Agenda Item 4.3

Priorities in the Implementation of the Triennium Work Plan (2010-2012)
Review of New Information on Bycatch

**Document 4-12**

# ICES Advice 2010: EC request on cetacean bycatch Regulation 812/2004

**Action Requested**

- Take note

Submitted by

United Kingdom


***NOTE:***
**IN THE INTERESTS OF ECONOMY, DELEGATES ARE KINDLY REMINDED TO BRING THEIR OWN COPIES OF DOCUMENTS TO THE MEETING**

## 1.5.1.3 Special Request Advice May 2010

## SUBJECT EC request on cetacean bycatch Regulation 812/2004, Item 1

**Advice Summary**

Annual reports and actions of Member States on the monitoring and mitigation of cetacean bycatch were found deficient in a number of aspects. Recommendations are made to overcome these deficiencies. An assessment of the bycatch of cetaceans in various EU fisheries, including species specific bycatch estimates is provided in Section 1.5.1.2 of this advice.

**Request**

*"As part of the Memorandum of Understanding between the European Commission and ICES, the Commission has a standing request to ICES to review the situation of incidental catches of cetaceans and the status of small cetaceans in European waters.*

*Beyond this standing request, ICES has been requested in 2008 to base its advice on the assessment of the Member States annual reports on the implementation of certain provisions of Council Regulation (EC) No 812/2004.*

*We would like to renew such request, and ask ICES to consider the following elements in the next assessment and advice:*

*1. Assessment of the national reports from 2007 and 2008, and specific scientific reports provided by Member States in the context of Reg. 812/2004;*

**ICES Advice**

ICES has examined all reports supplied by Member States to the European Commission for 2007 and 2008. An assessment of the bycatch of cetaceans in various EU fisheries, including species and taxa specific bycatch estimates, is provided in Section 1.5.1.2 of this advice. In relation to its assessment of the national reports, ICES advises that:

i. The full provision of annual reports on the implementation of Regulation 812/2004 by all relevant Member States for 2007 and 2008, together with previous reports, has greatly improved knowledge of cetacean bycatch within the European Union.
ii. The Black Sea Member States should be included in the requirements of 812/2004.
iii. The variable level of detail and uncoordinated reporting make it impossible to assess the extent to which the Regulation has been implemented.
iv. A standard reporting format needs to be implemented as soon as possible
v. The monitoring obligations of Regulation 812/2004 have not been met by many Member States, including some that have yet to develop bycatch monitoring programmes.
vi. Cetacean bycatch monitoring is insufficient in most fisheries and areas to enable sound management decisions to be made.
vii. A more flexible approach to monitoring needs to be established to ensure that Member States are not forced to monitor fisheries with very low bycatch rates while ignoring others where rates may be much higher.
viii. Current bycatch monitoring and reporting may not meet the requirements of Article 12 of the Habitats Directive or meet the need for providing best advice on ecosystem-based management as required under Regulation 2371/2002.
ix. Plans need to be elaborated for monitoring the fleets of smaller vessels.
x. A more flexible approach is required to ensure monitoring programmes are directed at fleets with the greatest impact on cetacean populations. Efficiency could also be enhanced through closer collaboration among Member States.
xi. Greater clarity is needed on the objectives of 'scientific studies' and 'pilot projects' that are required under 812/2004.
xii. Currently available pingers are generally too unreliable to be effective, or acceptable, in many EU fisheries. Development work is needed to improve pinger durability and ease of use.
xiii. A greater flexibility in the choice of fisheries requiring mitigation measures against cetacean bycatch could enable a greater reduction in overall bycatch levels.
xiv. Monitoring of pinger use is still problematic and further development and collaboration among Member States is needed.

**Basis of advice**

i. ICES notes that in 2009 all relevant member states supplied reports on their activities conducted under regulation 812/2004 for 2008. Nine member states also provided reports for 2007 that had not been available to ICES in 2009. ICES thus reviewed reports for 2007 and 2008 from all 20 relevant member states. This reporting (taken together with less complete national reporting on 812/2004 from previous years) enabled a more complete understanding of cetacean bycatch in EU waters than was the case prior to 2004.

ii. Neither of the EU Black Sea Member States has provided reports on the implementation of Regulation 812/2004. This is because the Regulation does not mandate any monitoring or bycatch mitigation in this region. Yet the provisions of Article 12 of Directive 92/42/EEC (the EU Habitats Directive) apply to these member states as to others, and the stated objective of the Regulation is to ensure that monitoring of incidental catches is undertaken. It is known that cetacean bycatch occurs in Black Sea fisheries (see Advice Section 1.5.1.2) and therefore appropriate monitoring, reporting and mitigation programmes should be established by EU Member States in that Sea.

iii. The current mixture of reporting formats makes it impossible to make general comparisons between Member States' monitoring programmes, while the lack of detail in some Member States' reports makes it impossible to determine the extent to which the obligations for monitoring, or for the deployment of mitigation strategies, have been met.

iv. ICES reiterates its advice given in 2008 and 2009 that reporting by relevant member states of the European Union should follow a standardised format and that the national reports should be made available to ICES in English and in a timely manner. A standard reporting format needs to be adopted as quickly as possible. The standardised reports should be reviewed after all reports for 2009 have been submitted with the aim of assessing how well the proposed format enables an overview of monitoring and bycatch assessment, and with a view to making incremental improvements in the reporting format if necessary.

v. Some Member States have not implemented any cetacean bycatch monitoring scheme in response to Regulation 812/2004. Some others have relied predominantly or exclusively on discard monitoring or other schemes to fulfil their obligations under Regulation 812/2004, while others have implemented dedicated schemes that partially or largely fulfil their monitoring obligations. Several Member States also report on scientific and pilot studies to examine bycatch in under 15m fleets or in sea areas where monitoring was not obligatory but in response to perceived issues, as is required by Article 12 of the Habitats Directive.

vi. A comprehensive assessment of which fisheries require further monitoring is not possible without more detailed work. Nonetheless, gillnet and other fisheries in the southern North Sea (especially in view of the high number of harbour porpoises exhibiting evidence of bycatch on the coasts of The Netherlands and Belgium) and the under 15m sector are candidates for better coverage.

vii. Even when bycatch monitoring has yielded no cetacean bycatch, this information can be useful in delimiting areas of potential concern. However, adherence to the monitoring scheme mandated under Regulation 812/2004 in fisheries where bycatch rates are now known to be low is not a sensible use of resources, especially when bycatch is known to be occurring more frequently in other fisheries or areas where there is no mandated monitoring under Regulation 812/2004.

viii. Monitoring of bycatch by Member States is required under Article 12 of the Habitats Directive and is needed if sound advice is to be provided to help implement the ecosystem-based management requirements of the CFP Regulation 2371/2002. The European Commission could remind Member States of these obligations.

ix. Under-15m vessels constitute the majority of vessels in the gillnet fleets of all Member States, but monitoring of under 15m vessels is poorly specified in Regulation 812/2004. Fleets of these vessels require a sampling strategy. Research into new monitoring technologies and techniques suitable for fleets of smaller vessels should be encouraged.

x. The determination of monitoring requirements on the basis of targeted precision (as required by Article 4 and Annex III of the Council Regulation 812/2004) is not always the best way to apportion sampling effort in fisheries where bycatch events may be infrequent. A more flexible approach would be to base sampling levels on achieving a specified level of certainty that bycatches do not exceed some predefined threshold. Closer collaboration among Member States is required in determining appropriate levels of bycatch monitoring and in implementing observer schemes. In some cases, more effective monitoring could be achieved by sharing responsibilities for monitoring when vessels from one Member State land fish in the ports of another Member

State. Tools and guidelines to help Member States to decide on how best to target monitoring resources could be developed.

xi. The use of catch-all obligations to conduct 'scientific studies' and 'pilot projects' relating to bycatch monitoring and mitigation under Regulation 812/2004 is not helpful to Member States. Greater clarity and specific recommendations are needed on how to undertake such tasks.

xii. ICurrently available acoustic deterrent devices (pingers) are not reliable, and are therefore ineffective in minimising bycatch in many fisheries. Further development work is needed to improve the reliability, durability and cost of pingers.

xiii. There is too much reliance under Regulation 812/2004 on the successful deployment of pingers to minimise bycatch. Those fisheries currently specified as requiring pingers are not necessarily those with the highest bycatch rates or the ones capturing the greatest numbers of cetaceans. A more adaptive and responsive approach to determining mitigation requirements should be developed, wherein Member States are required to demonstrate that overall bycatches fall below specific target levels.

xiv. Monitoring of pinger use has been problematic, although new technologies are being developed. Further work is needed to help facilitate enforcement, and enforcement agencies of the Member States could collaborate on this issue more effectively.

**Sources**

ICES. 2010. Report of the ICES Study Group of Bycatch of Protected Species (SGBYC). ICES CM 2010/ACOM:25.

## 1.5.1.4 Special request Advice May 2010

## SUBJECT EC request on cetacean bycatch Regulation 812/2004, Item 2

**Advice Summary**

An overview is presented on the population status of cetaceans concerned by Regulation 814/2004. Since 2004, few large-scale surveys of cetaceans have occurred in the Northeast Atlantic - and none in the Mediterranean Sea.

**Request**

*"As part of the Memorandum of Understanding between the European Commission and ICES, the Commission has a standing request to ICES to review the situation of incidental catches of cetaceans and the status of small cetaceans in European waters.*

*Beyond this standing request, ICES has been requested in 2008 to base its advice on the assessment of the Member States annual reports on the implementation of certain provisions of Council Regulation (EC) No 812/2004.*

*We would like to renew such request, and ask ICES to consider the following elements in the next assessment and advice:*

*Based on the best available knowledge on the cetacean species concerned by Regulation 812/2004 provide an assessment of the population status and map their yearly distribution and density in European waters since 2004;"*

**ICES Advice**

There has only been one comprehensive survey of the cetaceans in coastal waters of Northwest Europe since 2004 – the SCANS-II survey of July 2005 (Table 1). This was complemented by a survey in 2007 for cetaceans in offshore waters north of Portugal (CODA) (Table 2). No similar surveys have occurred in the Mediterranean and Black Seas. Although smaller scale surveys have been conducted in all waters, the results of these surveys cannot be considered in the wider population context appropriate for highly mobile species such as cetaceans.

For harbour porpoise *Phocoena phocoena*, the July 2005 SCANS-II survey generated a population estimate of 385 617 animals (95% CI: [261 266;569 153]) on the European continental shelf (including the series of contiguous populations in the North-east Atlantic and a geographically separated Iberian population). In the North Sea, no significant change in harbour porpoise abundance was detected between 1994 (SCANS-I) and 2005 (SCANS-II), but a southwards shift in distribution occurred. A separate population of harbour porpoise may exist in the inner Baltic Sea. Harbour porpoise abundance estimates for the inner Baltic Sea and off the Iberian Peninsula are low, making these populations particularly vulnerable to added mortality from fisheries bycatch. SCANS-II did not survey the inner Baltic Sea but harbour porpoises in this sea have been classified by the International Union for the Conservation of Nature (IUCN) as critically endangered, justified by the consideration that the current population size is extremely low (fewer than 250 mature individuals) and probably declining. The Iberian population is estimated to contain only 2646 animals. A population of harbour porpoises (*P. p. relicta*) of an unknown size in the Black Sea is listed as endangered by the IUCN.

The estimated abundance of common dolphins *Delphinus delphis* in North-west European continental shelf waters in 2005 was 50 507 animals (95% CI: [28 742;88 751]). The 2007 CODA survey estimated 116 709 common dolphin (95% CI: [61 397;221 849]) in European offshore waters. A separate population inhabits the Mediterranean Sea, but is now only abundant in the westernmost region of the basin. In part of this area (northern Alborán Sea and Gulf of Vera) common dolphin abundance has been estimated to be 19 428 animals (95% CI = [15 277;22 804]) based on surveys between 1992 and 2004. There are recent records of common dolphins off Algeria, Tunisia, Malta, in parts of the Aegean, in the south-eastern Tyrrhenian and in the eastern Ionian Seas. However, the distribution and abundance of the species in much of the Mediterranean is not known.

**Table 1** Estimates of cetacean abundance (number of animals) from the SCANS-II survey in 2005. CVs are given in parentheses (Hammond *et al*., in prep.). (Note that some of these estimates have been updated from those presented in the 2009 ICES advice)

| Species | Total |
|---|---|
| Harbour porpoise | 385 617 (0.20) |
| Common dolphin | 50 507 (0.29) |
| Common and striped dolphin (including unidentified) | 76 375 (0.25) |
| Bottlenose dolphin | 12 645 (0.27) |
| White-beaked dolphin | 16 787 (0.26) |
| White-beaked and white-sided dolphin (including unidentified) | 32 105 (0.33) |
| Minke whale | 18 599 (0.34) |

**Table 2** Estimates of cetacean abundance (number of animals) from the 2007 CODA survey. Design-based and model-based abundance estimates are provided for the whole survey area. Best estimates (based on lower CV) are shown in bold. CVs are given in parentheses (CODA, 2009).

| Species | Design-based abundance estimate (CV) | Model-based abundance estimate (CV) |
|---|---|---|
| Common dolphin | 118 264 (0.38) | **116 709 (0.34)** |
| Striped dolphin | 61 364 (0.93) | **67 414 (0.38)** |
| Common and striped dolphin (including unidentified) | 224 166 (0.48) | **259 605 (0.37)** |
| Bottlenose dolphin | 19 295 (0.25) | |
| Sperm whale | 2 091 (0.34) | **2 077 (0.20)** |
| Fin whale | 7 641 (0.21) | **9 019 (0.11)** |
| Minke whale | 6 765 (0.25) | |
| Large baleen whales | 8 237 (0.20) | **9 619 (0.11)** |
| Long-finned pilot whale | **25 101 (0.33)** | 25 338 (0.35) |
| Beaked whales | **6 992 (0.25)** | 7 343 (0.31) |

Aerial surveys of the Ligurian-Provençal basin in the Mediterranean estimated 19 578 (95% CI: [12 318;27 039]) striped dolphins *Stenella coeruleoalba* for the winter of 2009, and 13 232 animals (95% CI: [6640;26 368]) for summer of 2008. The abundance estimate for striped dolphins in the northern Alborán Sea and Gulf of Vera (1992–2008) was 14 220 individuals (95% CI: [8827;17 764]).

