

Agenda Item 4.1

Review of New Information on Threats to  
Small Cetaceans

Bycatch

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**ICES 2015: Report of the Working  
Group on Bycatch of Protected  
Species (WGBYC)**

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Submitted by

Secretariat



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# ICES WGBYC REPORT 2015

ICES ACOM COMMITTEE

ICES CM 2015\ACOM:26

## Report of the Working Group on Bycatch of Protected Species (WGBYC)

2–6 February 2015

ICES Headquarters, Copenhagen, Denmark



**ICES**

International Council for  
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## Executive summary

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The Working Group on Bycatch of Protected Species met in Copenhagen at ICES Headquarters between 2 and 6 February 2015. The meeting was chaired by Marjorie Lyssikatos (USA) and was attended by seventeen members from 12 nations. Of these, two members participated by video or tele-conferencing.

Since the commencement of WGBYC in 2009, the WG has been collating, storing and summarizing annual data reported by European member states affected by Regulation 812/2004. This has resulted in the development of WGBYC database that currently stores eight years (2006–2013) of data on dedicated monitoring effort and bycatch of cetaceans as reported to the European Commission by member states affected by the regulation. WGBYC continues to cooperate with the ICES Data Centre and make advances toward a more comprehensive database design (Section 7).

This year (2015) WGBYC undertook an historical review of Reg. 812 bycatch and monitoring effort data to the extent practicable (Section 3). A significant limitation in evaluating the magnitude of bycatch mortality since the implementation of Reg. 812 is not having an accurate estimate or census of total fishing effort from relevant European waters. There is considerable uncertainty in the representativeness of total fishing effort reported by member state Reg. 812 reports submitted to the European Commission. In addition, WGBYC has continually reported on the inconsistent submission and content of annual reports by some member states and the shortcomings of the Reg. 812 to accurately reflect the true magnitude of cetacean bycatch in gears affected by the regulation (ICES 2014a). Nonetheless, WGBYC undertook the historical review of Reg. 812 monitoring effort and reported bycatch of cetaceans.

Total observer effort reported by member states in relation to Reg. 812 was highest in the North Atlantic, followed by the Baltic, Mediterranean, and North Sea. This result generally applies to both gillnets and pelagic trawls. Based on Reg. 812 reporting, common and striped dolphins are taken as bycatch in both gillnet and pelagic trawl gear. Harbour porpoise bycatch is only evident in gillnets and bottlenose dolphins have been recorded taken as bycatch in both gillnet and pelagic trawl gears. For gillnets, harbour porpoise bycatch rates were on average lowest in the Baltic, followed by the North Sea/Eastern Arctic with the highest bycatch rates on average in the North Atlantic. Common and striped dolphin bycatch rates in gillnets were also reported for the North Atlantic RCM but were lower than harbour porpoise bycatch rates from the same area. For pelagic trawls, the North Atlantic common dolphin bycatch rate was higher on average than bycatch rates reported for bottlenose and striped dolphins from the Mediterranean and Black Sea. Potential significant sources of uncertainty in bycatch rates include missing data and different monitoring duties among regions. Mediterranean bycatch rates for gillnets are expected to be underestimated due to the lack of monitoring requirement under Reg. 812. In addition, North Atlantic and Mediterranean bycatch rates for pelagic/midwater trawls are likely underestimated due to missing data from Finland (since 2008), France (2012–2013), Spain (since 2009) and Sweden (since 2013).

The movement toward regionalised decision-making, where monitoring and mitigation measures are intended to be tailored to different fisheries and agreed at regional levels under the new Common Fisheries Policy should result in improved monitoring if carried out effectively (Section 8). As a result of some of these changes, WGBYC will begin to collate data submitted under Reg. 812 and other data sources in a new format (Section 4). The goal is to make it easier to evaluate bycatch levels and impacts

at a regional or assessment/management unit level and to work towards achieving consistency across taxonomic groups defined as protected, endangered and threatened species. WGBYC agreed to incorporate additional taxonomic groups where possible into its database commencing in 2017 to begin annual bycatch assessments of selected elasmobranch and other protected fish species, in addition to marine mammals, sea turtles and seabirds. This effort should also make for a smoother transition toward incorporating bycatch of protected species into regional stock assessment advice (Section 8).

WGBYC continues to develop a bycatch risk assessment with the aim of identifying regions that may pose the greatest threat to non-target species in the absence of reliable data that would be needed to quantify the bycatch of protected, endangered and threatened species in a statistically rigorous manner (Section 5). The WG applied a bycatch risk assessment to harbour porpoise where a range (high/low) in bycatch levels were estimated for regions within greater European Atlantic waters (i.e. Celtic and Irish Seas, North Sea, and Kattegat and Belt Seas). Data for the Celtic and Irish Sea assessment unit suggest that 1.39% of the harbour porpoise population is being taken if the upper 95% confidence limit bycatch rate is applied. This falls short of the 1.7% limit established by ASCOBANS. The North Sea and Kattegat Seas upper limit mortality estimates fell below 1.00% of their respective abundance estimates. However, many caveats apply to this upper limit, with the effort data reliability and the potential for biases described in Section 5. The WG will continue to improve upon and apply the bycatch risk assessment approach to other species/taxa as more data become available.

Several member states continue to design and test various mitigation methods to minimize bycatch of protected species (Section 6). Current mitigation research includes continued development of a porpoise Alarm in German waters, development of fisher brochures of best practices for reducing bycatch in Portuguese waters, continued research on pinger effectiveness in Danish and UK waters, and the development of alternative fishing gears in Swedish waters. WGBYC seeks a continued commitment by its members to support and engage in the development and implementation of mitigation research by seeking funding sources and collaborative research proposal ideas.

WGBYC and its role in evaluating the magnitude of protected species bycatch in European waters is confronted by considerable uncertainty in both the near and long term. This is primarily due to expected changes in monitoring baseline due to proposed changes in European Union marine policy and legislation (Section 8). Reg. 812/2004 has recently been amended by Regulation (EU) 579/2014. This was not an attempt to overhaul Reg. 812 but was a technical alignment of it with the Treaty on the Functioning of the European Union. This amendment does include two changes to Reg. 812 which should be noted. First it allows the amendment of the Annex detailing the technical specifications and conditions for using Acoustic Deterrent Devices, although the Commission has no immediate plans to amend this annex. Member states are using the derogation in Article 2 to use different types of acoustic deterrent devices which deviate from the specifications contained in the Annex. The other amendment was the inclusion of a legal obligation on the Commission to carry out a further review of Reg. 812 by the end of 2015. The Commission's long-term intention is to move away from a central regulation and incorporate the main elements of Reg. 812 (i.e. monitoring and mitigation) into other regulatory frameworks. Once this has been achieved Reg. 812 could be repealed. The new common fisheries policy also seeks to ensure better alignment with broader environmental and ecological policy



objectives, as in the Marine Strategy Framework directive and NATURA 2000. This devolved approach is meant to ensure that monitoring and mitigation are targeted in the areas and for the species most under threat. Improved mitigation measures will be incorporated under the new technical measures framework that will be developed as part of the reform of the common fisheries policy. This would set out the scope and management targets to be met in relation to incidental catches of cetaceans, with the possibility for member states to develop mitigation measures for specific areas and fisheries. The monitoring requirements will be incorporated into the revised data collection framework, in line with a move to a wider ecosystem approach to fisheries monitoring which would include incidental catches of non-target species such as cetaceans, seabirds and benthic organisms.

In anticipation of the changes noted above WGBYC has been and continues to be proactive on the coordination front with other ICES Working Groups with the aim of leveraging the expertise and data collection from other groups (Section 8). Most importantly, WGBYC will continue to seek cooperation with WGCATCH to evaluate current sampling schemes and provide guidelines for at sea sampling and recording of bycatches of PETS and rare fish. This effort should pay dividends as a sort of insurance policy if and when Reg. 812 is repealed and replaced by other monitoring programs that are currently not dedicated or designed to accommodate to the monitoring of protected species.

## **1 Opening of the meeting**

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The Working Group for Bycatch of Protected Species (WGBYC) met at ICES Headquarters in Copenhagen 2–6 February 2015. Delegates were welcomed by Jannica Haldin. A complete list of participants is given in Annex 1. The Terms of Reference are given in Annex 2.

## **2 Adoption of the agenda**

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The Draft Agenda was agreed and is also given in Annex 2. The Agenda follows the Terms of Reference. Much of the work was accomplished in small groups, with plenary discussion and agreement on major issues.

### 3 Historical Review of Reg. 812 Bycatch and Effort Data 2006–2013 (Tor B)

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A significant limitation in evaluating the magnitude of bycatch mortality since the implementation of Council Regulation No 812/2004 (hereafter termed Reg. 812) is not having an accurate estimate or census of total fishing effort from relevant European waters. There is considerable uncertainty in the representativeness of total fishing effort reported by Member States (MS) in Reg. 812 reports submitted to the European Commission, in addition to inconsistent submission of annual reports by some MS. As a result, the review of trends in bycatch from data obtained through Reg. 812 reports was limited to an evaluation of bycatch rates and sampling effort as reported by MS. With the cooperation of the ICES Data Centre, WGBYC long-term goal is to obtain a census of total fishing effort through more appropriate databases (see Section 7).

With the shift in marine policy, management and science towards regionalised ecosystem based science (see Section 8), the historical review of data obtained through Reg. 812 reports was structured spatially by regions where individual member states have a stake in the regional coordination meeting (RCM) process. A series of line graphs were created for cetacean species where there was sufficient observer data collected over the 6 year period 2008-2013, through Reg. 812 reporting requirements. Data collected during 2006-2007 were considered too sparse to be informative so were not included in the historical review.

Data reported by member states during 2008-2013 were stratified by species, broad gear type (i.e. gillnets and pelagic trawls), year, and RCM region. The gillnet category includes trammelnets and single panel nets. Bycatch records were pooled from both pingered and non-pingered net fleets and included records collected by traditional fisheries observers and remote electronic monitoring (REM) methods. Bycatch rates were calculated by dividing the total observed number of specimens by the annual total observer effort defined as days at sea. Total observed effort was also reported by broad gear type and RCM.

Harbour porpoise (*Phocoena phocoena*), and common (*Delphinus delphis*) and striped dolphin (*Stenella coeruleoalba*) bycatch rates were available for gillnets over the six year period (2008-2013). Harbour porpoise bycatch rates were on average lowest in the Baltic, followed by the North Sea/Eastern Arctic with the highest bycatch rates on average in the North Atlantic RCM. Common and striped dolphin bycatch rates in gillnets were also reported for the North Atlantic RCM but were lower than harbour porpoise bycatch rates from the same area (Figure 1).

Bycatch rates for pelagic trawls were produced for the following three Delphinid species: common, striped and bottlenose (*Tursiops truncatus*) dolphin, during 2008-2013. The North Atlantic common dolphin bycatch rate was higher on average than the bycatch rates reported from the Mediterranean and Black Sea RCM (Figure 2) for the other two Delphinid species.

Based on Reg. 812 reporting, common and striped dolphins are taken as bycatch in both gillnet and pelagic trawl gear. Harbour porpoise bycatch is only evident in gillnets. Bottlenose dolphins have been recorded taken as bycatch in gillnet and pelagic trawl gears.

Additional bycatch rates were available for other cetacean species but records were too sparse to produce meaningful results. They include minke whales (*Balaenoptera*

*acutorostrata*), Risso's dolphin (*Grampus griseus*), pilot whales (*Globicephala melas*), white-sided dolphins (*Lagenorhynchus acutus*) and white-beaked dolphins (*Lagenorhynchus albirostris*).

Total observer effort reported by MS in relation to Reg. 812 was highest in the North Atlantic, followed by the Baltic, Mediterranean, and North Sea RCM (Figure 3-5). This pattern generally applies for both gillnets and pelagic trawls. Observer sea days appear to have increased in the Baltic in recent years. This is largely due to increased observing of gillnet net fisheries by Denmark from 2010 to 2012 under REM trials and increased monitoring of pelagic trawls by Latvia from 2011 to 2013. Individual MS contributions to each RCM are summarized in Table 1.

Potential significant sources of uncertainty in bycatch rates include missing data and different monitoring duties among regions (Tables 1-2). For example, within the Mediterranean, MS have to monitor and report only on pelagic/midwater trawlers, whereas MS fishing in other regions have to report on gillnet fisheries as well. Given this situation the Mediterranean RCM bycatch rates for gillnets are expected to be underestimated. In addition, missing data on both pelagic/midwater trawlers and gillnets from Finland (since 2008), France (2012–2013), Spain (since 2009) and Sweden (since 2013) will possibly bias North Atlantic and Mediterranean RCM bycatch rates. Measures of uncertainty are generally not reported in the Reg. 812 MS reports. As a result it is not possible to properly assess if apparent “trends” in the bycatch rate data are significant, as it is unknown how much variability is associated with each of the point estimates.

## **4 Review and summarize annual national reports submitted to the European Commission under Regulation 812/2004 and other published documents and collate bycatch estimates of protected species (birds, mammals, reptiles, and fish) in EU waters (ToR A)**

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### **4.1 New Format for data reporting on bycatch of protected species**

The future role of WGBYC is being influenced by dynamic changes in EU legislation affecting marine policy, in addition to strategic changes within ICES for providing more integrated ecosystem advice across expert working groups for various stakeholders. One positive significant change under the new Common Fishery Policy (CFP) is the movement toward regionalised decision-making, where monitoring and mitigation measures are intended to be tailored to different fisheries and agreed at regional levels. As a result of some of these changes, WGBYC will begin to collate data submitted under Reg. 812 and other data sources in a new format (Section 4.3). The goal is to make it easier to evaluate bycatch levels at a regional or assessment/management unit level and to work towards achieving consistency across taxonomic groups defined as protected, endangered and threatened species (PETS) under the Habitats Directive (HD).

WGBYC agreed to incorporate additional taxonomic groups where possible into its database from 2017 to begin annual bycatch assessments of selected elasmobranch and other protected fish species, in addition to marine mammals, sea turtles and seabirds. The 2013 data from Reg. 812 reports contained in Section 4.3, constitutes a starting point for WGBYC at its 2016 meeting that will likely be adapted over time as firstly, WGBYC learns more about the specific duties of other Working Groups (WGs) that may already have some of these taxonomic groups or species covered under their respective ToR's and second, as more data becomes available (Sections 8 and 10). In 2016 WGBYC will use a sample dataset to test the adaptability of its existing data template to include more sampling records and taxa from data sources other than Reg. 812 reports (e.g. Data Collection Framework (DCF) programs) into the WGBYC database (Section 7).

### **4.2 Monitoring under Reg. 812 – Overview**

The WG was provided with MS annual reports to the European Commission on observations carried out under Reg. 812 in 2013. Six of the 23 EU coastal MS were not affected by any part of Reg. 812 in 2013 (Bulgaria, Croatia, Cyprus, Greece, Malta, Romania), either because they were not fishing in the areas covered and/or because none of their vessels fish with relevant gears. As in previous years Greece provided a short explanatory report with no data. Reports were received from 12 of the 116 Member States affected by Reg. 812 (Belgium, Denmark, Estonia, Germany, Ireland, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, and the United Kingdom; Table 1). France and Sweden did not submit to the Commission a 2014 report (on 2013 data). Finland, which is affected by Articles 4 and 5 of Reg. 812 (monitoring), last submitted a report in 2009 (covering monitoring in 2008). Spain, which is affected by Articles 2-5 of Reg. 812 (mitigation and monitoring), last submitted a report in 2010 (covering monitoring in 2009); this report documented the bycatch by gillnetters in 2009 of 24 common dolphins in division VIIIa and 13 harbour porpoises in divisions VIIIab. As in previous years, the Portuguese participant stated that the main difficulties in implementing Articles 4 and 5 in the polyvalent fleet are financial and logisti-

cal. First, the sampling target of 5% of fishing effort is almost impossible to attain using observers because of a lack of funding. Another difficulty is related to the dynamic nature of the polyvalent fisheries, which makes effort planning difficult. Also the possibility of switching between gears within a day or of using several gears simultaneously prevents accurately assessing the effort related to each gear type. It is suggested that at least the larger vessels could be required to report landings separated by each métier.

It is reiterated that Reg. 812 only requires monitoring of pelagic trawls (single and pair) in the Mediterranean and that monitoring bycatch of PETS in static net fisheries is not required in this region.

The quality and scope of the information provided in the 2014 reports is variable, with several MS simply repeating the information provided in previous years.

The contents of the reports have been reviewed by the following subjects:

- 1 ) implementation of mandatory mitigation and monitoring of cetacean bycatch, and information on voluntary mitigation and observation schemes (see Section 6 for mitigation);
- 2 ) information on cetacean bycatch (records of individual bycatch events and extrapolated estimates);
- 3 ) information detailing bycatch of non-cetacean taxa;
- 4 ) other relevant issues emanating from the reports.

Further information not found in the reports but provided by the participants during the meeting is also included.

#### **4.2.1 Regulation 812 reports**

Seventeen MS fish in the areas and with gears covered by the monitoring requirement of Reg. 812 as described in Annex IV, and established monitoring schemes for vessels over 15 m and pilot schemes for vessel under 15 m. Meeting these requirements, as well as meeting the requirements of monitoring protected species under the HD, was achieved in 2013 through a variety of observation methods in isolation or in combination, such as dedicated bycatch monitoring programs, other dedicated research projects, DCF observer programs either with or without a specific cetacean and PETs data protocol and REM trials.

Most MS that are affected by Reg. 812, except Sweden and Finland, carry out or attempt to carry out some form of cetacean bycatch monitoring. However, many reports do not detail the lengths of vessels monitored or the total size of the fleet, which makes an assessment of coverage within those fisheries problematic (Section 3).

The standard unit of fishing and observer effort across all MS is “days at sea” with the exception of Germany where effort is recorded in hours. “Net metre per day” or a similar metric would be a more precise unit for reporting static gear effort than “day at sea”, but this information is rarely reported in fishing effort statistics. The European format advised by the European Commission (following advice from ICES) asks for several fields of fishing effort, one of which was “total soak time” defined as “net metre per hour”. We emphasize that the Bycatch Risk Approach (BRA, see Section 5.1) requires a common standard unit of fishing effort. There is often a lack of detail regarding fishing effort for static gears because the fishing time of vessels (days at sea) and the fishing time of static gears (soak time) are not necessarily the same. Additionally, some countries do not differentiate between trammelnets and single panel

nets or do not report any information for trammelnets at all, as they are not explicitly mentioned in Reg. 812.

Table 3 collates fishing and observer effort by monitoring type (DCF vs. dedicated) by RCM region based on information contained in the Reg. 812 reports which includes monitoring directly under Reg. 812 and also monitoring to meet the requirements of the HD. The term “dedicated monitoring” is used to define programs that are specifically aimed (through sampling design and data collection protocols) to obtain data for the typically rare bycatch events of PET species (Section 8.2.2). Some additional information not mentioned in the reports but which was available to the WG is included for clarity. Detailed fishing and monitoring effort data available to the WG for 2013 (with and without observed bycatch) is described in more detail in Annex 4 (Table 6).

