 4 hours. The experimental design consisted of installing the (25) lights, in the centre of the headline, every other haul. Pulse rate was programmed for 10 Hz.

Overall the cruise lasted only for 2 days. The first haul with lights on resulted in a much

smaller catch of the target species compared to the early one without them. Right from this point the skipper and crew expressed their concern and displeasure, which was reinforced by the subsequent hauls confirming the apparent striking difference between hauls with light on and off (4.8 vs. 11.3 kg/h). At the end of the second day it became obvious that there were no conditions to pursue the experiments. Regrettably, given the usual high variability in blue whiting catches no conclusions could be drawn about the influence of lights on the species behaviour (on: 27.7 kg/h; off: 24.8 kg/h).

Main result

Significant losses of blue-and-red shrimp seem to be related with the use of lights. The number of hauls was insufficient to establish the existence of an effect on the blue whiting.

Discussion of the results

The impossibility of continuing the survey makes impossible to draw definitive conclusions.

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

If proved efficient, it would constitute an easy to implement and affordable bycatch reduction technique.

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

Not sufficient at this moment.

CONCLUSION

Subject to confirmation the tested layout does not constitute a viable solution for the bycatch problem.

Seemingly, the reason for losses of blue and-red shrimps is based on their attraction towards the lights. Since the latter are placed in the centre of the headline, part of the potential catch will pass over the top of the trawl gear.

Concerning the blue whiting, given the variability in yield among hauls, it was not possible to infer the impact of light on their behaviour.

The MINOUW Consortium



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