Pronounced changes in distribution are evident for many cetacean species both within and between years; however no information exists to map the annual distribution and density of any cetacean species in European waters.

**Recommendations**

Annual assessments of the population and distribution status of cetaceans in European waters can only be provided is if dedicated annual surveys occur. In areas of very low cetacean abundance (where conservation concerns may be greatest), it will be particularly difficult to obtain reliable abundance estimates. The cetacean populations in the Mediterranean and the Macronesian Seas are the most poorly known and these areas should be a high priority for surveys in the immediate future.

The impacts of human activities should ideally be assessed in relation to biological populations. Work has recently been conducted on the population structure of harbour porpoise in EU waters north of the Strait of Gibraltar, and ICES could provide advice on population abundance of harbour porpoises for any sub-division. Investigations into the population structure of other small cetaceans in Northern European waters and in the Mediterranean Sea are still needed.

**Basis of advice**

**1. Species of cetacean**

Within the North-east Atlantic, the harbour porpoise *Phocoena phocoena* and common dolphin *Delphinus delphis* are the two species most commonly reported as bycatch in fisheries affected by Regulation 812/2004. Other cetacean species reported as bycatch in fishing gear of 812/2004 fleets include striped dolphin *Stenella coeruleoalba*, bottlenose dolphin *Tursiops truncatus* and long-finned pilot whale *Globicephala melas* (ICES, 2009), although not regularly or in such high numbers. Within the Mediterranean Sea, the two cetacean species most frequently reported as bycatch are common dolphin and striped dolphin (ICES, 2009).

ICES is unable to assess the population level effects of fisheries bycatch for any cetacean species (or any sub-population) due to insufficient information.

A list of all cetacean species that occur in EU waters is included at Annex 3.

**2. Stock units**

A single harbour porpoise population exists in the North-east Atlantic, ranging from waters off France to northern Norway (mainly confined to continental shelf waters). A separate Iberian population exists whose range is not yet fully described but includes the Portuguese and Spanish Atlantic coasts (Fontaine *et al*., 2007). Separate populations or sub-populations of harbour porpoise may inhabit the Belts Seas and Kattegat and the inner Baltic Sea (Weimann *et al*., 2010). A number of possible stock units within the North-east Atlantic are given in ICES (2010). A sub-species of the harbour porpoise *P. phocoena relicta* inhabits the Black Sea.

One population of common dolphin exists in the North-east Atlantic ranging from waters off Scotland to Portugal. Separate populations occur in the Northwest Atlantic and in the Mediterranean Sea.

Based on both nuclear and mtDNA markers, discrete populations of common dolphins inhabit the western (Alborán Sea) and the eastern (Ionian Sea) Mediterranean Sea(Natoli *et al*., 2008). A sub-species of the short-beaked common dolphin *D. d. ponticus* inhabits the Black Sea.

Based on genetic analyses, population segregation occurs between striped dolphins in the eastern and western Mediterranean basins (Gaspari *et al*., 2007, Gaspari *et al*. in prep.).

**3. Status**

For the North Sea harbour porpoise population, no significant change in abundance was detected between the 1994 and 2005 SCANS surveys. However, a southwards shift in distribution occurred; densities in the southern part of the North Sea increased in 2005 while densities in more northern regions, such as off Shetland, Orkney and eastern Scotland, declined (see Annex 1 Figure 2a and Figure 2b). This finding was supported by co-incident increases in sightings and strandings in the southern North Sea. In the Celtic Sea and the western English Channel, harbour porpoise abundance increased between 1994 and 2005. The cause for this increase is not known but, as in the southern North Sea, a plausible explanation is the movement of animals into these waters.

Little is known about the current distribution of harbour porpoise in the inner Baltic Sea but abundance is very low.

The only abundance estimate for the Iberian population of harbour porpoise is 2 646 animals (CV = 0.80), derived from the SCANS-II survey. This extremely low abundance is a cause for concern; and is in marked contrast to the estimate of 358 800 porpoise in the North-east Atlantic population (SCANS-II, combining abundance data from different survey blocks).

Within the Mediterranean Sea, common dolphins have sharply declined during the last 30–40 years. In 2003, the causes of the population decline in the Mediterranean Sea are poorly understood but are thought to include prey depletion and bycatch.

Harbour porpoise are included on OSPAR's list of threatened and/or declining species and habitats in Regions II (the greater North Sea) and III (the Celtic Sea, and waters off the west coast of Ireland and the UK). The inner Baltic Sea population of harbour porpoises has been listed as 'critically endangered' by the IUCN. The common dolphin in the North-east Atlantic is listed as 'least concern' by the IUCN. The Mediterranean population of common dolphin is listed as 'endangered' by the IUCN. In 2006, this population was included in Appendices I and II of the Convention on the Conservation of Migratory Species (Bonn Convention).

**4. Effects of Regulation 812/2004**

Regulation 812/2004 has not been fully implemented by all EU countries in the North-east Atlantic and Mediterranean Sea and does not cover all vessels and fisheries known (or suspected) to have cetacean bycatch. Existing information on cetacean distribution and abundance available cannot be used to evaluate the effects of this Regulation because:

- No large-scale survey of cetaceans in coastal waters in the North-east Atlantic has been conducted since 2005 – the year the 812/2004 Regulation was implemented (including use of pingers);
- There has been no basin wide survey of cetaceans in the Mediterranean Sea, and therefore no contemporary abundance estimates (or information on range) exist for cetacean species in this region;
- Natural population trends that would have occurred in the absence of the Regulation are not known.

**5. Other issues**

- Other indicators, (e.g. strandings), point to continued high bycatch rates of porpoise in some fisheries in particular areas in the North-east Atlantic. In the southern North Sea, most of the porpoise bycatch is in gill- and tangle nets (Haelters and Camphuysen, 2009). The vessels using this gear are not included specifically under EU Regulation 812/2004.
- The distribution (and habitat use) of the Northeast Atlantic common dolphin population appears to be changing, although further analysis and investigations are required to substantiate this.
- In recent years, the number of stranded common dolphins diagnosed as bycatch in UK waters seems to have declined. The causes of this apparent decline are not known.
- High stranding rates of dead common dolphins have been reported on French and Spanish Atlantic coasts since 2004.
- There are reports in the parts of the Mediterranean Sea of incidental bycatch of common and striped dolphins in non-EU fleets. For the period December 2002 to September 2003 for the whole driftnet fleet in the Alborán Sea targeting swordfish *Xiphias gladius*, it has been estimated that 3110–4184 dolphins (both species) were taken as bycatch (Tudela *et al*., 2005).

**Extra information**

Only harbour porpoise and common dolphin have been included in this assessment of cetaceans in the North-east Atlantic. For information on abundance, distribution and habitat use of other cetacean species, see ICES (2007, 2009b and 2010). It is not possible to present annual distribution and density maps. Since 2004, only three large-scale surveys have been undertaken within the North-east Atlantic, which did not overlap in their area of coverage. These surveys were:

(a) SCANS-II[1] (Small Cetacean Abundance in the North Sea and adjacent waters) which surveyed continental shelf waters ranging from southern Norway (c60ºN) to the straits of Gibraltar in July 2005; see Annex 1, Figure 1a);
(b) CODA (Cetacean Offshore Distribution and Abundance in European waters) which surveyed waters off the continental shelves of Britain, Ireland, France and Spain in July 2007 (see Annex 1, Figure 1b);
(c) T-NASS (Trans North Atlantic Sightings Survey) undertaken in July 2007 and which surveyed waters to the west of the area covered by CODA and also more northern European waters.

As all of the above surveys were conducted during July, they do not provide any information on the distribution of cetaceans at other times of year. Comprehensive information is not available on seasonal movements or inter-annual variation in abundance/ densities for different regions in the North-east Atlantic.

Within the Mediterranean Sea, the two main species of concern with regards to Regulation 812/2004 are the common dolphin and the striped dolphin, as these are most frequently reported as bycatch (ICES, 2009a). Some information on bycatch of bottlenose dolphin in the Adriatic Sea by Italian pelagic pair trawls was provided last year as part of the Memorandum of Understanding between ICES and the European Commission. Due to the lack of a large-scale cetacean survey of the Mediterranean Sea, ICES is unable to present distribution or density maps for the common and striped dolphin. A summary of the smaller scale surveys for common and striped dolphins in the Mediterranean is presented in ICES (2010).

[1] This covered a similar, but slightly larger, area to the 1994 SCANS survey

**North-east Atlantic Harbour porpoise – Distribution and abundance**

From the line transect surveys (SCANS) conducted in July 1994, the population abundance of harbour porpoise in the continental shelf waters surveyed was estimated at 341 366 individuals (95% CI: [260 000;449 000]), including c.250 000 in the North Sea, 33 000 in the Baltic Sea, and 36,000 in the Celtic Sea (Hammond *et al*., 2002). In July 2005 SCANS-II covered a wider geographical area and produced an estimate of 386 000 individuals (95% CI: [261 300;569 200]) for the European continental shelf (SCANS-II 2008), and an estimate of 335 000 individuals for the region surveyed in 1994.

Off the French coast, no harbour porpoises were reported (visually or acoustically) within the inner Bay of Biscay (SCANS-II Block Z) or in the outer Bay of Biscay, west of France. These findings are not representative of the year-round distribution or abundance of porpoises within this region, as high bycatch rates have been reported in the inner Bay of Biscay, with an estimated c. 600 porpoise caught in 2008 (ICES, 2009a). Further, since 2002 an increase in harbour porpoise strandings has been reported along the Atlantic coast of France (Van Canneyt *et al*., 2009). An increase in the abundance of harbour porpoises was noted in the Celtic Sea and adjacent shelf waters between July 1994 and July 2005 – increasing from 36 280 (CV = 0.57) to 80 600 (CV = 0.50) individuals, respectively. Highest densities in 2005 were reported off southern Ireland and along the south-west coast of the UK.

**North-east Atlantic Common dolphin – Distribution and abundance**

In 2005, ICES reviewed all available literature and unpublished data on common dolphins for assessing their population status, and also for evaluating common dolphin interactions with fisheries, within the North-east Atlantic. Strong seasonal movements have been reported within this region, with dolphins being more widely dispersed in deeper offshore waters during summer (May–October) compared to the winter period (November–April) when pronounced concentrations occur in the shelf waters in the western English Channel and further offshore in parts of the Celtic Sea (ICES, 2005). Figure 4 shows the spatial distribution of common dolphins in May in the Bay of Biscay. Data were obtained over a six year period from 2003 and 2008 Areas of highest abundance occur between the upper Gironde river plume to waters off the Vendée coast, in the canyons areas in the south of the Bay (Cap Ferret and around), and in coastal waters off Brittany (G. Certain, unpublished data).

An estimated 50 507 common dolphins (95% CI: [28 742;88 751]) were present in continental shelf and slope waters in July 2005 (SCANS-II, 2008). Of this total, 11 141 individuals were estimated to be in the Celtic Sea and contiguous shelf waters; 4 919 in the Channel; 825 in the Irish Sea; and 2 199 in the nearshore waters of the Scottish west coast, 11 661 in waters off the west coast of Ireland, 392 in the inner Bay of Biscay, and 17 916 in waters off the Atlantic coasts of France and Iberia (Hammond *et al*., in prep., 2008 see Annex 1, Table 2). Highest densities occurred in the Celtic Sea and extending into St George's Channel and the southern Irish Sea, in the western English Channel, along the continental shelf off southwest Ireland, and to the west of Scotland (south of the Outer Hebrides) and Ireland. The recent CODA survey estimated that 116 709 common dolphins (95% CI: [56 915;246 740]) were present in European offshore waters. Highest densities were observed along the continental shelf slope, west of France (see Annex 1, Figure 5). Of the estimated total, 4 216 common dolphins were estimated to be off the west coast of Scotland and north-west coast of Ireland; 52 749 individuals off the south-west coast of Ireland and further offshore waters off the west of France; 21 071 individuals in the southern Bay of Biscay; and 38 673 off the north-west coast of Spain. T-NASS surveyed waters further offshore than those covered in the July 2007 CODA survey. Very low numbers of common dolphins were sighted in those areas where animals were seen in high abundance during the NASS 1995 surveys (Lawson *et al*., 2009). Several potential reasons for this have been identified: (i) differences in sighting conditions, e.g. sea state, (ii) uncertain species identification (as other dolphin species were sighted), (iii) a true reduction in common dolphin density, (iv) ship effect and (v) inter-annual distributional shifts. In addition, due to poor weather conditions, some of the NASS survey tracks were not covered in the June 2007 survey (IWC, 2009).

**Mediterranean Sea Common dolphin – Distribution and abundance**

This species is now only relatively abundant in the westernmost portion of the Mediterranean basin (Alborán Sea), with sparse sightings records off Algeria and Tunisia, small concentrations around the Maltese islands and in parts of the Aegean Sea, and relict groups in the south-eastern Tyrrhenian and eastern Ionian Seas (Bearzi *et al*., 2003; see Annex 2, Figure 1). An estimated 19 428 animals(95% CI: [15 277;22 804]) inhabit the northern Alborán Sea and Gulf of Vera (Cañadas and Hammond 2008; data obtained between 1992 and 2004). Average densities were higher in summer than in winter, and higher in the north-western Alborán Sea than in the eastern Gulf of Vera. No overall trend in abundance was evident in the northern Alborán area. However, a decline was observed in the Gulf of Vera, with summer densities threefold lower during 1996–2004 than during 1992–1995 (see Annex 2, Figure 2). The number of common dolphins in Kalamos of western Greece, has declined from about 150 animals in 1996 to about 15 common dolphins in 2007 (Bearzi *et al*., 2008).

