Agenda Item 4.3 Review of New Information on Bycatch

Document 4-18

Is limiting gillnet drop a management perspective for the protection of cetaceans in SACs?

Action Requested

- Take note

Submitted by GSM – Gesellschaft zum Schutz der Meeressäugetiere (Society for the Conservation of Marine Mammals)

NOTE:
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Is limiting gillnet drop a management perspective for the protection of cetaceans in SACs?

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Summary

In a cetacean sanctuary in the German North Sea gillnets with a drop of more than 1.3 m are prohibited by legal regulations. This legislation is based on the assumption by the Ministry for Agriculture, Environment and Rural Areas (Schleswig-Holstein) that the bycatch risk for harbour porpoises in such nets is low. Bycatch data from an area stretching from Flensborg Fjord to Eckernförde Bight collected between 1987 and 2009 were analysed with respect to net drop, type and target species. 72.7 % of bycaught porpoises were found in nets with a drop of 1.3 m or lower. 40.9 % of bycatches were reported from trammel nets (typically used in the flatfish fishery) whereas 52.3 were from gill nets (typically targeting cod). The findings show that reducing the drop to 1.3 m or less is not a suitable management option to prevent bycatch of harbour porpoises in protected areas.

Introduction

Incidental catch (also referred to as bycatch) in fisheries is a major threat to many small cetacean species worldwide (Culik 2011, Hoyt 2011). Harbour porpoises (*Phocoena phocoena*) are frequently bycaught in bottom-set gillnets and trammel nets of various mesh sizes and aimed at various target species. Bycatch numbers differ with respect to different types of fisheries. Significant seasonal variations as well as differences between fisheries for flatfish and roundfish are described in Danish North Sea fisheries. Whereas in the cod fishery around wrecks the highest bycatch per unit effort was found, this was much lower in flatfish fisheries. In sole nets no bycatch was reported (Vinther 1999).

In a sanctuary within the German National Park Wadden Sea (federal state of Schleswig-Holstein) aimed at protecting harbour porpoises, gillnets higher than 1.3 m are prohibited by legal regulations (Article 7b Coastal Fishery Ordinance for the Federal State of Schleswig-Holstein - KÜFO-SH 2008). This limit is defined by the distance between the head rope and the lead line in the stretched net. Often, this is referred to as the “drop” of a net. According to the Ministry for Agriculture, Environment and Rural Areas (MLUR) of the federal state of Schleswig-Holstein this

regulation is based on the assumption that the lack of harbour porpoise bycatch in sole nets in the Danish North Sea described in the bycatch analysis by Vinther (1999) is a consequence of the low depth of these nets (up to 1.5 m high).

In this paper bycatch data from a small scale fishery in the Western Baltic Sea were analysed with respect to target species and net drop. The aim of this paper is to analyse if a reduction of net drop can prevent bycatch as intended by article 7b KÜFO-SH and thus could be a management option for SACs elsewhere.

Material and methods

By-catch data from 97 harbour porpoises collected between 1987 and 2009 in a coastal area stretching from the German part of Flensborg Fjord to the southern end of Eckernförde Bight (54°53'N to 54°27°N and 009°27'E to 010°29'E) were analysed for net drop, target species and net type (trammel net or gillnet). Within 48 hrs of reporting a bycatch, fishermen were approached and asked to provide additional information on bycatch location, target species and nets involved. In some cases, fishermen refused to provide data, in other cases they did not remember details exactly. Thus, some of these details were available for only 49 of the bycaught animals. The data were provided by 17 fishermen (10 professional fishermen and 7 part-time fishermen) on a voluntary basis. Their vessels are between 8 and 12m long.

Results

72.7 % of nets causing bycatch in the study area had a drop of 1.3 m or less (n = 33, see Fig. 1). Typical nets used for the flatfish fishery had a drop between 1.0 and 1.5 m. Higher nets (up to 2 m) were mainly used to target cod. However, this distinction is not clear, since often both cod and flatfish were caught by the same fleet.