#### **4.2.2 Cetacean and other PETS bycatch data from Reg. 812 reports compared with data obtained through other monitoring programs.**

There are differences in the numbers of reported bycatch events depending on the type of observation scheme used. Monitoring carried out under the DCF does not lead to many observations of PETS bycatch in any of the four regions or relevant gear types, while dedicated monitoring of PETs gives observed results totaling 102 cetaceans, seals, sea turtles (Table 3). Several elasmobranch, protected fish and bird species are also reported under dedicated monitoring schemes. A similar pattern was evident in the 2011 and 2012 data (ICES WGBYC 2013, 2014). The reasons for these differences are not entirely clear but are likely to be a result of a combination of factors, including which specific fisheries are monitored under different programmes, differing data collection protocols, observer vigilance and possibly downstream data handling procedures.

For towed gears specifically, 942 observation days under the DCF resulted in zero records of PET bycatch, while 1041 days of dedicated monitoring resulted in 57 PET records: six common dolphins, two bottlenose dolphins, 49 loggerhead turtles (*Caretta caretta*) (Table 3). Elasmobranchs and protected bird and fish species in the Mediterranean were also reported by dedicated monitoring schemes.

For static gears specifically, 334 observation days under the DCF leads to no observed bycatch of PETS, while 580 days of dedicated monitoring resulted in a total 44 specimens as follows: 18 harbour porpoises, nine common dolphins, one striped dolphin, three bottlenose dolphins, one white-beaked dolphin, one white-sided dolphin and 11 grey seals (*Halichoerus grypus*) (Table 3). Some bird species were also observed.

Towed gears (with the exception of some specific fisheries such as pelagic pair trawls for sea bass (*Dicentrarchus labrax*) and tuna (*Thunnus* spp.) in the Atlantic and for anchovy (*Engraulis* spp.) in the Mediterranean (Table 3) do not appear to represent a high risk of bycatch for cetaceans compared with fixed net gears. This finding conflicts with the relatively low level of monitoring of net fisheries (0.45% coverage with only 0.28% of fishing effort covered by dedicated monitoring) because nets pose the highest risk of bycatch to cetaceans (with the exception of those trawl fisheries mentioned above). The lack of mandatory monitoring of static gears in the Mediterranean and Black Seas represents a significant loophole in Reg. 812 reporting requirements.

This evaluation of the differences in reported bycatch events demonstrates that the present DCF is not adequate for monitoring the bycatch of PETS, and this highlights the importance of designing and optimizing monitoring programs, so they can reliably



bly serve multiple purposes including quantifying the bycatch of rare event species (<http://www.nefsc.noaa.gov/fsb/>).

#### **4.3 Observed specimens, bycatch rates and mortality estimates, total and observed effort obtained from Reg. 812 reports**

The total number of cetacean bycatch specimens, total fishing and observed effort, aggregated to métier level 3 gear type (i.e. nets and pelagic trawls), by RCM and ICES division in 2013 from MS reports are summarized in Annex 4 (Tables 4-5). A total of 38 cetacean specimens were observed taken as bycatch in 2013 (Table 4) providing a total of 17 associated bycatch rates (Table 5; Figures 6-11). 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 stratum. This method will be extended to other taxa at subsequent WGBYC meetings. A complete compilation of all monitored strata with and without bycatch estimates are summarized in Table 6.

A request was issued to WGBYC members before the meeting to provide effort and bycatch data in the new data format to facilitate input in the WGBYC database. Data were received in the appropriate format from Denmark, Germany, Ireland, Italy, Netherlands, Poland, Portugal, Sweden and the UK. Data were also obtained from annual reports from Estonia, Latvia and Lithuania, but no observer data were available for Belgium (Table 1).

Data were provided by Spain from the Spanish DCF program but were not accompanied by a national report in relation to Reg. 812. Considerable uncertainty was expressed by WGBYC regarding how comprehensive the Spanish DCF data were in relation to monitoring of marine mammal species. Consequently these data were not added to the main WGBYC database. All currently available data (including Spain) will be further examined, along with other datasets on protected fish species collected under the DCF, to validate and ultimately incorporate all suitable datasets containing information on PETS bycatch into a single harmonized WGBYC database (Sections 4.1 and 7). Information documenting bycatch of cetaceans from Spanish waters gathered from sources outside the DCF can be found in section 4.5.3.

A summary of bycatch estimates provided by MS for 2013 is presented in Table 6. In contrast to previous years when bycatch estimates were aggregated by individual MS, these data were aggregated by ICES division to provide consistency with Tables 4 and 5 and to improve the accessibility or transferability of the data to other WG's (Section 8.2). Also in contrast to previous years, WGBYC did not calculate its own extrapolated bycatch estimates (to be compared with bycatch estimates provided by MS) based on numbers of observed specimens and monitored days given the inherent uncertainty associated with estimates derived in this manner (ICES, 2014a). When compiling information for inclusion in Table 6, some issues were evident in relation to the quality of ICES division information in those tables. In the Baltic, a substantial number of records occur which were not reported by ICES division and some uncertainty exists in relation to how Baltic areas are categorized. Some data were also only provided by ICES Subarea (e.g. VII or VIII) instead of by division (e.g. VIIa etc.) which meant that such records could not be used in any analyses performed at the ICES division level). A number of bycatch events with and without pingers were observed and these were combined to provide an overall bycatch rates for each stratum, which is in line with how the observed effort data are collated.

Cetacean bycatch estimates provided by MS for 2013 included 281 common dolphins in a seine net fishery in ICES Subarea IX, 94 bottlenose dolphins in a polyvalent fish-

ery also in ICES Subarea IX, and 41 bottlenose dolphins in a midwater trawl fishery in area GSA 17 in the Mediterranean. Notable bycatch estimates for non-cetacean species included 1412 loggerhead sea turtles also in a midwater trawl fishery in GSA 17 (about 6% of which are dead or comatose), and a further 252 loggerhead turtles in the polyvalent fishery in ICES Subarea IX. A number of bycatch estimates were also provided for elasmobranch species in the midwater trawl fishery in GSA 17 including 11 814 spurdog (*Squalus acanthias*), 8731 starry smooth-hound (*Mustelus asterias*) and 7665 common smooth-hound (*Mustelus mustelus*). These are all non-target commercial species. Further details on non-cetacean bycatches provided by MS in Reg. 812 reports are described in Section 4.4 below.

#### **4.4 Protected, Endangered and Threatened Species (PETS) other than cetaceans reported under Regulation 812**

Information on the bycatch of protected species other than cetaceans was reported by several MS in their Reg. 812 reports or in other reports provided to WGBYC (i.e. France). The taxa/species involved in 2013 were grey and common seals (*Phoca vitulina*), sea turtles, seabirds, endangered fish species (elasmobranchs and others) and bivalves.

##### **4.4.1 Ireland**

A total of 40 days at sea were observed on set-net vessels as part of a dedicated study examining interactions between set-nets and protected species. For 2013, the study reported a total of 8 grey seals observed as bycatch in large mesh tangle and trammelnets observed primarily off the south coast.

##### **4.4.2 Italy**

Observers from the monitoring program are also trained to collect additional data on bycatch of other PETS under the HD (i.e. loggerhead turtles and twaite shads (*Alosa fallax*) and species of conservation concern (e.g. sharks and pelagic rays and skates). Forty-nine loggerhead turtles were taken as bycatch in the GSA 17 area (with 45 incidents occurring in the northern Adriatic subarea), as well as a large number of sharks and rays, all in midwater pair trawls. In 2014 the percentage of dead or comatose taken as bycatch loggerhead turtles was extremely high (20%) compared to the annual average (6%). Reported specimens are given in Table 6 for most species take as bycatch.

##### **4.4.3 UK**

Using bycatch rates calculated from data collected annually under the bycatch program since 2005, estimates of seal bycatch for 2013 from static net fisheries in subareas IV (a, b, c), VI (a) and VII (a, d, e, f, g, h, j) 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). It is assumed that most, if not all seals caught in Subarea VII are grey seals, but those in IV and VI may be either species, and there are not sufficient detailed observations to confidently speculate the results for those areas. Estimates for preceding years have been of a similar magnitude. Given the relatively low pup production for grey seals in southern Ireland, Wales, Cornwall and France, it is difficult to see how this level of removal can be occurring solely from seal populations breeding locally. It is feasible that fisheries in the Celtic Sea are also taking seals from breeding colonies further afield, possibly in Scotland where breeding numbers continue to increase.

The UK also reported six species of seabird (cormorant, *Phalacrocorax carbo*, fulmar, *Fulmarus glacialis*, gannet, *Sula bassana*, guillemot, *Uria aalge*, razorbill, *Alca torda*, and sea gulls, *Larus* spp.), several species of shark, including basking shark (*Cetorhinus maximus*), porbeagle shark (*Lamna nasus*), thresher shark (*Alopias* spp.), tope (*Galeorhinus galeus*), six-gilled shark (*Hexanchus griseus*), and other fish species (twait and unidentified shad species) were recorded bycaught in 2013 in several static net gears. The UK report also stated that sufficient data now exist that seabird bycatch could be investigated in more detail using a statistical modelling approach in future and that a similar approach could be attempted for some of the fish species of most conservation concern.

#### 4.4.4 Poland

The incidental catches of cetaceans monitoring program covered also the observations of bycatch of seabirds and endangered fish species, such as twait shad, or fish from reintroduction programs, such as Atlantic sturgeon (*Acipenser oxyrinchus*). During the set gillnet fishing in ICES Subarea 25, three dead grey seals and four dead birds (three guillemots, one tufted duck, *Aythya fuligula*) were detected. No protected species of fish were reported in the monitored fishing operations for 2013.

#### 4.4.5 France

A separate report (no Reg. 812 report was delivered) by a partner institution (Ifremer) presenting bycatch estimates for protected species calculated from data collected annually under the bycatch program from 2008 to 2012. Incidental captures of two seal species (harbour and grey seals) were reported for ICES divisions VII d, e, h in set-net fisheries. Bycatch rates and extrapolations for both species were provided for each species by gear type and area.

### 4.5 Auxiliary data (stranding, entanglements and interviews) indicative of bycatch impacts

Strandings can shed light on the existence of incidental catches not captured by at-sea monitoring programs currently in place. The following is a summary of such events from 2013 member state reports from Portugal, Belgium and Spain.

#### 4.5.1 Portugal

The 2013 report states that strandings data collected by the National Stranding Network recorded 302 cetaceans (296 in the mainland – ICES division IXa; 5 in the Azores – ICES Subarea X and 1 from Madeira- outside ICES area). In the mainland, strandings data recorded by Life+ MarPro teams indicated that mortality due to confirmed bycatch was recorded for 95 individuals, corresponding to 37.5% of the analysed animals (n=254). The three species with higher percentage of mortality due to incidental capture are common dolphin, harbour porpoise and bottlenose dolphin. Most stranded animals with evidence of bycatch showed signs of interaction with fixed gears, either gillnets or trammel nets. These strandings attributed to bycatch in static gears supports the need to reinforce at-sea monitoring of static gears to assess the relative impact of the different net types.

#### 4.5.2 Belgium

The report states that in 2013, strandings records included 149 harbour porpoises (of which 132 were found along the coast and 17 in inner waters), one white-beaked

dolphin, one minke whale, 15 harbour seals and five grey seals. Investigation of the cause of death in 43% of the stranded porpoises (n=64) showed that 15 (23%) indicated mortality due to bycatch. One harbour seal and two grey seals were also bycaught animals.

#### 4.5.3 Spain

In 2014, a report compiling the bycatch incidence of threatened cetacean species in Spanish waters was produced as requested by the Spanish Ministry of Agriculture, Food and the Environment (Vázquez *et al.*, 2014). The report reviews historical information and publications but also incorporates new data and recent studies that can provide a clearer picture of bycatch in Spanish waters. Results are summarized here by geographical region (six distinct regions within the Atlantic coast, including the Canary Islands, and three regions within the Mediterranean coast), because in many cases regional authorities compile bycatch and strandings data in slightly different formats and, in addition, available time-series vary by region. Furthermore, findings are grouped by the method used to estimate bycatch incidence, that is: 1) bycatch signs in stranded specimen, 2) programmes of on-board observers and, 3) interviews with fishers. Below we summarize relevant findings from this report.

##### Bycatch estimates from strandings

The region of Galicia (NW Spain) has the longest time-series of bycatch-sign documentation in stranded individuals. Vázquez *et al.*, (2014) reports at least 13 different cetacean species were registered in the stranding record between 1990 and 2013.

Vázquez *et al.*, (2014) report stranding data in:

- 1) the region of Asturias (NW Spain) a total of 200 stranded individuals from which 70 (35%) showed signs of bycatch. No species-specific information is provided;
- 2) the Basque Country (N Spain) during the period 2000–2006 included 168 strandings from at least 11 species. From those, 12 individuals showed signs of bycatch;
- 3) the Atlantic coast of Andalusia (SW Spain), 39 individuals across eight cetacean species were reported as bycaught between 1996–2013;
- 4) the Mediterranean coast of Andalusia (SE Spain), 140 individuals from seven cetacean species were reported as bycaught between 1996–2013;
- 5) coast of the Balearic Islands (E Spain), 29 individuals from four cetacean species were reported as bycaught between 1998–2013;
- 6) coast of Valencia and Cataluña (NE Spain), 49 individuals from seven cetacean species were reported as bycaught between 1990–2009;
- 7) coast of the Canary Islands, 68 individuals from 8 cetacean species were reported as bycaught between 1990–2009. It was noted that higher bycatch rates in the Canary Islands were observed in the months of March, April and May which coincides with the main peak of sightings in the region as well as the main fishing season for some pelagic fish species such as *Cupleidae* and *Scombridae*.

##### Bycatch estimates from at-sea observers

A study published in 2003 (López *et al.*, 2003) registered no bycatch incidents during 67 observer days along Galician waters. However, the authors highlight that the ob-

server coverage was not sufficient to monitor the full fishing capacity of the study area. In 2012 the project LIFE-IDEMARES reported results from a programme of on-board observers in which 171 trips (192 observer days at sea) were conducted in Galicia (NW Spain) when bycatch incidents were reported (López *et al.*, 2012).

Fernández-Contreras *et al.*, (2010) report 891 days at sea on-board pairtrawlers in NW Spain during which observers registered 29 bycatch events, all of common dolphin. The majority of events included 1 or 2 individuals but 7 and 15 animals were also caught in two independent events. Young males showed a higher probability of being bycaught. Fernández-Contreras estimated a total of 394 (95% CI 230-632) bycaught individuals between 2001 and 2002 and three main factors were identified as influential in bycatch: depth, season and time of the day. Authors suggest that operational measures could reduce bycatch incidents in this fishery, especially if fishing in waters shallower than 250 m is restricted. The authors suggest that fishers would likely accept this operational measure since the main target species, blue whiting (*Micromesistius poutassou*) is more common in deeper waters.

Various observer programmes were carried out within the last 15 years in the Balearic Islands. Between 2001 and 2003 observers evaluating the interaction between bottlenose dolphins and artisanal fisheries registered the bycatch of two bottlenose dolphins over a total of 1014 hauls. Considering that this number of hauls constitutes approximately 3% of the annual artisanal fishing activity in the Balearic Islands, an approximated annual mortality of 60 individuals due to bycatch was suggested (Brotons *et al.*, 2008). In 2001, a pilot project assessing the effect of pingers in artisanal gillnet fisheries surveyed 55 hauls (27 with active pingers, 16 with inactive pingers and 12 controls) and registered no bycatch incident (Gazo *et al.*, 2008). An additional study carried out in 2005, evaluated the effect of pingers of different commercial brands in the artisanal gillnet fishery and 1193 hauls (743 with active pingers) were monitored without recording any bycatch event (Brotons *et al.*, 2008). Gonzalvo *et al.*, (2008) in a study assessing interactions between cetaceans and trawlers collected data from 75 hauls and while dolphins were observed around the fishing vessels during 55 hauls, no bycatch was registered.

#### **Bycatch estimates from interviews to fishers**

A first estimate of bycatch incidence from interviews to fishers in Galicia was published in 2003 (López *et al.*, 2003) where 499 interviews were conducted. Estimates from this study resulted in 210 (95% CI 23-556) annual bycatch events for coastal waters where gillnets had the highest incidence, 1518 (95% CI 464-3375) bycatch events in deep waters where both gillnets and trawlers had the highest bycatch incidence, and 350 (95% CI 43-904) in the Celtic Sea where trawlers had the highest incidence. Estimated bycatch numbers per species were: 1575 small dolphins, 53 bottlenose dolphins, 100 pilot whales, 100 mysticete whales.

López *et al.*, (2012) conducted 1274 interviews throughout the Spanish North-Atlantic coast (Galicia, Asturias, Cantabria and Basque Country) between 2009 and 2011. The 93.7% of fishers reported that they usually observed cetaceans, the 29.1% identified cetaceans to species level and the 62.2% acknowledge the occurrence of bycatch. Based on these data, 3023 cetaceans were estimated to be bycaught each year in the region; 24.3% of which were estimated to be taken by trawlers, 31.3% by artisanal fisheries, 24.8% by purse-seiners, 8.2% by longliners and 11.6% by gillnetters. Estimated bycatch numbers per species were: 2328 common dolphins, 454 bottlenose dolphins, 91 pilot whales, 61 porpoises, 30 Risso's dolphin, 60 mysticete whales. The results indicate that only the 32.7% of cetaceans could survive.

Goetz *et al.*, (2014) conducted 283 interviews in Galicia between 2008 and 2010 and 100% of fishers reported that they usually observed cetaceans, the 73.5% identified cetaceans to species level and the 8.8% acknowledge the occurrence of bycatch.

The authors estimated 1707 bycatch events per year (159 common dolphins, 136 bottlenose dolphins, 73 pilot whales, 40 porpoises and 1299 unidentified cetaceans). The authors suggest that bycatch levels for common and bottlenose dolphins are most likely unsustainable.

Aguilar *et al.*, (2002) based on interviews focused in the Basque country (N Spain), highlighted the existence of direct captures of small cetaceans for human consumption and estimated annual catches of 143 bottlenose dolphins and 69 common/stripped dolphins.

Vélez (2014) presented results of cetacean and marine turtle bycatch estimates from 156 interviews conducted in 2014 in the Atlantic coast of Andalusia (Cádiz and Huelva provinces, SW Spain) within a Master's Thesis using a similar methodology to Goetz *et al.*, (2014). Bottlenose dolphin and loggerhead turtle are the species most affected by bycatch. Vélez (2014) estimated that 18 bottlenose dolphins died annually due to bycatch. Given that the current population estimates of the local population of bottlenose dolphins in the area is 397 (95% CI 300-562; Santos *et al.*, 2012), the annual removal would be 5%, over the sustainable recommendations of 1.7% established by ASCOBANS.

#### **Other relevant information**

It is important to note the special case of interaction between Killer whales (*Orcinus orca*) and the artisanal longline fisheries (Almadraba) targeting bluefin tuna (*Tunnus thynnus*) in the area of the Straits of Gibraltar. Previous studies have registered increased calf survival and improved reproductive state for the social groups that interact with the tuna fishery as opposed to those groups that do not benefit from it (Esteban, 2008). Although no direct aggression from the fishers towards the whales has been registered, the authors suggest that the high density of hooks could have an impact on the regional groups of killer whales.

## 5 Evaluation of Bycatch Impacts on Populations (ToR C)

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### 5.1 Bycatch Risk Assessment – Evaluate impact of bycatch on relevant species furthering the approach adopted by WKRev812

The BRA approach adopted by the workshop to Evaluate Aspects of EC Regulation 812/2004 (WKRev812) in 2010 and later elaborated at WKBYC in 2013, aims to identify sea areas or fisheries that may pose the greatest threat to non-target species in the absence of reliable data that would be needed to quantify the bycatch of that species in a statistically rigorous manner.

