

**2.2**

**REPORT OF THE MANAGEMENT COMMITTEE WORKING GROUP ON  
BY-CATCH**

13 March 2006, Selfoss

Droplaug Ólafsdóttir, chair of the Working Group, welcomed the participants to the meeting: The following were present: Dr Arne Bjørge (Norway), Ms Lisbeth Plassa (Norway), Mr Bjarni Mikkelsen (Faroe Islands), Mr Fernando Ugarte (Greenland), Mr Ole Heinrich (Greenland), and Mr Daniel Pike and Dr Christina Lockyer from the Secretariat.

**1. ADOPTION OF AGENDA**

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

**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**

Bjørge reported on progress in implementing Council Regulation 812/2004 pertaining to the incidental catch of cetaceans in fisheries in European Union waters, which entered into force in July 2004. The regulation includes measures restricting Baltic Sea drift net fisheries, providing for mandatory use of acoustic deterrent devices (pingers) in some fisheries, and the use of onboard observers on vessels of over 15 m in length. Further details were provided in the 2005 report of this Working Group (NAMMCO 2005). An evaluation workshop is scheduled for 2007 but may be delayed. There have been problems in some areas with the introduction of pingers into the fishery, and some reluctance by fishermen to use them because of technical difficulties. The Working Group will continue to monitor progress in implementing this regulation.

**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** since last year. Fishery logbooks are mandatory for all vessels larger than 110 BRT, however the reporting of by-catch in these logbooks is encouraged but not required. The logbooks are not formatted for recording by-catch, and such records must be entered as supplementary comments. There is no logbook

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system in place for smaller boats. Mikkelsen noted that there had been a close cooperation between fisheries and science, and that there was no indication that substantial numbers of marine mammals were being by-caught.

Ugarte reported that, since last year, the format of the mandatory logbook reporting system in **Greenland** has been changed so that reporting of marine mammal by-catch is explicitly required. In most cases by-catch of small whales and seals in coastal fisheries is thought to be included in the catch statistics but there is no way to separate out by-catch from directed catch. By-catch of large whales is probably always reported because the fisherman must seek permission from the Department of Hunting before the whale can be killed and utilised, and the fisherman can receive compensation for damaged gear.

Ólafsdóttir reported that the by-catch monitoring programme in **Iceland** is unchanged from last year. The reporting of marine mammal by-catch in fishery logbooks is mandatory on all vessels. However reporting in most fisheries is very poor. An effort to introduce a procedure for reporting marine mammal by-catch through the log book system was initiated for the gillnet fishing fleet in 2002, and the results from this programme were evaluated by the Scientific Committee and this Working Group last year (NAMMCO 2005). The recommendations for improvement of the reporting system made last year were accepted by Iceland, but there has been no progress in implementing them.

Bjørge noted that **Norway** had the legal instruments necessary to manage marine mammal by-catch, but to date data on by-catch had been lacking. The reporting of marine mammal by-catch in fishery logbooks has been mandatory since 2003 on vessels larger than 21 m. The fisheries statistical database has recently been updated to include fields for marine mammal by-catch. In 2005 two new programmes were introduced: an independent observer (IO) programme for large vessels, and “reference fleet” (RF) programmes for large and small vessels. In the RF programme vessels are contracted to provide detailed information on their catch, effort and by-catch. The main objective of the IO programme is to monitor catch composition in order to improve fishery regulations, and recording of by-catch is a secondary objective. The offshore RF programme is designed to improve catch and effort statistics to support fish stock assessment. The coastal RF programme is designed to provide detailed data on catch, effort, by-catch and the size distribution of the catch, including by-catches of marine mammals. Further details of these programmes are provided in Section 4.2.1.

## **4.2 Evaluation of procedures developed and implemented by NAMMCO Member Countries**

### **4.2.1 Norway**

Working papers NAMMCO/15/MC/BC/7 and NAMMCO/15/MC/BC/8 reported on progress in using the IO and RF programmes to monitor by-catch in coastal (NAMMCO/15/MC/BC/8), shelf and offshore fisheries (NAMMCO/15/MC/BC/7).