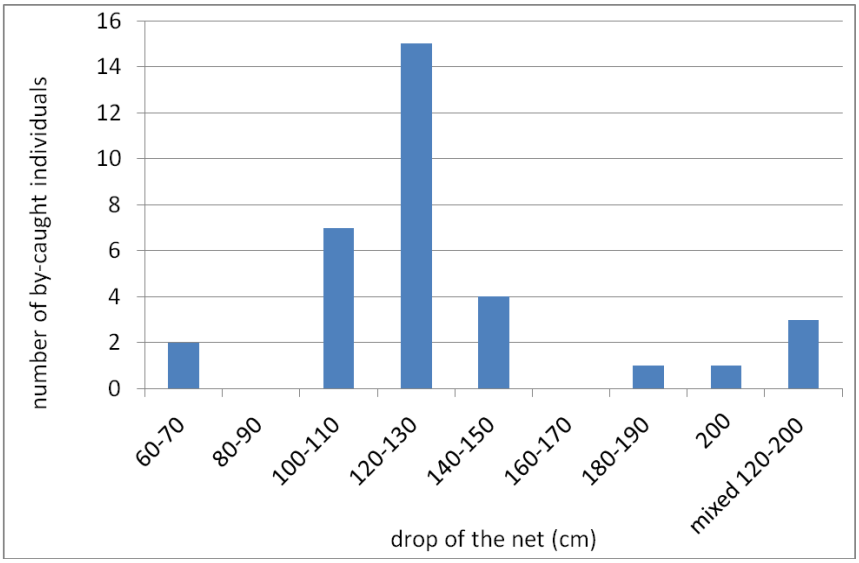

Fig. 1: Number of bycaught harbour porpoises with respect to net drop in Eckernförde Bight and Flensborg Fjord (1987-2009; n = 33). In mixed fleets (last column) panels of different drop were used.

Fig. 2 shows that bycatch in the study area mainly occurs in bottom set nets targeted at cod and flatfish. In 56.1 % of bycatches fishermen reported cod as target species.

70.7 % of the questionnaires indicated flatfish. Often, various fish species are targeted with the same nets or within fleets with different nets.

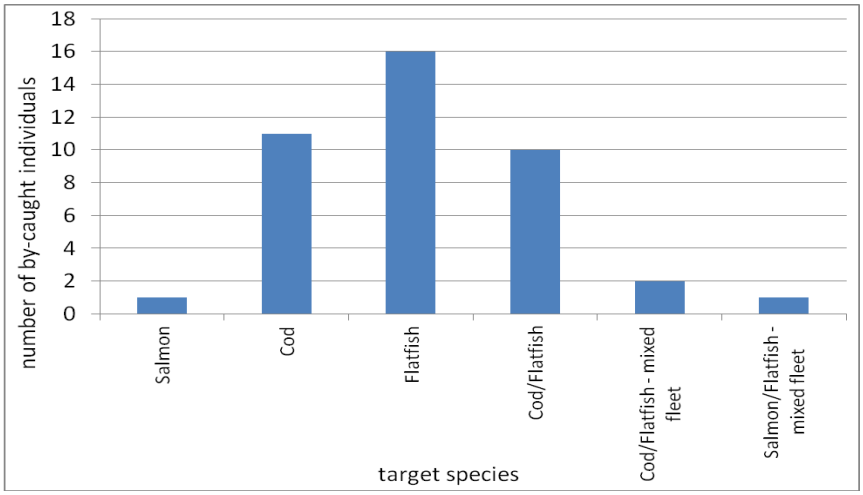

Fig. 2: Number of bycaught harbour porpoises with respect to target species (Eckernförde Bight and Flensborg Fjord 1987-2009; n = 41). In mixed fleets (last two columns) panels of different drop were used.

Fishermen in the study area use gillnets and trammel nets. Bycatch occurred in both types of nets. Trammel nets were involved in 18 cases (40.9 %) whereas 23 bycaught individuals (52.3 %) were from gillnets. 3 individuals (6.8 %) were caught in mixed fleets (Fig. 3).

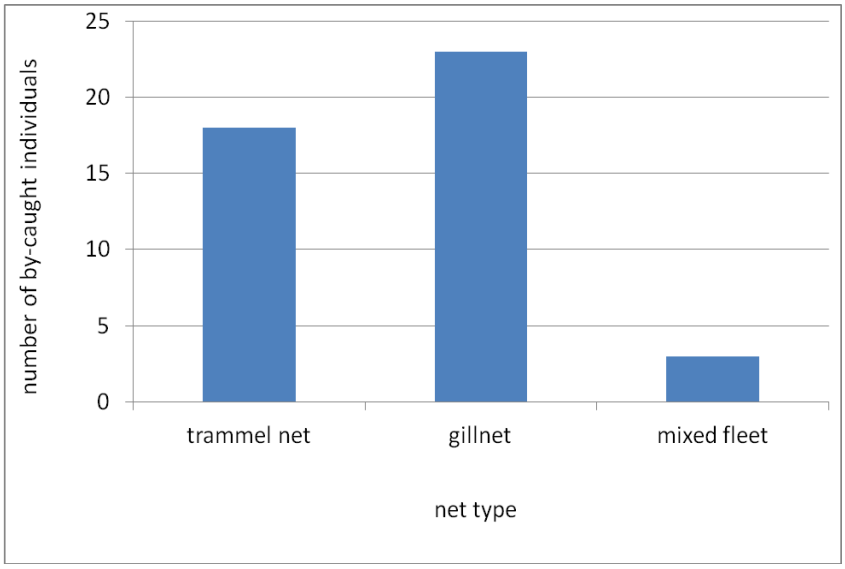

Fig. 3: Number of bycaught harbour porpoises with respect to net type (Eckernförde Bight and Flensborg Fjord 1987-2009; n = 44). In mixed fleets (last column) panels with both types were used.

