

1.6.1.1 Bycatch of small cetaceans and other marine animals – Review of national reports under Council Regulation (EC) No. 812/2004 and other published documents

Advice summary

Reports by EU Member States on the bycatch of marine mammals, observed in conformity with Council Regulation (EC) No. 812/2004, are summarized. An evaluation of the total annual bycatch of harbour porpoises in three assessment units (Celtic and Irish Seas; North Sea; Kattegat and Belt Seas) indicates that levels are below those thought to be unsustainable, but there are unknown amounts of bias in these assessments. No updated assessment was possible in areas where ICES has previously advised that harbour porpoise bycatch is likely to need immediate mitigation measures (NW Iberia and Baltic Sea). The lack of statutory reports from some major fishing nations compromises ICES ability to assess the overall impact of fisheries on small cetaceans and other marine animals. ICES continues to advise that any moves to integrate monitoring of the bycatch of protected species in all EU waters within the Data Collection Framework needs very careful consideration of sampling regimes as such monitoring will require significant adjustments from those used to monitor commercial fish bycatch.

Request

Annex IIA in the Memorandum of Understanding between the EC and ICES requests that ICES and under “Ecosystem based approach deliverables”: “Provide any new information regarding the impact of fisheries on other components of the ecosystem including small cetaceans and other marine mammals, seabirds and habitats.”

Elaboration on ICES advice

Based on reports provided by EU Member States, a total of 38 cetacean specimens were observed taken as bycatch in 2013. Seventeen associated bycatch rates were calculated by dividing the total number of observed specimens for a given species by the total number of observed days in each fleet (categorized by Nantes métier level 3). ICES has not raised these observations to assess total mortality this year due to uncertainties in fishing effort data.

Cetacean bycatch estimates were, however, provided by EU Member States for 2013: 281 common dolphins *Delphinus delphis* in a seine net fishery in ICES Subarea IX, 94 bottlenose dolphins *Tursiops truncatus* in a polyvalent fishery also in ICES Subarea IX, and 41 bottlenose dolphins in a midwater trawl fishery in GSA 17 in the Mediterranean.

Information on the bycatch of protected species other than cetaceans was reported by six EU Member States under Council Regulation (EC) No. 812/2004 or in other reports. The taxa/species involved in 2013 were grey *Halichoerus grypus* and harbour seals *Phoca vitulina*, loggerhead turtles *Caretta caretta*, seabirds, and fishes (elasmobranchs and others).

Bycatch estimates for turtles were provided by EU Member States for two fisheries. A midwater trawl fishery in GSA 17 caught 1412 loggerhead turtles (about 6% of which were dead or comatose). A further 252 loggerhead turtles were caught in a polyvalent fishery in ICES Subarea IX.

Ireland

In 2013 an experimental study reported a total of eight grey seals observed as bycatch in a large mesh tangle and in trammelnets, primarily off the south coast, based on 40 days-at-sea.

Italy

Forty-nine loggerhead turtles were taken as bycatch in midwater pair trawls in GSA 17 (with 45 incidents occurring in the northern Adriatic subarea).

UK

Estimates of seal bycatch for 2013 from static net fisheries in ICES Subareas and Divisions IV, VIa, and VII (except Division VIII) give an estimate of 469 seals (CV = 0.117), thought to be predominately grey seals. Further work is required to break down the seal bycatch estimates by species (into grey and common seal bycatch). The UK also reported several species of seabirds and protected fish bycaught in 2013 in static net gears.

Poland

Poland's monitoring programme for cetaceans observed three dead grey seals and four dead birds in setnets.

France

France reported incidental captures of harbour and grey seals for ICES Divisions VIId, e, and h in setnet fisheries.

Estimates of total harbour porpoise mortality in setnets 2006–2013

Table 1.6.1.1.1 provides estimates of potential bycatch mortality of harbour porpoises *Phocoena phocoena* in the European Atlantic. The fishing effort data are likely to be underestimated as effort from smaller vessels is not fully represented in all areas. In this respect the estimated bycatch range may be biased low. On the other hand, the range may be biased high as much of the sampling has been done on larger vessels that use more gear and are likely to have a higher bycatch rate per day than smaller vessels.

Table 1.6.1.1.1 also shows the percentage bycatch mortality of harbour porpoise, based on the 95% bycatch estimates as a proportion of best estimate of abundance in 2005. Data for the Celtic and Irish Sea assessment unit suggests that 1.39% of the harbour porpoise population is being taken if the upper 95% confidence interval bycatch rate is applied. Similarly, the figures for 2005 suggest that 1.48% is being taken in the Kattegat and Belt Seas assessment unit. A more recent abundance survey of the Kattegat and Belt Seas in 2012 found more porpoises to be present, with consequential reduction in bycatch % mortality. All of these figures are below the 1.7% limit established by ASCOBANS and adopted in previous ICES advice. However, many caveats apply to the range of bycatch estimates due to effort data reliability and the potential for biases in the observation data.