A team of onboard independent observers reported in 2005 from shelf and offshore long line fisheries (920,400 hooks), Danish seine (355 hauls), purse seine targeting

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saithe (64 sets), demersal trawl (3,693 hours), shrimp trawls (3,555 hours). No marine mammals were reported by-caught during the observed fishing operations. In 2005, ten contracted commercial vessels reported from demersal trawl (9,396 hours, 2,582 hauls), Danish seine (30 hauls), purse seine (71 sets), long lines (36,683,400 hooks) and gill net (64,530 nets) operations. No marine mammal was reported by-caught in the trawl, Danish seine, purse seine, and long line fisheries. In the gill net fisheries seven seals were reported by-caught: three grey seals in statistics area 6 (Lofoten area), and four harp seals in statistics area 21 (west of Svalbard).

In order to improve the fisheries statistics for coastal and inshore fisheries, a number of coastal fishing vessels were contracted to provide very detailed information on their fishing effort, catches, by-catches including incidental catches of seabirds and marine mammals. The skippers of a sub-sample of coastal fishing vessels less than 15 m total length were contracted and offered economic compensation for providing information on their fishing operations and catches. The financial compensation in combination with the selection procedure and a continuous personal dialog with the skippers contribute to the reliability of the reported information.

By the end of 2005 a total of 18 vessels was contracted, two vessels in each of nine fishery statistics areas. Fourteen of these vessels were contracted by 1st October and for these vessels information on effort, catch and by-catch were available for the period October-December 2005.

Forty marine mammals (26 harbour porpoises, 10 harbour seals and 4 grey seals) were by-caught by the contracted vessels during the period of October to December 2005. Information on the associated gear type, fishing effort and landed catches of target species was provided. The first period of data from the contracted fishing vessels indicates that this is a promising method for monitoring by-catches and estimating total removals of marine mammals by commercial coastal fisheries.

As data on marine mammal by-catches accumulate, the next step will be to estimate the magnitude of these by-catches by extrapolating from observed and reported fishing operations to entire fisheries. It is anticipated that this will be feasible sometime in 2007.

The Working Group welcomed the progress by Norway in monitoring by-catch in coastal and offshore fisheries. In discussion it was noted that monitoring 14 of the small vessels in the coastal fleet during a three-month period was unlikely to produce estimates of by-catch with acceptable precision, as this comprised a small proportion of the total number of gillnetters. However this will be evaluated once further data are accumulated. It was also noted that misreporting by RF vessels is possible and is difficult to detect. However the intention was to minimize the likelihood of misreporting by being careful in the choice of reference vessels, maintaining contact with the skippers and by closely monitoring their reports.

### **4.2.2 Other countries**

In 2004 the Scientific Committee recommended that full uncertainty should be

incorporated into the by-catch estimates from the Icelandic logbook programme and the experimental gillnet survey. In working paper NAMMCO/15/MC/BC/12 the original estimates of marine mammal by-catch in the gill net fishery presented by Ólafsdóttir and Gunnlaugsson (2004) were verified giving confidence limits for the estimates for each species, area and time period. In addition new estimates on by-catch from observer survey in 2005 were presented. The confidence limits for the average numbers of by-caught animals in nets were estimated using a bootstrap procedure by generating 1,000 resamplings of the by-catch data for each mammal species, area and time period. Estimates of the by-catch of harbour porpoise, the most commonly by-caught species, from the logbook programme had moderate precision (95% CI plus/minus 30-50%) for the total area, while estimates from the observer programme had lower precision. Estimates of the by-catch of harbour seals, the second most commonly caught species, had somewhat lower precision. For other species, precision was very poor because of the relative rarity of by-catch events. The precision of estimates from the logbook programme could be improved by increasing the number of reporting fishermen, which is only about 5% at present. However as noted by the Scientific Committee last year some of the critical assumptions underlying the estimation of by-catch from the logbook programme are unlikely to be always met and their failure will lead to the underestimation of by-catch. This is supported by the fact that the point estimates of harbour porpoise by-catch from the experimental gillnet survey are substantially higher than those from the logbook programme for similar time periods.

The Working Group welcomed Iceland's progress in fulfilling this technical recommendation by the Scientific Committee. It was noted that the level of precision for the most commonly caught species, the harbour porpoise, may be acceptable even with the present low rate of reporting in the logbook programme. In this regard the recommendation by the Scientific Committee to carry out an analysis of the level of observer coverage required to achieve an acceptable level of precision in by-catch estimates from the Icelandic gillnet fishery was reiterated. However the potential for negative bias in estimates from this programme still needs to be addressed, and the Working Group referred to the recommendations of the Scientific Committee (NAMMCO 2005) for doing so.

