NAMMCO Scientific Committee Working Group on By-catch

REPORT
29 February, Marine Research Institute, Reykjavík, Iceland

As convenor of the planning meeting, Desportes welcomed the participants and thanked the Marine Research Institute for hosting the meeting.

She reviewed the TORs for the NAMMCO BYC WG as established by SC/21:
1. Identify all fisheries with potential by-catch of marine mammals
2. Review and evaluate current by-catch estimates for marine mammals in NAMMCO countries.
3. If necessary, provide advice on improved data collection and estimation methods to obtain best estimates of total by-catch over time.

The specific aims of this meeting were to establish the framework of the WG work and to identify a) what data and other information were available and which data were missing to be able to evaluate current by-catch estimates in NAMMCO countries, b) identify possible Chairs, and c) scheduling the next meeting and its specific TOR.

1. UPDATE SINCE 2010 (WKOSBOMB WS)

1.1 Conclusion of the joint ICES-NAMMCO workshop on bycatch (2010)

The WS on Observation Schemes for Bycatch Of Mammals and Birds (WKOSBOMB) reviewed ways of monitoring by-catch (both direct and indirect and best practice), data collection management, fleet effort data needed for raising by-catch rates and raising procedures (ICES WKOSBOMB 2010). The newly developed by-catch monitoring method using CCTV cameras was presented and its potential underlined and welcomed.

One of the main output of WKOSBOMB should have been to develop guidelines describing best practice for conducting marine mammal and seabird by-catch monitoring, but these guidelines were never finalised.

1.2 Progress since 2010

1.2.1 In NAMMCO countries

Norway

There are two reference fleets (RF) in Norway. The offshore RF (ORF) is constituted of 15 larger vessels >15 m and fishing offshore using gears such as long lines (9), bottom trawl for cod (4) and bottom trawl (2). The coastal RF (CRF) is composed of approximately 19 vessels, with at least 2 vessels in each of 9 Norwegian statistical coastal fishing areas (waters out to 4 nm). They use gillnets for cod (half mesh size 80-105 mm) in the winter/spring and for monkfish (half mesh size 180 mm, from shallow waters down to 400m depth) in summer/autumn. Nets with half mesh of 80-105mm are also used for other species according to season and availability. Vessels are contracted for a year at a time to collect information on

fishing effort, catch and all by-catches (including marine mammals and seabirds). The CRF vessels receive economic incentives for reporting catch and effort, and for taking biological measurements and samples. Every vessel has a contact person at the IMR, which from time to time observe the fishing operations. If the data reported by the vessel are different from the data observed by IMR staff, the contract can be cancelled.

Norway uses the by-catch data from the coastal reference fleet (CRF) to estimate the by-catch rate (using GAM models) in the cod and monkfish fisheries, and landing statistics from the Directorate of Fisheries for the same species and gear types to extrapolate to the entire fisheries. There is no effort data from the commercial coastal fleet of vessels less than 15m total length (which comprises about 5000 vessels). Therefore, the landings statistics are used for the extrapolation.

The statistics provided to Bjørge for his first analysis of by-catch in the cod and monkfish fishery (Bjørge et al. 2013) were inaccurate, as they included all Norwegian cod and monkfish landings and not only landings from the coastal gillnet fisheries for cod and monkfish, thus leading to an overestimation of total by-catch in those fisheries. The previous estimate was 6900 harbour porpoises a year, but preliminary analyses based on correct landing statistics indicate that the actual bycatch will be closer to 3300 porpoises a year with a CV of ca 10%. The reanalysis will be finalized this year, providing by-catch estimates for harbour porpoises, grey and harbour seals. The by-catch estimates provided to this meeting for grey and harbour seals (NAMMCO/SC/23/BYC04) are based on the correct landings.

Collection of by-catch data will also be initiated in the lumpfish fishery, where by-catch rates are likely to be high but the overall effort is small. The by-catch of marine mammals should therefore be limited, but might be significant for seabirds.