Table 1.6.1.1.1. Harbour porpoise bycatch mortality estimated by assessment unit, based upon compiled fishing effort of all setnet vessels and high and low estimates of bycatch.

Porpoise assessment unit	Year	Fishing effort	Estimates of bycaught porpoises		Best estimate of abundance	% mortality using lower bycatch estimate	% mortality using higher bycatch estimate
		days-at-sea	Lower 95% CI	Higher 95% CI			
Celtic and Irish Seas	2005	32 930	1 137	1 472	105 000	1.07%	1.39%
North Sea, including Divisions VIId and IIIa	2005	44 165	1 235	1 990	227 000	0.54%	0.88%
Kattegat and Belt Seas – Division IIIa (south) and Subdivisions 22 and 23	2005	7 526	110	219	14 800	0.74%	1.48%
	2012	7 526	110	219	40 000	0.27%	0.55%

Comparison of monitoring under Council Regulation (EC) No. 812/2004 and the Data Collection Framework

The numbers of reported bycatch events vary depending on the type of observation scheme used. A total of 334 observation days under the DCF resulted in no records of marine mammal bycatch, while 580 days of dedicated monitoring in matched setnet fisheries resulted in bycatch totals of 18 harbour porpoises, 15 dolphins (of five species), and 11 grey seals. In contrast, for towed gears, 942 observation days under the DCF resulted in no records of marine

mammal bycatch, while 686 days of dedicated monitoring in the same gears/regions resulted in an observed bycatch of six common dolphins.

Similar differences between observer schemes were evident in the 2011 and 2012 data and also apply to bycatch of protected fish and seabirds. The reasons for these differences are not entirely clear but are likely to be a result of a combination of factors, including which specific vessels are monitored under different sampling programmes, sampling stratification, and data collection/transmission protocols.

This evaluation of the differences in reported bycatch events demonstrates that the present DCF is not adequate for monitoring the bycatch of marine mammals (and other Protected, Endangered and Threatened (PET) species).

Suggestions

Sampling under the current DCF can contribute to the assessment of bycatch of PETS, but is not sufficient on its own as currently implemented by EU Member States. As ICES has advised previously, bottom trawling is generally oversampled with respect to monitoring of bycatch of these species while, in some specific fishing areas, setnets, longlines, and purse-seines are undersampled. For seabirds priority should be given to monitoring in trammelnets and set gillnets in the Baltic, North Sea, and North Atlantic, and in longline fisheries in the Atlantic and Mediterranean/Black Sea.

It is important that if the bycatch of these species is to be assessed based on DCMAP (the future DCF) then the monitoring programmes must be specifically designed to include this purpose.

The standard unit of fishing and observer effort across all EU Member States is 'days-at-sea', with the exception of Germany where effort is recorded in hours. To report static gear effort a more precise unit than 'days-at-sea' would be 'net-metre-per-day' or a similar metric, but this information is rarely reported in fishing effort statistics. The standard European format requires several fields of fishing effort, one of which is 'total soak time' defined as 'net metre per hour'. In order to assess bycatch risk, ICES requires a common standard unit of fishing effort. Additionally, only some countries report any information for trammelnets, as they are not explicitly mentioned in Council Regulation (EC) No. 812/2004.

Basis of the advice

Background

Reports on observations made in 2013 were received from 12 of the 16 EU Member States affected by Council Regulation (EC) No. 812/2004 in that year. No reports for 2013 were provided to the Commission by France, Finland, Spain, or Sweden, but Sweden supplied their report to ICES. The quality and scope of the information provided by the reports for 2013 was variable, with one EU Member State (Belgium) reporting only strandings data. It is difficult for ICES to assess the overall impact of fisheries on PETS if data is not forthcoming from major fishing nations.

Methods

Review of Council Regulation (EC) No. 812/2004 reports

The contents of the Council Regulation (EC) No. 812/2004 reports were reviewed by the following subjects:

- implementation of mandatory mitigation and monitoring of cetacean bycatch, and information on voluntary mitigation and observation schemes (for mitigation see ICES, 2015 [Section 6]);
- information on cetacean bycatch (records of individual bycatch events and extrapolated estimates);
- information detailing bycatch of non-cetacean taxa;
- other relevant issues in the reports.

