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REPORT OF THE MANAGEMENT COMMITTEE WORKING GROUP ON BY-CATCH

28. February 2005, Tromsø

Droplaug Ólafsdóttir, chair of the Working Group, welcomed the participants to the meeting. Participants to the meeting were: Arne Bjørge and Hanne Østgård (both from Norway), Bjarni Mikkelsen (Faroe Islands), Karen Motzfeldt and Ole Heinrich (both from Greenland) and Daniel Pike and Christina Lockyer (both from NAMMCO)

1. ADOPTION OF AGENDA

The draft agenda (Appendix 1, p. 196) was adopted. The List of Documents is provided in Appendix 2, p. 196.

2. APPOINTMENT OF RAPPORTEUR

Daniel Pike, Scientific Secretary of NAMMCO, was appointed as Rapporteur.

3. INFORMATION REGARDING ONGOING MONITORING AND MANAGEMENT OF MARINE MAMMAL BY-CATCHES OUTSIDE THE NAMMCO AREA

3.1 European Union Initiative

Council Regulation 812/2004 pertaining to the incidental catch of cetaceans in fisheries in European Union waters was adopted 26 April 2004 and entered into force by 1 July 2004. The Council Regulation contains three specific measures, as follows:

1. Restrictions on Baltic Sea drift-net fisheries:
The use of drift nets is to be prohibited altogether in the Baltic Sea from 1 January 2008, and an interim phasing out procedure is advised.
2. Mandatory use of acoustic deterrent devices:
The use of pingers will become compulsory in EU fisheries deploying bottom-set gillnet, entangling net and other gillnet fisheries. This applies only to vessels larger than 12 m in length. This limitation to the regulation is currently debated among NGOs, and there are NGO initiatives to remove this limitation to the regulation.
3. Use of on board observers:
On board observers will be used in target fisheries considered to be at high risk for cetacean by-catch. Observers would monitor fishing operations, incidental catches of cetaceans and the use of acoustic devices. As a general rule, monitoring schemes shall be based on a sampling strategy designed to allow the estimation of the by-catch rates of cetaceans, for the most frequently caught species, with a coefficient of variation (*cv*) not exceeding 0.30. Minimum levels of coverage are specified in the regulation, depending on fishery type and fleet size.

Implementation of the new regulation will be the responsibility of Member States. There is no central coordinating body for the implementation process, and it is anticipated that the progress of implementation will differ between Member States.

Discussion

It was clarified that the new regulation applies only to countries covered by the Common Fishery Policy, *i.e.* member countries of the EU.

It was noted that the use of pingers began some years ago in Danish fisheries, and has been found to be effective in reducing the by-catch of harbour porpoises there.

It was not immediately apparent how the minimum observer coverage levels specified in the regulation and the target minimum precision level of $cv \leq 0.3$ for by-catch estimates were related. The precision of estimates from observer programmes depends mainly on the level of observer coverage and the rate of by-catch. Thus coverage rates would have to be relatively higher to give acceptable estimates for rarely by-caught species and for fisheries with low by-catch rates. Therefore the coverage necessary to achieve the specified level of precision would be species and fishery specific.

4. REVIEW PROGRESS IN MONITORING AND MANAGEMENT OF MARINE MAMMAL BY-CATCHES WITHIN THE NAMMCO AREA

4.1 Progress in monitoring marine mammal by-catches by NAMMCO Member Countries

Mikkelsen noted that there had been no changes in the by-catch reporting system in the Faroe Islands. Fishery logbooks are mandatory for all vessels larger than 110 BRT, and no logbook system is in place for smaller boats. The logbook reporting system is not formatted for by-catch reporting, but fishers have been instructed to report by-catch as supplementary comments. Reporting is not mandatory for foreign vessels fishing in Faroese waters.

Motzfeldt reported that, while the monitoring of offshore fisheries through the observer programme is ongoing, there had been no new developments in by-catch monitoring in coastal fisheries in Greenland over the past year. In most cases by-catch of small whales and seals in some coastal fisheries is included in the catch statistics but there is no way to separate out by-catch from directed catch. In this connection the Working Group recalled the definition of by-catch accepted by NAMMCO in 1999: "Marine mammals taken incidentally in fisheries targeting other species". In this context incidental catches of marine mammals should be reported as by-catch even if they are fully utilised. While this may not be important in the management context if there are no conservation issues or harvest controls, if harvest must be controlled in the future, it will be essential to be able to separate directed from incidental catch.