Discussion
The by-catch rate provided by the CRF is thought to be reliable because of the contact person at the IMR that periodically observes the fishing operations and compares observed and reported data. Also as the contract is for one year, this arrangement is less prompt in causing changes in fishing methods/areas in order to minimising by-catch (as has been observed in some fisheries). Vessels in the coastal reference fleet are thought to be representative of the fishery. The IMR chooses the "average" vessels among the received applications. Landings data for the whole fisheries collected by the Directorate of Fisheries are also considered to be reliable.

In the Trøndelag -Lofoten area, a recent significant decline in grey seal pup production has been observed. This could be due to the by-catch in monkfish fishery. The monkfish fishery is a relatively new fishery and has little regulation (and level of enforcement not known) and has been moving north from Trøndelag as the local stocks get depleted. The bycatch of young grey seals is known to be high and a decline in pup production could be expected after an approximate time leg of five years.

Mitigation – Bjørge has recently received funding for conducting pinger experiments, which will start in the monkfish fishery this summer, and then in the cod fishery next winter. Standard pingers from Aquamark and Future Ocean will be used, as well as a few banana pingers. These pingers have been specifically developed for, and are efficient in, mitigating by-catch of harbour porpoises. SMRU has also carried out some developing work on pingers for grey seals (different sounds).

Bjørge mentioned that he tested Future Ocean pingers resulting in the pingers breakup, although it was uncertain whether it was due to the pressure (down to 400m) or handling (e.g., when net is being hauled). Future Ocean has made changes in the design to make more robust pingers.

Bjørge et al. (2013) also suggested as a mitigation measure, that gillnets with large mesh sizes should be prohibited in shallow waters, as by-catch rate are higher in shallow waters, even if by-catch occurs down to 400m. Desportes reported that gillnet with mesh under 90mm were considered by-catch safe (ASCOBANS 2015a). Norway does not have data to examine this, but it could be interesting in terms of possible mitigation.

Iceland

The cod gillnet and the lumpsucker fisheries are the main problem concerning by-catch of marine mammals in Iceland (NAMMCO/SC/21/11). An electronic log system was put in place 3-4 years ago in the gillnet fishery. However, the reporting of by-catch using the electronic log system dropped significantly compared with the hand written logbook. Either the fishermen did not understand how to report by-catch, or they did do not want to participate. During MRI's annual April cod gillnet research survey, all by-catch is recorded by the scientists on board the vessels, with representative coverage around the entire country. These data are (about 1% of the total fleet effort now) were considered the most reliable to extrapolate to the cod fishery, but the information on seasonal changes is now outdated. Data from the Directorate of Fisheries observer scheme were used to estimate by-catch rate in the lumpsucker fishery. The most common marine mammal by-catches observed in the Icelandic fishery are of harbour porpoises, harbour and grey seals, but some dolphins, harp, ringed and bearded seals are also by-caught, as well as seabirds.

Mitigation – The MRI is working with Bird Life International to begin using lights to mitigate seabird by-catch and pingers in 2017. Trials will be conducted during the cod survey.

Discussion

Electronic logbooks are not considered reliable yet, however reporting is increasing. The Directorate is working at making the electronic logbooks easier to use. Currently, zero by-catch is rarely reported in the electronic logbook, and no by-catch reported can either mean no by-catch or lack of reporting.

Greenland

By-catch are considered as removals and should be treated as direct catches. It is however not clear whether all by-catches are reported as catch and therefore are reliably included in catch statistics.

Faroes

Electronic logbooks have been introduced for the fleet larger than 15 GRT in 2013, with registration of marine mammal as mandatory. Zero by-catch is asked to be reported. However, the registration of the species is not an option in the logbook.