The Council Regulation (EC) No. 812/2004 reports include monitoring directly under this regulation and also monitoring in some cases under DCF and to meet the requirements of the Habitats Directive (Council Directive 92/43/EEC). Further information, not found in the reports but provided to ICES was also included.

Bycatch risk assessment

In order to calculate the total annual harbour porpoise mortalities in gillnet fisheries in the period 2006–2013, a table of observed bycatch by ICES division was generated from the ICES database. Data consisted of the summed number of days of observation (across all nations and all gillnet fisheries) within each ICES division, together with the number of harbour porpoises observed bycaught. It was assumed that porpoise bycatch events can be considered to follow a binomial distribution, such that observed days are either porpoise positive or porpoise negative, with a maximum of one animal observed in any one day of fishery observation or sampling unit (i.e. trip or haul). This is a realistic assumption in that it is very unusual to observe two porpoises in the same net or on the same day. This simplification allowed ICES to calculate binomial error distributions around the observed porpoise bycatch rates and then to calculate the 95% confidence limits around the estimated bycatch rate. The lower and upper intervals of the bycatch rate were then used to generate a range of possible annual bycatch totals based on effort data for 2013 collated by the Scientific, Technical and Economic Committee for Fisheries (STECF) and others. Data were collated across all gillnet métiers, all seasons, and all vessel length categories within each area (ICES division initially) by days-at-sea.

Observed bycatch and effort data for each ICES division were summed to obtain a single composite pair of numbers (the number of days of observation in all gillnet fisheries by all countries and the number of observed bycaught porpoises) for three of the five harbour porpoise assessment units advised by ICES (2014). The remaining two assessment units will be examined in the future.

The upper and lower confidence intervals of the summed bycatch rate estimates for each of these three assessment units were then used to generate a range of potential bycatch totals by applying them to the estimates of the numbers of days-at-sea by gillnetting vessels. The percentage bycatch mortality of harbour porpoise, based on the 95% bycatch estimates was calculated as a proportion of the best estimates of abundance.

The effort data and the observations cover a wide range of vessel types and métiers. No account was taken of any spatial heterogeneity nor of differences in mesh sizes or other important gear characteristics. There is therefore an implicit assumption that the summarized observations are representative of the nature and diversity of the gillnet fisheries within each assessment region, and this is not likely to be true. For this reason a range of numbers has been used to highlight the uncertainty in the overall bycatch estimate within each assessment unit. This approach does not address several potential biases. An examination of these will require detail of the fleet structure and how the observations are stratified.

Additional information

Stranded marine mammals can shed light on the existence of incidental catches, but it is difficult to assign this mortality to specific fisheries. Recent information is available from Portugal and Belgium. Recent information from Spain gained from on-board observers and from interviews with fishers is also available.

Portugal

In 2013 254 stranded cetaceans were examined at post mortem and 95 (37%) of these were attributed to fishery bycatch. The three most affected species were common dolphin, harbour porpoise, and bottlenose dolphin. Most stranded animals with evidence of bycatch showed signs of interaction with either gill- or trammelnets.

Belgium

In 2013, investigation of the cause of death in 64 stranded harbour porpoises showed that 15 (23%) were killed as bycatch. One harbour seal and two grey seals were also bycaught.

Spain

No bycatch was observed in a 2009–2011 programme of on-board observation in which 171 trips (192 observer days-at-sea) were conducted in Galicia (NW Spain). Observations were made on trawlers and in a variety of artisanal fisheries.

Based on 1274 interviews with fishers in 2009–2011 in Galicia, Asturias, Cantabria, and Basque Country, an estimated 2328 common dolphins, 454 bottlenose dolphins, 91 pilot whales *Globicephala melas*, 61 harbour porpoises, 30 Risso's dolphin *Grampus griseus*, and 60 baleen whales (Mysticeti) were bycaught each year. Not all of these bycaught animals were killed. About one quarter were estimated to be taken in trawls, another quarter in purse-seines, one-third in artisanal fisheries, and the remainder by longlines and gillnets.

Based on a separate set of 283 interviews in Galicia in 2008–2010, an estimated 1707 bycatch events occurred per year in this region alone (159 common dolphins, 136 bottlenose dolphins, 73 pilot whales, 40 harbour porpoises, and 1299 unidentified cetaceans).

Interviews were also conducted on the Atlantic coast of Andalusia in 2014. An estimated 18 bottlenose dolphins died annually due to bycatch. Given that the current population estimate of bottlenose dolphins in the area is 397 (95% CI 300–562), the annual removal would be 5%, a figure that is likely to be unsustainable to this bottlenose dolphin population.

Sources and references

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