**Mediterranean Sea Striped dolphin – Distribution and abundance**

Although the striped dolphin is the most abundant cetacean in the Mediterranean Sea, in both the eastern and western basins), it is not found at uniform densities. The greatest densities occur in highly productive, open waters beyond the continental shelf (Forcada *et al*., 1994, Frantzis *et al*., 2003, Gannier, 2005, Notarbartolo di Sciara *et al*., 1993). In 1991, the population in the western Mediterranean, excluding the Tyrrhenian Sea, was estimated to be 117–880 individuals (95% CI: [68 379;214 800]) (Forcada *et al*., 1994). No abundance estimates are available for the eastern Mediterranean basin and no current estimates of abundance exist for the whole western Mediterranean basin. Aerial surveys were conducted in the Ligurian-Provençal basin (Annex 2, Figure 1) in winter 2009 (January, February) and summer 2008 (August) to estimate abundance of striped dolphins. The winter abundance estimate was 19 578 animals (95% CI: [12 318;27 039])(Panigada *et al*., 2009). The summer abundance estimate was 13 232 animals (95% CI: [6640;26 368]). The summer 2008 estimate was slightly more than half (25 614 individuals; 95% CI: [15 377;42 658]) of that from a survey conducted in 1992 in the same area with comparable effort. The abundance estimate for striped dolphins in the northern Alborán Sea and Gulf of Vera (1992–2008) was 14 220 individuals (95% CI: [8827;17 764] (Höschle and Cañadas, unpublished data). Relative abundance was highest in the north-western Alborán Sea. Highest densities were observed in deeper waters, with relatively low densities in shallow waters (Hoschle, 2008). In the central Spanish Mediterranean Sea, the abundance of striped dolphins was estimated at 15 778 animals (95% CI: [10 940;22 756]) (Gomez de Segura *et al*., 2006). In waters off the Italian Aeolian Islands, striped dolphin abundance was estimated to be 4030 individuals (95% CI: [2239;7253]) (Fortuna *et al*., 2007).

**References**


Bearzi, G., Agazzi, S., Gonzalvo, J., Costa, M., Bonizzoni, S., Politi, E., Piroddi, C. and Reeves, R. R. 2008. Overfishing and the disappearance of short-beaked common dolphins from western Greece. Endangered Species Research, 5: 1–2.

Bearzi, G., Reeves, R. R., Notarbartolo di Sciara, G., Politi, E., Cañadas, A., Frantzis, A. and Mussi, B. 2003. Ecology, status and conservation of short-beaked common dolphins (*Delphinus delphis*) in the Mediterranean Sea. Mammal Review, 33: 224–252.

Cañadas, A. and Hammond, P. S. 2008. Abundance and habitat preferences of the short-beaked common dolphin *Delphinus delphis* in the southwestern Mediterranean: implications for conservation. Endangered Species Research, 4: 309–331.

CODA 2009. Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA). Unpublished report to the European Commission.

Fontaine, M. C., Baird, S. J. E., Piry, S., Ray, N., Tolley, K. A., Duke, S., Birkun Jr, A., Ferreira, M., Jauniaux, T., Llavona, A., Ozturk, B., Ozturk, A. A., Ridoux, V., Rogan, E., Sequeira, M., Siebert, U., Vikingsson, G. A., Bouquegneau, J.- M. and Michaux, J. R. 2007. Rise of oceanographic barriers in continuous populations of a cetacean: the genetic structure of harbour porpoises in Old World waters BMC Biology 5(30). doi:10.1186/1741-7007-5-30.

Forcada, J., Aguilar, A., Hammond, P. S., Pastor, X. and Aguilar, R. 1994. Distribution and numbers of striped dolphins in the western Mediterranean sea after the 1990 epizootic outbreak. Marine Mammal Science, 10: 137–150.

Fortuna, C. M., Canese, S., Giusti, M., Revelli, E., Consoli, P., Florio, G., Greco, S., Romeo, T., Andaloro, F., Fossi, M. C. and Lauriano, G. 2007. An insight into the status of striped dolphins (*Stenella coeruleoalba*) of the southern-Tyrrhenian sea. Journal of the Marine Biological Association of the United Kingdom, 87: 1321–1326.

Frantzis, A., Alexiadou, P., Paximadis, G., Politi, E., Gannier, A. and Corsini-Foka, M. 2003. Current knowledge of the cetacean fauna of the Greek Seas. Journal of Cetacean Research and Management 5: 219–232.

Gannier, A. 2005. Summer distribution and relative abundance of delphinids in the Mediterranean Sea. Review Écologie (Terre et Vie), 60: 223–238.

Gaspari, S., Azzellino, A., Airoldi, S. and Hoelzel, A.R. 2007. Social kin association and genetic structuring of striped dolphins (*Stenella coeruleoalba*) population in the Mediterranean Sea. Molecular Ecology, 16: 2922–2933.

Gaspari, S., Marsili, L., Fossi, C., Ciofi, C. and Chelazzi, G. in prep. Identification of conservation units of the striped dolphin *Stenella coeruleoalba* in the Mediterranean Sea by population genetic analysis.

Gomez de Segura, A., Crespo, E.A., Pedraza, S.N., Hammond, P.S. and Raga, J.A. 2006. Abundance of small cetaceans in the waters of the central Spanish Mediterranean. Marine Biology, 150: 149–160.

Haelters, J. and Camphuysen, C. J. 2009. The harbour porpoise in the southern North Sea. Abundance, threats and research, and management proposals. Report commissioned by IFAW (International Fund for Animal Welfare). 60pp.

Hammond, P. S., Bearzi, G., Bjørge, A., Forney, K., Karczmarski, L., Kasuya, T., Perrin, W. F., Scott, M. D., Wang, J. Y., Wells, R. S. and Wilson, B. 2008. *Phocoena phocoena* (Baltic Sea subpopulation). In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.1. <www.iucnredlist.org>. Downloaded on 18 May 2010.

Hammond, P. S., Berggren, P., Benke, H., Borchers, D. L., Collet, A., Heide-Jorgensen, M. P., Heimlich, S., Hiby, A. R., Leopold, M. F. and Øien, N. 2002. Abundance of harbour porpoise and other cetaceans in the North Sea and adjacent waters. Journal of Applied Ecology, 39: 361–376.

Hoschle, C. 2008. Abundance and habitat preferences of striped dolphins (*Stenella coeruleoalba*) in the northern Alborán Sea, Spain, University of Hamburg.

ICES. 2005. Report of the Working group on Marine Mammal Ecology (WGMME). ICES CM 2005/ACE:02.

ICES. 2009a. Report of the Study Group for Bycatch of Protected Species (SGBYC). ICES CM 2009/ACOM:22..

ICES. 2009b. Report of the Working Group on Marine Mammal Ecology (WGMME). ICES CM 2009/ACOM:21.

ICES. 2010. Report of the Working Group on Marine Mammal Ecology (WGMME). ICES CM 2010/ACOM:24.

IWC. 2009. Report of the Sub-Committee on Small Cetaceans. Annex L. International Whaling Commission Report.

Lawson, J., Gosselin, J.- F., Desportes, G., Acquarone, M., Heide-Jørgensen, M. P., Mikkelsen, B., Pike, D., Víkingsson, G., Zabavnikov, V. and Øien, N. 2009. A note on the distribution of short-beaked common dolphins, *Delphinus delphis*, observed during the 2007 T-NASS (Trans North Atlantic Sightings Survey), International Whaling Commission Report, SC/61/SM35.

Natoli, A., Cañadas, A., Vaquero, C., Politi, E., Fernandez-Navarro, P. and Hoelzel, A. 2008. Conservation genetics of the short-beaked common dolphin (*Delphinus delphis*) in the Mediterranean Sea and in the eastern North Atlantic Ocean. Conservation Genetics, 9: 1479–1487.

Notarbartolo di Sciara, G., Venturino, M. C., Zanardelli, M., Bearzi, G., Borsani, F. J. and Cavalloni, B. 1993. Cetaceans in the central Mediterranean Sea: distribution and sighting frequencies. Boll. Soc. Zool. Ital. 60: 131–138.

Panigada, S., Burt, L., Lauriano, G., Pierantonio, N. and Donovan, G. 2009. Winter abundance of striped dolphins (*Stenella coeruleoalba*) in the Pelagos Sanctuary (north-western Mediterranean Sea) assessed through aerial survey. International Whaling Commission SC/61/SM7.

SCANS-II 2008. Small cetaceans in the European Atlantic and North Sea (SCANS II). Final report to the European Commission under contract LIFE04NAT/GB/000245.

Tudela, S., Kai, A., Maynou, F., El Andalossi, M. and Guglielmi, P. 2005. Driftnet fishing and biodiversity conservation: the case study of the large-scale Moroccan driftnet fleet operating in the Alborán Sea (SW Mediterranean). Biological Conservation, 121: 65–78.

Van Canneyt, O., Dars, C., Gonzalez, L. and Dorémus, G. 2009. Les échouages de mammifères marins sur le littoral français en 2008. Rapport CRMM pour le Ministère de l'Ecologie, de l'Energie, du Développement Durable et de la Mer, Direction de l'eau et de la biodiversité, Programme Observatoire du Patrimoine Naturel: 31pp.

Wiemann, A., Andersen, L. W., Berggren, P., Siebert, U., Benke, H., Teilmann, J., Lockyer, C., Pawliczka, I., Skora, K., Roos, A., Lyrholm, T., Paulus, K. B., Ketmaier, V. and Tiedemann, R. 2010. Mitochondrial Control Region and microsatellite analyses on harbour porpoise (*Phocoena phocoena*) unravel population differentiation in the Baltic Sea and adjacent waters. Conservation Genetics, 11: 195–211.

## Annex 1

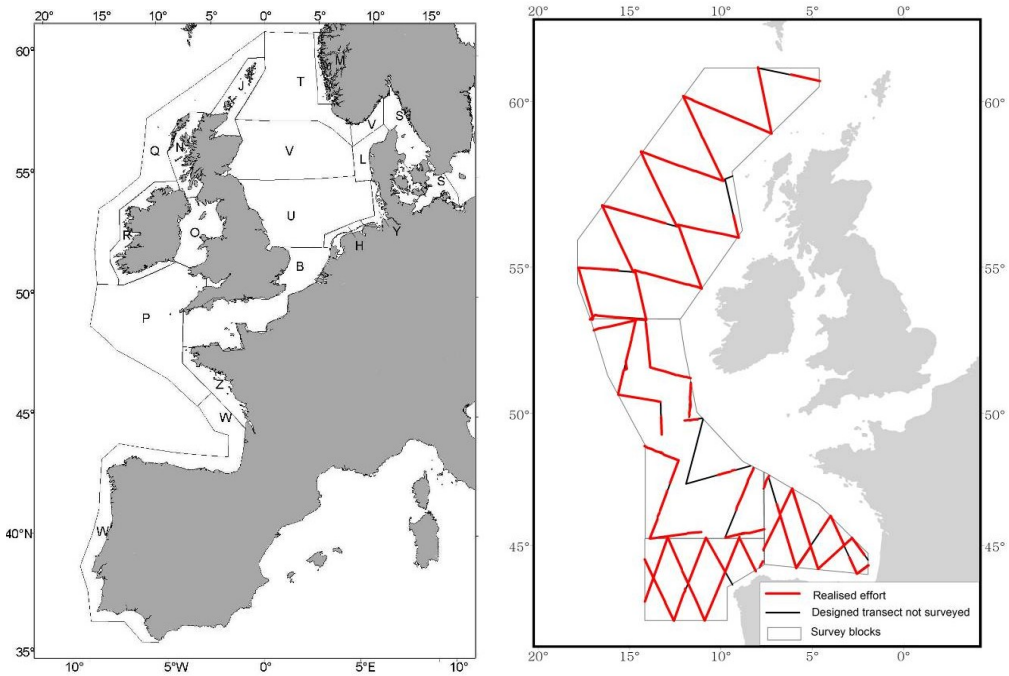


**Figure 1.** (a) Survey blocks defined for the SCANS II survey. Blocks S, T, V, U, Q, P and W were surveyed by ship. The remaining blocks were surveyed from aircraft (SCANS-II 2008), (b) CODA survey region divided into the survey blocks, and survey route (in red) (CODA, 2009).