Ólafsdóttir noted that the reporting of marine mammal by-catch in fishery logbooks is mandatory on all vessels in Iceland. These obligations were however not met by fishermen and no effective official control was in place until 2002. An effort to facilitate and introduce a procedure for reporting marine mammal by-catch through

the log book system was initiated for the gillnet fishing fleet in 2002. The system is unchanged from last year.

Bjørge reported that the reporting of marine mammal by-catch in fishery logbooks has been mandatory since 2003 on vessels larger than 21 m in Norway. However there is no system in place to collect and analyse the data from the logbooks, so the effectiveness of the programme is not known. In 2004 fisheries observers on larger offshore fishing vessels were instructed to also report by-catches of marine mammals. A computer programme for recording and reporting fishing effort, target species catches and by-catches of fish was modified to incorporate species of marine mammals. An evaluation of the effectiveness of this system is in progress.

In 2004 the Institute of Marine Research began a pilot project in which a limited number of coastal gillnetters were contracted to provide detailed records of their fishing effort, target species catches, and by-catches of marine mammals. The effectiveness of this procedure has been evaluated and the programme will be expanded in 2005.

4.2 Evaluation of procedures developed and implemented by NAMMCO Member Countries

4.2.1 Iceland

In 2004 the Management Committee requested the Scientific Committee to carry out an evaluation of the data collection and estimation procedures used in the Icelandic by-catch monitoring programme. This evaluation was carried out at the 12th meeting of the Scientific Committee in 2004. The evaluation focused on the methods used and the reliability of the by-catch estimates rather than on the significance of the estimates themselves.

In 2002 a procedure of monitoring marine mammal by-catch was introduced to the gillnet fishery in Iceland. From 4.5-4.8% of the operating fishing vessels reported marine mammal by-catch in the fishery log books in 2002 and 2003. The results from a questionnaire survey conducted in 2004 were used to interpret the by-catch data from the log books and estimate the total number of marine mammals, mainly harbour porpoises, entangled in the gillnet fishery in 2002, 2003 and the first half of 2004. The results were compared to the fishermen's own attempts to estimate the annual by-catch and secondly, to information obtained from gillnet research surveys performed in March and April 2003 and 2004. The comparison revealed a considerably lower estimate using the log book reports, probably indicating that estimates produced from the log book reports are negatively biased.

The Scientific Committee noted that it was assumed that those fishermen, who reported by-catch in their logbooks, did so for every by-catch event. This assumption is demonstrably false as some fishermen indicated in response to the questionnaire that they reported by-catch only occasionally. This would cause a negative bias of unknown magnitude in the by-catch estimation. This problem could be solved in the future by modifying the logbook forms such that the presence or absence of marine mammal by-catch was consistently reported for every gear cast.

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It was also assumed that fishermen did not deliberately falsify their logbook records or answer untruthfully to the questionnaire survey, by reporting that they had no by-catch when in fact they did. It is impossible to estimate the magnitude of this bias, if it exists, in a self-reporting scheme. The most likely effect of such deliberate falsification would be to cause an underestimation of by-catch.

The uncertainty of the by-catch estimates was not estimated, but it was considered that it should be possible to do so. Given the low return rate of by-catch records, this uncertainty is likely to be very high, especially for species that are rarely taken. The only way to improve the precision of the by-catch estimates would be to increase the response rate of fishermen. While the by-catch estimates from the experimental gillnet survey programme provide an independent check on the estimates from logbooks, the uncertainty in these estimates is likely also to be very high because of the relatively low amount of effort in the survey fishery. Therefore the gillnet survey will likely have very low power to provide estimates of by-catch with required precision.

Similarly, direct independent observation of a subsample of the fishery could provide an unbiased and independent estimate of by-catch. But again, the precision of the estimate would be directly proportional to the fishing effort that could be observed. It is possible to calculate the amount of observer coverage required to produce estimates of a given precision, and the Committee recommended that this be done for the Icelandic fishery.

No estimate of by-catch was provided from the lumpsucker gillnet fishery, which is known to take marine mammals.

In summary the Scientific Committee recommended the following actions to improve the estimation of by-catch in Icelandic fisheries:

- i. Logbook reporting forms should be changed such that the presence or absence of by-catch is reported for every gear cast, along with associated effort data;
- ii. Full uncertainty should be incorporated into the by-catch estimates from the logbook programme and the experimental gillnet survey;
- iii. An analysis should be carried out of the level of observer coverage required to achieve an acceptable level of precision in by-catch estimates from the Icelandic gillnet fishery;
- iv. By-catch from the lumpsucker gillnet fishery should be estimated.