1.2.2 & 1.2.3 In ICES and Europe

The ICES WGBYC has been discussing at length the reliability of the monitoring and reporting conducted in the EU, noting that by-catch data are patchy, their reliability unequal, and the monitoring effort often too low to allow an extrapolation to a whole fishery. UK is likely the country putting the largest effort into monitoring, followed by France and now the Netherlands

with a large Remote Electronic Monitoring (REM) project covering about 10% of the gillnet fleet.

In general, the situation is not good for by-catch monitoring in Europe, and may become worse with the by-catch monitoring integrating in the new Data Collection Framework (DCF, discard monitoring), as this monitoring is designed to quantify the discard of commercial species and not for the monitoring of protected species. Among other problems, gillnet fisheries are under-prioritised as they do not generate much discard. However, they are the gears generating most of the marine mammal by-catch. The ICES WGBYC data continues to demonstrate the failures of the current DCF to capture by-catch of rate event species, including marine mammals. Dedicated marine mammal by-catch observers report by-catch rates much higher than DCF observers in similar fisheries (e.g. ICES WGBYC 2014, 2015).

One problem is that DCF observers have many tasks to carry out, some under the deck. They often do not have time to check for marine mammals falling out of the net when being hauled, while it is known that a non-negligible number of, in particular, harbour porpoises fall out, especially from smaller mesh gillnets.

Certainly an important progress since 2010 is the full development of Remote Electronic Monitoring (REM, using CCTV cameras), and its adaptation to all kinds of vessels, including smaller vessels (ASCOBANS 2015b). REM has been validated and produced in fact better data than dedicated observers, and it is now used extensively in Denmark and the Netherlands. The system in particular is able to capture video of animals falling out of the net during hauling. Videos must be examined afterwards, representing many hours of effort. For marine mammals, however, the videos can be examined at relatively high speed, thus speeding up the process. Although the initial financial investment can be high, it has been calculated than in Denmark it is cheaper to invest in REM and analyse the data on land, than to have dedicated observers on board. Also, one advantage is that the original data remains intact.

The WG wondered how such system would perform in the dark, in conditions like in Northern Norway.

In terms of mitigation, pingers are /have been used mainly by UK and Denmark under the EU regulation 812, although the enforcement is not always very clear. Sweden has been working a lot and successfully with gear modification and the development of alternative gears, in particular to prevent seal damage to the catch and to reduce bycatch of seals.

1.2.4 Things coming up

The International Fisheries Observer and Monitoring Conference will take place in August 2016 in San Diego, CA (http://www.ifomc.com/). Bjørge informed that the conference did not seem to be dealing much with marine mammals, but mainly concerned with fish discard and by-catch.

2. UPDATE ON BY-CATCH REPORTING SYSTEMS IN NAMMCO COUNTRIES

2.1 Faroe Islands

Starting in 2013, the reporting of by-catch in the logbooks have become mandatory for vessels above 15 GMT (about 15 m), including the registration of zero by-catch, but no identification of species. There is no by-catch reporting system for vessels below that size.

Discussion

The WG recommended as a priority a modification of the logbook for allowing species identification to be recorded, especially as it does not increase much the workload. A reporting system should also be implemented for smaller vessels.

By-catch reporting in the logbook is very low in the Faroes and the same problem with a typical lack of reporting from the fisherman is expected, as in Norway and other countries.

2.2 Greenland
No information received.

2.3 Iceland
Logbooks are mandatory for vessels of all sizes, and landings and by-catch of marine mammals and birds should be reported. Most, if not all, cod gillnet boats report net lengths and soak time. In the lumpsucker fishery, some of the smaller vessels report net lengths and time soaking, but this is not mandatory. Generally in Iceland, the scope of the reporting (mandatory or not) depends of the nature of the fishery not of the size of the vessels.

It is not allowed to sell bycaught marine mammals and seabirds in Iceland.

2.4 Norway
It is mandatory for all vessels larger than 15m to have electronic logbooks and to report by-catch of marine mammals and birds by species, with a special column designed for this reporting. Although the bycatch of marine mammals is low in the offshore fleet of larger vessels (Bjørge et al. 2007) it is assumed to occur. However, there are just no reports in logbooks, so this reporting is not a reliable source of by-catch data.