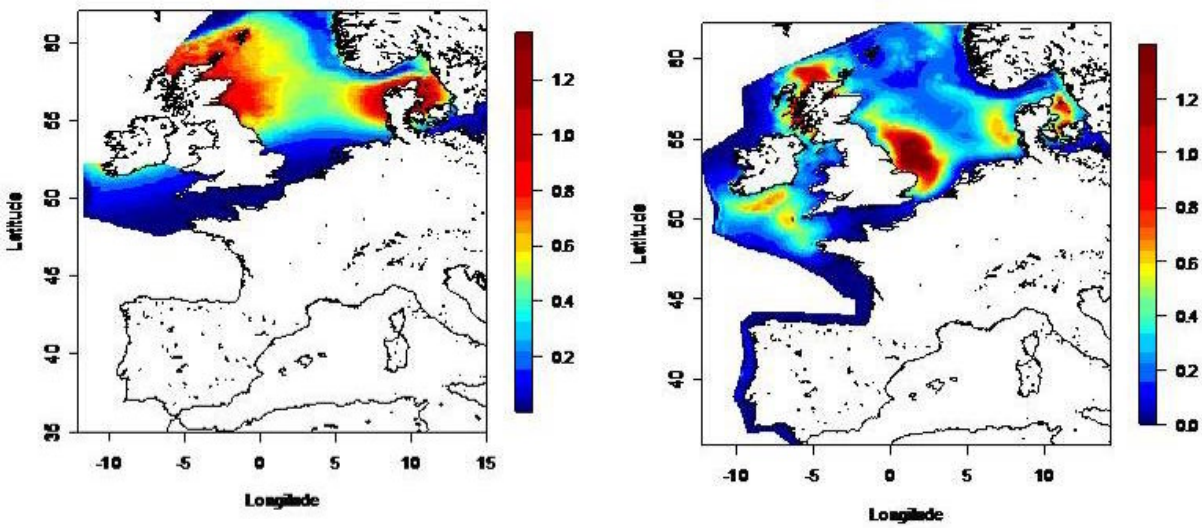


**Figure 2** Estimated harbour porpoise density (animals per km$^2$) in July in (a) 1994 and (b) 2005 (SCANS-II, 2008).

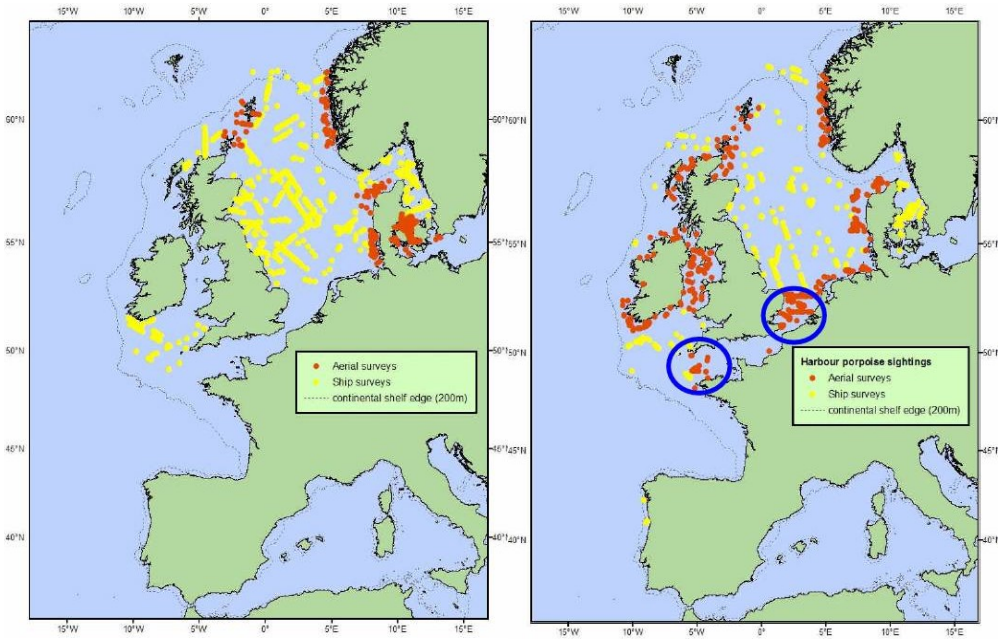


**Figure 3** Sightings of harbour porpoises during (a) SCANS-I in July 1994 and (b) SCANS-II in July 2005. Note SCANS-II survey extended into the Bay of Biscay and waters off Iberia. Note that the SCANS-I survey did not include the Irish Sea, or waters to the west of Scotland and Ireland (SCANS-II, 2008).

**Table 1** Results from SCANS-II: estimates of group abundance, mean group size, animal abundance and animal density (individuals.km$^{-2}$) for *P. phocoena.* CVs are given in parentheses. Figures in square brackets are 95% confidence intervals. There were no sightings of harbour porpoise in block Z.

| Block | Group abundance | Mean group size | Animal abundance | Animal density |
|---|---|---|---|---|
| B | 32 052 (0.39) | 1.28 (0.04) | 40 927 (0.38) | 0.331 (0.38) |
| H | 3 138 (0.37) | 1.24 (0.16) | 3 891 (0.45) | 0.355 (0.45) |
| J | 8 294 (0.37) | 1.24 (0.08) | 10 254 (0.36) | 0.274 (0.36) |
| L | 9 152 (0.43) | 1.26 (0.04) | 11 575 (0.43) | 0.555 (0.43) |
| M | 3 230 (0.37) | 1.22 (0.08) | 3 948 (0.38) | 0.305 (0.38) |
| N | 9 309 (0.41) | 1.30 (0.07) | 12 076 (0.43) | 0.394 (0.43) |
| O | 11 118 (0.36) | 1.37 (0.07) | 15 230 (0.35) | 0.335 (0.35) |
| P | 25 334 (0.52) | 3.18 (0.21) | 80 613 (0.50) | 0.408 (0.50) |
| Q | 7 679 (1.27) | 1.30 (0.19) | 10 002 (1.24) | 0.067 (1.24) |
| R | 7 685 (0.35) | 1.39 (0.10) | 10 716 (0.37) | 0.278 (0.37) |
| S | 14 788 (0.34) | 1.57 (0.09) | 23 227 (0.36) | 0.340 (0.36) |
| T | 11 519 (0.35) | 2.06 (0.12) | 23 766 (0.33) | 0.177 (0.33) |
| U | 54 357 (0.28) | 1.19 (0.09) | 88 143 (0.23) | 0.562 (0.23) |
| V | 19 909 (0.32) | 2.37 (0.22) | 47 131 (0.37) | 0.294 (0.37) |
| W | 1 022 (0.77) | 2.59 (0.15) | 2 646 (0.80) | 0.019 (0.80) |
| Y | 1 473 (0.47) | 1.00 (0.00) | 1 473 (0.47) | 0.125 (0.47) |
| **Total** | **220 059 (0.18) [64 984 - 532 333]** | | **385 617 (0.20) [261 266 - 569 153]** | |

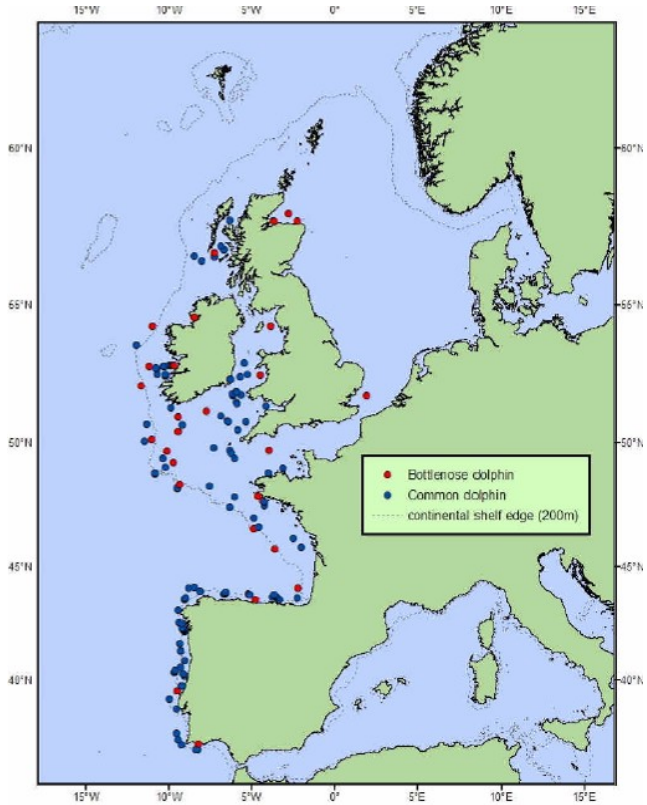


**Figure 4** Sightings of common dolphins during SCANS-II in July 2005 (SCANS-II 2008).

**Table 2** Results from SCANS-II, estimates of group abundance, mean group size, animal abundance and animal density (individuals.km$^{-2}$) for (a) *D. delphis* (Hammond *et al*., in prep). CVs are given in parentheses. Figures in square brackets are 95% confidence intervals. There were no sightings of *D. delphis* in blocks H, J, L, M, S, T, U, V and Y.

| Block | Group abundance | Mean group size | Animal abundance | Animal density |
|---|---|---|---|---|
| B | 378 (0.73) | 13.0 (0.36) | 4 919 (0.82) | 0.040 (0.82) |
| N | 1 256 (0.58) | 1.8 (0.14) | 2 199 (0.60) | 0.072 (0.60) |
| O | 375 (0.69) | 2.2 (0.36) | 825 (0.78) | 0.018 (0.78) |
| P | 999 (0.31) | 11.2 (0.57) | 11 141 (0.61) | 0.056 (0.61) |
| Q | 505 (0.85) | 2.9 (0.39) | 1 454 (0.81) | 0.010 (0.81) |
| R | 1 266 (0.70) | 9.2 (0.19) | 11 661 (0.73) | 0.302 (0.73) |
| W | 1 434 (0.26) | 12.5 (0.17) | 17 916 (0.22) | 0.129 (0.22) |
| Z | 314 (0.84) | 1.3 (0.20) | 392 (0.86) | 0.012 (0.86) |
| **Total** | **6 527 (0.26)**<br>**[3 970 – 10 732]** | | **50 507 (0.29)**<br>**[28 742 – 88 751]** | |

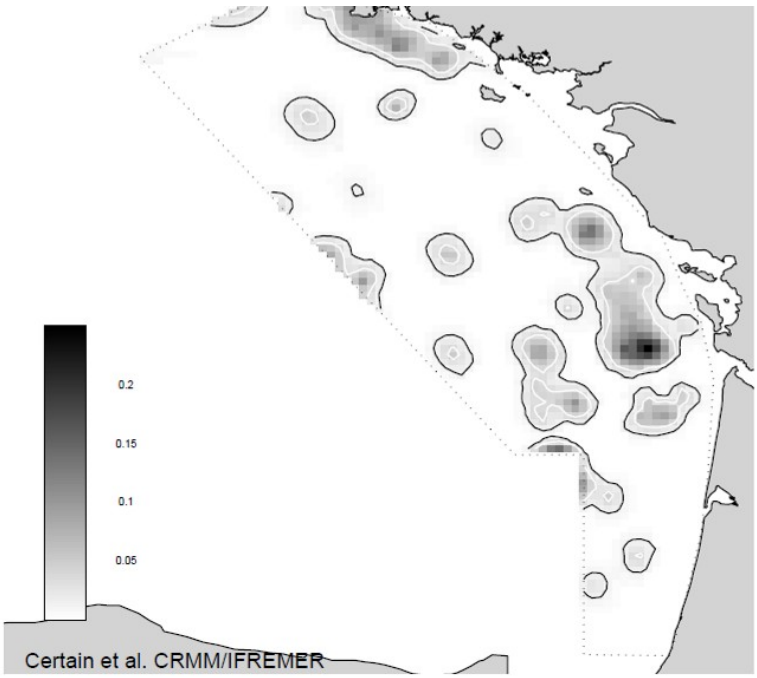


**Figure 4** Surface maps of smoothed predicted abundance of common dolphins in the Bay of Biscay in May (G. Certain unpublished data). Data obtained between 2003 and 2008.

**Table 3** Results from CODA, model-based (DSM) abundance estimates. Figures in parentheses are CVs. Figures in square brackets are 95% confidence intervals. From CODA (2009).

| **Species** | **Block** | **Abundance of animals (CV)** | **95% Confidence Interval** |
|---|---|---|---|
| **Common dolphin** | 1 | 4,216 (0.57) | 1,478 -12,027 |
| | 2 | 52,749 (0.39) | 25,054 – 111,059 |
| | 3 | 21,071 (0.51) | 8,270 – 53,689 |
| | 4 | 38,673 (0.46) | 16,464 – 90,839 |
| | **Total** | **116,709 (0.34)** | **61,397 - 221,849** |

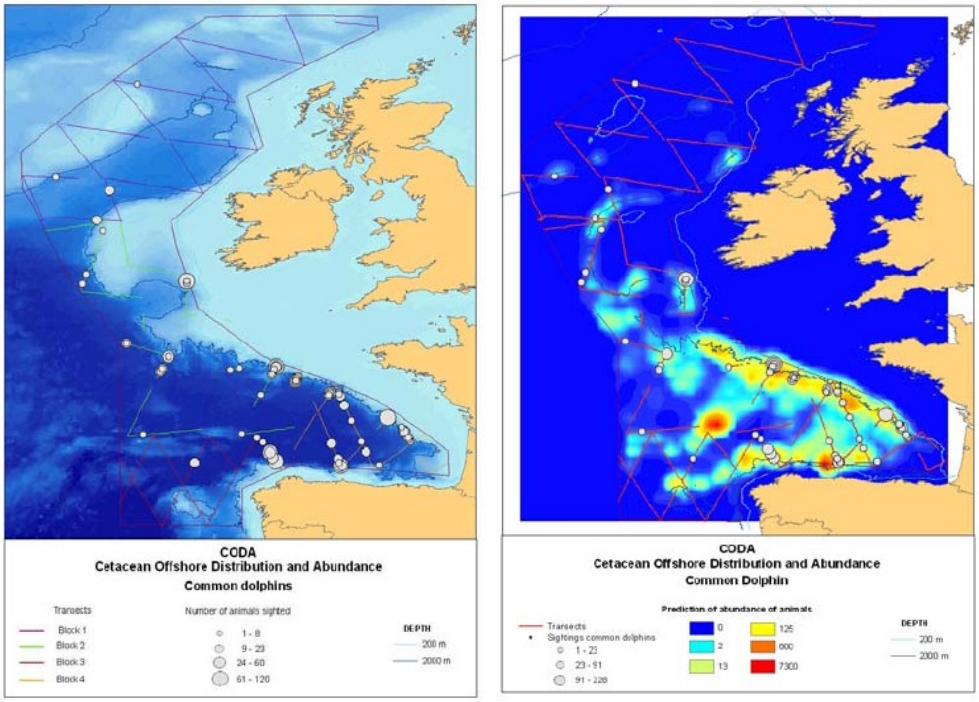


**Figure 5.** (a) Distribution of sightings (circles proportional to group size) of common dolphins and (b) surface maps of smoothed predicted abundance of common dolphins in offshore waters (CODA 2009).