The essential idea is to use an estimate of total fishing effort for the fisheries of concern in a region of concern, together with some estimate of likely or possible bycatch rates that might apply for the species of concern, in order to evaluate whether or not the total bycatch in that area might be a conservation issue.

Bycatch rates are not always available for specific fisheries, especially where monitoring has been limited, but where sufficient monitoring has been accomplished in the wider region or in other local similar fisheries, bycatch rates can be 'imported' or used as a substitute for missing measurements in order to obtain an approximate idea of the likely scale or magnitude of the problem.

There are clearly many problems with such an approach, especially if the 'estimates' produced are misused. One way to avoid the misuse of estimates generated in this way is to provide a range of values, based on the uncertainty inherent in the estimate of the 'imported' bycatch rate. Thus if a fishery in an adjacent area has been monitored and an estimate of the bycatch rate has been made, the 5% and 95% confidence limits on that rate can be used together with the estimate of fishing effort in the region of concern to generate upper and lower limits on the potential annual bycatch total. Where there is more observation effort in adjacent regions or related fisheries, limits will be closer together, whereas if very limited sampling has been achieved, a wider range of possible annual bycatch totals is produced.

These bycatch ranges can act as a guide to then help focus attention on areas where bycatch is most likely to be a concern (on the assumption that bycatch rates in the fishery and area of concern are likely to be similar to those in adjacent fisheries or areas) and can also highlight those areas most in need of further monitoring.

The working group used the WGBYC bycatch database to generate a table of observed bycatch rates by ICES division and by species, with the specific initial aim of addressing bycatch of porpoises in gillnet fisheries. 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 porpoises observed bycaught. Detailed data on the allocation of such catches among fishing trips, days or hauls is not available within the WGBYC database, which is a summary of national observations reported primarily under Reg. 812. The WG 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 the working group 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 limits of the bycatch rate were then used to generate a range of possible annual by-

catch totals based on effort data collated by the Scientific, Technical and Economic Committee for Fisheries (STECF) and others that provide an underlying fishing effort 'map'.

Fishing effort data are available within the WGBYC database for certain MS that have filed reports with the Commission on observation activities conducted under Reg. 812. These data in theory could be used to estimate the range of potential bycatch totals, but were found to be somewhat patchy, as not all MS have filed the relevant reports, and there was also some uncertainty within the WG as to how accurate or representative the total effort is as reported by MS under Reg. 812. (Section 3). They were therefore used mainly for exploratory purposes. In some areas (Kattegat and Belt Seas) the WG was able to access gillnet effort data for the region directly from the relevant fishery departments. Other data were obtained from the STECF compiled dataset. Data were collated across all gillnet métiers, all seasons and all vessel length categories within each area (ICES division initially) through days at sea.

Observed bycatch and effort data were compiled from the WGBYC database (2006–2013) initially by ICES division, but were also pooled 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 out of the five harbour porpoise assessment unit areas proposed by ICES (ICES, 2014b) (Tables 8-9).

The upper and lower confidence interval on the pooled bycatch rate estimates for three of the five assessment unit regions 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 vessels gillnetting in each of the three regions (Table 9).

It must be stressed that the effort data and the observations cover a wide range of vessel types and métiers, from small vessels using a few tens or hundreds metres of nets to large vessels fishing many tens of km of netting. No account is taken of the differences between or among vessels that were sampled and those of the fleet as a whole, nor of any spatial heterogeneity nor of any differences in mesh sizes or other important gear characteristics. There is therefore an implicit assumption that the observations that the WG has summarized are representative of the nature and diversity of the gillnet fisheries within each assessment region, and this is likely untrue. For this reason the WG did not compile a central or point estimate of bycatch as such numbers are frequently misused, but has preferred to use the range of numbers as an indication of the possible scale of porpoise bycatch within each assessment unit. This approach explicitly recognizes the uncertainty in the overall bycatch rate estimate (its precision) but does not address any potential biases, which would need a much more thorough examination of both the fleet structure and the scope of the observations if it was to be addressed.

Table 9 provides the first overview of potential bycatch mortality estimates of harbour porpoises in the European Atlantic. The fishing effort data are likely to be underestimated as it is apparent that effort from smaller vessels is not fully represented in all areas (Section 4). In this respect the estimated bycatch range may be biased low. On the other hand, 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 (Section 4).

The estimates also show the highest porpoise bycatch estimate based on the 95% bycatch rate as a proportion of abundance. 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 limit bycatch rate is applied. This falls short of the 1.7% limit es-



tablished by ASCOBANS. However, many caveats apply to this upper limit, regarding the effort data reliability and the potential for biases (noted above) to exist in the observation data.

## 6 Bycatch Mitigation (ToR D)

### 6.1 Mitigation compliance carried out under Regulation 812 – Mandatory and voluntary mitigation measures

Of the thirteen MS providing an annual Reg. 812 report covering 2013, Belgium, Estonia, Italy, Latvia, Lithuania, and Portugal reported that they were not affected by the mandatory mitigation measures, as they do not fish in the area concerned and/or do not have gillnet vessels above 12 m in length (Table 7).

France, the Netherlands, and Sweden have not implemented the mandatory use of pingers. No report and no information were available for Spain.

Denmark, Germany, Ireland, Poland and United Kingdom have implemented the use of pingers, and they are assumed to have been used in 2013 by relevant fisheries in these countries. However the exact number of vessels actually affected by the mandatory use of pingers remains unclear and the number of vessels actually using routinely functioning pingers is unknown (Table 7). Four MS (Poland, Germany, Denmark and UK) provided the name of the organizations in charge of enforcing and controlling the mandatory mitigation measures in port and/or at sea. Some MS enforcement agencies are equipped with pinger detectors which should allow detecting functioning pingers at sea. Germany has reported problems using pinger detectors because of the loud vessel operating noise masking sounds emanating from the pingers.

None of the MS reports describe the enforcement strategy. Denmark reported on four controls in 2013 (pinger fleet of 27 vessels), with 2 infringements detected, while Germany reported on 14 controls in 2013 (size of the pinger-fleet unknown), with no infringement detected. No enforcement information was reported by any other MS.

It is worth mentioning in this context the comments from Swedish fishers (Köningson, *pers. comm.*) that states they do not use pingers in Swedish waters when and where it is mandatory because there is no control, but they do use pingers in German waters because the German authorities carry out controls.

Several MS report on voluntary mitigation measures. Some gillnetters below 12 m voluntarily use pingers in the Netherlands (1 vessel) and Sweden (5 vessels in division IIIa). Pingers are voluntarily used by pelagic pairtrawlers targeting tuna in Ireland, sea bass in the UK and anchovy (*Engraulis encrasicolus*) in Italy.

In Sweden some fishers use alternative fishing gears such as pots and traps in area IIIId. In Portugal a manual of best fishing practices for avoiding bycatch of cetaceans and marine birds was prepared for five different fisheries and made available to fishers.

### 6.2 Mitigation research carried out by various Member States and the USA

#### 6.2.1 Germany

Thünen Institute for Baltic Sea Fisheries (Rostock) and F<sup>3</sup>:Forschung.Fakten.Fantasie (Kiel), with financial support from the German Federal Ministry of Food and Agriculture (BMEL), are carrying out a project to develop and test a new type of acoustic deterrent device - a 'Porpoise Alarm' (PAL). The pingers that fishers are currently using are potentially controversial as they are suspected of driving porpoises away from feeding grounds. In contrast the PAL generates porpoise communication noises

which in theory warn animals in the vicinity about the presence of nets, which in turn may reduce bycatch rates.

To test their practicality and effectiveness, PAL devices were deployed on a small number of German and Danish commercial gillnet vessels while carrying out their normal fishing activities in the Baltic Sea, for several months in 2013 and 2014. For the trials, specifically those fisheries were selected that are active in areas where higher bycatch rates of harbour porpoises could be expected. During these trials, bycatch of five harbour porpoise in 2013 and two in 2014 was observed. Due to the trials setup, the very limited number of observed fishing vessels and the small number of documented bycatch events, it is not possible to further extrapolate the results. First results concerning practicability and effectiveness of PAL are promising, but further development and trials are necessary. Thanks to additional funding from BMEL, this work will be carried over the years 2015–2017.

In a project running from 2013 to 2015 and financed by the German Federal Agency for Nature Conservation (BfN), the Nature And Biodiversity Conservation Union (NABU) aims to test and enhance alternative ecosystem friendly fishing methods to avoid the bycatch of seabirds and harbour porpoises in gillnet fisheries for cod in the German Baltic EEZ. Main alternative gears tested in the project are automatic longline systems, as well as jigging machines. Another alternative gear that might be investigated in this project is stationary uncovered poundnets. Results shall reveal what modifications might be necessary before these gears could be an economically viable alternative fishing method.

### 6.2.2 Portugal

In Portugal, within the scope of one of the actions from Life+ MarPro project, the strategy to implement best practices/mitigation measures in the different fisheries passed in 2013 by developing, disseminating and discussing the developed best practice manuals directly to fishers. Within a year, more than ten meetings took place throughout the country with fishers and fishers' representatives to present the best practice manuals and to discuss their implementation in the different fisheries and areas. The meetings were also very useful to identify the major concerns of fishers and Producer Organisation (PO) leaders regarding cetaceans and seabirds. In general, interactions and bycatch of dolphins are clearly of more concern than those of seabirds although there are some differences between areas and fisheries. For example, seabirds seem to be a matter of concern for artisanal fishers because they are more often accidentally caught than cetaceans. On the other hand, although both seabirds and cetaceans are accidentally caught in purse-seiners and beach-seine, fishers demonstrate a higher concern with cetaceans, probably because they want to release them alive and the release operation is complex and sometimes not successful. The MarPro staff highlights the good collaboration with all PO chairs and technical staff in the organization of the meetings, logistic arrangements and the motivation of skippers who participated in the meetings. During the meetings, Marpro technicians briefly presented the objectives of the project, talked about the biology and conservation status of species that might occur in their fishing areas and highlighted the species and fisheries which are more problematic in bycatch in Portugal. There were constructive discussions about the mitigation measures indicated in the manuals and in some cases, fishers talked about their day-to-day practices and suggested new ideas. These ideas might be considered to improve the manuals in future. Marpro dissemination materials and informative leaflets were distributed to all participants and were also left with PO chairs to be delivered to their associates. In particular, it must

be pointed out the difficulty to promote meetings with the artisanal polyvalent fishery, which includes set-nets as a gear of concern, as fishers are not generally organized in associations and it is the main and larger fishery operating in the country (more than 90% of the Portuguese fleet are small <12 m vessels). Therefore, for artisanal fisheries, MarPro agreed to disseminate and discuss the best practice manuals by approaching fishers and skippers individually at the harbours. Other mitigation measurements include the restart in 2014 of pinger trials that will continue until 2015 at which time legislative or administrative measures will be implemented if necessary. These trials are testing pingers on gillnets and purse-seines.

### 6.2.3 Denmark and UK

Although pingers have been shown to reduce the bycatch of harbour porpoises there are still questions to be answered in relation to effective range, habituation and displacement. A trial was thus conducted studying the acoustic behaviour of porpoises in response to two different pingers with different acoustic properties at three different locations in Denmark and the UK. One pinger, the AQUAmark100, produces broadband complex high frequency signals; whereas the second, AQUAmark 300, pinger produces tonal 10 kHz pulses. The UK experiment included one AQUAmark100 pinger running in cycles of 23 hours on and off. The pinger was placed at the centre of a triangular array of 14 acoustic click detectors (C-PODs) spaced at 0, 200, 400, 800, 1600, 2400, and 3600 m distances from the pinger. In Denmark two experiments were conducted. One had a 23 hour period on-off AQUAmark100 pinger placed in an array of five C-PODs at 0, 200, 400, 800, 1600 m. The second experiment used an AQUAmark300 pinger in a shorter array with two C-PODs at 0 and 300 m distances only. The results showed that in UK the AQUAmark100 significantly reduced the number of porpoise clicks at 0 and 200 m distances, whereas in Denmark a significant reduction in clicks was found at 0, 200 and 400 m distances from the pinger. In none of the studies of the AQUAmark100 did the acoustic behaviour reveal any signs of habituation. The studies of the AQUAmark300 revealed only a significant reduction in the number of clicks at 0 m distance, however on this station habituation effects were indicated by an increase in clicks over time.

### 6.2.4 Sweden

In the Swedish small-scale and coastal fisheries, alternative fishing gear has been, and is still being, developed. The main reason for the development is the seal inflicted damages to fishing gear and catch that threaten an economically viable gillnet fishery. Traps and pots are types of fishing gear where it is possible to protect the catch from seals. In traps and pots, the catch can be gathered in closed compartments which in turn can be designed using a solid construction and a strong material which ensures a seal-safe fishing gear. Despite several years effort there is still some work to do before there is some commercial alternative as pot or traps for many commercial fish species. However, a pot or trap fishery could also result in a high bycatch of seals or other PETS such as certain cetaceans or bird species. In order to prevent bycatches, especially of seals that are attracted to the catch inside the pot, pot entrances were equipped with seal exclusion devices (SEDs) of various sizes and shapes. A field study was conducted to investigate what effect different types of SEDs had on the bycatch of seals as well as on the pots' catchability. Results from the trials show that it is possible to decrease bycatches of seals to low levels without reducing fishing efficiency. (Königson *et al.*, 2015a. *in press*. Fisheries Research). The development of cod pots are also progressing. Königson *et al.*, (2015b) investigates cod pots as an economically viable alternative to gillnets in the southern Baltic Sea. The seal/fisheries conflict

is still increasing in the Baltic and spreading further south. This leads to an increased need to develop alternative fishing gears in areas around the Baltic. Since 2014 Sweden and Denmark have been cooperating in developing cod pots as an alternative to the gillnet cod fisheries in the southern Baltic. Recent years' research in this area has focused on trying to find out what parameters affect the catch for baited fishing gear in different areas. The behaviour of the species targeted in alternative fishing gears is also a major focus area to identify what characteristics in the fishing gear affect the fish behaviour and thereby the efficiency of the gear.

#### **6.2.5 Northeast USA**

The National Oceanic Atmospheric Administration (NOAA) Northeast Fisheries Science Center (NEFSC) Protected Species Branch (PSB) has been conducting various research trials with the aim of reducing bycatch across several gear types that interact with various protected, endangered or threatened species or species of concern ([http://www.nefsc.noaa.gov/read/protsp/PR\\_gear\\_research/](http://www.nefsc.noaa.gov/read/protsp/PR_gear_research/)). The NEFSC PSB gear research program aims to work cooperatively with commercial fisher to develop innovative and viable solutions for reducing unintended bycatch while maintaining a commercially viable fishing industry.

Bycatch mitigation studies have been conducted since 2004. Most recent workshops and research studies include: gillnet bycatch reduction workshop in 2013 aimed at developing solutions for reducing bycatch of sea turtles and Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) in gillnets (NMFS, 2013), topless bottom-trawl gear research aimed at reducing bycatch of sea turtles and retaining target flounder catches (Gahm *et al.*, 2014), improving Cusk (*Brosme brosme*) survivorship in the Gulf of Maine lobster trap pot fishery (Yong *et al.*, 2014), design and testing low profile gillnets for reducing bycatch of sea turtles and Atlantic sturgeon in a large mesh gillnet fishery (He *et al.*, 2013), and the design and implementation of a sea scallop deflector dredge (Smolowitz *et al.*, 2012).

## **7 Improvements and Ongoing Developments to WGBYC Database (ToR E)**

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### **7.1 Coordination with the ICES Data Center**

WGBYC continued to work with staff from the ICES Data Center intersessionally last year (2014). Advances were made in converting the WGBYC data entry template into XML format for ease of data uploading to the database. With ICES Data Centre cooperation, WGBYC long-term goal is to have the ICES Data Centre take over the screening, auditing, uploading and maintenance of the WGBYC database. This project will continue intersessionally.

Neil Holdsworth (Head of Data and Information) and Carlos Pinto (Data Systems Analyst) from the ICES Data Centre gave a briefing to WGBYC on ICES new science and data strategy to streamline the flow of data to all ICES Working Groups. WGBYC has been given permission to pipe into the annual Working Group on Spatial Fisheries Data (WGSFD) 'Data Call' process for obtaining total effort data across all European fleets. Vessel logbook and VMS data are available on request. Both sources entail different levels of spatial resolution. Vessel logbook data will likely be the most useful to the work of WGBYC. Data confidentiality rules were discussed and the possibility of obtaining meta-data with data records. The data call generally comes out in December every year and processing of data requests occurs the following June. WGBYC missed the December 2014 data call. However, it was learned that WGBYC could still submit a data request before June with the possibility of having it ready for the WGBYC 2016 meeting (Section 10.1).

### **7.2 Adapting database to be more inclusive of all protected taxa reported via Reg. 812, DCF and Habitats directive**

To support estimation of PETS bycatch mortality it will be necessary to adapt the current WGBYC data template to accommodate additional data sources to compliment as much as possible data coming in through MS Reg. 812 reports (e.g. DCF, Habitat's directive, other at-sea or electronic monitoring programs). It was briefly discussed how a flow chart outlining the components of various data sources and how they would flow into one comprehensive database could be a useful tool for conceptualizing data flow and associated challenges. Some new field additions were discussed to help facilitate the compilation and query of data records from one integrated database. Two new fields were discussed as possible and feasible additions to the current WGBYC current database: Monitoring type (1-Reg812; 2-DCF; 3-Reg812/DCF; 4-Other; 5-Unknown) and Sampling Protocol (M=marine mammals; C=Cetaceans; B=Seabirds; T=Sea Turtles; F=Fish; E=Elasmobranchs; P=PETS; A=all). Adaptations to the WGBYC data template and database will be conducted intersessionally (Section 10.1).

## 8 Develop, Improve and Coordinate Methods for Bycatch Monitoring and Assessment (within the Context European Legislation) (ToR F and ToR G)

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### 8.1 Anticipated future changes in legislation addressing the problem of cetacean bycatch within European waters

The Commission has reviewed Regulation (EC) 812/2004 on two occasions since its introduction, in 2009<sup>1</sup> and 2011<sup>2</sup>. The conclusions from these reviews were broadly similar. There have been improvements in the frequency and consistency of reporting by most MS which has increased the knowledge of the extent of bycatch. There is now a better understanding of fisheries where incidental catches are evident and others where monitoring shows there is no bycatch issue.

Despite this, Reg. 812 still has a number of weaknesses. It is not necessarily targeted at the right fisheries or in the right areas and there remains an over reliance on the use of acoustic deterrent devices to mitigate bycatch. These devices have not delivered the desired results. They have been found to be effective at reducing incidental catches of one species in one gear type (i.e. harbour porpoise in gillnet fisheries) but ineffective for other cetacean species (e.g. common dolphins) or for other gear types (e.g. pelagic trawls). Additionally only vessels greater than 12 m are required to use these devices, yet there is scientific evidence that shows that significant numbers of cetaceans are incidentally caught by smaller vessels fishing in inshore waters. The result has been that incidental catches of cetaceans remain in a number of fisheries.