Discussion

It was noted that any self reporting is dependent on the willingness of fishermen to participate. It has been the experience in Iceland and other areas that a sustained effort must be made to explain the programme to fishermen and continually remind them of the requirement to report marine mammal by-catch.

The recommendations of the Scientific Committee were supported by the Working Group. The importance of including a level of precision in by-catch estimates was especially emphasised. In this regard it will be necessary to establish target levels of precision that are required for management. It was considered likely that such a level

would likely be at least as precise as that established by the EU, *i.e.* $cv \leq 0.3$. However such targets may be species specific. Having a target level of precision will simplify the process of designing an effective by-catch monitoring programme.

Bjørge informed the Working Group that Norway is evaluating the use of the catch of target fish as a scaling factor to convert by-catch observations from monitoring programmes to total estimates of by-catch. This is in contrast to the Icelandic programme which uses fishing effort as a scaling factor. The two methods will be compared once the Norwegian programme begins to produce data. This could be done as well within the Icelandic data set, for which catch and effort data are available.

It was concluded that the system used in Iceland of monitoring marine mammal by-catch through fishery logbooks could be a useful model for other countries to use as a starting point. To be effective, the system would have to be modified such that the presence or absence of by-catch is recorded for every gear cast. It was recognised that this would require changes in logbook format which might be problematic for practical reasons in some cases. It was also recognised that such a system was likely to result in negatively biased estimates in most cases due to non-reporting and potentially to deliberate misreporting. Therefore, in high risk fisheries or for species of special conservation concern for which very precise and unbiased estimates are required, a logbook system might have to be augmented by an observer programme with a targeted level of estimation precision.

4.2.2 Other countries

In Norway, observer programmes to monitor by-catch have just begun to function and their effectiveness is currently under evaluation. It was suggested however that in addition the data from the mandatory logbook reporting system should be analysed to see if it can be used to estimate by-catch levels in some fisheries. The Faroe Islands and Greenland have no by-catch monitoring programmes that are suitable for evaluation.

5. EVALUATION OF THE POTENTIAL RISK OF MARINE MAMMAL BY-CATCH IN THE FISHERY WITHIN THE NAMMCO AREA

5.1 Spatial and temporal overlap in the fishing activity and distribution of marine mammals within the NAMMCO area

In 2004 the Management Committee recommended that member countries should prepare working documents outlining the existing knowledge about marine mammal by-catch in their jurisdiction, for the consideration of the Working Group on By-catch at its next meeting. These documents would be evaluated by the Working Group and used to develop recommendations and priorities for by-catch monitoring in member countries.

Faroe Islands

Working paper NAMMCO/14/MC/BC/7 provided a summary of ongoing fisheries, fishery management and marine mammal distribution in the Faroe Islands. The main fisheries in Faroese waters are mixed-species, demersal fisheries and single-species,

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pelagic fisheries. The demersal fisheries are mainly conducted by Faroese fishermen, whereas the pelagic fishery is conducted by Faroese and foreign fishermen licensed through bilateral and multilateral fisheries agreements. Gears used include jigging, longlines, otter trawls, pair trawls, purse seine and gillnets. In contrast to most other areas however there is no inshore, shallow water gillnet fishery in the Faroes, and only 8 vessels participate in a deep-water gillnet fishery for Greenland halibut and monkfish. Management of fisheries is based on individually transferable effort quotas within fleet categories. In addition there are limitations on the catch of non-target fish within fisheries, as well as seasonal and area closures to protect spawning areas and juvenile fish.

The most common baleen whales in the Faroes are the minke and fin whales. Common toothed whale species include the pilot whale, northern bottlenose whale, harbour porpoise, white-sided and common dolphins. Grey and hooded seals are the most common seal species in the area. The seasonal distribution of marine mammals is highly variable but some species are present year-round, while others apparently migrate through. In general there is a high degree of overlap between the distribution of marine mammals and some fisheries.

Although no formal by-catch reporting system exists, incidental reports of marine mammal by-catch are very infrequent. This is probably because of the very limited use of gillnets in the area. Reports of by-catch in the other gear types used are infrequent or non-existent.

Discussion

The Working Group agreed that the lack of an inshore gillnet fishery was certainly the reason why by-catch appeared to be an infrequent phenomenon in the Faroes. However it was noted that by-catch of harbour porpoises and dolphins is high in some pelagic trawl fisheries in other areas, including the UK and the Bay of Biscay. Given the lack of a formal reporting system and the fact that many of these fisheries are carried out by foreign fleets from which even incidental reports of by-catch could not be expected, the Working Group could not rule out the possibility that by-catch in pelagic trawl and possibly other fisheries was significant in the Faroes.