## Annex 2

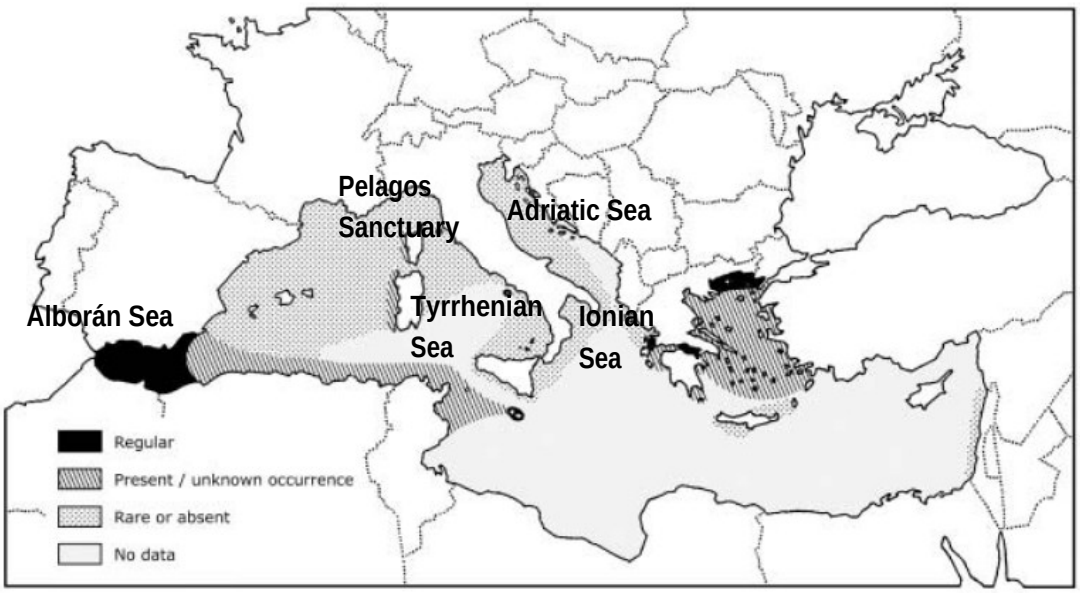


**Figure 1** Approximate distribution of short-beaked common dolphins in the Mediterranean Sea (taken from Bearzi *et al*., 2003).

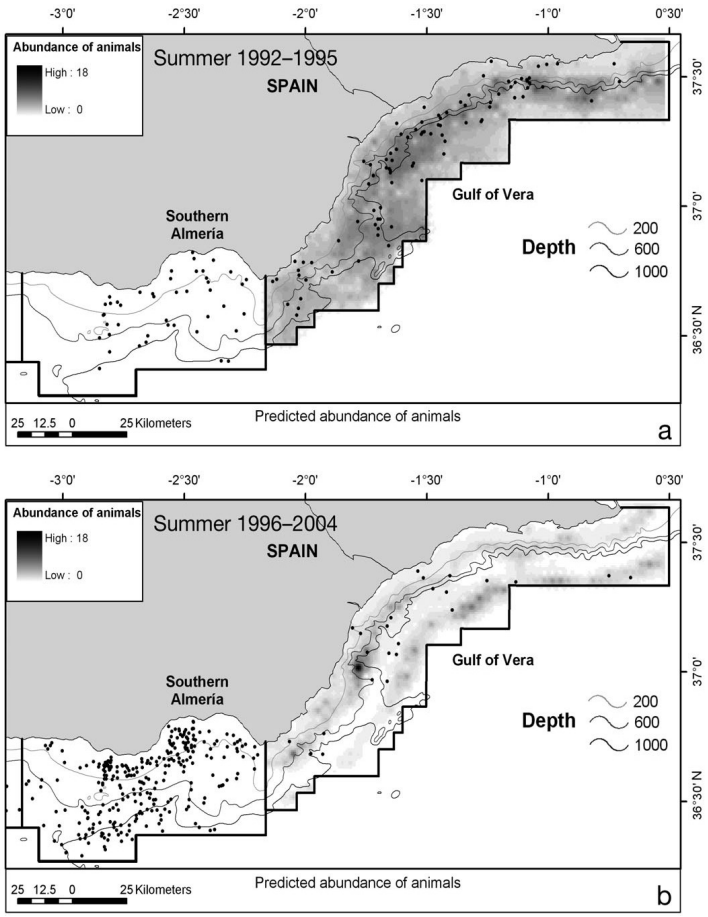


**Figure 2** Surface maps of predicted abundance of *D. delphis* for the Gulf of Vera (a) between 1992 and 1995, and (b) between 1996 and 2004 (taken from Cañadas and Hammond, 2008).

## Annex 3

List of cetaceans that occur in EU waters.

| | |
|---|---|
| Northern right whale | *Eubalaena glacialis* |
| Blue whale | *Balaenoptera musculus* |
| Sei whale | *Balaenoptera borealis* |
| Fin whale | *Balaenoptera physalus* |
| Minke whale | *Balaenoptera acutorostrata* |
| Humpback whale | *Megptera novaeangliae* |
| Pygmy sperm whale | *Kogia breviceps* |
| Dwarf sperm whale | *Kogia simus* |
| Sperm whale | *Physeter macrocephalus* |
| Blainville's beaked whale | *Mesoplodon densirostris* |
| True's beaked whale | *Mesoplodon mirus* |
| Gervais' beaked whale | *Mesoplodon europaeus* |
| Sowerby's beaked whale | *Mesoplodon bidens* |
| Northern bottle-nosed whale | *Hyperoodon ampullatus* |
| Cuvier's beaked whale | *Ziphius cavirostris* |
| Rough- toothed dolphin | *Steno bredanensis* |
| Bottlenose dolphin | *Tursiops truncatus* |
| (Long-beaked) common dolphin | *Delphinus delphis* |
| Striped dolphin | *Stenella coeruleoalba* |
| Atlantic white-sided dolphin | *Lagenorhychus acutus* |
| White-beaked dolphin | *Lagenorhychus albirostris* |
| Long-finned pilot whale | *Globicephala melanea* |
| Short-finned pilot whale | *Globicephala macrorhynchus* |
| False killer whale | *Pseudorca crassidens* |
| Killer whale | *Orcinus orca* |
| Risso's dolphin | *Grampus griseus* |
| Harbour porpoise | *Phocoena phocoena* |

# ECOREGION General Advice
# SUBJECT EC request on cetacean bycatch Regulation 812/2004, Item 3

**Advice Summary**

Regulation 812/2004 requires Member States to undertake specified actions in certain fisheries to reduce cetacean bycatch. ICES has reviewed information on fishing effort and bycatch levels and advises both on which fisheries require further actions and which fisheries, presently included in 812/2004, may not require action.

**Request**

*"As part of the Memorandum of Understanding between the European Commission and ICES, the Commission has a standing request to ICES to review the situation of incidental catches of cetaceans and the status of small cetaceans in European waters.*

*Beyond this standing request, ICES has been requested in 2008 to base its advice on the assessment of the Member States annual reports on the implementation of certain provisions of Council Regulation (EC) No 812/2004.*

*We would like to renew such request, and ask ICES to consider the following elements in the next assessment and advice:*

*3.* ***Identify areas outside the scope of Reg. 812/2004 where measures would be necessary to be applied to reduce the incidental catches of cetaceans.****"*

**ICES Advice**

ICES has based all of the advice below on the best available information and on the balance of evidence. ICES notes that in many cases the information is very uneven and patchy and is in some cases inconsistent. It is noticeable that it is only possible to assess bycatch in a few fisheries and this limits confidence in total bycatch estimates. This situation can only be remedied by improving the information collected in future. All ICES advice related to information needs should be considered in the context of needing to be assessed continuously if any Regulation is to be remain focussed on its overall objective of reducing bycatch to levels that allow growth and maintain the sustainability of cetacean populations.

Cetacean distribution and interactions with fisheries are not constant through time. This ICES advice and any consequent Regulation must thus be regarded as being appropriate for the near and medium term. In addition, ICES notes that the Regulation only pertains to cetaceans and does not apply to pinnipeds (seals) which are marine mammals also caught as bycatch in these fisheries,

ICES advises that Regulation 812/2004 should be extended to provide effective monitoring and mitigation measures to vessels of all length categories in the main fisheries with cetacean bycatch problems. At present, the Regulation is focused primarily on vessels of 15m and over for observations and for vessels of 12 m and over for mitigation measures, yet ICES notes that for most member states at least 75% of vessels in relevant fleets are less than 12 m in length. The Regulation therefore effectively excludes the majority of vessels that may be impacting cetacean populations. The following advice relates primarily to the commonest cetacean species in EU waters: harbour porpoise, common, striped and bottlenose dolphins. This is partly because available information is best for these species; it also focuses on static nets and pelagic trawls, the two fishing methods believed to have the greatest risk of cetacean bycatch.

1. Baltic Sea (ICES Subdivisions 24–32)

ICES advises that mitigation measures continue to be applied to all static net fisheries in the whole of sub-division 24. This area contains the majority of the critically-endangered harbour porpoise sub-population in the Baltic Sea and mitigation should aim to reduce bycatch to as near zero as possible. This advice applies both to small vessel fisheries in waters managed by Member States and to larger vessels that fish in waters beyond direct Member State fisheries legislation.

2. Belt Seas and Kattegat (ICES Subdivisions 21–23)

ICES advises that mitigation measures be applied to all static net fisheries in the Belt Seas and Kattegat to reduce the bycatch of harbour porpoise below 1.7% of the current best abundance estimate (see Background below for explanation

of this figure). Such measures may be most needed in Subdivisions 22 and 23, adjacent to the range of the critically endangered harbour porpoise sub-population in the Baltic Sea. This advice applies to both small vessel fisheries in waters managed by Member States and to larger vessels that fish in waters beyond direct Member State fisheries legislation.

3. North Sea and Skagerrak (ICES Subarea IV and Subdivision IIIaN)

ICES advises that insufficient evidence exists to recommend further mitigation measures for any fishery in the North Sea and Skagerrak. In particular, there is a need for better information on bycatch and effort in static net fisheries in the southern North Sea (ICES statistical area IVc) especially for small vessel and recreational fisheries (where there is little or no data collection of management framework at present) in waters managed by Member States. The assessment of total bycatch in this area is very uncertain, with the upper end of the estimates exceeding 1.7% of the current best estimate of the harbour porpoise population with the other estimates all being below 1.7%. There are also indications that there is some sub-structure in the North Sea population which could exacerbate fisheries impacts to this species.

ICES advises that a further evaluation be conducted in three years time to assess if bycatch exceeds 1.7% of the best population estimate. If sufficient information is not forthcoming to conduct such an assessment, then mitigation measures should be applied to all static net fisheries including those undertaken by small vessels and for recreational purposes in statistical area IVc.

There is no indication that pelagic fisheries in the North Sea currently pose a major risk to cetaceans, so the current requirement for monitoring these fisheries under Regulation 812/2004 could be relaxed, noting that some monitoring will still be undertaken under other legislation.

4. North Atlantic (ICES subareas VI, VII and Divisions VIIIa,b)

ICES advises that the evidence is incomplete and insufficient to recommend further mitigation measures for static net fisheries in ICES statistical areas VI, VII and VIII a,b. In particular, there is a need for better information on bycatch and effort in static net fisheries in the southern parts of this area (ICES statistical areas VII and VIII a,b) especially for small vessel and recreational fisheries (where there is little or no data collection of management framework at present) in waters managed by Member States. The assessment of total bycatch in this area is very uncertain, with the upper end of the estimates exceeding 1.7% of the current best estimate of the harbour porpoise population. There may also be some sub-structure in the harbour porpoise population of this part of the North Atlantic which could exacerbate fisheries impacts to this species.

ICES advises that a further evaluation be conducted in three years time to assess if bycatch exceeds 1.7% of the best population estimate. If sufficient information is not forthcoming to conduct such an assessment, then mitigation measures should be applied to all static net fisheries including those undertaken by small vessels and for recreational purposes in statistical areas VII and VIII a,b.

5. Iberian waters (ICES Divisions VIIIc-e, subarea IX)

ICES advises that mitigation measures be applied to all static net fisheries in Iberian waters (ICES statistical areas VIIIc-e, IX) shallower than 200 m to reduce the bycatch of harbour porpoise (and if possible common dolphin) below 1.7% of the current best abundance estimate. This advice applies particularly to small vessel fisheries managed by Member States in these waters. ICES advises that information on fisheries and bycatch in these waters is poor and that further information might enable the above advice to be more precisely targeted.

6. North Atlantic (ICES subareas VI – IX)

ICES advises that that mitigation measures be applied to all pelagic fisheries for bass and albacore tuna to reduce the bycatch of common dolphin below 1.7% of the current best abundance estimate.

7. Mediterranean Sea (FAO Statistical area 37)

ICES advises that information on bycatch and effort in static net fisheries in the Mediterranean, including small vessel and recreational fisheries in waters managed by Member States is needed. There is a further need for surveys to estimate total population abundance of cetaceans in the Mediterranean. There is considerable sub-structure in the bottlenose dolphin population in the Mediterranean and this implies that targeted mitigation measures may be required once more detailed information is available. The assessment of total bycatch for the Mediterranean is extremely uncertain, with estimates of the bycatch of bottlenose dolphins exceeding 1.7% of the current best estimate in some areas, with limited or no evidence in other areas.

ICES advises that a further evaluation in conducted in three years time to assess if bycatch exceeds 1.7% of the best population estimate. If sufficient information is not forthcoming to conduct such an assessment, then mitigation measures should be applied to all static net fisheries including those undertaken by small vessels and for recreational purposes in the Mediterranean.

8. Black Sea (FAO Statistical area 37)

ICES advises that mitigation measures be applied to all static net fisheries in EU waters of the Black Sea during the period from March to June to reduce the risk that harbour porpoise bycatch exceeds 1.7% of the population.

ICES advises that better information on bycatch and effort might enable the above advice to be more precisely targeted. There is a further need for surveys to estimate population abundance for cetaceans in all parts of the Black Sea.

9. European Macronesia (ICES subarea X and EU waters south of the Azores)

There is no evidence to indicate that bycatch mitigation measures are required in these waters.

*Recommendations*

ICES recommends that a more appropriate and cost effective method of setting targets for the monitoring required under Regulation 812/2004 is needed to: (a) optimally use available resources and (b) acquire the requisite information to accurately assess cetacean bycatch. The current monitoring requirements are based on a target CV of a bycatch rate. A better approach would be to require that sufficient monitoring is carried out to confirm whether bycatch rate is less than or greater than the predefined reference limit (in the current case that is 1.7% of the best estimate of the cetacean population). This would reduce the amount of monitoring required in fisheries with little or no bycatch.