The Regulation has recently been amended by Regulation (EU) 579/2014. This was not an attempt to overhaul Reg. 812 but was a technical alignment of it with the Treaty on the Functioning of the European Union (TFEU). This amendment does include two changes to Reg. 812 which should be noted. First it allows the amendment of the Annex detailing the technical specifications and conditions for using Acoustic Deterrent Devices (ADD's), although the Commission has no immediate plans to amend this annex. MS are using the derogation in Article 2 to use different types of ADDs which deviate from the specifications contained in the Annex. The other amendment was the inclusion of a legal obligation on the Commission to carry out a further review of Reg. 812 by the end of 2015. The review clause contained in Article 7 states:

*"By 31 December 2015, the Commission shall review the effectiveness of the measures provided for in this Regulation and shall, if appropriate, submit to the European Parliament and to the Council an overarching legislative proposal for ensuring the effective protection of cetaceans"*

The Commission has not yet made any decision as to the content and format of this review or whether an overarching legislative proposal is required. However, the Commission has indicated previously that it sees little merit in amending Reg. 812. A full review would take too long and would require an impact assessment and consultation process before any proposal could be tabled. This would take upwards of 2 years to complete and lead undoubtedly to prolonged political discussion and possi-

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<sup>1</sup> COM(2009) 368

<sup>2</sup> COM(2011) 578

ble watering down of provisions. In any case continuing to have detailed rules for managing cetacean bycatch agreed under a co-decision regulation of the Council and the European Parliament runs contrary to the objective under the new CFP, of moving to regionalised decision-making, where measures are tailored to different fisheries and agreed at regional level.

The Commission's long-term intention is to move away from a central regulation and incorporate the main elements of Reg. 812 (i.e. monitoring and mitigation) into other regulatory frameworks. Once this has been achieved Reg. 812 could be repealed. The new CFP also seeks to ensure better alignment with broader environmental and ecological policy objectives, as in the Marine Strategy Framework directive (MSFD) and NATURA 2000. This devolved approach will ensure that monitoring and mitigation are targeted in the areas and for the species most under threat. Improved mitigation measures will be incorporated under the new technical measures framework that will be developed as part of the reform of the CFP. This would set out the scope and management targets to be met in relation to incidental catches of cetaceans, with the possibility for MS to develop mitigation measures for specific areas and fisheries. The monitoring requirements will be incorporated into the revised DCF, in line with a move to a wider ecosystem approach to fisheries monitoring which would include incidental catches of non-target species such as cetaceans, seabirds and benthic organisms. Proposals for both the technical measures and DCF will be tabled during 2015.

Related to the management of cetaceans and, as part of its Smart Regulation policy, the Commission is to undertake a Fitness Check (REFIT) of the EU Nature Legislation, in particular the Birds Directive and the Habitats Directive (Nature Directives) which will require a comprehensive assessment of whether the current regulatory framework is "fit for purpose". To support the European Commission's Fitness Check, an Evaluation Study of the Birds and Habitats Directives is currently being carried out. It will assess the effectiveness, efficiency, coherence, relevance and EU added value of the EU nature legislation and present conclusions and serve as a basis for the European Commission to prepare the Fitness Check Report on the two Directives. The collection of data and information constitutes a critical part of the Evaluation study and therefore the consultation will involve a wide range of stakeholders.

## **8.2 Cooperation with other ICES Working Groups**

### **8.2.1 NSWG and WGMIXFISH**

All European Union MS are legally obliged to implement an ecosystem approach under the MSFD. As such, ICES is taking on a more holistic approach to providing advice on bycatch. In 2015 ICES will begin experimenting with providing summary advice sheets that include bycatch estimates of protected species that occur incidental to a target fishery under the purview of respective ICES stock assessment working groups. Mark Dickey-Collas and the Chairs of the North Sea Working Group (NSWG) and the Working Group on Mixed Fisheries (WGMIXFISH) provided a briefing to WGBYC sharing their conceptual approach to this new direction in providing ecosystem level advice to ICES stakeholders. It was made clear that this year's efforts are a first test case and will be an evolving process that may be adapted over time to achieve the most practical and scientifically sound outcome possible.

This year (2015) the NSWG and WGMIXFISH have been selected as test cases to work cooperatively with WGBYC at evaluating the practicalities of integrating information on PETS bycatch into their respective stock assessment advice. The NSWG was se-



lected because it is a relatively data rich area making it easier to create a conceptual framework integrating advice across ICES WG's. However, NSWG works at the target species level which could present significant challenges for integrating advice on PETS bycatch given WGBYC works on data at the fleet level. As an alternative option, WGMIXFISH works at the fleet level which could be more conducive to integrating PETS bycatch advice.

Simon Northridge and Mark Tasker (members of WGBYC) have agreed to attend meetings of NSWG and WGMIX this spring and fall, respectively, to discuss the feasibility and options for integrating PETS bycatch into stock assessment advice.

### **8.2.2 Working Group on Commercial Catches (WGCATCH)**

ICES intends to include information about incidental bycatches of PETS in future advice sheets. This means there is a need to improve the recording of PETS under existing DCF sampling programmes and to better align information on PET bycatch from other sources with the ICES stock advice format.

The Study Group on Practical Implementation of Discard Sampling Plans (SGPIDS; 2015) and WGBYC (2013a) reviewed the adequacy of protocols and data handling in the current DCF and concluded that the incorporation of data collection for rare species within existing DCF programmes should be relatively easy (and cheap) because PETS bycatch in most fisheries currently monitored under the DCF tends to be sporadic.

SGPIDS and WGBYC have also noted that the current DCF programme is not optimized for the sampling of rare species, however it recognized that altering existing survey designs to improve monitoring of rare species, would likely lead to additional costs. Although there is a wish to monitor a broad range of species, covering several taxa, an overarching design that adequately covers all taxa within the DCF is not realistic. When incorporating monitoring of PETS in the new DCF, the emphasis should therefore be on improving on board sampling protocols to ensure PETS bycatches are captured within the data recording system and to alter downstream data handling systems to ensure bycatch records of PETS are easily accessed by end-users.

The recognition that it is difficult to design an overall sampling plan that adequately covers all taxa of rare species does not mean that the sampling focus of the new DCF could not be altered to better reflect patterns of PETS bycatch. Sampling under the existing DCF can contribute to the assessment of bycatch of PETS if such species are properly documented but is not sufficient on its own as currently implemented to make a full assessment of the impact of fisheries on PETS. For example: in cases where sampling under the DCF is carried out by means of sampling in harbours (market sampling), obviously the bycatch of PETS is not covered at all because PETS bycatches are not routinely returned to shore. Also the coverage of fleets is not tuned to the métiers where there is a high risk of incidental bycatch. An assessment carried out by ICES (2013b) showed that bottom trawling is generally oversampled with respect to monitoring of PETS, while in some areas static nets, longlines and purse-seines are under sampled. For seabirds in particular, priority should be given to monitoring static nets in the Baltic, North Sea and North Atlantic, and in longline fisheries in the Atlantic and Mediterranean/Black Sea.

One approach to help address some of these issues maybe to use data collected under the DCF or other sources to help identify "hot spots", such as areas, seasons or métiers with relatively high bycatch rates of PETS. Based on initial assessments of the data at this larger scale, relevant Member States or RCG's may then need to carry out more

focused surveys to fully assess the scale and patterns of PETS bycatch in specific fisheries. This approach would require Member States or RCM's to identify additional fisheries and/or species requiring sampling and should include, as a minimum, species listed in the (annexes of) legislations, conventions and action plans: OSPAR, HELCOM, ASCOBANS (International Union for Conservation of Nature; IUCN), ACCOBAMS (Agreement on the Conservation of small Cetaceans), ICCAT (International Commission for the Conservation of Atlantic Tunas), Birds Directive, Habitats Directive, CMS (Bonn Convention) and UNCLOS (United Nations Convention on the Law of the Sea).

It was also noted that several countries do not have species codes for many PETS, which leads to issues with data storage in national databases and this is probably the most pressing issue that should be resolved in the short term. Some other parameters of importance were also considered and are presented in Table 10. The majority of these parameters, such as date, time and geographical position, are not expected to cause any problems, as they are already required fields in fishery sampling databases. The inclusion of PETS bycatch records is also not expected to require major changes to databases because it is simply the sampling of another species group. Institutes are encouraged to add these fields and incorporate acknowledged PETS codes. Additional fields may be added for the coverage of additional details, depending on regional differences in protocols and training. SGPIIDS highlighted three specific parameters which are considered essential to recording of PETS (or rare species) as follows:

The database interface should contain as mandatory:

- 1) **Checkbox for sampling on haul level** of incidental bycatch: this may for example consist of inspection of the codend at opening and/or a scan for rare species during processing of the catch. This field allows the output of hauls or sets with zero bycatches. The exact definition of sampling at haul level may lead to additional fields: for example an indicator of percentage of coverage or a description of the actual observer action carried out (i.e. percentage of observed of hauls of gillnets).
- 2) **List of species codes**: it should be hierarchical so that it is possible to enter taxa on species genus, family – or order level. It was noticed that not all species of interest are included in the AFIS List of Species for Fisheries Statistics Purposes <http://www.fao.org/fishery/collection/asfis/en>.
- 3) **Acoustic Deterrent Devices (ADD's or "Pingers")** which are used in some set-net fisheries (and in some pelagic trawl fisheries) to deter harbour porpoises and dolphins. Several fields may be added to this category to record further details.

WGBYC agreed that the WG to cooperate with for the development and evaluation of sampling protocols in DCF sampling schemes, is the Working Group on Commercial Catches (WGCATCH). It was noted however that none of the current Terms of Reference of this group deals with the sampling of incidental catches or PETS. WGBYC stresses the need to adopt a reoccurring Term of Reference to deal with this:

WGBYC recommends WGCATCH...

*...to implement the collection of data on incidental bycatch of, Protected, Endangered and Threatened Species (PETS) and rare fish species in the sampling protocols of national catch-and discards sampling schemes, including incorporation of appropriate fields in National databases, data processing, data validation and synchronization with the regional database.*

It was further noted that, although the DCF sampling schemes evaluated by WGCATCH are primarily focused on commercial species, the scope of WGCATCH is in fact wider than just commercial species. It covers the sampling of the total catch, including discards and bycatch. WGBYC therefore wonders whether the word “commercial” in the full name of WGCATCH is appropriate.

WGBYC will continue to seek cooperation with WGCATCH to evaluate current sampling schemes and provide guidelines for at sea sampling and recording of bycatches of PETS and rare fish. In order to make the cooperation as efficient as possible, the group appointed a contact person who will attend meetings of WGCATCH and report back to WGBYC. In 2015, Ruth Fernandez will be contact person for WGCATCH.

## 8.3 Other Monitoring Projects

### 8.3.1 Netherlands

In the Netherlands, IMARES Wageningen UR and Marine Science and Communication (MS&C) started at the end of 2012 a Remote Electronic Monitoring (REM) project on the monitoring of bycatch of harbour porpoises in gill and trammelnet fisheries, targeting sole (*Solea solea*), cod (*Gadus morhua*), turbot (*Scophthalmus maximus*), brill (*Scophthalmus rhombus*) and sea bass. During its first year (2013) this project dealt with various issues, including difficulties in finding fishers to participate due to several reasons. In some cases there was too little electrical power to operate the REM systems on board of small vessels (<10 m) and social-political inference with management measures concerning quota issues interfered with the project as well. In 2014, nine vessels were involved in the project. This number is less than initially intended (target of at least 10 and ideally 12 boats) as a result of shortage of funding from the Ministry. The aim is to increase the number of boats in 2015 and onwards. A scientific quota for participating fishers contributed to an increase in fishers volunteering to participate. In this project harbour porpoises are being recorded, no other PETS species. The project is funded by the Dutch Ministry of Economic Affairs, will continue until 2016.

### 8.3.2 Poland

Current research (HMS IOUG) focused on assessing the scale of the risk arising from the use of gillnets (in situ) in the areas of occurrence of harbour porpoises (especially in protected Natura 2000 areas) and trying to find ways to avoid bycatch.

Hel Marine Station also collects bycatch data from all monitoring/observers programs (not connected to Reg. 812). Additionally some academic scientists continue to collect opportunistic data on the bycatch of species such as: sturgeon, twaite shad and sea lamprey.

Poland is currently also starting a pilot monitoring program of seabird bycatch in a coastal fishery conducted by the National Marine Fisheries Research Institute (NMFRI). In autumn 2014 it started a pilot project of bycatch monitoring of seabirds by coastal fishery. This project includes at-sea observer program, video monitoring and observation from assisting boat (i.e. alternative platform). It covers coastal areas of the Baltic Sea including Gulf of Gdańsk, Szczecin Lagoon and Pomeranian Bay. The main task is to check the possibility, technical requirements and any other issues connected to conducting monitoring on small (<12 m) boats in coastal fishery. The preliminary results will be ready by the end of 2015.

## **9 Other Business**

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First WGBYC meeting to be held the US – 2017

## 10 Tasks for 2016 Meeting

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### 10.1 Intersessional ToR's

Regional coordination meetings (RCM) – Related to ToR F, it is incumbent upon all members of WGBYC to network with their relevant peers who are engaged in the RCM process to educate and stress the need for proper sampling design amendments or modifications under the DCF for robust data collection on PETS to support bycatch mortality analyses carried out by WGBYC.

Tor E – Submit data request to WGSFD for fleet level data from years 2009-2014 and describe how WGBYC intends to use the data prior to June 2015. If request can't be met then request will be made too WGSFD for the 2015/2016 data call meeting (December 2015).

Tor G – Report back to WGBYC in 2016 the status of other WG's level of involvement assessing and quantifying bycatch of PETS.

Tor H – Adapt data upload Excel Template to accommodate inclusion of PETS reported through DCF records. Test application of new DCF data records by applying them to the new data reporting format (e.g. Tables 4-6). WGBYC will test the incorporation of new data fields and records using a sample dataset previously compiled and summarized in the WGBYC 2014 reports (i.e. 2012 data). Depending on speed of progress on adapting, the data template will in turn determine to which extent DCF PETS data members will need to upload data for the 2016 meeting. Communicate intersessionally on status and progress of this project.

### 10.2 WGBYC members attendance at other relevant WG meetings in 2016

Ruth Fernandez (ICES Advisory Programme Professional Officer) and Bram Couperus – WGCATCH (Working Group on Commercial Catches) will be advocating and liaison with WGCATCH to represent WGBYC interest and stake in proper sampling protocols for the collection of bycatch data on PETS.

Simon Northridge – WGNSSK (Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak), and WGBIE (Working Group for the Bay of Biscay and the Iberian Waters Ecoregion).

Mark Tasker – WGMIXFISH-METH (Working Group on Mixed Fisheries Advice Methodology), and WGMIXFISH-ADVICE (Working Group on Mixed Fisheries Advice)

And report back to WGBYC with feedback after attending respective meetings.

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## Annex 2. Agenda

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### WGBYC agenda, 2 – 6 February 2015, Copenhagen

#### Monday 2 February

- 13:00 Getting connected: Internet, Sharepoint, Printer
- 13:30 ICES Welcome, New Chair, Household Rules, and other Routine business matters
- 14:00 Introduction - Review 2015 ToR
- ToR e – Ronan (any progress, continued challenges, status of WGBYC database, etc.)
    - o BRAM (updates on coordination with other ICES WG's (i.e. PGCCDBS, WGCATCH and Regional Coordination Meetings (RCM's)
  - Other overarching issues to be discussed
    - o Landing Obligation – effects
    - o Updates on meetings/workshops relevant to the work of WGBYC
      - Ascobans Workshop re: Reg812 deregulation/new DCF
    - o Change to Report Format re: bycatch data from Reg812
  - Changes to the agenda
  - Status of Reg. 812 MS Reports
    - o Preliminary task assignments for ToR a and d
- 17:00 Adjourn for the day (Group Dinner @ WAGAMAMA 17:30)

#### Tuesday 3 February

- 9:00 Mark Dickey-Collas talk with WGBYC Integrating Bycatch Advice into SA's
- 9:30 Dominic EU – Changes in Legislation
- 10:00 Discussion re: Changes in Legislation and Integrating Bycatch Advice
- 11:00 Revised Draft Format of WGBYC Annual Report
- Plenary ToR a and ToR d): Confirm task assignments (Sara, Simon, Christian, Genevieve, Ronan)
- Review annual national reports and mitigation trials
- 12:30 Lunch
- 13:30 Plenary – Mitigation Presentations (and Poland Effort/Fishery Characteristics)
- Poland Fishery Effort
  - Updates from ongoing trials (US, UK)
  - Future mitigation research planning (Cross Taxa Gillnet Bycatch Mitigation – Simon)
  - German trials (Christian)
  - Discussion
- 15:00 Continue drafting text for ToR a and ToR d

16:30 Plenary - Status Update (review tasks for Day 2)

17:00 Adjourn for the day

### **Wednesday 4 February –**

9:00 Working on ToR a (Bycatch) and ToR d (Mitigation)

10:00 Plenary

- Status Update ToR a and d
  - o WGBYC d-base
  - o Revised Table Format
  - o ToR a (Text from Reg812 reports)
  - o ToR d (mitigation text) – only recommendations to ourselves
- ToR b (Trends) and ToR c (Impacts)
  - o Discuss Options for trends analysis (2006-2013)
  - o Select subgroup to work on ToR b
- Can ToR b inform ToR c?
- What more can be done for ToR c?
- Assign tasks

12:30 Lunch

17:00 Adjourn for the Day

### **Thursday 5 February**

9:00 Continue drafting:

- ToR a and d (Bycatch and Mitigation)
- ToR b and c (Trends and Impacts)

11:30 Plenary

- ToR d – Upload text to Sharepoint please....
- ToR a – Sample table revisions:
  - o Table 4a [WGYC2014] turns out to be very useful to for quickly identifying where most biases are in the data. Being adapted to support Tor B Trends analysis
  - o Eliminating Tables 4b-4c (replace with summary text only)
  - o Table 4d? – (Coverage by area gear and fleet size)
  - o Tables 4e-4f – Rethinking format; dbase challenges
    - Draft table of Mortality estimates by area and species
- ToR b –Trends: Present draft graph results
- ToR c – Impacts: Status update
  - o Preliminary Recommendations (to ourselves or WGMME?)
    - Overlapping ToR's with WGMME re: 'IMPACTS'
      - What is WGBYC's role?