It was noted in the Working Paper that the estimated number of bycaught harbour seals is high relative to the known abundance of this species. It also seems likely that seals are bycaught in substantial numbers in the lumpfish fishery, however no estimates exist for this. The Working Group therefore reiterated its recommendation of last year that the Icelandic monitoring programme should be extended to include this fishery.

## **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**

### **Greenland**

Working paper NAMMCO/15/MC/BC/9 presented a partial and preliminary description of fisheries in Greenland, including target species, area, season, gear type, regulatory regime and potential for marine mammal by-catch. Fisheries are regulated through a system of licences that limit the species to be fished, the area, the time of the year used for fishing and/or the amount of fish to be caught. Several species have total allowable catches in accordance with international advice. The Ministry of Fisheries and hunting in Greenland regulates the catch of 18 species belonging to 16 genera of fish, crustaceans and molluscs: Greenland halibut, Atlantic halibut, golden redfish, beaked redfish, cod, polar cod, common grenadier, northern grenadier, striped wolffish, spotted wolffish, capelin, Atlantic salmon, lumpfish, Arctic char, shrimp, snow crab and scallop. Besides these commercially and/or culturally important species, there are occasional catches of other species, such as blue whiting, American plaice or Atlantic herring. The most important fisheries are those for shrimp and Greenland halibut. In the latter fishery, gillnets are used and there is some potential for by-catch. Coastal fisheries for cod, lumpfish, salmon and Arctic char also use gillnets. Pound nets set for cod and traps set for crab have resulted in occasional entanglements of humpback whales. Given that the vast majority of the fishermen who deploy fishing gear have a hunting licence, it was considered likely that most by-catch of seals and small cetaceans is consumed or sold in the same way as the animals that are shot with rifle, and probably enters the catch statistics but is not distinguished as by-catch.

The best known by-catch problem in Greenland is the entanglement of humpback whales in fishing gear. Most entanglements occur in crab pot lines and stationary pound nets, but set gillnets are also at risk. The meat of by-caught humpback whales is distributed among municipal institutions, such as hospitals and schools, and among the public that gathers where the whales are being flensed. The flensing of a humpback whale is an important social and cultural event. The by-catch benefits the community in the form of free meat and work for whaling and flensing crews. However, the affected fishermen lose because their lost and damaged gear is only partially compensated by the government, according to the fishermen's economic status. In addition, the government absorbs costs associated with replacement of damaged gear and the flensing and distribution of the whale.

The Working Group considered this work to be incomplete as it did not provide descriptions and spatial distributions of all fisheries in sufficient detail and provided no information on the potential for overlap with marine mammals. Nevertheless this was considered a first step in assessing the potential for by-catch in Greenland. In this regard the Working Group noted that there was potential for marine mammal by-catch in nearshore gillnet and trap fisheries for several species, but at present there is no way to assess the magnitude of by-catch that is occurring. The Working Group recommended the completion of this report.

### **Norway**

Working paper NAMMCO/15/MC/BC/6 presented an overview of the main Norwegian fisheries with regard to landings, spatial and temporal distribution of catches, and the distribution of the main marine mammal species in Norwegian waters,

with the intention of showing where and when there are elevated risks for by-catches of marine mammals. The Norwegian fishing fleet operates a range of gear types and individual vessels might operate more than one gear type depending on target species, season and area. Purse seines and trawl are the main fishing gear for pelagic fisheries with regard to landed catches, and demersal trawl, long lines and bottom set gill nets are the main gear types for demersal species. The majority of pelagic and demersal fish landed in Norway is caught by purse seine and demersal trawl, respectively. These gear types are supposed to have a relatively low risk of marine mammal by-catches. The majority of fishing vessels are small, coastal types deploying a variety of gears. Some of these are coastal gillnetters which are associated with higher risk of marine mammal by-catch (see 4.2.1). However the number of these vessels has declined greatly in the past 20 years.

