MINOUW

Case study results

3.4a - Trammelnet fishery, Catalonia

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SUMMARY

Lights are commonly used in trammel nets in the Western Mediterranean. We assessed the effects of lights in reducing unwanted bycatch and in affecting target catches of commercial species. Using lights to elicit an avoidance reaction by certain components of the catch could be a inexpensive way of minimizing by-catches and subsequent discards. The experiment consisted in deploying a control trammel net of 1500 m without lights, as routinely used by local fishers, and a similar trammel net fitted with artificial lights of two colors (white or green) mounted on the floating ropes at 25 m interval. The sampling consisted in 10 effective days and took place between 10 April and 15 May 2017 using 2 fishing vessels replicating the experiment in similar conditions trammel net fishery examined was targeting the cuttlefish. The lights configurations tested did not result as a viable solution to reduce unwanted catches in this fishery. Further research on artificial light stimuli is necessary before recommending the adoption of devices based on artificial light on trammel nets.

CASE STUDY RESULTS

Type of intervention

Using artificial lights

Aim of the experiment

To establish whether lights could be used to improve size or species selectivity in trammel nets.

Main activities carried out

Commercially available lights as commonly used in set trammelnets in the Western Mediterranean were experimentally affixed to the float rope of a standard trammelnet to assess the possible reduction in unwanted by catch and the effect of this modification on the catches of commercial species. Using lights to elicit an avoidance reaction by certain components of the catch could be a inexpensive way of minimizing by-catches and subsequent discards.

The experiment consisted in deploying a control trammel net of 1500 m with no modification, as routinely used by local fishers, and a similar trammel net fitted with artificial lights two colours (white or green) mounted on the floating ropes at 25 m interval (lights commercially available from Talleres Muro: www.talleresmuro.com). The experimental trammel net had 10 consecutive white lights over a stretch of 250 m of the float rope and a similar string of 10 green lights, separated from the previous by 1000 m of net. The sampling consisted in 10 effective workdays fishing the two nets simultaneously and took place between 10 April and 15 May 2017 using 2 fishing vessels replicating the experiment in similar conditions (i.e. both vessels deployed the experimental and the modified net).

The trammelnet fishery examined is the métier targeting the cuttlefish (Sepia officinalis), commonly practiced by Mediterranan small scale fishers.
Catches were identified, measured, categorized (commercial, discards and reason for discarding) and the statistical differences among the different configurations were tested by means of linear mixed models, considering the two sampling vessels as random effects. Differences in standardized (kg/100 m net · h) catches of commercial species were assessed. Unwanted catches (N/100 m net · h) were tested separately by category (D: catches under minimum landing size of regulated species; K1: bitten or otherwise damaged catches of commercial species; K2: species routinely discarded of no commercial value).

Main results

- Artificial lights produced a low, but significant, increase in total catches of commercial species of 13-14%, with no differences due to light colour.
- The effect of lights on discard reduction was not statistically significant (reduction of 10%)
- Similar proportions of discards for deployments with green and white lights (17% and 18%, respectively).

Discussion of the results

Small scale fishing gear are assumed to have little ecosystem impact, when compared with towed demersal fishing gear. However, certain deployments of trammelnets, such as the case of the cuttlefish métier discussed here, can produce significant amounts of unwanted catches. For instance, the standard configuration tested here produced 19% discards in weight on average (21% in number of individuals). Unwanted catches are commonly discarded, but with the entry in force of the Landings Obligation, unwanted catches of regulated species will need to be brought to land, and used for non-human consumption purposes.
The use of artificial lights on the floatrope of trammelnets did not change significantly the amount of discards for the majority of species (17-18% compared with 19% in the standard deployment), while inducing an increase of 13-14% in the catches of the target species (cuttlefish).

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

The adoption of artificial light on the floatrope of trammelnets is not recommended, at least in the cuttlefish métier.

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

Not at this moment.

CONCLUSION

The configurations tested do not constitute a viable solution to reduce unwanted catches in trammelnet fisheries. Further research on artificial light stimuli is necessary

before recommending the adoption of devices based on artificial light on trammel nets.

ADDITIONAL RESOURCES OR LINKS

Commercial solutions based on artificial light. Research and Development Company SafetyNet Technologies: http://sntech.co.uk/
ICES-FAO Working Group on Fishing Technologies and Fish Behaviour: http://www.fao.org/fishery/topic/16921/en

The MINOUW Consortium

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