12:30 Lunch

- 13:30 Plenary
- 14:00 ToR e (Coordinations with ICES Data Centre re: Develop. Bycatch Monitoring Data and Fishing Effort)
- Niel and Carlos from ICES Data Center coming to speak
- 14:30 ToR f (Monitoring/Asses Methods Coord)
- ToR g (Monitor/Research under EU Legislation)
- 16:30 Status Update on all ToR's
- ToR b Subgroup needs to meet again
- 17:00 Adjourn for the day

**Friday 6 February**

- 9:00 Writing and submitting final draft text for all ToR's
- 11:00 Draft 2016 ToR's, Recommendations and Intersessional Tasks
- 2017 WGBYC meeting in the US
  - Inter-session data call?
  - Other items?
- 12:00 Lunch
- 14:00 Reviewing ToR b
- Trends Graphs
  - Companion Tables
  - Maps
- 16:00 Meeting Adjourned

### Annex 3. WGBYC draft Terms of Reference for the 2016 meeting

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The **Working Group on Bycatch of Protected Species** (WGBYC), chaired by Marjorie Lyssikatos, USA, will meet at ICES HQ in Copenhagen Denmark, 1–5 February 2016 to:

- a) Review and summarize annual national reports submitted to the European Commission under Regulation 812/2004 and other published documents and collate PETS bycatch rates and estimates in EU waters;
- b) Evaluate and report on trends in bycatch rates and estimates of protected species where possible from MS reporting under 812 and from DCF;
- c) Evaluate the range of (min/max) impacts of bycatch on cetacean species where possible by assessment unit. , furthering the bycatch risk approach to assess likely conservation level threats and prioritize areas where additional monitoring is needed;
- d) Collate and review information from National 812 reports and elsewhere relating to the implementation of bycatch mitigation measures and ongoing bycatch mitigation trials, compile recent results and coordinate further work on protected species bycatch mitigation;
- e) Continue to develop, improve and coordinate methods for bycatch monitoring, research and assessment within the context of European legislation (e.g. MSFD), regional conventions (HELCOM and OSPAR) and targets;
- f) Develop collaborative research proposal among WGBYC members to pursue research project(s) and funding opportunities in support of researching PETS and target species behaviour in relation to fishing gear;
- g) Continue, in cooperation with the ICES Data Centre, to develop, improve, populate, and maintain the database on bycatch monitoring and relevant fishing effort in European waters. Adapt the WGBYC d-base to accommodate the incorporation of other PETS bycatch data as reported through the DCF and other sampling schemes (**intersessional**);
- h) Collate DCF and other monitoring scheme records relevant to total observer effort and bycatch of PETS (**intersessional**);
- i) Adopt new structural changes to tabular output of PETS bycatch and associated effort data necessary to meet emerging data needs and requests from other ICES Working Groups (i.e. stock assessment WG's and WGMME (**intersessional**);
- j) Review reports and related ToR from other ICES Working Groups/Workshops that may have bycatch of PETS under their purview. The goal is to not duplicate work (**intersessional**).
- k) The definition of a PET is unclear. ADGBYC considered that it would be useful for WGBYC to recommend criteria for defining PETS, and then the relevant expert group be asked to apply those criteria (regionally if necessary) to arrive at a draft list. A discussion on who should compile information/contribute to future advice should follow.

WGBYC will report by 26 February 2016 to the attention of the Advisory Committee.

## Supporting Information

Priority	The current activities of this Group will lead ICES into issues related to the ecosystem affects of fisheries, especially with regard to the application of the Precautionary Approach. Consequently, these activities are considered to have a very high priority.
Scientific justification	<p>a) The European Commission has decided not to amend Res. 812/2004 and to integrate monitoring of protected and endangered species into the new DCF (DCMAP). It is essential to cooperate with the scientists who design observer schemes and protocols for the monitoring of catch and discards;</p> <p>b) Evaluating trends in bycatch rates where possible from Reg. 812 reports is an essential component to the effectiveness of the legislation and monitoring of bycatch impacts on populations;</p> <p>c) This is essential to use in answering part of the European Commission MoU request to “provide any new information regarding the impact of fisheries on marine mammals, seabirds...”;</p> <p>d) ICES Member Countries are required to reduce levels of bycatch under several pieces of legislation; the response to this ToR will help meet that aim;</p> <p>e) Bycatch monitoring and assessment is fundamental to the work of the group; in light of significant changes in legislation that will impact monitoring programs for PETS any improvements in coordination and methods will help the group and other workers in this field;</p> <p>f) Improving scientific understanding how target and non-target catches interact with commercial fishing gear is fundamental to developing effective mitigation measures to reduce bycatch on vulnerable species;</p> <p>g-j) An operating database allows for more efficient response to future advice requests and an audit trail for information used in the Group’s reports; remaining intersessional ToR’s all aim to increase efficiency of WGBYC’s tasks in providing advice to various groups.</p> <p>k) The advice drafting group added this new term of reference as a result of no clear definition on the list of PETS under the purview of WGBYC. Developing a set of criteria will help to compile such a list.</p>
Resource requirements	None beyond usual Secretariat facilities
Participants	13–21 members
Secretariat facilities	Secretariat support with meeting organization and final editing of report.
Financial	No financial implications
Linkages to advisory committees	ACOM
Linkages to other committees or groups	WGFTFB, WGMME, WGSE, WGEF, SGPIDS, WGCATCH, WGMIXFISH, WGSFD, WGNSSK, SCICOM
Linkages to other organizations	NAMMCO, ASCOBANS, ACCOBAMS, GFCM, EC, IWC

## Annex 4. Tables

**Table 1. Summary table of MS by RCM regarding the status of Reg. 812 report submissions to the European Commission (Green = Yes for report with data on observer effort (either days at sea or other measurement); Grey = Yes for report with no data on observer effort (either days at sea or other measure); Coral = no report submitted; \* Two trawlers that were monitored in 2012 have since been scrapped. As a result, in 2013 no vessels are affected by the regulation; \*\* Germany provides reports on observations made under DCR to the Commission which include information on cetacean bycatch; \*\*\* Swedish report was not received in due time, but the report was made available late to ICES).**

RCM	Coastal Member State of the EU	Monitoring (Art. 4-5)	Report reg 812 and observer effort data provided							
		Fishing in areas affected with relevant gears	2006	2007	2008	2009	2010	2011	2012	2013
Baltic	Estonia EE	Yes								
Baltic	Finland FI	Yes								
Baltic	Latvia LV	Yes								
Baltic	Lithuania LT	Yes								
Baltic	Poland PL	Yes								
Mediterranean and Black Sea	Bulgaria BG	NO								
Mediterranean and Black Sea	Croatia HR	NO								
Mediterranean and Black Sea	Cyprus CY	NO								
Mediterranean and Black Sea	Greece GR	NO								
Mediterranean and Black Sea	Italy IT	Yes								
Mediterranean and Black Sea	Malta MT	NO								
Mediterranean and Black Sea	Romania RO	NO								
Mediterranean and Black Sea	Slovenia SI	Yes*								
North Atlantic	Portugal PT	Yes								
North Atlantic	Spain ES	Yes								
North Atlantic, Baltic	Germany DE	Yes		**						
North Atlantic, North Sea and Eastern Arctic	France FR	Yes								
North Atlantic; North Sea and Eastern Arctic	Ireland IE	Yes								

RCM	Coastal Member State of the EU	Monitoring (Art. 4-5)	Report reg 812 and observer effort data provided							
		Fishing in areas affected with relevant gears	2006	2007	2008	2009	2010	2011	2012	2013
North Atlantic; North Sea and Eastern Arctic	Netherlands NL	Yes								
North Atlantic; North Sea and Eastern Arctic	United Kingdom UK	Yes								
North Sea and Eastern Arctic, Baltic	Belgium BE	Yes								
North Sea and Eastern Arctic, Baltic	Denmark DK	Yes								
North Sea and Eastern Arctic; Baltic	Sweden SE	Yes		****						****

**Table 2. Summary table of MS by RCM regarding proper reporting of observer effort in 'days at sea' in Reg. 812 report submissions to the European Commission (Green = MS Reg. 812 reports provided observed effort in days at sea; Grey = MS Reg. 812 reports provided no effort or if provided it was not in the format of days at sea; \* Two trawlers that were monitored in 2012 have since been scrapped. As a result, in 2013 no vessels are affected by the regulation \*\* No report but information provided late to ICES.**



RCM	Coastal Member State of the EU	Monitoring (Art. 4–5)	Observed Effort (days at sea)							
		Fishing in areas affected with relevant gears	2006	2007	2008	2009	2010	2011	2012	2013
Baltic	Estonia EE	Yes								
Baltic	Finland FI	Yes								
Baltic	Latvia LV	Yes								
Baltic	Lithuania LT	Yes								
Baltic	Poland PL	Yes								
Mediterranean and Black Sea	Bulgaria BG	NO								
Mediterranean and Black Sea	Croatia HR	NO								
Mediterranean and Black Sea	Cyprus CY	NO								
Mediterranean and Black Sea	Greece GR	NO								
Mediterranean and Black Sea	Italy IT	Yes								
Mediterranean and Black Sea	Malta MT	NO								
Mediterranean and Black Sea	Romania RO	NO								
Mediterranean and Black Sea	Slovenia* SI	Yes								
North Atlantic	Portugal PT	Yes								
North Atlantic	Spain ES	Yes								
North Atlantic, Baltic	Germany DE	Yes								
North Atlantic, North Sea and Eastern Arctic	France FR	Yes								
North Atlantic; North Sea and Eastern Arctic	Ireland IE	Yes								
North Atlantic; North Sea and Eastern Arctic	Netherlands NL	Yes								
North Atlantic; North Sea and Eastern Arctic	United Kingdom UK	Yes								
North Sea and Eastern Arctic, Baltic	Belgium BE	Yes								
North Sea and Eastern Arctic, Baltic	Denmark DK	Yes								
North Sea and Eastern Arctic; Baltic	Sweden SE	Yes								**

Table 3. Collation of fishing and monitoring effort by type of gears and areas and bycatch of protected species (PS) under the Habitats Directive (HD) and seals for the year 2013. The monitoring data are extracted from the 2014 annual reports to Reg. 812/2004 for the year 2013, while data on fishing effort are extracted from the WGBYC database; Fishing and monitoring effort reported in days at sea (das); Areas: NS, North Sea (IIIa, IVabc, VIId); EA, Eastern Arctic; NEA, Northeast Atlantic; Protected species (PS): Pp, *Phocoena phocoena*; Dd, *Delphinus delphis*; SC, *Stenella coeruleoalba*; Tt, *Tursiops truncatus*; Lal, *Lagenorhynchus albirostris*; Lac, *Lagenorhynchus acutus*; Hg, *Halichoerus grypus*; Cc, *Caretta caretta*.

	Fishing effort (das)	DCF monitoring (das)	ByCatch PS (HD) + seals	Dedicated monitoring (das)	ByCatch PS (HD) + seals
Data from	WGBYC database	Reg. 812 2014 report	WGBYC database	Reg. 812 2014 report	
TOWED GEARS					
Baltic (22-29)	69 991	46	0	473	0
NS + EA	110 382	134	0	18	0
NEA	17 593	762	0	195	6 Dd
Med, GSA 17	10 228	0		355	51 2 Tt, 49 Cc
TOTAL	208 194	942	0	1041	57 6 Dd, 2 Tt, 49 Cc
ALL NETS					
Baltic (22-29)	72 603	30	0	92	3 Hg
NS + EA	38 903	41	0	64	2 1 Lac, 1 Lal
NEA	93 342	263	0	424	39 18 Pp, 9 Dd, 1 Sc, 3 Tt, 8 Hg
TOTAL	204 848	334	0	580	44 18 Pp, 9 Dd, 1 Sc, 3 Tt, 1 Lac, 1 Lal, 11 Hg
LONGLINES					
Baltic (22-29)	2540	0		0	
NS + EA	58	0		0	
NEA	7800	0		18	1 1 Cc
TOTAL	10 398	0		18	1 1 Cc

Table 4. Total number of cetacean bycatch specimens in 2013 reported by MS under Reg. 812. Pp, *Phocoena phocoena*; Dd, *Delphinus delphis*; SC, *Stenella coeruleoalba*; Tt, *Tursiops truncatus*; Lal, *Lagenorhynchus albirostris*; Lac, *Lagenorhynchus acutus*.

Métier Level 3	RCM	Fishing Area (Ices Division)	Total effort (Days at sea)	Total observed effort (Days at sea)	Dd	La	Lal	Pp	Sc	Tt
Nets	Baltic	22-24	4817							
		25-32	31607	10	0	0	0	0	0	0
		IIIb	2625							
		IIIc	5611							
		IIId	5656	111	0	0	0	0	0	0
		(blank)	21 878	18	0	0	0	0	0	0
	North Atlantic	VIA	181	5	0	0	0	0	0	0
		VIB	360							
		VIIA	656	6	0	0	0	0	0	0
		VIIb	428							
		VIIc	446							
		VIIe	8064	132	1	0	0	7	2	1
		VIIIf	4410	30	0	0	0	7	0	0
		VIIg	3617	79	0	0	0	1	0	0
		VIIh	829	4	4	0	0	2	0	0
		VIII	249							
	North Sea and Eastern Arctic	VIIj	1552	10	0	0	0	0	0	0
		VIIk	310							
		IIa	48							
		IV	6495	21	0	0	0	2	0	0
		IVa	1174	49	0	1	1	0	0	0
		IVb	924	6	0	0	0	0	0	0
		IVc	3802	11	0	0	0	0	0	0
		VIIId	14 209	58	0	0	0	1	0	0

Métier Level 3	RCM	Fishing Area (Ices Division)	Total effort (Days at sea)	Total observed effort (Days at sea)	Dd	La	Lal	Pp	Sc	Tt
	Unknown	Distant	19							
	Baltic	IIIa	8515	52	0	0	0	0	0	0
		IIIAS27	15							
		IIIAS31	13							
Pelagic trawls	Baltic	22-24	65							
		25-32	7365							
		IIIb	29							
		IIIc	276							
		IIId	15 616	470	0	0	0	0	0	0
		(blank)	4492	5	0	0	0	0	0	0
	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	10 228	355	0	0	0	0	2	0
	North Atlantic	IXB	4.5							
		VI	27							
		VIA	1164	65	0	0	0	0	0	0
		VIB	42	2	0	0	0	0	0	0
		VII	270							
		VIIA	194	9	0	0	0	0	0	0
		VIIb	762	20	0	0	0	0	0	0
		VIIc	179	31	0	0	0	0	0	0
		VIIe	565	62	6	0	0	0	0	0
		VIIg	283	17	0	0	0	0	0	0
		VIIh	227	22	0	0	0	0	0	0
		VIII	55							
		VIIIa	21	1	0	0	0	0	0	0
		VIIIb	41	2	0	0	0	0	0	0
		VIIIc	2.5							
		VIIIe	29							

Métier Level 3	RCM	Fishing Area (Ices Division)	Total effort (Days at sea)	Total observed effort (Days at sea)	Dd	La	Lal	Pp	Sc	Tt
		VIIj	554	15	0	0	0	0	0	0
		VIIk	214	14	0	0	0	0	0	0
		Xb	53.5							
		XIVB	14							
	North Sea and Eastern Arctic	IIa	74	0	0	0	0	0	0	0
		IIb	21	4	0	0	0	0	0	0
		IV	2675							
		IVa	596	37	0	0	0	0	0	0
		IVb	231	12	0	0	0	0	0	0
		IVc	112	1	0	0	0	0	0	0
		VII	24							
		VIIId	277	49	0	0	0	0	0	0
		(blank)	1223							
	Unknown	Distant	2							
	Baltic	IIIa	2207							

Table 5. Cetacean bycatch rates in 2013 reported by MS under Reg. 812. Pp, *Phocoena phocoena*; Dd, *Delphinus delphis*; SC, *Stenella coeruleoalba*; Tt, *Tursiops truncatus*; Lal, *Lagenorhynchus albirostris*; Lac, *Lagenorhynchus acutus*.

Métier Level 3	RCM	Fishing Area (Ices Division)	Total effort (Days at sea)	Total observed effort (Days at sea)	Dd	La	Lal	Pp	S c	Tt
Nets	Baltic	22-24	4817							
		25-32	31 607	10	0.00	0.00	0.00	0.00	0.00	0.00
		IIIb	2625							
		IIIc	5611							
		IIId	5656	111	0.00	0.00	0.00	0.00	0.00	0.00
		(blank)	21 878	18	0.00	0.00	0.00	0.00	0.00	0.00
		VIA	181	5	0.00	0.00	0.00	0.00	0.00	0.00
		VIB	360							
		VIIA	656	6	0.00	0.00	0.00	0.00	0.00	0.00
		VIIb	428							
		VIIc	446							
		VIIe	8064	132	0.01	0.00	0.00	0.05	0.02	0.01
		VIIIf	4410	30	0.00	0.00	0.00	0.23	0.00	0.00
		VIIg	3617	79	0.00	0.00	0.00	0.01	0.00	0.00
		VIIh	829	4	1.00	0.00	0.00	0.50	0.00	0.00
		VIII	249							
		VIIj	1552	10	0.00	0.00	0.00	0.00	0.00	0.00
		VIIk	310							
	North Sea and Eastern Arctic	IIa	48							
		IV	6495	21	0.00	0.00	0.00	0.10	0.00	0.00
		Iva	1174	49	0.00	0.02	0.02	0.00	0.00	0.00
		IVb	924	6	0.00	0.00	0.00	0.00	0.00	0.00
		IVc	3802	11	0.00	0.00	0.00	0.00	0.00	0.00
		VIIId	14 209	58	0.00	0.00	0.00	0.02	0.00	0.00

Métier Level 3	RCM	Fishing Area (Ices Division)	Total effort (Days at sea)	Total observed effort (Days at sea)	Dd	La	LaI	Pp	S c	Tt
	Unknown	Distant	19							
	Baltic	IIIa	8448	52	0.00	0.00	0.00	0.00	0.00	0.00
		IIIAN	67							
		IIIAS27	15							
		IIIAS31	13							
Pelagic trawls	Baltic	22-24	65							
		25-32	7365							
		IIIb	29							
		IIIc	276							
		IIId	15 616	470	0.00	0.00	0.00	0.00	0.00	0.00
		(blank)	4492	5	0.00	0.00	0.00	0.00	0.00	0.00
	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	10 228	355	0.00	0.00	0.00	0.00	0.01	0.00
	North Atlantic	IXB	4.5							
		VI	27							
		VIA	1164	65	0.00	0.00	0.00	0.00	0.00	0.00
		VIB	42	2	0.00	0.00	0.00	0.00	0.00	0.00
		VII	270							
		VIIA	194	9	0.00	0.00	0.00	0.00	0.00	0.00
		VIIb	762	20	0.00	0.00	0.00	0.00	0.00	0.00
		VIIc	179	31	0.00	0.00	0.00	0.00	0.00	0.00
		VIIe	565	62	0.10	0.00	0.00	0.00	0.00	0.00
		VIIg	283	17	0.00	0.00	0.00	0.00	0.00	0.00
		VIIh	227	22	0.00	0.00	0.00	0.00	0.00	0.00
		VIII	55							
		VIIIa	21	1	0.00	0.00	0.00	0.00	0.00	0.00
		VIIIb	41	2	0.00	0.00	0.00	0.00	0.00	0.00

Métier Level 3	RCM	Fishing Area (Ices Division)	Total effort (Days at sea)	Total observed effort (Days at sea)	Dd	La	LaI	Pp	S c	Tt
		VIIIId	2.5							
		VIIIe	29							
		VIIj	554	15	0.00	0.00	0.00	0.00	0.00	0.00
		VIIIk	214	14	0.00	0.00	0.00	0.00	0.00	0.00
		Xb	53.5							
		XIVB	14							
	North Sea and Eastern Arctic	Ila	74	0						
		IIb	21	4	0.00	0.00	0.00	0.00	0.00	0.00
		IV	2675							
		Iva	596	37	0.00	0.00	0.00	0.00	0.00	0.00
		IVb	231	12	0.00	0.00	0.00	0.00	0.00	0.00
		IVc	112	1	0.00	0.00	0.00	0.00	0.00	0.00
		VII	24							
		VIIId	277	49	0.00	0.00	0.00	0.00	0.00	0.00
		(blank)	1223							
		Distant	2							
	Baltic	IIIa	2207							



**Table 6. 2013 bycatch estimates stratified by RCM, fishing area, and métier for all species (birds, cetaceans, elasmobranchs and other fish, seals, and sea turtles) reported by EU Member States under Regulation 812/2004.**