3. REVIEW OF TYPES OF FISHERIES IN NAMMCO COUNTRIES AND IDENTIFICATION OF THOSE WITH POTENTIAL BY-CATCH OF MARINE MAMMALS

3.1 Faroe Islands
- The pelagic pair trawling mackerel, blue whiting and herring fisheries using pelagic or semi-pelagic trawl with very high vertical opening, (VHVO) are increasing, while marine mammals (pilot and minke whales) have been reported by-caught in these fisheries. The by-catch risk might therefore be increasing.
- Semi pelagic trawl are known to take e.g. pilot, minke, and killer whales.
- Purse seines are reported taking dolphins, killer whales as well as baleen whales such as minke whales.
- Grey seals and harbour porpoises have been reported to be caught on longlines, however the longline halibut fishery, which was likely the most problematic fishery, has ended.
- Harbour porpoises have been reported by-caught in herring set gillnet in shallow waters.
- A fishery for greater argentine is using high vertical opening trawls, but it is unknown if by-catch of marine mammals occurs in this fishery.

The Faroes have gillnet fisheries for monkfish and Greenland halibut, but they operate in relatively deep waters, below 380m and 500m respectively and are therefore assumed to not be a problem with regard to by-catch.

3.2 Greenland
No information provided.

3.3 Iceland

- Gillnet fishery for cod and lumpsucker generate marine mammal by-catch. In the lumpsucker fishery by-catch rates are high, but effort is now low due to limits on number of nets and effort days (around 20). The cod gillet fishery effort has decreased appreciably in recent years/decades.
- Bottom trawlers have very low by-catch - maybe 1 seal per year.
- Pelagic capelin fisheries sometimes entrap humpbacks, but they usually escape.
- The pelagic trawling fishery has been increasing in recent years, but no by-catch has been reported in log books nor in the Directorate of Fisheries observer scheme or by scientists on board those vessels.

Iceland has no halibut fishery (as halibut are protected due to low population), no turbot fishery, and no trammel net fishery. These fisheries are usually associated with high by-catch in other countries.

Nets are not allowed in recreational fisheries in Iceland. These fisheries are restricted to hand held angling, and therefore are not believed to involve any marine mammal bycatch.

Harbour porpoise, harbour seal and grey seal are the species the most represented in the Icelandic by-catch.

3.4 Norway

- Bottom set gillnets for cod (75 – 105 mm mesh) and monkfish (180 mm mesh size) are the most problematic fisheries.
- Bottom set gillnet for lumpsucker also have by-catch but the effort is low.
- The halibut fishery might also generate by-catch, but the effort is much smaller than that of the cod fishery. However this fishery, which uses nets similar to the monkfish fishery, has increased in recent years and should be monitored.
- In Finnmark, some trapnets for salmon catch harbour porpoises. The porpoises can normally be released alive.
- In Finmark lots of harp seal pups are caught in some years.

The salmon driftnet fishery stopped in 1988. This fishery had high by-catches of harbour porpoises. Floating longlines for salmon are now prohibited in Norway, but when in use they were taking lots of young hooded seals. There is no pelagic trawling at the moment. Purse-seine are not a problem for marine mammals.

Cod traps have been used in coastal fisheries, the cod being sold live. It was profitable, but has ended because of the high cod worm infestation rate, particularly in those areas where the traps were used. By catch was a problem for coastal seals.

Trammel nets are used - some by the recreational fishery, close to land, mainly for crabs.

In Norway, gillnets can be used in the recreational fishery. No licence is needed and no reporting of catch is required, therefore no statistics are available. However, it is a fairly large fishery, especially for cod, and more coastal cod may actually be caught by recreational fishers than commercially. The number of nets is regulated, but there is no limit on landings. Levels of by-catch are unknown.