The distributions of several species of toothed and baleen whales are well known for the summer months but poorly described for the remainder of the year. These distributions show considerable overlap with those of fisheries. However, these provide a static picture of fishery and marine mammal distribution, which in the real world are very dynamic both in space and time. Much more detailed data would be required to identify potential “hotspots” for marine mammal by-catch.

The Working Group welcomed this contribution from Norway, noting that it added greatly to their understanding of Norwegian fisheries. These reviews were originally requested in 2004 (NAMMCO 2004) for the purpose of developing recommendations and priorities for by-catch monitoring in member countries. While the reviews had proven quite useful in identifying fisheries that were most at risk for marine mammal by-catch, it was considered that further progress in this area would require much finer spatial and temporal resolution of both fishery and marine mammal distributions than was available for most areas. Therefore, the Working Group **recommended** that efforts be concentrated on developing effective monitoring programmes, especially for fisheries identified as being most at risk for marine mammal by-catch.

## **6. REPORTING OF BY-CATCH TO NAMMCO**

### **6.1 Reporting in 2005**

Pike reviewed the by-catch information in the National Progress Reports applicable for 2004. This year all countries included the required section on by-catch in their progress reports, however the format was not followed in all cases. It is apparent that, without effective by-catch monitoring programmes in place, countries cannot report by-catch in a way that can be quantified. The Faroe Islands provided information on their collection programme and reported some by-catch. Greenland reported some by-catch but no details as to the methodology of by-catch data collection, coverage, or monitoring effort are given. Norway provided a brief description of ongoing programmes to monitor by-catch, but it was too preliminary to provide any estimates from these programmes (see 4.2.1). Iceland provided the most detailed reporting of by-catch. However total by-catch cannot readily be estimated from these data as reported. The Icelandic monitoring programme was reviewed in detail in 2005 (NAMMCO 2005).

## **7. OTHER ITEMS**

### **7.1 Proposal for a workshop on by-catch monitoring**

The Terms of Reference for this working group indicate that its major focus is to improve the systems for collecting data on by-catch in NAMMCO member countries. At present no NAMMCO member country has an effective monitoring programme for marine mammal by-catch. The Icelandic programme is the most advanced, and was reviewed by the Scientific Committee in 2004 (NAMMCO 2005). By-catch monitoring in Greenland, the Faroe Islands and Norway is less developed, and no quantitative estimates of by-catch can yet be made available for these areas. Given the early stage of development of by-catch monitoring programmes in NAMMCO member countries, there is potentially much to gain from learning from the experiences of other jurisdictions where monitoring programmes are more developed.

The Working Group therefore proposes that NAMMCO host a workshop with the theme "Monitoring Marine Mammal By-catch". The meeting would focus on the following issues:

1. Review of by-catch in NAMMCO member countries, and present systems of monitoring;
2. Review of monitoring systems in other jurisdictions - what works and what does not;
3. Recommendations to establish and/or improve by-catch monitoring systems in NAMMCO member countries.

The Report from the Workshop would be available to this Working Group in 2007 and could be used to make progress on recommendations to NAMMCO member countries for improving their by-catch monitoring programmes.

The 3-day workshop would include only a few invited experts from relevant jurisdictions, as well as those members of the Working Group who wished to attend. The experts invited would be people directly involved in the setup and operation of monitoring programmes and analysis of by-catch data. The workshop would be held in January 2007, to allow sufficient time for meeting preparations. Invited experts would be offered funding support by NAMMCO, but could come at their own expense if they can. It is assumed that delegates from this Working Group would pay for their own travel and expenses. The total cost of the workshop would be approximately NOK 72,000.

The Working Group considered that such a workshop would be very useful in fulfilling its terms of reference, and **recommended** that NAMMCO support this proposal.

### **7.2 Information from ICES and SMM By-catch workshops**

In 2005 Pike attended two workshops which focused primarily on the mitigation of marine mammal by-catch. ICES hosted a theme session "Mitigation Methods for Reduction of Marine Mammal and Sea Turtle By-catch in Fisheries" at the Annual Science Conference held in Aberdeen, 20-24 September 2005. The session dealt primarily with by-catch mitigation, but there was some information presented on by-

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catch monitoring programmes in Sweden and Finland. The Society for Marine Mammalogy (SMM) hosted a workshop “Science and Implementation Considerations of Mitigation Techniques to Reduce Small Cetacean By-catch in Fisheries”, immediately preceding their Biannual Meeting in San Diego on 10 December 2005. As indicated by the workshop title the main focus was on mitigation of by-catch in gillnet and trawl fisheries. There was considerable discussion about the effectiveness of pingers and operational problems with using them on a large scale. Abstracts of all papers from both conferences are available from the Secretariat.