Taxa	Species	RCM	Fishing Area	Métier Level 3	Total effort (Days at sea)	Observed effort (Days at Sea)	Total specimens (Number)	Bycatch Estimate (Number)
Bird	Phalacrocorax carbo	Baltic		Nets	10 516	9	2	
Bird	Phalacrocorax carbo	Baltic		Traps	122	5	1	
Bird	Somateria mollissima	Baltic		Nets	10 516	9	7	
Cetacean	Delphinus delphis	North Atlantic	IX	Bottom trawls	12 464	92	2	
Cetacean	Delphinus delphis	North Atlantic	IX	Seines	10 680	114	3	281
Cetacean	Delphinus delphis	North Atlantic	VIIe	Nets	76	10	1	
Cetacean	Delphinus delphis	North Atlantic	VIIe	Pelagic trawls	5	36	6	
Cetacean	Delphinus delphis	North Atlantic	VIIIh	Nets	361	4	4	
Cetacean	Lagenorhynchus acutus	North Sea and Eastern Arctic	Iva	Nets	917	49	1	
Cetacean	Lagenorhynchus albirostris	North Sea and Eastern Arctic	Iva	Nets	917	49	1	
Cetacean	Phocoena phocoena	North Atlantic	VIIe	Nets	3004	116	7	
Cetacean	Phocoena phocoena	North Atlantic	VIIIf	Nets	1606	16	7	
Cetacean	Phocoena phocoena	North Atlantic	VIIIfg	Nets	127	11	1	
Cetacean	Phocoena phocoena	North Atlantic	VIIIh	Nets	361	4	2	
Cetacean	Phocoena phocoena	North Sea and Eastern Arctic	IV	Nets	411	2	2	
Cetacean	Phocoena phocoena	North Sea and Eastern Arctic	VIIId	Nets	8583	22	1	
Cetacean	Stenella coeruleoalba	North Atlantic	VIIe	Nets	76	10	2	
Cetacean	Tursiops truncatus	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	2	41
Cetacean	Tursiops truncatus	North Atlantic	ICES Subarea IX	Polyvalent	123 120	118	2	94

<b>Taxa</b>	<b>Species</b>	<b>RCM</b>	<b>Fishing Area</b>	<b>Métier Level 3</b>	<b>Total effort (Days at sea)</b>	<b>Observed effort (Days at Sea)</b>	<b>Total specimens (Number)</b>	<b>Bycatch Estimate (Number)</b>
Cetacean	<i>Tursiops truncatus</i>	North Atlantic	VIIe	Nets	76	10	1	
Elasmobranch	<i>Alopias vulpinus</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	3	
Elasmobranch	<i>Dasyatis pastinaca</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	23	
Elasmobranch	<i>Mustelus asterias</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	6	
Elasmobranch	<i>Mustelus mustelus</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	324	8731
Elasmobranch	<i>Myliobatis Aquila</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	227	7665
Elasmobranch	<i>Prionace glauca</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	2	
Elasmobranch	<i>Pteromylaeus bovinus</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	8	286
Elasmobranch	<i>Pteroplatytrygon violacea</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	60	1729
Elasmobranch	<i>Raja asterias</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	3	
Elasmobranch	<i>Raja clavata</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	40	
Elasmobranch	<i>Raja miraleus</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	1	
Elasmobranch	<i>Scyliorhinus canicula</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	1	
Elasmobranch	<i>Squalus acanthias</i>	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	10 228	355	414	11 814
Fish	<i>Alosa fallax</i>	Baltic	IIIId	Bottom trawls	2459	20	3	

Taxa	Species	RCM	Fishing Area	Métier Level 3	Total effort (Days at sea)	Observed effort (Days at Sea)	Total specimens (Number)	Bycatch Estimate (Number)
Fish	Alosa fallax	North Sea and Eastern Arctic	IIIa	Bottom trawls	44 388	94	9	
Fish	Alosa fallax	North Sea and Eastern Arctic	IVB	Bottom trawls	25 960	26	0	
Fish	Lampetra fluviatilis	North Sea and Eastern Arctic	IVB	Bottom trawls	15 126	5	0	
Seal	Halichoerus grypus	North Atlantic	VIIg	Nets	2084	30	8	
Turtle	Caretta caretta	Mediterranean and Black Sea	GSA 17 (Zone 37.2.1)	Pelagic trawls	20 456	710	59	1412
Turtle	Caretta caretta	North Atlantic	ICES Subarea IX	Polyvalent	61 560	59	1	252
		Baltic		Bottom trawls	6080	14	0	
		Baltic		Longlines	431	11	0	
		Baltic		Nets	2016	8	0	
		Baltic		Pelagic trawls	126	4	0	
		Baltic	22-24	Bottom trawls	135	6	0	
		Baltic	25-32	Bottom trawls	673	39	0	
		Baltic	25-32	Nets	31 347	10	0	
		Baltic	IIIc	Bottom trawls	2604	12	0	
		Baltic	IIIId	Bottom trawls	2781	26	0	
		Baltic	IIIId	Longlines	295	3	0	
		Baltic	IIIId	Nets	2158	111	0	
		Baltic	IIIId	Pelagic trawls	14 136	470	0	
		North Atlantic	ICES Subarea IX	Longlines	7800	31	0	
		North Atlantic	VA	Bottom trawls	28	12	0	
		North Atlantic	Via	Nets	18	5	0	
		North Atlantic	Via	Pelagic trawls	705	65	0	
		North Atlantic	VIb	Pelagic trawls	0	2	0	

<b>Taxa</b>	<b>Species</b>	<b>RCM</b>	<b>Fishing Area</b>	<b>Métier Level 3</b>	<b>Total effort (Days at sea)</b>	<b>Observed effort (Days at Sea)</b>	<b>Total specimens (Number)</b>	<b>Bycatch Estimate (Number)</b>
		North Atlantic	VIIa	Nets	467	6	0	
		North Atlantic	VIIa	Pelagic trawls	76	9	0	
		North Atlantic	VIIIB	Pelagic trawls	659	20	0	
		North Atlantic	VIIC	Pelagic trawls	152	31	0	
		North Atlantic	VIIe	Nets	3824	16	0	
		North Atlantic	VIIe	Pelagic trawls	196	26	0	
		North Atlantic	VIIIf	Nets	2570	14	0	
		North Atlantic	VIIg	Nets	1102	38	0	
		North Atlantic	VIIg	Pelagic trawls	218	17	0	
		North Atlantic	VIIIf	Pelagic trawls	138	22	0	
		North Atlantic	VIIIa	Pelagic trawls	0	1	0	
		North Atlantic	VIIIb	Pelagic trawls	12	2	0	
		North Atlantic	VIIj	Nets	1085	10	0	
		North Atlantic	VIIj	Pelagic trawls	38	15	0	
		North Atlantic	VIIk	Pelagic trawls	198	14	0	
		North Sea and Eastern Arctic	1	Bottom trawls	52	14	0	
		North Sea and Eastern Arctic	IIA	Bottom trawls	100	9	0	
		North Sea and Eastern Arctic	IIB	Bottom trawls	189	52	0	
		North Sea and Eastern Arctic	IIB	Pelagic trawls	10	4	0	
		North Sea and Eastern Arctic	IIIa	Bottom trawls	19 458	120	0	
		North Sea and Eastern Arctic	IIIa	Nets	1948	52	0	

<b>Taxa</b>	<b>Species</b>	<b>RCM</b>	<b>Fishing Area</b>	<b>Métier Level 3</b>	<b>Total effort (Days at sea)</b>	<b>Observed effort (Days at Sea)</b>	<b>Total specimens (Number)</b>	<b>Bycatch Estimate (Number)</b>
		North Sea and Eastern Arctic	IIIa	Seines	1232	7	0	
		North Sea and Eastern Arctic	IV	Bottom trawls	9667	112	0	
		North Sea and Eastern Arctic	IV	Nets	4869	19	0	
		North Sea and Eastern Arctic	IV	Seines	1244	20	0	
		North Sea and Eastern Arctic	Iva	Bottom trawls	795	12	0	
		North Sea and Eastern Arctic	Iva	Pelagic trawls	371	37	0	
		North Sea and Eastern Arctic	IVB	Bottom trawls	726	39	0	
		North Sea and Eastern Arctic	IVB	Nets	178	6	0	
		North Sea and Eastern Arctic	IVB	Pelagic trawls	81	12	0	
		North Sea and Eastern Arctic	IVc	Nets	3422	11	0	
		North Sea and Eastern Arctic	IVc	Pelagic trawls	21	1	0	
		North Sea and Eastern Arctic	VIIId	Nets	704	36	0	
		North Sea and Eastern Arctic	VIIId	Pelagic trawls	249	49	0	

**Table 7. Compliance in 2013 to Art. 2-3 of Reg. 812 by European member states affected by these articles (i.e. fishing in the targeted area with the targeted gears); na = not available.**

Area	Countries	Vessels which should use pingers	Vessels carrying pingers
Baltic Area 24	LV	4	na
	PL	59	19
	DE	33	na
	DK	7	na
	SE	5	0
	SE, area Aa	16	0
North Sea IIIa+ IV	SE	2	0
	DK	20	na
	NL	na	0
	DE	31	na
	FR	(8)	0
	UK	7	7
NEA VIIdefghj	DE	12	na
	UK	21	21
	IE	na	na
	FR	(82)	0
	ES	na	na

**Table 8. Harbour porpoise bycatch rates by ICES Division derived from the WGBYC d-base (years 2006-2013). The 95% (high) and 5% (low) bycatch rate confidence intervals are provided by the following assessment units: KB - Kattegat and Belt Seas; BA – Baltic; NS – North Sea and Eastern Channel; WS – West of Scotland; CI – Celtic and Irish Seas; IP – Iberian Peninsula (Figure 12).**

ICES Division	Observed days	No of porpoises observed bycaught	Assessment Unit	Low Bycatch Rate	High Bycatch Rate
IIIC: 22	364	6	KB	0.007	0.032
IIIB: 23	816	19	KB	0.015	0.034
IIID: 24+	741	0	BA	0.000	0.004
IIIA	706	27	NS	0.027	0.052
IIIBCD	15	0	KB	0.000	0.181
IV	472	22	NS	0.032	0.066
IX	152	0	IP	0.000	0.019
VIA	19	0	WS	0.000	0.146
VIB	45	0	WS	0.000	0.064
VIIA	92	3	CI	0.009	0.082
VIIB	63	4	CI	0.022	0.139
VIID	220	1	NS	0.000	0.021
VIIE	801	36	CI	0.034	0.059
VIIF	331	27	CI	0.058	0.111
VIIG	423	33	CI	0.058	0.103
VIIH	129	6	CI	0.020	0.090
VIII	336	4	CI	0.004	0.027
VIIIAB	926	14	CI	0.009	0.024
IIICD	488	0	IP	0.000	0.006
VIIJ	106	20	CI	0.129	0.262
ALL	7245	222			

**Table 9. Harbour porpoise bycatch mortality estimates expected by Assessment Unit based upon estimated fishing effort of all gillnet vessels and potential impact range (low/high) (ICES, 2014c). NOTE: During the process of drafting advice for ACOM the content of Table 9 changed. Please refer to the 2015 final advice report for corrections made to values contained within this table. Final 2015 advice can be found at <http://www.ices.dk/community/advisory-process/Pages/Latest-Advice.aspx>.**

Porpoise Assessment Unit	Fishing Effort	Estimates of bycaught porpoises		Best Estimate Of Abundance	% mortality using lower bycatch estimate	% mortality using higher bycatch estimate
		Lower	Higher			
	Days at Sea	95% CI	95% CI			
CELTIC and IRISH SEAS	32 930	1137	1472	106 000	1.07%	1.39%
NORTH SEA INCL VIID and IIIA:	44 165	1235	1990	274 000	0.45%	0.73%
KATTEGAT AND BELT SEAS - IIIA(south), 22,23	7526	110	219	28 000	0.39%	0.78%

**Table 10. Minimum parameters to be recorded on board and to be stored in national databases for the sampling of Protected, Endangered and Threatened Species (PETS).**

Need to know	Further details
Date	
Time	
Geographical position (GPS)	
Gear type level 6	
Meshsize for set-nets	
Haul ID	
Check box for sampling at haul level	Inspection opening codend; scan of the catch during handling; % of coverage
Species codes	See <a href="http://www.fao.org/fishery/collection/asfis/en">http://www.fao.org/fishery/collection/asfis/en</a>
Number of specimens	
Pingers Y/N	Brand; type; distance to nearest pinger; battery check







## Annex 5. Figures

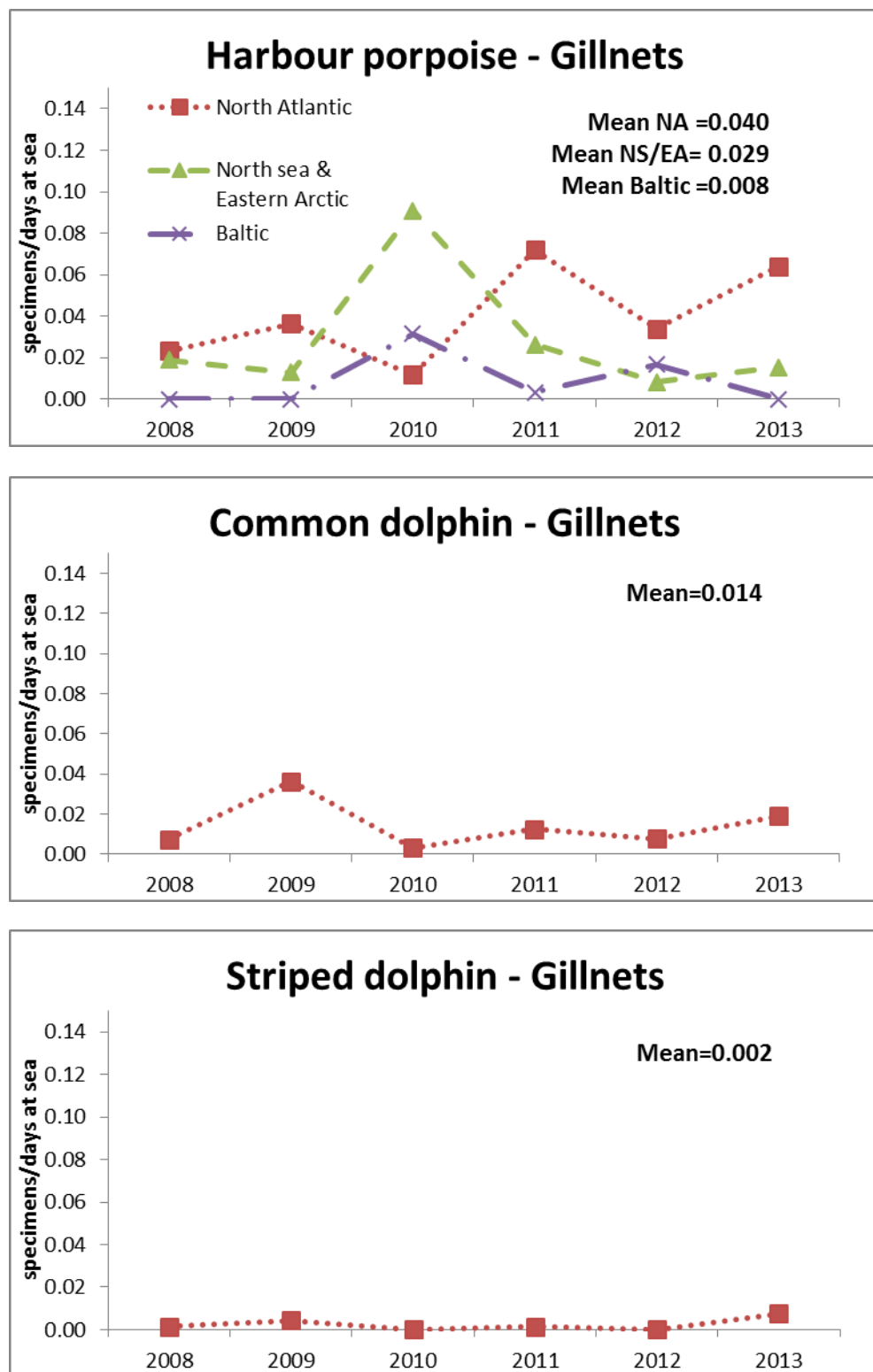


Figure 1. Gillnet bycatch rates (# of observed specimens/observed days at sea) by cetacean species and RCM where sufficient data were available. Data were obtained directly from Reg. 812/2004 member state reports. Measure of uncertainty not available.

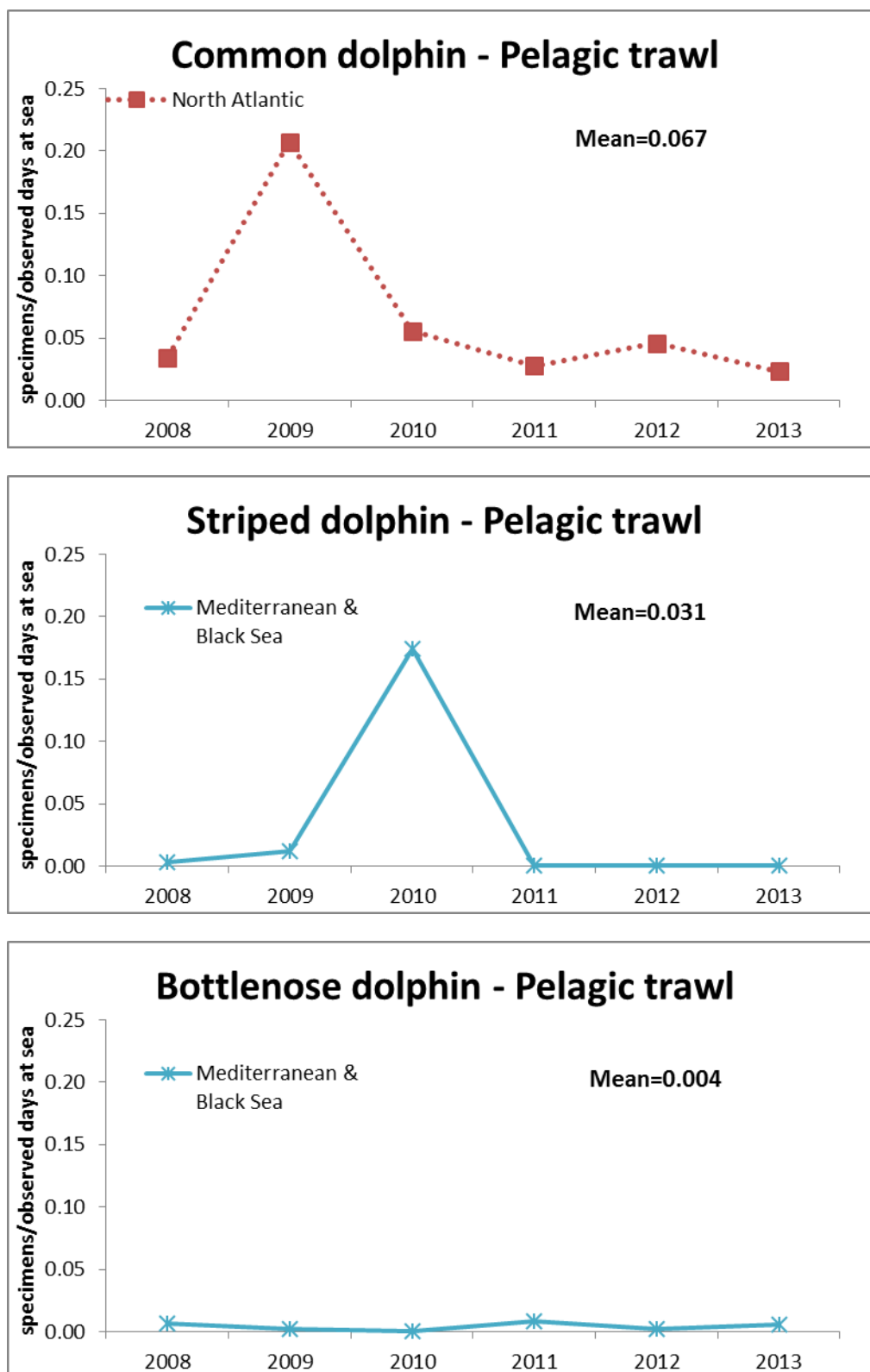


Figure 2. Pelagic trawl bycatch rates (# of observed specimens/observed days at sea) by cetacean species and RCM where sufficient data were available. Data were obtained directly from Reg. 812/2004 member state reports. Measures of uncertainty not available.