The three species of concern are grey and harbour seals, and harbour porpoises. In recent years, humpback whales have becoming entangled in the Troms area when they feed in wintering herring in the fjords.

Very little by-catch is recorded in the offshore fleet, and no grey and harbour seals are taken, and seldom harp seals. The Directorate of Fisheries observers were asked to report bycatch of marine mammals during one year on the larger vessel fleet, however, as no by-catch was observed, so this monitoring stopped.

4. IDENTIFICATION OF EXISTING & NEEDED BY-CATCH-RELATED DATA AND OWNERS OF THE DATA

4.1 By-catch data

Norway

The data from reference fleet is owned by IMR, as well as the mark recapture data for tagged seals. Landing statistics are from the Directorate of Fisheries, but there is very good cooperation between the two institutions and it is no problem in getting the data.

In Norway, the by-catch data originate from the reference fleet and the recovery of tagged seals.

The WG recommended that more reference vessels be used in the area where by-catches are largest, i.e. especially the Lofoten - Vesterålen area, in order to get more accurate and reliable by-catch data.

Iceland

It would be good to have more observers. The March/April cod gillnet survey is a great source of data over a 10 year-period. Although capturing the peak of the gillnet season it does not provide information on seasonal changes in by-catch rate, which is needed, and therefore information from the old hand written log books was used. One possible solution, if electronic recording does not improve, could be to contract the vessels that are already contracted for the gillnet research survey in the spring to year round and use them as a reference fleet.

The fishery observer data is improving, but was not reliable in the past. It became more reliable about 2 years ago, according to the Directorate, after they instructed the observers about the importance in recording by-catch data.

Data from the electronic logbooks are presently not reliable. Improvements of the software are being made by the Directorate of Fisheries to facilitate reporting. It may be possible to look at some vessels that are reliable and use their data as a reference fleet. Reporting of zero by-catch is required in the logbook.

Faroes

The reliability of the reported by-catch data has never been assessed. It is especially important to get reliable data for fisheries identified as problematic such as the mackerel mid water trawling fishery which is increasing in effort in recent years, and where the by-catch is relatively high.

Very-high vertical opening (VHVO) trawl are used in the Faroes. Mikkelsen was not sure whether there was by-catch, however he will follow up and try to get reporting from the fishery this summer. VHVO trawl have been identified as being very problematic with regards to by-catch in Spain.

4.2 Fleet effort

Norway

Only landings are available for the coastal fisheries (vessel < 15m). For the larger vessel fisheries, logbooks can be used if there are by-catches reported.

Iceland
Effort is recorded as number of pulled nets, total length, and soaking time.

The WG discussed the use of automatic recording to get effort data. Norway has this for larger vessels, and Iceland has used automatic recording as well, including larger and smaller vessels, mainly as a safety feature. Most, if not all commercial vessels have this. It records length of net and GPS position. Bjørge reported that he tried to use it to obtain effort data, but it is a large, unwieldy amount of data.

Faroes
The information was not available and will be provided at the next meeting.

4.3 By-catch Estimates
Only Norway and Iceland have estimated total by-catch for the few fisheries considered most important.

4.4 Data gaps
In Norway there might be a problem with the species identification of by-caught seals. This will be discussed in a coming meeting with the Coastal reference fleet.

In the Faroes, reliable by-catch data are missing for all fisheries. Reporting is mandatory for vessels over 15 GMT using logbooks, but as elsewhere very little by-catch reporting. Species identification of the by-catch is not available.

In Iceland, information on seasonal changes in by-catch rate is missing.

5. BEST *MODUS OPERANDI* FOR REVIEWING AND EVALUATING EXISTING BY-CATCH ESTIMATE

5.1 Needed external expertise
The WG is meant to be a permanent WG, with a more or less fixed membership, meeting every 1-2 years. The WG would not look at the impact of by-catch on marine mammals populations, but would review the by-catch estimates to be used in impact assessment and population modelling. It may also discuss mitigation possibilities, if the SC so wishes.