Greenland

NAMMCO/14/MC/BC/8 provided a tabular presentation of the major fisheries around Greenland. Offshore fisheries are monitored by observers with an approximate coverage of 50%. Reporting of marine mammal by-catch is mandatory. There are no reports of marine mammal by-catch from these fisheries.

Inshore gears used include bottom trawls, gillnets, long lines, crab pots, scallop dredges and pound nets. Reporting of by-catch for smaller vessels is not mandatory and it is assumed that if by-catch occurs it is reported through the general harvest monitoring programme. In such cases it would not be distinguishable as by-catch.

Discussion

While the information presented in NAMMCO/14/MC/BC/8 was considered a useful

first step, the Working Group required more information on the size and spatial distribution of Greenlandic fisheries, and their overlap with marine mammal distributions, in order to evaluate the potential for by-catch in Greenland. This applies particularly to fisheries in nearshore waters. It appears that the offshore fishery is low-risk in terms of by-catch, as it has relatively high observer coverage and no by-catch has been reported. While it was recognised that most by-catch may be included in the catch statistics, it was considered that some way of estimating by-catch from fisheries is required.

By-catches of humpback whales have occurred for the past few years in West Greenland. The whales become entangled in the float lines of crab traps or pound nets. In addition there have been observations of humpback whales carrying entangled gear. While catches have been small, the size of the population is uncertain, so further information will be required to evaluate the significance of this by-catch. It was noted in this regard that the Scientific Committee is already carrying out an assessment of humpback whales off West Greenland.

Iceland

NAMMCO/14/MC/BC/9 provided an overview of fishing effort for the main fisheries operated by the Icelandic fishing fleet, as well as an overview of the present knowledge of the distribution of the most common marine mammals in Icelandic waters. Fisheries in Iceland are spread throughout a large area surrounding Iceland. The main fishing fleet operates within the Icelandic EEZ but some Icelandic fisheries are also conducted on the Reykjanes ridge and Irminger Sea southwest of Iceland, the Iceland Faroe ridge, southeast of Iceland and in the Jan Mayen and Barents sea areas northeast of Iceland. Gears used in the fisheries include hand line, gillnet, bottom and pelagic trawls, longlines, purse seines and Danish seines. Year-round inshore fisheries include gillnet fisheries for lumpsucker, codfishes, flatfishes and wolffish.

The most common whales in the Icelandic inshore are minke, humpback and killer whales, harbour porpoises and white-beaked dolphins. Common species encountered offshore include fin whales, pilot whales, sperm whales, sei whales, northern bottlenose whales and white-beaked and white-sided dolphins. While some humpback whales apparently stay year-round in Icelandic waters, most baleen whale species are present only in the spring, summer and fall. Grey and harbour seals are the most common pinnipeds occurring in Icelandic near shore waters.

Comparison of the distribution the fisheries and that of marine mammals may lead to the conclusion that incidental entanglements of marine mammals may occur for all fisheries in Iceland. The largest overlap in fishing effort and marine mammal distribution occurs on the coastal shelf leading to the highest potentials for by-catch in these fisheries. Varying catchability of marine mammals in different gear types is likely to result in various by-catch levels within the same area and season. The highest risk for by-catch is probably in the coastal and near shore gillnet fishery. Some interactions may also occur in the capelin and herring fisheries.

Discussion

The Working Group agreed that the inshore gillnet fisheries were the most likely to result in by-catch in Icelandic waters. Indeed by-catch of harbour porpoise, seals and other species is known to occur in these fisheries. Thus it was recommended that by-catch monitoring be focussed on these fisheries in the near term. Nevertheless, similar to the situation in the Faroes, it was considered that there was potential for by-catch in other fisheries as well. Therefore every effort should be made to obtain information about marine mammal by-catch in other fisheries, probably by establishing a self-reporting system similar to that used in the gillnet fishery.

Norway

Norway did not provide a working paper as had been recommended by the Management Committee.

5.2 Other indirect or direct evidence of marine mammal by-catch within the NAMMCO area

Bjørge informed the Working Group that the recovery of seal tags from Norwegian coastal fisheries indicated that grey and harbour seals may experience an additional mortality of roughly 5% from fishery by-catch. Bottom set gillnets accounted for most of the mortality but the small cod trap net fishery accounted for a relatively high percentage of seal tag returns.