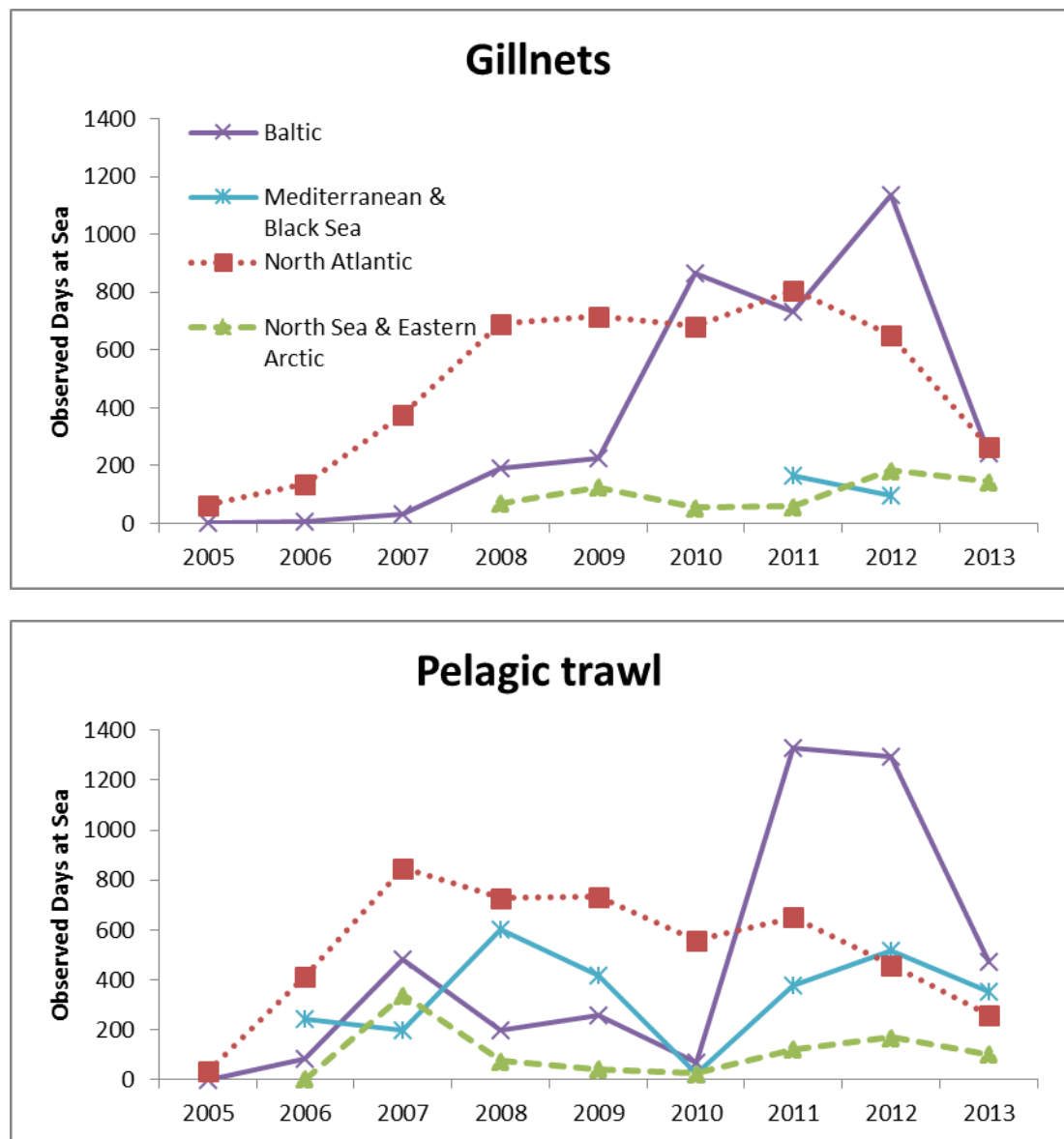


Figure 3. Total observed days at sea by RCM reported by member states pursuant to annual Reg. 812/2004. Individual MS represented within each RCM are summarized in Table 1.

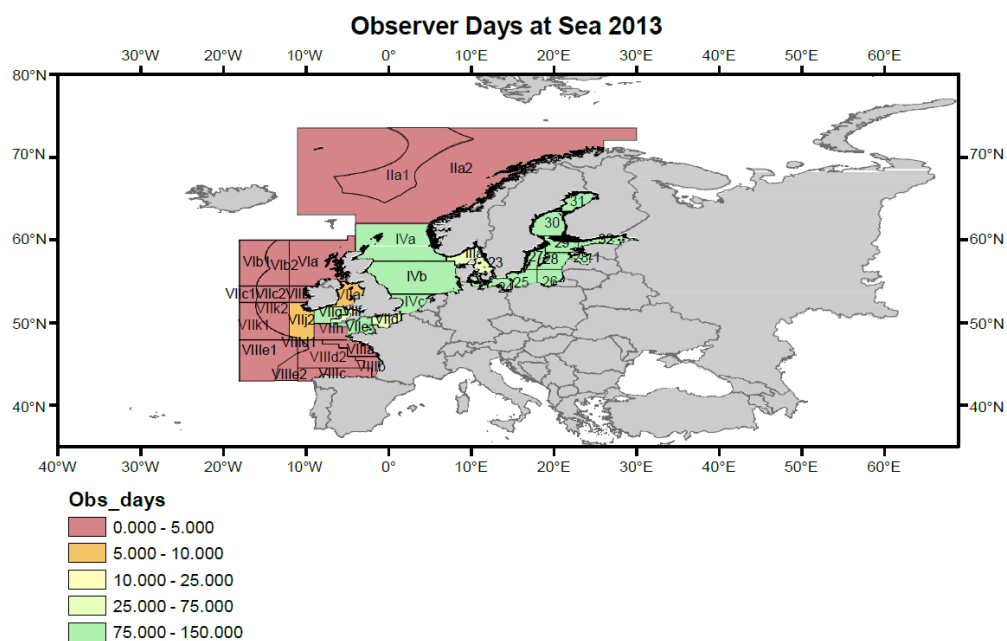


Figure 4. Map of gillnet sea days observed in 2013 as reported by MS pursuant to Reg. 812 cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, there was 75-100 observer sea days carried out in the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to subarea VIII. Hence, there was 0-5 observer sea days carried out in the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was 75-150 observer sea days carried out in the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated.

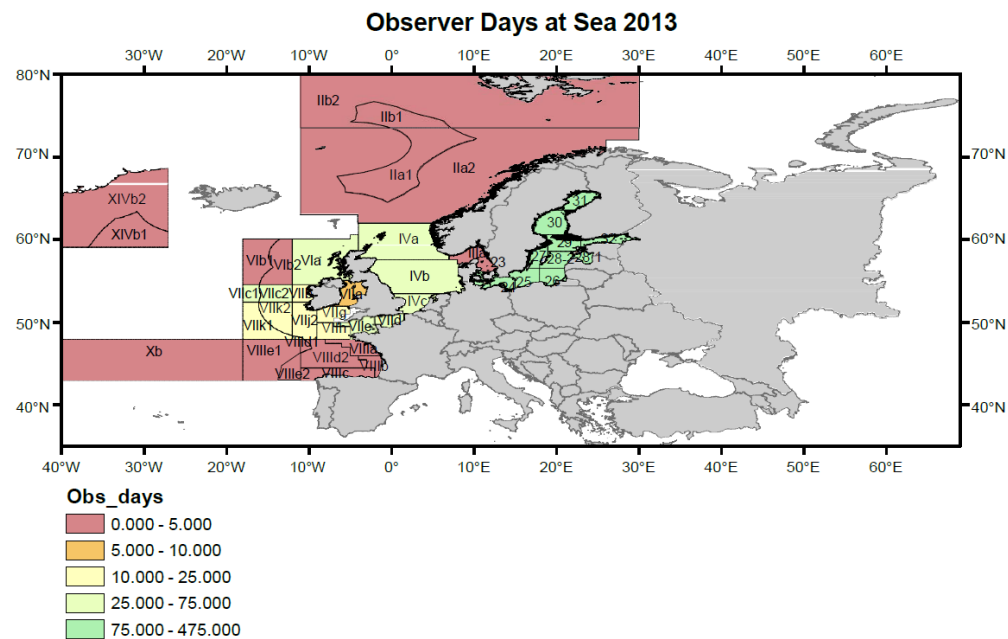


Figure 5. Map of pelagic trawler sea days observed in 2013 as reported by MS pursuant to Reg. 812 cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, there was 25-75 observer sea days carried out in the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to sub-area VIII. Hence, there was 0-5 observer sea days carried out in the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was 75-475 observer sea days carried out under Reg. 812 in the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated. The Mediterranean region falls outside ICES areas therefore any effort submitted by Mediterranean MS are not shown on the map.

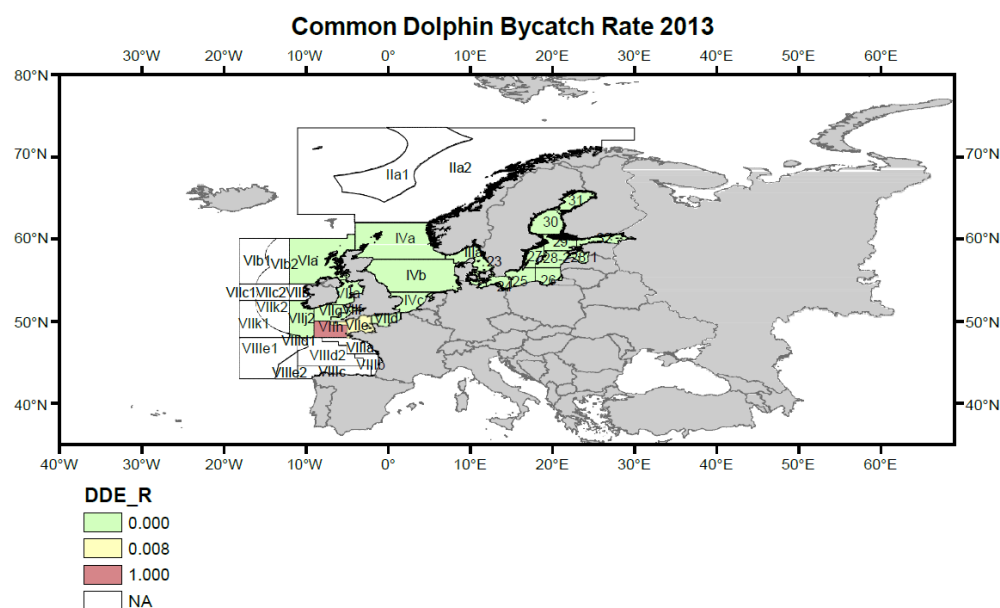


Figure 6. Map of 2013 common dolphin gillnet bycatch rates (no. specimens observed/no. of sea days observed) by ICES fishing area. Data were obtained from Reg. 812 MS reports submitted to the European Commission to meet cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, there was 0 common dolphin bycatch reported under Reg. 812 in the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to subarea VIII. Hence, there was no monitoring reported by MS from the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was zero common dolphin bycatch reported by MS in the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated.



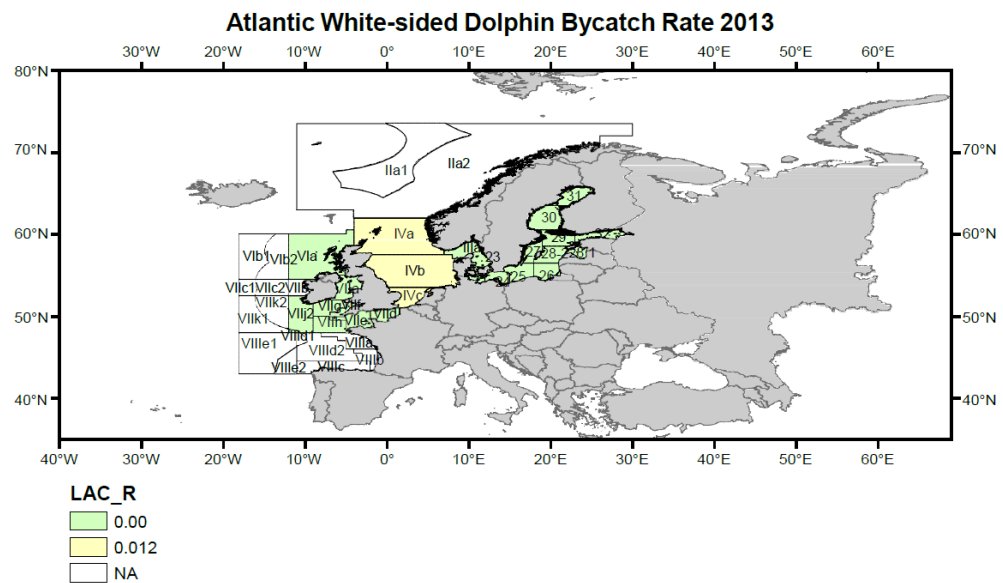


Figure 7. Map of 2013 white-sided dolphin gillnet bycatch rates (no. specimens observed/no. of sea days observed) by ICES fishing area. Data were obtained from Reg. 812 MS reports submitted to the European Commission to meet cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, the bycatch rate was 0.012 for the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to subarea VIII. Hence, there was no monitoring reported by MS for the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was zero bycatch of white-sided dolphins reported by MS from the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated.

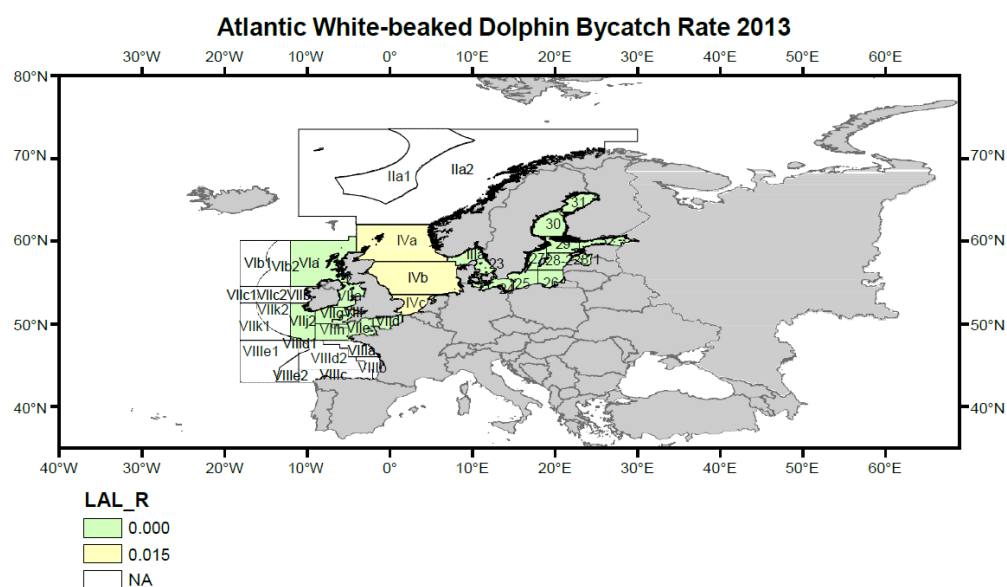


Figure 8. Map of 2013 white-beaked dolphin gillnet bycatch rates (no. specimens observed/no. of sea days observed) by ICES fishing area. Data were obtained from Reg. 812 MS reports submitted to the European Commission to meet cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, the bycatch rate was 0.015 for the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to subarea VIII. Hence, there was no monitoring reported by MS from the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was zero white-beaked dolphin bycatch observed reported by MS from the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated.

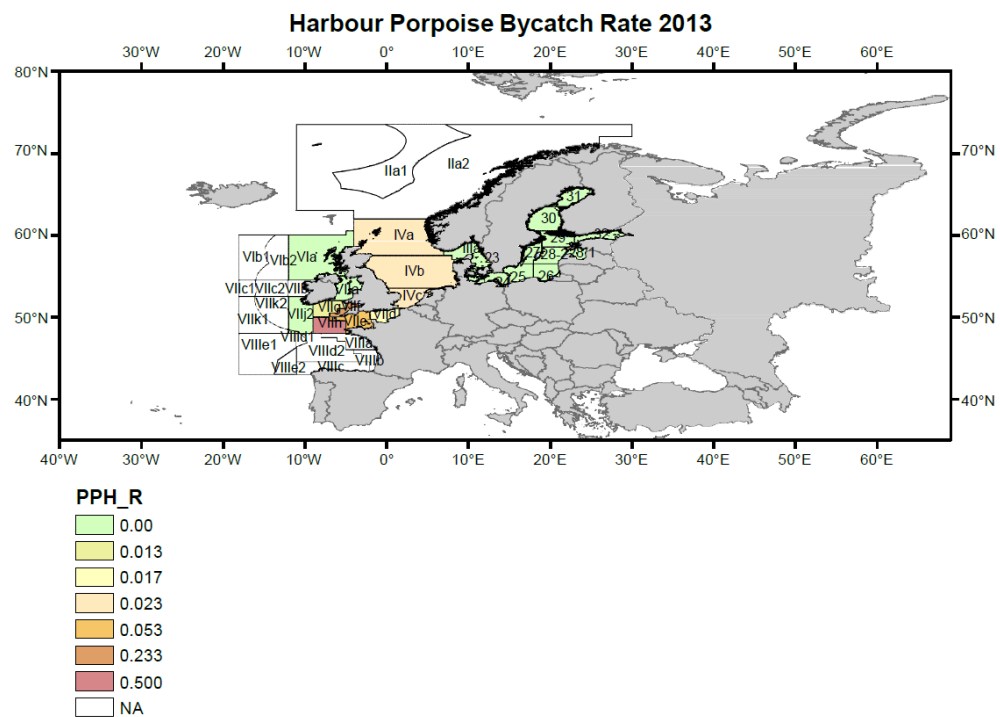


Figure 9. Map of 2013 harbour porpoise gillnet bycatch rates (no. specimens observed/no. of sea days observed) by ICES fishing area. Data were obtained from Reg. 812 MS reports submitted to the European Commission to meet cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, the harbour porpoise bycatch rate was 0.023 in the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to subarea VIII. Hence, there was no monitoring reported by MS in the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was zero harbour porpoise bycatch reported by MS in the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated.