Some fishery expertise was needed, both in terms of fishery statistics (sampling, effort), but also gear specialists.

5.2 Best forum
The group agreed that at this point the best forum was a NAMMCO working group, but that links should be developed with the ICES WGBYC with the aim of future joint meetings.

This could be done by inviting the ICES WGBYC chair, Marjorie Lyssikatos, or members such as, e.g., Simon Northridge (UK), Ronan Cosgrove (Ireland) and Lotte Kindt-Larsen (Denamrk) to the NAMMCO WG.

5.3 Planning of next BY-CATCH working Group meeting
5.3.1 Terms of reference

The TOR of that particular meeting will be to:

1) Review Norwegian harbour and grey seals and harbour porpoise by-catch data and estimates
2) Review the Icelandic lumpsucker and cod gillnet fishery by-catch data and estimates.
3) Review of the situation in the Faroese mid-water trawling – precise fleet description, by-catch risk and reporting, methods for improving the situation.
4) Review information from Greenland on reporting of by-catch for the different species.

5.3.2 Date and place

Norway should have the reanalysis of the by-catch data (porpoise and seals) ready for the late fall, including the data up to 2015. There will be a meeting with the Coastal reference fleet late in December 2016, and Bjørge will participate and discuss how more reliable species identification of seals can be achieved. Iceland is currently reanalysing some older data and will need to analyse the data from the 2016 April cod survey.

The group agreed that the date of the next meeting would be decided in August according to progress in the analyses. Prewitt will contact the group at that time. If both the Norwegian and Icelandic analyses are completed, the WG could meet in February-March 2017.

5.3.3 Agenda

Not determined, but see ToRs for the meeting under point 5.3.1

5.3.4 Invited experts

Interesting experts to invite would be:

From Norway, Erik Berg (IMR, Tromsø), expert in fisheries statistics and gear specialist (coastal cod and halibut); Modulf Overvik (Directorate of Fisheries) working with the fishery database, and sampling and effort data

From Iceland, Haraldur Einarsson, a fishing gear specialist.

From the ICES BYCWG, preferably Marjorie Lyssikatos (chair), or Simon Northridge, Finn Larsen or Lotte Kindt-Lassen (especially with regards to REM and mitigation).

5.4 Identification of a WG Chair

A recommendation from Secretariat is that the Chair is not a stakeholder- not someone from NAMMCO countries tabling data to be reviewed by the WG.

Several names were proposed Simon Northridge and Nora Hanson (ICES MME), both from SMRU, UK; Garry Stenson & Jack Lawson from Canada; Ronan Cosgrove from Ireland; Lotte Kindt-Larsen (has worked with REM and pinger experiment, lots of contact with fishermen in DK). Kimberley Murray, from NOAA/Northeast Fisheries Science Centre.

Several participants felt that Murray would be an appropriate chair.

5.5 Other business

No other business was raised.

6. AOB

The WG members are at present Arne Bjørge (NO), Thorvaldur Gunnlaugsson and Guðjón Sigurdsson (MRI, IS), Sandra Granquist (Seal Centre, IS), Guðni Magnús Eiríksson (Fisheries Directorate, IS, responsible for the reporting (logbook) system), Bjarni Mikkelsen (Faroes), Nette Levermann (Greenland), Geneviève Desportes (Convenor).

The report was adopted by correspondence on March 15, 2016.

7. REFERENCES

ASCOBANS. 2015a. Draft Submission of ASCOBANS Advice on the Requirement of Legislation to Address Monitoring and Mitigation of Smalll Cetacean ByCatch. AC22/Doc.4.1.b. Available at http://www.ascobans.org/sites/default/files/document/AC22_4.1.b_DraftSubmission_EUBycatchLegislation.pdf

ASCOBANS. 2015b. Report of the ASCOBANS Workshop on Remote Electronic Monitoring with Regards to Bycatch of Small Cetaceans. Available at the ASCOBANS Secretariat

Bjørge, A., Borge, A. and Kleven, S. 2007. Observed and reported bycatches of marine mammals in the Norwegian shelf and offshore fisheries. NAMMCO/15/MC/BC7. 9pp.