Discussion

It seems a matter of common sense that a larger net produces more bycatch relative to its area. A lower drop of a net should thus reduce bycatch because the probability of a collision should be accordingly lower. However, the vertical orientation of harbour porpoises when bottom feeding (Lockyer et al. 2001), a typical behavior in which porpoises direct their echolocation beam into the bottom in order to detect benthic fish such as gobies, may prevent a simple linear correlation between net area and

number of bycatches because this behaviour takes place just above the bottom in the reach of any bottom-set net regardless of its drop.

The main finding of this study is that in 24 out of 33 investigated cases bycatch occurred in nets with a drop of 1.3 m or lower. Thus, harbour porpoise bycatch can be regarded as a common phenomenon in bottom set-net fisheries in the western Baltic Sea regardless of net drop. This finding contrasts sharply with the assumption of the MLUR that nets with a low drop produce no or only minor bycatch. Vinther (1999) – on whose research this assumption is based – states: “The result of no bycatch in the sole fishery seems to be too optimistic”. Furthermore, he emphasises that in addition to the drop other factors typical for the sole net fishery may have been responsible for the result that no bycatch was observed in this fishery in the Danish North Sea. Among others, the short soak time which is often only 4 to 8 hours, the smaller mesh size or the less robust net material compared to other fisheries or differences in hanging ratio may also be part of the explanation. Further, the distribution of sole fisheries investigated in his study took place in an area of low harbour porpoise density, and the plaice fishery with higher nets -which was responsible for bycatch- occurred in a different season. Also, in Belgium sole nets are known to catch harbour porpoises at least occasionally (Haelters & Camphuysen 2009).

In this study, 18 of 44 reported bycatches were from trammel nets, whereas 23 bycatches occurred in gillnets. Trammel nets are three-layered fishing nets, the middle layer of which is fine-meshed, the others coarse-meshed. The middle layers used in the study area had a mesh size of 10 to 14 cm (stretched mesh) and thus were similar to the mesh size of gillnets in the same area (10 cm to 15 cm). The mesh size of the outer layer was much larger (size reported by fishermen: 28 to 60 cm). Mesh size seems to be one of the most critical factors for the entanglement of a porpoise. Mouth, fins and fluke are at a high risk of entanglement at mesh sizes of 11 cm or larger (Kastelein 1995). The turbot fishery using very large meshes (mean 26.7 cm) is among the fisheries with the highest bycatch rate (Vinther 1999) but wasn’t used in the area of interest.

The main drawback of this study is that no effort data are available in order to compare bycatch per unit effort between different drops, net types or target species. Log book data collected do not allow for any of these comparisons. Further, many datasets from questionnaires in this study remain incomplete as this is a retrospective study. Also, variations in the seasonal density and distribution of harbour porpoises in the study area and use of different nets (i. e. different target species in different times of the year) could not be accounted for in this study.

However, since cod is the main target species in the fishery of the study area, at least a rough estimation can be given on relative effort between cod and flatfish nets. A fisherman’s estimate is that today, cod is targeted by 60 % of nets in the study area whereas only 40 % target flatfish. Among other factors, the fishing effort depends to a high degree on the current market value. Around 57% (range: 36 to 81%) of the total amount of all fish landed in the harbours of the Baltic coast of Schleswig-Holstein is cod, but only 10% (range: 3 to 20%) is attributed to flatfish (plaice, dab, flounder and turbot) (Fischerblatt 1987 – 2007).

The “typical” flatfish net in the study area has a drop of 1.5 m or lower whereas cod nets are mainly 2 m high. In contrast to the cod fishery, trammel nets are mainly used in the flatfish fishery. Given the fact that only about 40 % of nets target flatfish, and over 70 % of bycatch occurred in nets lower than 1.3 m it appears that the flatfish

fishery should be given much more attention with regard to the conservation of harbour porpoises than used to be the case in the German Baltic Sea.

The data suggests that reducing the net drop is not a management option for SACs designated for harbour porpoises. To achieve the conservation target of these SACs, the use of gillnets and trammel nets should be banned in these areas. An incentive for fishermen to use alternative gear could be to grant exclusive fishing rights in SACs to those fishermen who use environmentally friendly fishing gear.

For future studies, there is a need for better fisheries data which allow researchers to distinguish between net types and give accurate assumptions of effort in various set net fisheries in a good temporal and spatial resolution. Further, the reporting of bycatch including details about location and fishing method must be improved.

Acknowledgements

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