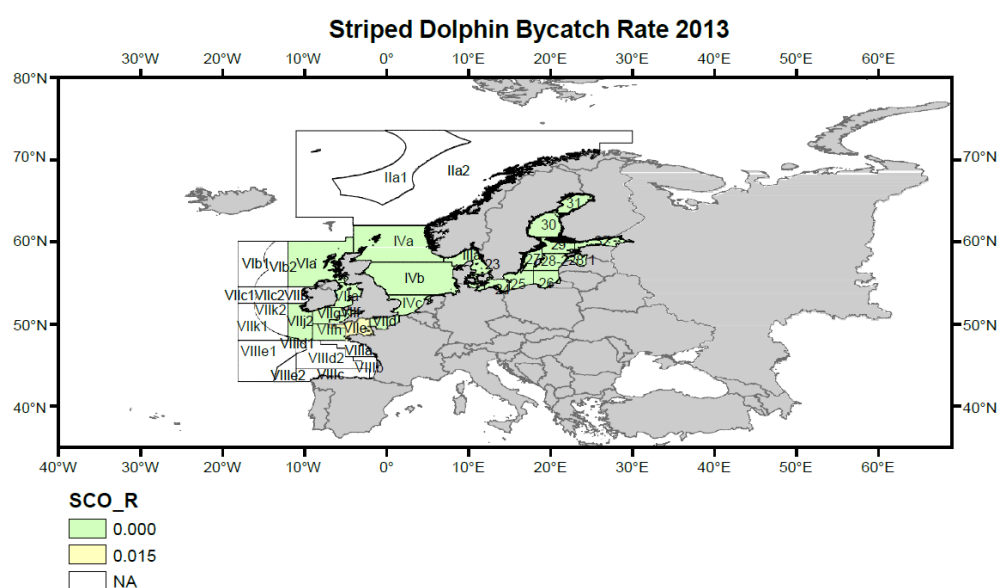


Figure 10. Map of 2013 striped dolphin gillnet bycatch rates (no. specimens observed/no. of sea days observed) by ICES fishing area. Data were obtained from Reg. 812 MS reports submitted to the European Commission to meet cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, there was zero bycatch of striped dolphins observed under Reg. 812 in the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to subarea VIII. Hence, there was no monitoring reported by MS in the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was zero bycatch of striped dolphins observed under Reg. 812 in the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated.

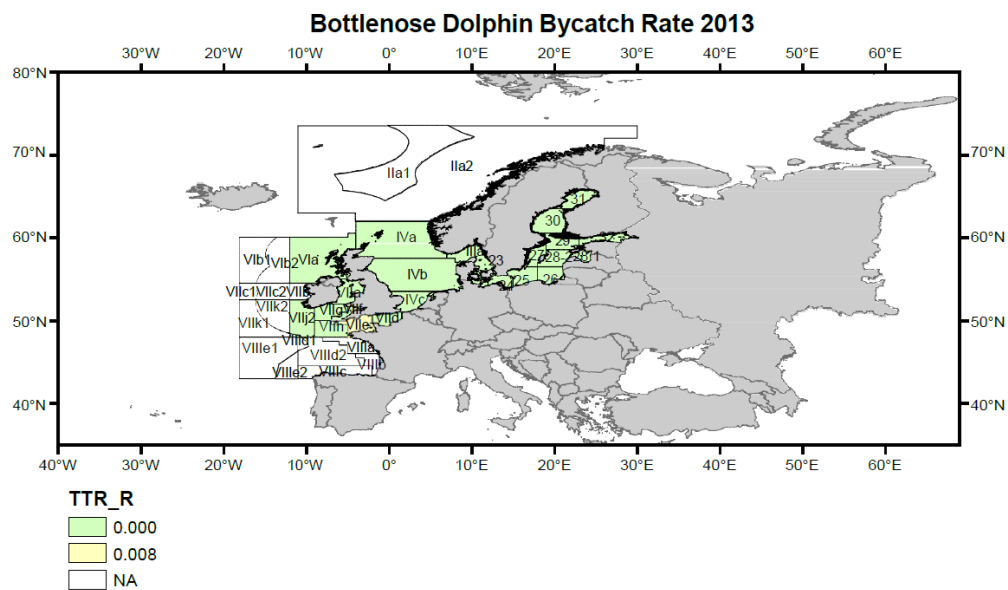


Figure 11. Map of 2013 bottlenose dolphin gillnet bycatch rates (no. specimens observed/no. of sea days observed) by ICES fishing area. Data were obtained from Reg. 812 MS reports submitted to the European Commission to meet cetacean monitoring requirements. Note the following data aggregations: 1) North Sea ICES areas IV a-c was pooled to one single IV subarea. Hence, there was zero bycatch of bottlenose dolphins observed under Reg. 812 in the entire North Sea (IV), 2) ICES areas VIII a-b, VIII d1-d2, VIII e1-e2 were aggregated to subarea VIII. Hence, there was no monitoring reported by MS in the Bay of Biscay region of the North Atlantic (VIII) and 3) subdivisions 22-32 in the Baltic Sea were aggregated. Hence, there was zero bycatch of bottlenose dolphins observed under Reg. 812 in the Baltic Sea. Any remaining ICES areas identified in the map were not aggregated.

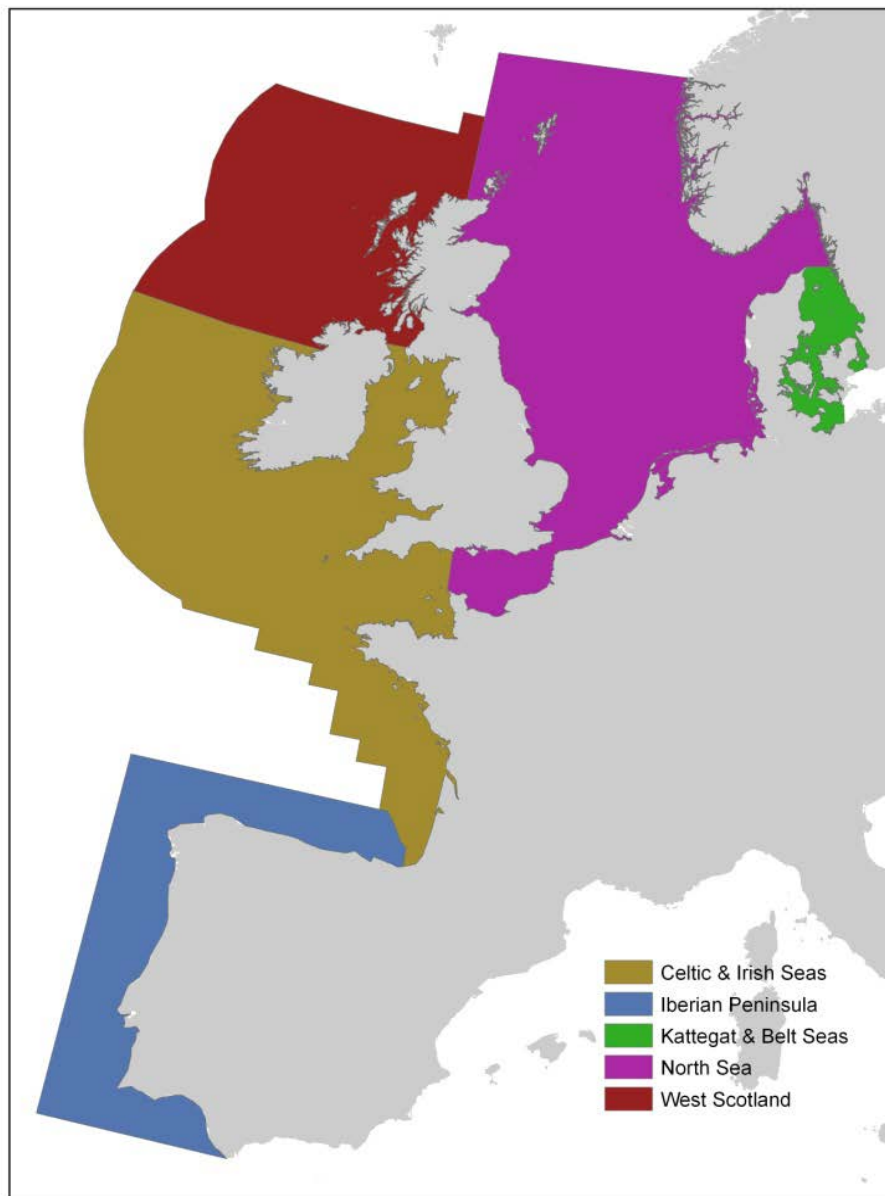


Figure 12. Proposed harbour porpoise assessment units for OSPAR MSFD indicator assessments (ICES, 2014b).

## Annex 6. Recommendations

Recommendation	Adressed to
1. Sampling under the current DCF can contribute to the assessment of bycatch of PETS, but is largely insufficient on its own as currently implemented by Member States. An assessment carried out by WGBYC (2013b) showed that bottom trawling is generally relatively oversampled with respect to monitoring of protected species bycatch, while in some specific fishing areas set-nets, longlines, and purse-seines are under sampled. For seabirds priority should be given to monitoring in trammelnets and set gillnets in the Baltic, North Sea, and North Atlantic, and in set longline fisheries in the Atlantic and Mediterranean/Black Sea.	RCMs
2. WGBYC is requesting all commercial effort data (i.e. all fleets and areas) from vessel logbooks during years 2009-2014 in addition to meta-data to support proper interpretation (e.g. data gaps in reporting, field definitions and collection procedures). WGBYC intends to summarize logbook effort over broad temporal and spatial scales (i.e. calendar year and assessment units) to support PETS bycatch mortality analyses.	ICES Data Center and WGSFD
3. WGBYC recommends that WGCATCH implement the collection of data on incidental bycatch of, Protected, Endangered and Threatened Species and rare fish species in the sampling protocols of national catch- and discards sampling schemes, including incorporation of appropriate fields in National databases, data processing, data validation and synchronization with the regional database.	WGCATCH

## Annex 7. Technical minutes

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Review of ICES Report of the Working Group on Bycatch of Protected Species (WGBYC), 2-6 February 2015, Copenhagen, Denmark. ICES CM 2015-ACOM:26.

Reviewers:	(chair) Daniel Oesterwind
	Julio Valeiras
	Alfredo López Fernández
Chair WG:	Marjorie Lyssikatos
Secretariat:	Ruth Fernández

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*To the attention of ADGBYC 2015*

### General

The Review Group considered the following EC standing request included in the 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.”*

### General comments

The RG acknowledges the intense effort expended by the working group to produce the WGBYC report 2015.

The work of the WGBYC is essential to progress the developments of techniques for the assessment and mitigation of PETS bycatch, which will be required to address special requirements for each bycatch species group.

The Report of WGBYC show that it seems that most countries are not in a position to provide bycatch data form dedicated monitoring programs with the monitoring effort needed. The bycatch monitoring programs should be reconsidered by ICES and EU to aim an agreed framework for monitoring programs. The RG suggest to request EU and countries the improving of their bycatch collection within the Data Collection Framework, namely the onboard at sea sampling for fisheries with bycatch suspected high levels. Métiers must be clearly identified and it must be requested the availability and quality of data being used in the assessment of bycatch to accurately reflect the true magnitude of cetacean bycatch in gears affected by the Regulation 812/2004. If this is not possible and too ambitious it may be another option to reconsider other less precise methods which are cheaper and easier to obtain by every country. They may be resulting in less quality, but perhaps more data will be recorded and comparisons between the countries and areas are possible.

The review group noted that although it appeared information regarding bycatch of different species it was difficult to value the use of that data in terms of assessment and evaluate mitigation measures. The review group suggests that a better description of the used methods to obtain bycatch data and to compare those data should be made in future reports.



### Section 3 (Tor B)

The WG mentioned at the end that it was not possible to properly assess if apparent 'trends' are significant, but mentioned at the beginning that a series of line graphs were created where there was sufficient data available. What does sufficient mean in that context? Another example is '...but records are too sparse to produce meaningful results...' which implements, that the other results (the graphs) are meaningful. The RG find these statements contradictory.

Based on the created graphs, the WG made comparisons between different areas. As example "...bycatch rates were on average lowest in the Baltic..." The question is, what does it mean, a comparison between North Sea, Atlantic and Baltic make no sense, because population size differs in the different regions and were not taken into account. Bycatch rates should only be compared within the same area...

The reporting on trends indicates that critical data for the assessment of cetacean bycatch are different in terms of availability and that MS report heterogeneous data (e.g. reporting by métier of fishing effort, spatio-temporal data and dedicated sampling effort to bycatch). The RG miss a better explanation how the countries reported their data and how the WG handled the heterogeneous data for its comparison.

Due to the title 'historical Review' of the section, the RG would expect some sentences to the historical development of the data quality and quantity during the last years.

### Section 4 (Tor A)

#### 4.1.

It's a good point to include other species than cetaceans in a new format database. WGBYC could investigate to use standard fisheries formats currently used in EU/ICES (Fishframe, Data Exchange Format).

#### 4.2

The section summarized the national reports well, but the group mentioned in different sections that data quality and quantity is insufficient. Therefore The RG would also expect a section about what is missing in the different reports for each MS. Shortcomings of the national reports are desirable, as well.

##### 4.2.1

As the WG mentioned in the text, 'days at sea' is a very imprecise fishing effort. The reviewers stresses that the quality of the data would increase if the group could use another fishing effort index. Therefore it is absolute desirable to get a better effort data. When it is unrealistic to become information about swept area and/or net meter/day for example, the WG could try to get other effort information like numbers of operations at sea which is still imprecise compared to the standard fishery efforts, but might be more meaningful than days at sea.

There is a calculation error in Table 3: NEA: 39 numbers of bycatch and a total of 44.

And only 23 coastal MS exists.

##### 4.2.2

The group compared DCF monitoring with dedicated monitoring and mentioned that different types of fisheries, and areas were monitored by DCF compared to the dedicated monitoring. At the end the group came to the conclusion that DCF monitoring is not adequate...The RG would recommend that it seems to be inadequate,

but a comparison between different areas and fisheries could also be the reason for the different results between both data sources. Therefore it should be clarify why DCF monitoring is not adequate. It seems that it due to not registered events of bycatch but details are missing.

#### **4.3. Data form Reg812 reports**

The RG thinks that the same method of discard rates estimation for all taxa could be not adequate.

Another point is that observer data must be requested for Belgium and Spain in the future.

#### **4.5 strandings**

The RG find that it should be mentioned that there is a high uncertainty if the species really died through fisheries even if the individuals have some external gear markers. Origin and total number of dead animals are not possible to assess by stranding findings. But the quantification of bycatch animals from 'Auxiliary data' could be considered as an 'indicator' of bycatch problems in a population within an area. Another problem is the standardization of identifying possible fishery victims, it is necessary to unify criteria and to develop standards following European protocols.

##### **4.5.3 Spain**

There is some more information on bycatch in Spanish waters, including update information on Galician and north-Spain from Vázquez et al. (2014) and project LIFE-INDEMARES. Spanish data from onboard sampling DCF by IEO (2003-2014) were sent to chair Lyssikatos and Copernus at the beginning of WG. In detail:

The longest time series about bycatch data based on stranding's exists from the Galician coast. Vázquez *et al.*, (2014) report 723 cetacean individuals (including at least 7 species) with an evidence of bycatch from a total of 4540 cetacean stranded between 1990 and 2013, representing an incidence of 15.9 % of total stranding's. This value increases to 44.1 % when only the 'examined specimens' were taken into account. Additional, for the Galician information: Although Vázquez has all the stranding data for the Galician area, only data which were comparable with the rest of the northern area, were used.

In 2012 the project LIFE-IDEMARES reported results from a programme of on-board observers in which 171 trips (192 observer days at sea) were conducted from Galicia to the Basque Country (NW and N Spain) and where no bycatch events were recorded.

### **Section 5 (Tor C)**

#### **5.1**

The WG mentioned that there are many problems with the BRA approach...It would be advanced to list some of them...How is a wider region defined? The RG would like to have some more explanations.

In addition, the RG missed information about other population and species.

At the end the WG came to the conclusion that the estimated rates may be biased low due to the fact that the fishing effort likely to be underestimated and smaller vessels are not fully represented...but mentioned that much of the sampling were conducted

on larger vessels that use more gears....The RG do not understand the conclusion and thinks that the estimated rates could be biased low and/or high.

A general remark from the RG: The problem of unknown population size or migration pattern of the bycaught species to address the request is not mentioned by the WG but should. Those data and knowledge are crucial and useful information to assess the impact on a population. Especially bycatch impacts on a smaller scale could be masked due to the population exchange with individuals from the open oceans due to migration. Another general point to discuss is the approach of the 2 % reduction and to assume that this may be sustainable for all populations. The RG thinks that this approach is useful for a larger scale like common dolphin in European waters, but on a smaller scale, for local populations it seems to be an insufficient approach.

Another approach would be to study local populations and the local fishing impact instead of estimating the impact of the whole population or on a wider scale like the total Atlantic.

## **Section 6. Bycatch Mitigation**

Some additional information for the Galician region:

The use of pingers in the waters of Galicia, and other Spanish coasts, was treated unfairly by the manufacturers or broadcasting companies resulting in conflicts and a broad debate. Resulting in the resolution of the Minister of Agriculture and Fisheries on 20 December 2005, which prohibits the use of deterrents acoustic appliances cetacean (pingers) in fisheries in the internal waters of the Balearic Islands. Furthermore, its possession on board of vessels is prohibited. However, the Directorate General of Fisheries may expressly authorize such use for scientific purposes.

### **6.2.1**

The RG find that even if BMEL gives additional funding to continue the German study, that the report is not the right place to thank for funding.

In addition the aspect of coordinating further work is not detailed described. The report should set up a coordination objective and clearly define a set of steps to continue working on the elimination of bycatch, mitigation measures and in coordination and harmonization between MS.

## **Section 7 (Tor E)**

New developments to WGBYC database should be coordinated to standardized fisheries formats currently used in EU/ICES (Fishframe, Data Exchange Format)

The point of other coordinating methods for monitoring and assessment are not detailed.

## **Section 8 (Tor F & G)**

### **8.2**

The RG is not sure if the data quality is sufficient to provide advice on bycatch. In the whole report it is mentioned that all estimates may be biased and that there are high uncertainties due to missing data (fishing effort, population size, observer effort etc.). As in the report described, the data seems to be very inadequate to statistical analyse in terms of assessment and bycatch trends study.

**Some ideas to reduce uncertainty in the cetacean bycatch and future research fields:**

- Full catalogue fishing effort
- Review of knowledge of cetaceans and catches by the fishing industry, unifying methodologies.
- Detection of hot spots in local arts, areas or times of fishing.
- Orientation campaigns observers.
- Specialized observers.
- Unification database.
- Increase in relation to the sector, dialogue and debate.
- Meetings, conferences and educational materials of casuistry and best practices for fishers.
- New materials, technology and network testing.
- Estimation of local cetaceans populations affected and trends in the use of their habitat.

Another important note is the impact on the cetacean population size by direct catches with harpoons. Even if harpoons are forbidden to carry on board the problem is not solved in the Cantabrian in the Bay of Biscay.

**Section 8.2.2**

Table 10. There are some data missing, if the WG wants to get a better data quality, some more information should be listed (e.g. swept area, soaking time, hooks per meter, netlength, operations)

**Conclusions**

The RG congratulates to the very interesting and informative report. Only a few minor critics and comments were mentioned by the Review Group.