Bjørge, A., Skern-Mauritzen, M. & Rossman, M.C. 2013. Estimated bycatch of harbour porpoise (*Phocoena phocoena*) in two coastal gillnet fisheries in Norway, 2006-2008. Mitigation and implications for conservation. *Biological Conservation*. 161: 164-173.

ICES WKOSBOMB. 2010. Report of the Joint NAMMCO-ICES Workshop on observation schemes for bycatch of mammals and birds. 28 June – 1 July 2010, Copenhagen, Denmark. ICES CM 2010/ACOM:33. 36pp.

ICES WGBYC. 2015. Report of the Working Group on the Bycatch of Protected Species. 2–6 February 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:26. 80pp.

ICES WGBYC. 2014. Report of the Working Group on the Bycatch of Protected Species. 4–7 February 2014, Copenhagen, Denmark. ICES CM 2014/ACOM:28. 94pp.

APPENDIX 1 - AGENDA

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   1.1. Conclusion of ICES-NAMMCO WS on bycatch in 2010
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      1.2.2. In ICES
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5. BEST *MODUS OPERANDI* FOR REVIEWING AND EVALUATING EXISTING BYCATCH ESTIMATE
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6. AOB

APPENDIX 2 – LIST OF DOCUMENTS

Meeting documents

SC/23/BYC/01	Agenda
SC/23/BYC/02	List of participants
SC/23/BYC/03	List of documents
SC/23/BYC/04	Bjørge, Moan, Nilssen and Øigård. Bycatch of harbour and grey seals in Norway.
SC/23/BYC/05	Mikkelsen. Fisheries in Faroese waters and the potential for bycatch of marine mammals.

Background documents

SC/23/BYC/O01	ICES WKOSBOMB. 2010. Report of the joint NAMMCO-ICES workshop on observation schemes for bycatch of mammals and birds.
SC/23/BYC/O02	ICES WGBYC. 2015. Report of the Working Group on Bycatch of Protected Species.
SC/23/BYC/O03	ICES WGBYC. 2014. Report of the Working Group on Bycatch of Protected Species.
SC/23/BYC/O04	ICES WGBYC. 2013. Report of the Working Group on Bycatch of Protected Species.
SC/23/BYC/O05	ASCOBANS. 2015. Workshop on Remote Electronic Monitoring with Regards to Bycatch of Small Cetaceans.
SC/23/BYC/O06	ASCOBANS 2015. Draft Submission of ASCOBANS Advice on the Requirements of Legislation to Address Monitoring and Mitigation of Small Cetacean Bycatch.
SC/23/BYC/O07	Bjørge et al. 2013. Estimated bycatch of harbour porpoise (*Phocoena phocoena*) in two coastal gillnet fisheries in Norway, 2006–2008. Mitigation and implications for conservation. *Biological Conservation* 161: 164–173.
SC/23/BYC/O08	Bjørge et al. 2002. Dispersal and Bycatch mortality in Gray, *Halichoerus grypus*, and harbour, *Phoca vitulina*, seals tagged at the Norwegian coast. MARINE MAMMAL SCIENCE, 18(4):963-976.
SC/23/BYC/O09	Bjørge et al. 2005. Observed and Reported Bycatches of Marine Mammals in Norwegian Shelf and Offshore Fisheries. NAMMCO/15/MC/BC/7
SC/23/BYC/O10	Bjørge et al. 2005. Spatial Structure of Norwegian Fisheries and the associated Risk for Bycatches of Marine Mammals. NAMMCO/15/MC/BC/6.
SC/23/BYC/O11	Needle et al. 2014. Scottish science applications of Remote Electronic Monitoring. ICES Journal of Marine Science, doi: 10.1093/icesjms/fsu225.

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