ICES recommends that accurate, practical, and clear definitions of the gear types to which Regulation 812/2004 applies should be developed and included in the Regulation. As currently written, it is unclear whether certain types of fishing gear known to interact with cetaceans are covered within the scope of Regulation 812/2004. For example, trammel nets are not explicitly referenced in Regulation 812/2004 but are in other regulations. This has caused some confusion and discrepancies between Member States in taking action and reporting under Regulation 812/2004 in relation to this type of gillnet. The use of adaptive and hybrid styles of gear, such as Very High Vertical Opening trawls in Spanish waters and certain long surface nets used by Italian, French, and Spanish fisheries can also create regulatory ambiguity. Adoption of this recommendation would ensure consistent consideration of management measures across fisheries regulations to avoid the exclusion of gear types of concern, which would otherwise undermine the regulation's capacity to reduce cetacean bycatch.

ICES recommends that the collection and supply of appropriate fishing effort data should be improved, particularly for the under 10 m sector and static net and recreational fisheries to enable better identification and application of targeted bycatch mitigation measures by gear type or area. It is not possible to assess precise levels of cetacean bycatch in European fisheries at present. One of the largest constraints is the lack of precise and directly relevant data on fishing effort. ICES was only able to calculate approximate levels of animals caught per day at sea and/or animals caught per landed tonnes of target species. These metrics are not precise due to variability in landings, nor do they account for the actual duration of time which cetaceans are exposed to fishing gear, such as length of net x soak time in the case of static nets. In cases where bycatch rates are clearly well above or well below the level at which management action might be required, this lack of precision may not be important, but in cases where the assessment is equivocal, this lack of appropriate effort data may be of greater importance..

ICES recommends that surveys should be conducted to provide more reliable estimates of the abundance of cetaceans in Mediterranean and Black Seas, and in European Macronesia. ICES has provided advice on cetacean abundance in 2009 and in 2010. The current advice is based on updated pooled estimates for each of the management regions considered by ICES. For some of the areas particularly the Mediterranean and Black Sea, estimates of cetacean abundance are tentative.

ICES recommends that data collected under the DCF (and including data already collected under the previous DCR) should be collated to assess the scale of cetacean bycatch in all fisheries at a European level. Regulation 812/2004 relates solely to static net and pelagic trawl fisheries, yet many other fisheries are known to be associated with some levels of cetacean bycatch. Low level monitoring of fishery discards is mandated in many other European fisheries under the Data Collection Framework (DCF). An explicit requirement to record and report the bycatch (and discard) of cetaceans (and other protected species and seals) under the DCR would be a cost-effective way of monitoring fisheries currently thought to have low bycatch levels.

ICES is aware that monitoring of fisheries is problematic for many Member States because on board observer monitoring can be very expensive. This is particularly the case when a target level of precision in the final bycatch estimate is being attempted. A possible improved approach to target levels of monitoring is outlined in Anon. (2010). Furthermore, recent monitoring of small vessels using video monitoring techniques shows that cheaper and more flexible approaches to observer monitoring are feasible. Such approaches could be adopted for monitoring of fisheries currently outside the scope of Regulation 812/2004 that are mentioned in the ICES advice above.

**Basis of advice**

Background

Council Regulation (EC) No 812/2004 of 26.4.2004 laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98 was introduced to reduce bycatch of cetaceans in certain European fisheries. The Regulation was based on advice from both ICES and STECF. Following implementation of the Regulation, it has become apparent (partly through evidence gathered under the Regulation) that it was not targeted particularly well at the fisheries that have the highest risk of cetacean bycatch. This discrepancy is likely due both to improved information and to changes in cetacean distribution and in fisheries.

A workshop was convened to examine available evidence for cetacean bycatch in fisheries in all European waters; this review focussed on static net and pelagic trawl fisheries as these are perceived to have the highest bycatch rates. The review also focussed on four species for which regular records of bycatch are available: harbour porpoises and common, striped, and bottlenose dolphins. Ideally an assessment of bycatch should be based on the whole of a discrete biological population. Within European waters and for the species concerned this is not feasible, because population structure of cetaceans within EU waters area is generally uncertain. Several sub-populations or stocks of harbour porpoises are thought to exist in European waters, but there is a high level of interchange between most of them, and stock boundaries previously suggested are either indistinct or do not align well with fishery management areas. A single panmictic population of common dolphins is thought to occupy the Northeast Atlantic, with separate sub-populations in the Mediterranean and Black Seas. The common dolphins present within European Fishery Zone will also likely range well beyond the boundaries of the Zone. The review therefore split the Zone into pragmatic management regions for which fisheries effort information could be obtained.

The “bycatch limit” of 1.7% derives from work undertaken by a working group convened by the International Whaling Commission and ASCOBANS (IWC, 2000). This working group modelled harbour porpoise populations under various scenarios of bycatch and target population size, making best assumptions about a variety of population parameters. This figure (1.7%) is the rate of total removals from a population that would still allow the harbour porpoise population to achieve 80% of its carrying capacity over a very long time horizon (a proxy for a sustainable population). The figure was adopted by ASCOBANS as the rate above which bycatch would become “unacceptable”; subsequently noted by a North Sea Ministerial meeting and accepted by the European Commission as a level above which ICES might advise that mitigation measures would become necessary.

Regulation 812/2004 requires Member States to design and implement observer monitoring schemes for incidental catches of cetaceans for vessels with an overall length of 15 m or over, for certain defined fisheries and conditions defined in Annex III of the Regulation. Member States are also required to collect scientific data on incidental catches of cetaceans for vessels with an overall length less than 15 m and involved in the same defined fisheries by means of appropriate scientific studies or pilot projects. ICES notes that very few scientific studies or pilot projects have been implemented by Member States. Regulation 812/2004 also requires vessels of 12m and over that participate in certain defined fisheries and conditions defined in Annex 1 of the regulation to use acoustic deterrent devices.

ICES is aware that monitoring of fisheries is problematic for many Member States because on board observer monitoring can be very expensive. This is particularly the case when a target level of precision in the final bycatch estimate is being attempted. A possible improved approach to target levels of monitoring is outlined in Anon. (2010). Furthermore, recent monitoring of small vessels using video monitoring techniques shows that cheaper and more flexible approaches to observer monitoring are feasible. Such approaches could be adopted for monitoring of fisheries currently outside the scope of Regulation 812/2004 that are mentioned in the ICES advice above.

ICES has advised above that Member States should have three years to implement schemes to observe cetacean bycatch in fisheries. To an extent this is an arbitrary number, but ICES notes that Member States have been under the obligations of the European Habitats Directive (92/43/EEC) since the early 1980s, that requires assessment of cetacean bycatch, and many have been obliged further as outlined above by Regulation 812/2004 in more recent years. Thus ICES notes that Member States have had considerable opportunity to put in place suitable mechanisms. A three year deadline should enable at least two years of data to be available for evaluation.

Results and conclusions

Cetacean abundance estimates

Wide-scale surveys have been conducted to estimate cetacean abundance in the North Sea, Skagerrak, Kattegat, Belt Seas, Atlantic part of the European Fisheries Zone north of Iberia and in shelf waters to the west of Iberia. Further surveys have been conducted in parts of the Mediterranean. Table 1.5.1.5.1 indicates abundance levels for each of the Management Regions considered by ICES. Abundance figures for the Mediterranean, Black and Macronesian Seas must be regarded as very approximate and based on expert judgement.

**Table 1.5.1.5.1** Pooled abundance estimates for each of the Management Regions together with the associated 1.7% limit on bycatch.

| **Species** | **Management Region** | **Number of animals** | **1.7%** |
|---|---|---|---|
| Harbour porpoise | Baltic (Sub-divisions 24-32) | 4949 (mostly in Sub-division 24) | 84 |
| | Kattegat (IIIa S) and Belt Seas (Sub-divisions 21-23) | 14,030 | 238 |
| | North Sea and Skagerrak (IIIa N) | 205,751 | 3498 |
| | Atlantic N (VI, VII, VIIIa,b) | 153,977 | 2617 |
| | Atlantic S (VIIIc,d,e, IX) | 2831 | 48 |
| | Black Sea | c30,000 | 510 |
| Common &/or striped dolphin | North Sea | 5022 | 85 |
| | Atlantic | 343,586 | 5841 |
| Common dolphin | Black Sea | c100,000 | c1700 |
| Striped dolphin | Western Mediterranean | c120,000 | c2040 |
| | Tyrrhenian Sea | c100,000 | c1700 |
| | Ionian Sea | c30,000 | c510 |
| | Total Mediterranean | c500,000 | c8500 |
| Bottlenose dolphin | North Sea | 1026 | 17 |
| | Atlantic N (VI, VII, VIIIa,b) | 21,049 | 358 |
| | Atlantic S (VIIIc,d,e, IX) | 9820 | 167 |
| | Western Mediterranean | c10,000 | 170 |
| | Total Mediterranean | c50,000 | 850 |
| | Black Sea | c3000 | 50 |

Bycatch rates

Table 1.5.1.5.2 summarises available bycatch rates for the Management Regions and species of highest abundance/main concern in European waters. These are expressed in a variety of units, corresponding with available information. It is not straight-forward to translate between these units, so no effort was made to do this. There are notable differences in reported bycatch rates between fleets operating in approximately the same sea area.

**Table 1.5.1.5.2** Bycatch rates derived from observer schemes in European waters

| Species and gear type | Management Region | Rates |
|---|---|---|
| Harbour porpoise – static nets | Baltic (Sub-division 24) | No rate recorded, very low population size |
| | Kattegat (IIIa S), Belt Seas (Sub-divisions 21-23) | Germany: 1 animal per 133 days or per 11 tonnes landed (note these figures include part of sub-division 24)<br>Sweden: 1 animal per 39 days |
| | North Sea + Skagerrak (IV and IIIa north) | Sweden: 1 animal per 13 days<br>Denmark: 1 animal per 1.7 tonnes landed<br>Norway: 1 animal per 6.4 tonnes landed<br>UK: 1 animal per 5.0 tonnes landed; 1 per 13.5 days<br>Netherlands: 1 animal per 48 days (Feb. – May IVc only) |
| | Atlantic N (VI, VII, VIIIa,b) | UK: 1 animal per 22 days (hake 1 per 10 days, flatfish 1 per 68 days);<br>Ireland: 1 porpoise per 4.8 days at sea<br>France: 1 animal per 62 days, spider crab nets less risky (France annual reports) |
| | Atlantic S (VIIIc,d,e, IX) | Portugal: 0.026 animals per vessel per year. |
| | Black Sea | High bycatch rates in April-June |
| Common dolphin – static nets | North Atlantic waters (VI, VII, VIII and IX) | UK: 1 animal per 5.0 tonnes landed; flatfish nets less risky (UK annual reports)<br>UK: 1 dolphin per 53 days (21 days for hake, 114 for flatfish)<br>France: 1 animal per 247 days, spider crab nets less risky (France annual reports)<br>Spain: 1 animal per 18 days (VIIIa,b only)<br>Portugal: 1.35 animals per vessel per year |
| | Azores | No or very low bycatch. Only nets within 500m of shore and in less than 30m depth allowed |
| | Madeira | No bycatch as no nets allowed |
| Common dolphin – pelagic trawl | North Atlantic waters (VI, VII, VIII and IX) | Netherlands: 1 animal per 613 days fished (no bass, much mackerel/horse mackerel)<br>UK: 1 animal per 1.2 days fished in bass fishery only (prior to pinger deployment). Non-bass pelagic trawl no bycatch in VI (coverage = 500 days)<br>France: 1 animal per 8.3 days fished (bass/tuna fishery only, no bycatch in mackerel/horse mackerel)<br>Ireland: albacore 47.5 days per dolphin<br>Spain: (1 common dolphin in 92 hauls in VIIIabd) |
| | Azores | No trawls |
| | Canary Island waters | No information |
| | Madeira | No trawls |
| Striped dolphin – pelagic trawl and [Italian long surface-set nets] | Mediterranean NW Basin (ES, FR, IT) | France: 1 animal per 61 days fished<br>[Italy: Few recent observations, large in past, no reason to expect change] |
| Bottlenose dolphin – static nets | Mediterranean NW Basin (ES, FR, IT) | Italy: 0.29 animal per vessel per year (based on study off Sardinia) |
| | Black Sea | No information |
| Bottlenose dolphin – pelagic trawl and purse seine | Mediterranean NW Basin (ES, FR, IT)<br>Tyrrhenian Sea and south of Sicily<br>Adriatic | France: 1 animal per 245 days fished<br>Italy: 0.6 animal per purse seine vessel per year<br>Italy: 0.001 animal per pelagic trawl vessel per year |
| | Black Sea | No information |

Effort

Table 1.5.1.5.3 provides an estimate of effort in relevant EU fleets on the basis of days at sea, tonnes of fish landed or number of vessels. A recent database compiled by a subgroup of STECF was not available to ICES at the time of developing this advice. These parameters are not ideal ways of describing effort as it applies to bycatch: km.hours and number of tows would be more appropriate parameters for static nets and pelagic trawls respectively, but information on these parameters are not available.