6. REPORTING OF BY-CATCH TO NAMMCO

6.1 Reporting in 2004.

Pike reviewed the by-catch information in the National Progress Reports applicable for 2003. This year, for the first time, all countries used the new National Progress Report format to report by-catch. The Faroe Islands and Greenland reported some by-catch but did not provide details about the fishery in which these animals were caught, as required in the format. Norway provided a brief description of ongoing programmes to monitor by-catch, but did not provide any estimates from these programmes. Reporting from Iceland followed fully the National Progress Report format, and further details are provided elsewhere in this Report.

7. OTHER ITEMS

No other items were brought to the attention of the Working Group.

8. RECOMMENDATIONS

The Working Group supported the recommendations of the Scientific Committee to improve the estimation of by-catch from the Icelandic monitoring system (see 4.2.1). In addition the Working Group made the following recommendations to improve by-catch monitoring in NAMMCO member countries:

1. The use of self reporting through fishery logbooks to estimate by-catch should be considered the minimum level of monitoring for NAMMCO member countries. To be effective, such a reporting system must report

- the presence or absence of by-catch for every gear set. It is also crucial that fishermen be kept informed about the programme.
2. Supplemental monitoring, probably through observer programmes, will be necessary for high risk fisheries and in cases of high conservation concern where more precise and reliable estimates are required.
 3. Target levels of precision for by-catch estimation should be established. While these may be species or stock specific it was considered likely that such a level would likely be at least as precise as that established by the EU, *i.e.* $cv \leq 0.3$.
 4. The use of target species catch *vs* fishery effort as scaling factors to convert by-catch observations from monitoring programmes to total estimates of by-catch should be compared.
 5. Norway should continue to develop its observer programme for offshore fisheries and the targeted collection of data from the coastal fishery.
 6. Norway should evaluate the usefulness of the existing logbook system for estimating by-catch in some fisheries.
 7. For Greenland, catch of marine mammals resulting from some coastal fisheries with mixed species catches should be specified with regard to catching method.

The Working Group recommended that Greenland and Norway provide the information on the potential for fishery by-catch that was requested for this year (see 5.1). For Greenland, the concentration should be on inshore fisheries.

9. FURTHER MEETINGS?

The Working Group considered the face-to-face meeting to be more productive than previous teleconferences and recommended that this practice should be continued, depending on progress, at the discretion of the Chair.

10. ADOPTION OF REPORT.

The Report was adopted on 1 March 2005.

APPENDIX 1 – AGENDA

1. Adoption of agenda
2. Appointment of rapporteur
3. Information regarding ongoing monitoring and management of marine mammal by-catches outside the NAMMCO area
 - 3.1 European Union Initiative
4. Review progress in monitoring and management of marine mammal by-catches within the NAMMCO area
 - 4.1 Progress in monitoring marine mammal by-catches by NAMMCO Member Countries
 - 4.2 Evaluation of procedures developed and implemented by NAMMCO Member Countries
 - 4.2.1 *Iceland*
 - 4.2.2 *Other countries*
5. Evaluation of the potential risk of marine mammal by-catch in the fishery within the NAMMCO area
 - 5.1 Spatial and temporal overlap in the fishing activity and distribution of marine mammals within the NAMMCO area
 - 5.2 Other indirect or direct evidence of marine mammal by-catch within the NAMMCO area
6. Reporting of by-catch to NAMMCO
 - 6.1 Reporting in 2004.
7. Other items
8. Recommendations
9. Further meetings
10. Adoption of report

APPENDIX 2 - LIST OF DOCUMENTS

NAMMCO/14/MC/BC/1	List of participants
NAMMCO/14/MC/BC/2	Draft agenda.
NAMMCO/14/MC/BC/3	List of documents
NAMMCO/14/MC/BC/4	National Progress Reports: By-catch reporting for 2003.
NAMMCO/14/MC/BC/5	Björge, A. Update on the European Union initiative.
NAMMCO/14/MC/BC/6	Excerpt from the Report of the 12th Meeting of the NAMMCO Scientific Committee: 11.1 Estimation of by-catch in Icelandic coastal fisheries
NAMMCO/14/MC/BC/7	Potential for by-catch in Faroese fisheries
NAMMCO/14/MC/BC/8	Potential for by-catch in Greenlandic fisheries
NAMMCO/14/MC/BC/9	Potential for by-catch in Icelandic fisheries
NAMMCO/14/MC/BC/10	Potential for by-catch in Norwegian fisheries (not provided)
Additional document	
SC/12/15	Ólafsdóttir, D. and Gunnlaugsson, Th. Monitoring of marine mammal by-catch in the Icelandic gillnet fishery