### **7.3 Depredation and damage to fishing gear by marine mammals**

The Working Group noted that the depredation of fish from fishing gear by marine mammals, and consequent gear damage, had become a significant problem in some areas. Recognising that this item was outside its terms of reference, the Working Group suggested that this problem should be considered by the Management Committee for further action.

## **8. RECOMMENDATIONS**

In 2005 the Working Group provided a number of recommendations to improve the monitoring of by-catch in NAMMCO member countries (NAMMCO 2005). At that time the Management Committee noted that the Working Group was not able to complete its assessment of the potential for marine mammal by-catch in NAMMCO member countries, and therefore agreed to postpone a full consideration of the recommendations put forward by the Working Group until the next annual meeting. The Working Group therefore reiterated the recommendations first put forward last year, with some additions and modifications:

1. The Working Group reiterated and supported the recommendations of the Scientific Committee made in 2005 to improve the estimation of by-catch from the Icelandic monitoring system (NAMMCO 2005).
2. NAMMCO should host and support the proposed workshop “Monitoring Marine Mammal By-catch” described under 7.1.
3. 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.
4. 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.
5. 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.*  $cv \leq 0.3$ .
6. Norway should continue to develop its observer programme for offshore fisheries and the targeted collection of data from the coastal fishery, and provide estimates of by-catch with associated precision as soon as feasible.



7. Norway is in the process of revising their logbook system and introducing electronic logbooks. The effective recording of marine mammal by-catch should be a part of this process.
8. For Greenland, catch of marine mammals resulting from some coastal fisheries with mixed species catches should be specified with regard to catching method.

## **9. FURTHER MEETINGS**

In general the Working Group found it far more productive to hold face-to-face rather than telephone meetings. If the recommended workshop is held in January 2007, it will be convenient to hold a meeting of the Working Group in conjunction with the Workshop. Otherwise the next meeting should immediately precede the next meeting of the Council.

## **10. ADOPTION OF REPORT**

The report was adopted on 14 March 2006.

## **REFERENCES**

- NAMMCO. 2004. Report of the Management Committee. In: *Annual Report 2003*, NAMMCO, Tromsø, pp. 75-132.
- NAMMCO. 2005. Report of the Management Committee. In: *Annual Report 2004*, NAMMCO, Tromsø, pp. 129-203.
- Ólafsdóttir, D. and Gunnlaugsson Th. 2004. Monitoring of marine mammal by-catch in the Icelandic gill net fishery. NAMMCO/SC/12/15

## **Appendix 1: AGENDA**

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**Appendix 2: LIST OF DOCUMENTS**

NAMMCO/15/MC/BC/1	List of participants
NAMMCO/15/MC/BC/2	Draft agenda.
NAMMCO/15/MC/BC/3	List of documents
NAMMCO/15/MC/BC/4	National Progress Reports: By-catch reporting for 2003.
NAMMCO/15/MC/BC/6	Bjørge, A., Ynnesdal, H. and Hartvedt, S. Spatial structure of Norwegian fisheries and the associated risk for by-catches of marine mammals.
NAMMCO/15/MC/BC/7	Bjørge, A., Borge, A. and Kleven, S. Observed and reported by-catches of marine mammals in Norwegian shelf and offshore fisheries, 2005.
NAMMCO/15/MC/BC/8	Bjørge, A. Godøy, H. and Nedreaas, K. A system for monitoring by-catches of marine mammals in Norwegian coastal and inshore fisheries.
NAMMCO/15/MC/BC/9	Ugarte, F. Potential for by-catch in Greenlandic fisheries
NAMMCO/15/MC/BC/10	Pike, D.G. Proposal for a workshop on by-catch monitoring.
NAMMCO/15/MC/BC/11	Pike, D.G. Information from ICES and SMM by-catch workshops.
NAMMCO/15/MC/BC/12	Ólafsdóttir, D. Marine mammal by-catch in the Icelandic gill net fishery.