**Table 1.5.1.5.3** Static nets and pelagic trawl effort in each management region by days at sea, tonnes landed fish or number of vessels. * = days at sea for all Mediterranean fleet except Italian has been extrapolated using Italian figures (see text)

| **Baltic (24-32)** | Static nets | | Pelagic trawls | |
|---|---|---|---|---|
| EU Member State | Days at Sea | Tonnes Landed | Days at Sea | Tonnes Landed |
| Sweden | 23527 | 4170 | 1337 | 115140 |
| Denmark | 5285 | 1817 | 948 | 61701 |
| Germany (Vessels >8m) | 11990 | 6599 | 1283 | 21639 |
| Poland | 34337 | 9321 | 6886 | 103797 |
| Lithuania | 1599 | 371 | 712 | 13291 |
| Finland | >70,049 | 1877 | 4934 | 108006 |
| Estonia | na | na | na | na |
| Latvia | na | na | na | na |
| **Totals** | **>146,787** | **24155** | **16100** | **423574** |
| **Kattegat and Belt Seas (21-23)** | Static nets | | Pelagic trawls | |
| EU Member State | Days at Sea | Tonnes Landed | Days at Sea | Tonnes Landed |
| Sweden | 12635 | 1470 | 58 | 2938 |
| Denmark | 10358 | 2565 | 453 | 9404 |
| Germany (Vessels > 8m) | 9312 | 790 | 86 | 1034 |
| **Totals** | **32305** | **4825** | **597** | **133754** |
| **North Sea** | Static nets | | Pelagic trawls | |
| EU Member State | Days at Sea | Tonnes Landed | Days at Sea | Tonnes Landed |
| United Kingdom | 5998 | 2185 | 551 | 78182 |
| Belgium | 420 | 143 | 0 | 0 |
| Netherlands | 3578 | | 246 | |
| Denmark | 11188 | 7463 | 1982 | 155365 |
| Sweden | 950 | 223 | 155 | 15563 |
| Norway | 9005 | 1801 | NA | NA |
| Germany (Vessels>10m) | 1014 | 704 | 250 | 13984 |
| France | 2200 | | 0 | 0 |
| **Totals** | **34359** | **>12519** | **3183** | **263094** |
| **Atlantic North VI,VII,VIIIab** | Static nets | | Pelagic trawls | |
| EU Member State | Days at Sea | Tonnes Landed | Days at Sea | Tonnes Landed |
| United Kingdom | 33,546 | 8,957 | 2529 | 173,025 |
| Belgium | 60 | na | 0 | 0 |
| Germany | 441 | na | 364 | na |
| Ireland | 3,195 | 1,964 | 3802 | 141,198 |
| France | 57,000 | na | 8500 | na |
| Spain (VIIIabd) | 3213 | (35 vessels) | 1464 (VHVO) | (6 vessels) |
| Denmark | 0 | 0 | 2058 | 175,830 |
| Netherlands | 0 | 0 | 1514 | na |
| **Totals** | **94,242** | | **18,768** | |
| **Atlantic South VIIIcde,IX** | Static nets | | Pelagic trawls | |
| EU Member State | Days at Sea | Number of vessels | Days at Sea | Number of vessels |
| Spain (Galicia only) | 370,000 | 1600 | 0 | 0 |
| Portugal (approximately) | 392,000 | 1960 | 0 | 0 |
| **Totals** | **>762,000** | 3560 | | |
| **Atlantic Total** | **856,242** | | | |
| **Mediterranean** | Static nets | | Pelagic trawls | |
| EU Member State | Days at Sea | Number of vessels | Days at Sea | Number of vessels |
| Italy | 940926 | 11978 | | |
| Spain | 81588* | 1046 | 2820 | |
| France | 59982* | 769 | | |
| Slovenia | 4680* | 60 | | |
| Greece | 1411753* | 18099 | | |
| Cyprus | 38298* | 491 | | |
| Malta | 78390* | 1005 | | |
| **Mediterranean Total** | 2615617* | 33448 | | |

Bycatch assessment per region and comparison with 1.7%.

The possible scale of bycatch of harbour porpoises in static net fisheries was found to be either clearly over 1.7% of the best estimate of abundance or was equivocal (Table 1.5.1.5.4). In the latter case, the majority of extrapolated figures were under 1.7%. In these equivocal cases, further observation while not removing current mitigation requirements is advised in order to gain greater certainty as to the level of bycatch. The level of bycatch in the Baltic could not be assessed, partly due to the rarity of these events because of the low population size.

Bycatch of common dolphins in static nets was found to be moderate in most of the Atlantic range, but may be higher off Iberia. Bycatch of this species in bass or albacore tuna pelagic trawls was higher than in other pelagic trawl fisheries, but had a low overall total due to relatively low fishing effort. Collectively bycatch of common dolphins in the European Atlantic may exceed 1.7% overall, with the greatest proportion possibly being in static net fisheries off Iberia. There is no knowledge relating to bycatches in the Black Sea. Bycatch of bottlenose dolphins may exceed 1.7% in the Mediterranean, but the assessment is based on one relatively local study of bycatch.

**Table 1.5.1.5.4** Possible scale of bycatches of cetaceans in static nets and pelagic trawls, with comparison with 1.7% limit and caveats. Summary key: − = recommend immediate mitigation measures; o = enhanced short-medium term observation to decide appropriate action; + = no action required at present beyond background observation. ? = Knowledge of effort and bycatch in the Mediterranean and Black Seas is particularly poor.

| Management Region | Possible scale of annual bycatch | 1.7% | Comment (most important caveats) | Summary |
|---|---|---|---|---|
| **Harbour porpoise – static nets** | | | | |
| Baltic (Sub-divisions 24-32) | Unknown as bycatch events rare and unreported | 84 | Critically-endangered sub-population – any bycatch should be as close to zero as possible | − |
| Kattegat (IIIa S), Belt Seas (Sub-divisions 21-23) | 242-828 animals per year | 238 | Lowest bycatch figure is above 1.7% | − |
| North Sea and Skagerrak | 715-7364 animals per year | 3498 | High figure based on one sample off Denmark, other possible figures all below 3000 per year | o |
| Atlantic (North) | 1520-19634 animals per year | 2617 | High figure based on one sample off Ireland | o |
| Atlantic (South) | 92 animals per year | 48 | Low sampling of bycatch rates | − |
| Black Sea | High in May-June | c510 | Low sampling of bycatch through year, but pronounced spring peak | o |
| **Common dolphin (+ striped dolphin) – static nets** | | | | |
| Atlantic | North: 1111 (or 1778 if all fleets extrapolated at UK rate)<br><br>Portugal: 2646<br>Spain (Galicia) 764 | 5841 | Sum of French days x bycatch rate, UK days x bycatch rate, Spain days x bycatch rate with remainder of fleet extrapolated at UK rate<br><br>From Lopez et al. (2003) | o |
| Black Sea | Unknown | c1700 | | o ? |
| **Common dolphin (+ striped dolphin) – pelagic trawls for bass/tuna** | | | | |
| Atlantic | 320 | 5841 | For 2008, most recent year of estimates, but has been higher | o |
| Black Sea | Unknown | c1700 | | o ? |
| **Common dolphin (+ striped dolphin) – pelagic trawls other than bass/tuna** | | | | |
| Atlantic | 0 - 30 | 5841 | Very low bycatch rate, but observer coverage low also | + |
| Black Sea | Unknown | c1700 | | o ? |
| **Striped dolphin** | | | | |
| Mediterranean | Unknown | c8500 | Fishing effort not available | o ? |
| **Bottlenose dolphin** | | | | |
| Mediterranean | 9700 | 850 | Bycatch rate based on one study | − |

Methods

Cetacean abundance estimation

Abundance estimates from the CODA and SCANSII projects and other recent surveys were used to calculate abundance estimates for each of the major ICES statistical areas (Figure 1.5.1.5.1). Survey blocks were allocated proportionally to ICES statistical areas based on the areal proportions of each block in each statistical area, and abundance estimates then allocated from each survey block to the relevant overlapping ICES statistical areas. Proportions of area of overlap used to calculate abundance estimates using an assumption of even distribution in each survey block. These figures were summed for each Management Region considered in this review. ICES Division IIIa was split into southern and northern regions (Kattegat and Skagerrak respectively); the pro-rated abundance estimate for porpoises in Division IIIa was split in two, allocating half to the North Sea-Skagerrak region and half to the Kattegat- Belt seas region (Table 1.5.1.5.1). No complete surveys exist for the Mediterranean, Black Sea or European Macronesian Seas; therefore ICES used a patchwork of smaller scale studies that provide a very incomplete overview of cetacean abundance in these regions.

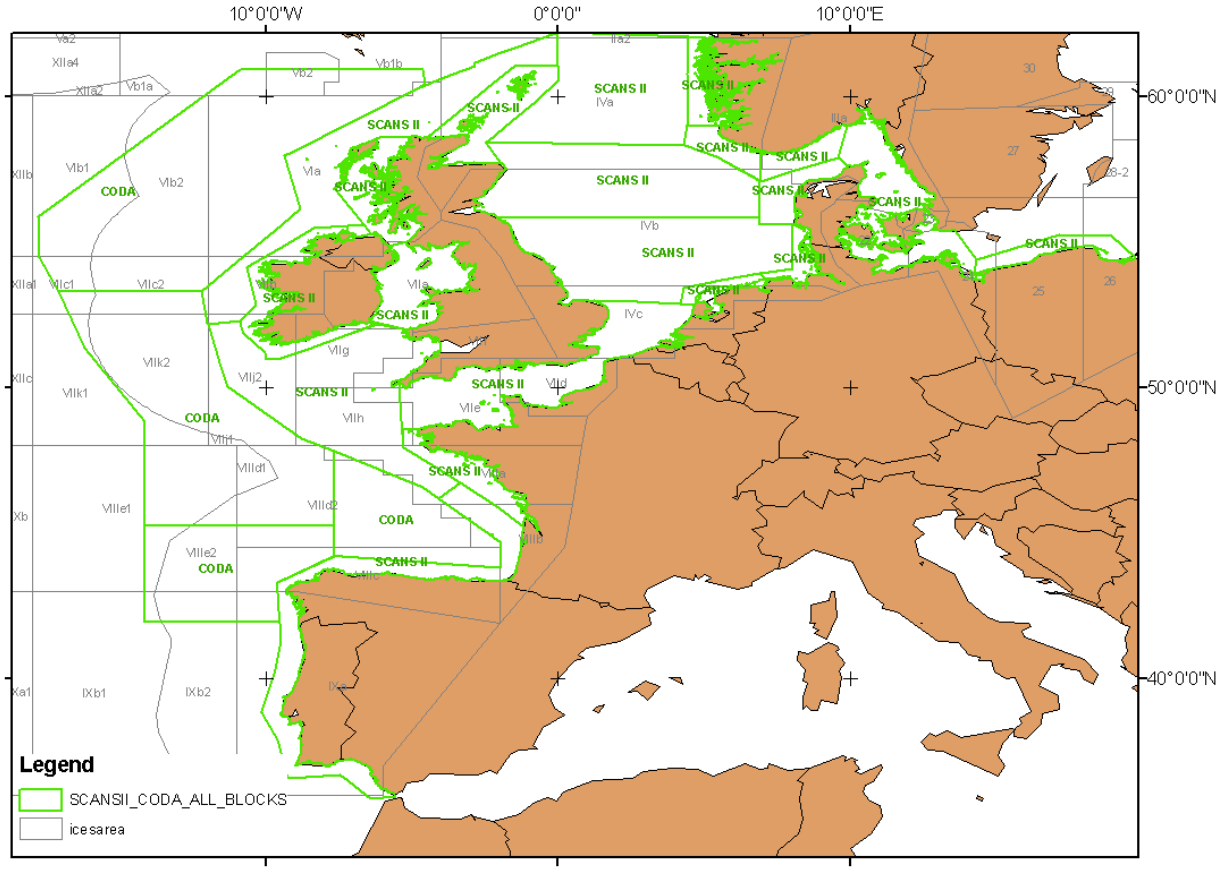


**Figure 1.5.1.5.1** SCANS and CODA survey blocks overlying ICES Statistical Areas

Estimation of bycatch rates

Likely bycatch rates were obtained both from published estimates and from interrogation of national bycatch monitoring databases. Where feasible, these rates were expressed as days at sea per animal caught and/or tonnes of fish landed per animal caught, and were subsequently used to determine whether a given level of fishing effort or landings within each region could be considered likely to take as many as 1.7% of the best estimates of animal abundance.

Effort estimation

Effort data were compiled from a variety of data and some crude extrapolations were used where some data were lacking. Days at sea for static net vessels were available for many of the fleets operating in the Baltic, North and Celtic Seas (ICES Subareas VI, VII, and Divisions VIIIab) from National Fleet Statistical Databases, but some data were incomplete. Finnish data are a minimum estimate because effort data in the published accounts relate to days at sea by boats using specific mesh sizes, and it is not possible to derive an overall figure for static net fleet effort from them. Data from Latvia and Estonia could not be located.

Data from Germany exclude vessels under 8m in length in the Baltic and vessels under 10 m in the North Sea. Norwegian days at sea were estimated from tonnes landed from gillnet vessels on the conservative assumption that catch rates per day at sea were slightly less than Swedish vessels for which both landings and days at sea were available. Swedish effort data were estimated days at sea based on reported net.hours of fishing effort from monthly and daily logbook data. Danish, UK, Dutch, Belgian, Irish and French data were taken from national fishing fleet / logbook data. Spanish effort data were lacking and data were taken from a published paper (Lopez *et al*., 2003) which gives numbers of vessels for Galicia alone, as well as an estimate of the number of fishing trips per boat per year. Portuguese data were taken from the number of polyvalent vessels and the number of static net licences and on the assumption of 200 days at sea per year per boat.

Fishing effort data for the Mediterranean was only available for Italy. Official statistics for the Italian fleet give both the number of vessels using nets and the size of the small vessel fleet ("picola pesca") that utilise more than one gear type, and an estimate of the number of days at sea by vessels using static nets. These two figures suggest that on average an Italian polyvalent/gillnet boat fishes for about 78 days per year. This same number was used to give an approximate idea of the amount of fishing (days at sea) for the remaining Mediterranean fleet, for which the number of vessels was the only available information. While this may not be a very reliable figure, 78 days at sea per year per vessel is a conservative figure, and the aim here is simply to obtain some perspective on the likely scale of fishing activity compared with other regions. The number of vessels using gillnets or small polyvalent vessels for Mediterranean EU member states were taken from several publications.

Methods for bycatch assessment per region and comparison with 1.7%

ICES found it impossible, with the data available, to assess bycatch of cetaceans with any great precision. The possible scale of bycatch was calculated by multiplying observed bycatch rates by the relevant figure for effort in each Management Region. The two extremes of possible scale of bycatch were then compared with the 1.7% of best abundance estimate for each species. It should be obvious from this that the "real" level of bycatch may lie outside the limits calculated (either above or below), but these calculations provided at least a balance of best available evidence upon which ICES could base its advice.

**Sources**

Anon. 2010. Mitigation of Incidental catches of cetaceans in EU waters. European Parliament Study IP/B/PECH/IC/2009-39. 154pp.

ICES. 2010. Report of the workshop on the Review of Regulation 812/2004 (WK812REV). ICES CM 2010/ACOM:57. Xx pp.

IWC. 2000. Report of the IWC-ASCOBANS Working Group on Harbour Porpoises. Journal of Cetacean Research and Management, (Supplement) 2: 297-305.

López, A., Pierce, G. J., Santos, M. B., Gracia, J., Guerra, A. 2003. Fishery by-catches of marine mammals in Galician waters: results from on-board observation and an interview survey of fishermen. Biological Conservation, 111: 25-40,

## 1.5.1.6 Special Request Advice October 2010

## ECOREGION General Advice
## SUBJECT EC request on cetacean bycatch Regulation 812/2004, Item 4

**Advice Summary**

Regulation 812/2004 requires Member States to undertake specified actions in certain fisheries to reduce cetacean bycatch. ICES has evaluated current mitigation measures (including bycatch observation schemes) and provides advice on their effectiveness and cost.

**Request**

*"As part of the Memorandum of Understanding between the European Commission and ICES, the Commission has a standing request to ICES to review the situation of incidental catches of cetaceans and the status of small cetaceans in European waters.*

*Beyond this standing request, ICES has been requested in 2008 to base its advice on the assessment of the Member States annual reports on the implementation of certain provisions of Council Regulation (EC) No 812/2004.*

*We would like to renew such request, and ask ICES to consider the following elements in the next assessment and advice:*

*4.* ***Provide an evaluation of mitigation measures currently in place and an assessment on the most recent developments of mitigation measures used to reduce the incidental catches of cetaceans, including information on cost.***

**ICES Advice**

**Mitigation measures currently in place**

ICES advises that acoustic deterrents, using basic tonal 10 khz signals and more complex multi-signals, deployed on static gear are effective in reducing the bycatch of **harbour porpoises**.

ICES advises that there is no evidence that currently available acoustic deterrents are effective in reducing bycatch of **common dolphins in static gear** over the longer term.

ICES advises that there have been mixed results in the use of acoustic deterrents in reducing bycatch of **common dolphins in pelagic trawls**. The use of certain acoustic deterrents has resulted in substantial reductions in bycatch rate of common dolphins in UK and French pelagic trawl fishery for bass. These results though have not been repeated consistently elsewhere.

ICES advises that there are limited and mixed experimental results on the effects of commercially available acoustic deterrents on the behaviour of **bottlenose and striped dolphins**. These devices have not been demonstrated to be effective in reducing the bycatch of these species. One study of a prototype acoustic deterrent, the AquaTech 363 interactive, demonstrated a change in the behaviour of bottlenose dolphins. This does not necessarily mean that these devices would work in commercial fisheries and in all areas.

ICES advises that the implementation of regulation 812/2004 in respect of the use of acoustic deterrents is poor. There are no official records of the numbers of boats that are carrying such deterrents but a combination of factors associated with cost, reliability etc have resulted in sporadic uptake by fishermen in spite of legal requirements. Vessels in a number of countries have been using deterrents and some countries have been taking initiatives to improve uptake and usage, and it is likely that the use of pingers by these vessels has reduced the total number of incidental deaths of harbour porpoises over the past few years.

ICES advises that it has proved difficult to monitor and enforce the use of acoustic deterrents required under Regulation 812/2004 given the difficulties in testing whether devices are operational or whether fishermen have properly deployed them on gear.

ICES advises that observation schemes are essential in both determining whether mitigation measures are needed and whether mitigation measures that are deployed are working. Regulation 812/2004 does not require that observations are

made on vessels using compulsory mitigation measures. ICES notes that this reduces the usefulness, to the fishing industry, of the deployment of mitigation measures.

**Evaluation of other mitigation measures**

ICES advises that gear modifications as mitigation measures have shown that none of these alternative mitigation measures are superior to acoustic deterrents. For example, nets that are impregnated with barium sulphate have been tested in several places with mixed success and little agreement as to which characteristics of these nets could reduce bycatch rates although further testing is currently underway.

ICES notes that a reduction in fishing effort with static gear in the North Sea has occurred since the early and mid 1990s, at least in the UK and Danish fleets. ICES has no reason to doubt that this will have led to a reduction in overall harbour porpoise bycatch in this Region.

**Mitigation costs**

ICES advises that the cost of acquiring acoustic deterrents for static nets varies between about € 60 and € 134 per 200 m of net (e.g. between € 6000 and € 13 400 for 20 km of nets) depending on the brand purchased. Sales of acoustic deterrent units has been below expectation so far and costs could decrease if market volume increased. There are additional costs associated with periodic maintenance, the replacement of batteries and replacement of units due to loss. The costs for other mitigation measures including reduction in effort with static gear, displacement of effort and others have not been quantified and would be expected to vary depending on the fishery.

*Recommendations*

ICES recommends that research be carried out to determine if a suitable acoustic device can be devised that will be effective in deterring dolphins over the longer-term away from static nets and to determine the characteristics of acoustic devices that are the most effective in deterring dolphins from pelagic trawls.

**Basis of advice**

**Mitigation measures currently in place**

The effectiveness of acoustic deterrents is well established for harbour porpoises using basic tonal 10khz pingers and more recently using more complex multi signal ADDs such as DDDs (ICES, 2010). With respect to common dolphins, there is little evidence that commercial pingers are effective in gillnets.

Studies conducted by IFREMER in France through an EU funded project carried out major research identified some deterrent systems for common dolphins. A directional acoustic deterrent (CETASAVER) was also developed for common dolphins in pelagic trawls with some positive results. A sequence of acoustic signals in DDDs has been identified with a strong behavioural response in common dolphins but not in all geographic areas. The use of DDDs in the UK pelagic trawl fishery for bass has led to a substantial reduction in bycatch rate.

In the case of bottlenose and striped dolphins, there is limited information. For bottlenose dolphin, the majority of studies have been carried out in relation to reduction of depredation and damage to fishing nets as opposed to bycatch mitigation or deterrent effect of acoustic deterrents. An Irish study on the AquaTech 363 on bottlenose dolphins in the resulted in positive results nut generally, there is limited information on the effects of commercially available acoustic deterrents on the behaviour of this species. For striped dolphin, the limited research conducted indicated no reaction to the active alarm.

**Evaluation of other mitigation measures**

No other useable mitigation measure

**Mitigation costs**

Control and enforcement agencies in a number of countries have indicated that relevant parts of Regulation 812/2004 are practically unenforceable given the difficulties in testing whether devices are operational or whether fishermen have deployed them on gear. German and Danish authorities commissioned a project to develop a monitoring device which would permit inspection of set nets to determine if acoustic deterrents were functioning properly. Monitoring without fishermen necessarily being onsite or retrieving their nets was an additional requirement.

Annual costs of deploying ADDs vary considerably in relation to the technology employed in the devices and the rate of loss in specific fisheries. The costs are not considered to be insignificant for gillnet fisheries. Several countries have, however, instigated grant aid schemes or provided fishermen with pingers free of charge.

The costs of acoustic deterrent devices depend both on the brand of the units purchased and the maximum spacing requirements for the particular units purchased. Some units are more expensive than others but have a larger maximum spacing which reduces the cost per meter. Table 1.5.1.6.1 provides an illustration of the acquisition costs of acoustic deterrents for 20 km of nets.

**Table 1.5.1.6.1** Initial outlay costs for different pinger types for mitigation of harbour porpoise bycatch in static nets (based on 20km of gillnets (based on Cosgrove *et al*. 2006, with updates). *Tests on spacing have been conducted on Aquamark; these indicate that a wider spacing leading to a reduction to 40 pingers per 20km may still be effective. These tests have not been conducted with other pinger makes.

| **Brand** | **Airmar** | **Aquamark** | **Fumunda** | **Savewave** | **DDDs** |
|---|---|---|---|---|---|
| No. pingers required | 200 | 100* | 200 | 100 | 50 |
| Unit cost (€) | 46 | 80 | 67 | 60 | 178.40 |
| **Total Outlay** | **€ 9200** | **€ 8000** | **€ 13400** | **€ 6000** | **€ 8920** |

Costs for other alternative measures such as reduction of effort have not been estimated. As for switching to potential alternative fishing gears such as pots, studies have been conducted in a number of countries including Sweden, Germany, Norway, Canada, Faroe Islands and Iceland but in most cases, catch rates were lower than those of gillnets which would result in lower economic returns. Costs for switching to alternative gears also remain a major disincentive for fishermen.

**Sources**

Cosgrove, R., Browne, D. and Robson, S. 2006. Assessment of acoustic deterrent devices in Irish gill net and tangle net fisheries. Marine Technical Report, BIM. Unpublished.

ICES. 2010. Report of the Workshop on the Review of Regulation 812/2004 (WK812REV). ICES CM 2010/ ACOM:57. Xx pp.

# ECOREGION General Advice
# SUBJECT EC request on cetacean bycatch Regulation 812/2004, Item 5

**Advice Summary**

Regulation 812/2004 requires Member States to undertake specified actions in certain fisheries to reduce cetacean bycatch. ICES has reviewed information on effectiveness of mitigation measures for cetacean bycatch and provides advice on the most efficient method for each fishery that may have a bycatch of cetaceans greater than 1.7% of the relevant best estimate of population abundance..

**Request**

*"As part of the Memorandum of Understanding between the European Commission and ICES, the Commission has a standing request to ICES to review the situation of incidental catches of cetaceans and the status of small cetaceans in European waters.*

*Beyond this standing request, ICES has been requested in 2008 to base its advice on the assessment of the Member States annual reports on the implementation of certain provisions of Council Regulation (EC) No 812/2004.*

*We would like to renew such request, and ask ICES to consider the following elements in the next assessment and advice:*

*5.* ***Following the assessment made in point b) identify the most efficient mitigation measure for each species concerned by Reg.812/2004 and according to the fishing gear in use.***

**ICES Advice**

ICES advises that the most effective mitigation measure is to cease fishing using gears that pose a risk to cetaceans. While this may be an option in certain circumstances, ICES recognises that this may have unacceptable social and economic consequences. Spatial and/or temporal closures may be effective in areas or at times where cetacean occurrence is particularly predictable and seasonal. ICES notes that any closure would also require careful planning in order to avoid unwanted consequences such as displacement into areas or to gears that may have other unwanted environmental effects.

ICES advises that acoustic deterrents are the most efficient measure to reduce **harbour porpoise** bycatch in static nets if it is not possible to cease using static nets. All commercially available deterrents that have been tested are capable of reducing harbour porpoise bycatch, but the most suitable deterrent depends on the exact nature of each fishery, including length of net, method of gear deployment etc.

ICES advises that one type of acoustic deterrent, the DDD, has been proven efficient in reducing the bycatch of **common dolphins in pelagic trawl** fisheries for bass in the UK while another acoustic device (Cetasaver) that has been developed in France may reduce dolphin bycatch by about 50%. These devices are likely also to work in VHVO trawls.

ICES advises that there is as yet no proven and operational device to reduce bycatch of **common or bottlenose dolphins in static nets or of striped dolphins** in any net.

ICES advises that the choice of the most appropriate mitigation measure depends not just on efficiency, but on a balance of factors that could be examined in a formal cost-benefit study. Such studies can clarify the trade-offs between issues but ultimately there need to be societal choices and that is beyond the purview of ICES advice. An example would be the costs and benefits of mitigative actions for the critically endangered harbour porpoise in the Baltic Sea. Closures of fisheries would be the only way of guaranteeing no bycatch, but this may have unacceptable social and economic consequences.

*Recommendations*

ICES recommends that the manufacturers of acoustic deterrents should be encouraged generally to improve reliability and robustness of their devices and to provide cost effective ways of ensuring that their devices are working.

ICES recommends that further experimental and developmental work is required in commercial fisheries, especially for pelagic trawls (common dolphin bycatch in the Atlantic and striped dolphin bycatch in Mediterranean) and to reduce bycatch of common/striped and bottlenose dolphin bycatch in static net fisheries.

**Basis of advice**

It is reasonably obvious that the cessation or limitation of fishing would lead to a reduction in bycatch. The reduction in static net effort (partly due to quota limitations) in parts of the North Sea may be one reason why the numbers of bycaught harbour porpoises have declined in recent years.

Fishery closures are not though straightforward in their results. Fishery closures can cause displacement, either geographically or into a different type of fishery. A geographic closure may, under some circumstances, place the overall population of cetaceans at a greater risk of bycatch than existed previously. This may particularly occur if the displacement leads to greater fishing effort to compensate for lower catches of fish per unit effort. A displacement to a different fishing method may cause a different unwanted environmental effect.

A temporary closure would be most effective in areas where there is a predictable temporal peak in cetacean abundance or bycatch. One example of this appears to occur with bycatch of harbour porpoises in bottom-set static nets in the Black Sea, where a peak in bycatch appears to occur in spring.

A variety of techniques have been suggested to reduce bycatch of harbour porpoises in static nets. These include a variety of acoustic devices, netting impregnated with material to make them more acoustically opaque and/or stiffer, and ropes containing air (air bubbles are good reflectors of porpoise echo-location sounds). Among these suggestions, only acoustic devices and netting impregnated with barium sulphate have been tested, with only the former being demonstrated to be effective.

Grid technology, escape panels and acoustic deterrents have been tested to reduce catch of common dolphins in pelagic trawls for bass. The first two were found to be only partially successful and were comparatively difficult to rig and use. Several types of acoustic deterrents have been tested with only limited success with only one make being effective. The reasons for this effectiveness are not known.

There is no proven and operational device to reduce bycatch of common dolphins in static nets. Common dolphin bycatch has been reduced at least initially in at least one driftnet fishery, but this reduced rate did not last; so as yet there is no proven and reliable means of using acoustic deterrents to achieve long term bycatch reduction, though trials using DDDs are underway in the UK. Insufficient research/development has occurred to be able to provide reliable advice for mitigation measures to reduce bycatch of bottlenose dolphins in static nets.

**Sources**

ICES. 2010. Report of the workshop on the Review of Regulation 812/2004 (WK812REV). ICES CM 2010/ACOM:57. Xx pp.