

MARINE ENVIRONMENT PROTECTION  
COMMITTEE  
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Agenda item 10

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## **IDENTIFICATION AND PROTECTION OF SPECIAL AREAS AND PSSAs**

### **Information on recent outcomes regarding minimizing ship strikes to cetaceans**

#### **Submitted by the International Whaling Commission**

#### **SUMMARY**

*Executive summary:* This document provides information on recent outcomes regarding minimizing ship strikes to cetaceans since the adoption of the IMO guidance document in 2009 (MEPC.1/Circ.674). This includes identified high risk areas where measures to reduce risk may come before the Committee, possibly through proposals to establish PSSAs and Associated Protective Measures. The International Whaling Commission (IWC) is also seeking collaboration on data collection to improve understanding of the issue and inform mitigation measures.

*Strategic direction:* 5.2, 7.1

*High-level action:* 5.2.4, 7.1.2

*Output:* 5.2.4.1, 7.1.2.2

*Action to be taken:* Paragraph 24

*Related documents:* Resolutions A.982(24) and MEPC.267(68); MEPC.1/Circ.674; MEPC 59/18; MEPC 58/18/1, NAV 58/INF.8; COLREG.2/Circ.64 and COLREG.2/Circ.65

#### **Introduction**

1 Collisions between whales/dolphins and ships occur worldwide where vessel activities overlap with cetacean habitat. Collisions can cause damage to vessels and lead to injury and/or death of cetaceans.

2 In response to this threat, in 2009 the Committee issued guidance on minimizing the risk of ship strikes to cetaceans (MEPC.1/Circ.674). The International Whaling Commission (IWC) was closely involved in the development of MEPC.1/Circ.674. Since then, the IWC has

continued to work on the issue with ongoing efforts to address the problem through a Ship Strikes Working Group, two dedicated ship strike data coordinators, regular discussions of new research at annual meetings of IWC's Scientific Committee, and two major collaborative international workshops (IWC/63/CC8<sup>1</sup>; IWC/65/CCRep01<sup>2</sup>).

3 Currently, the only proven, effective mitigation measures are to avoid areas with known concentrations of whales, and reduce speed while transiting those areas. Such measures require the identification of high risk areas through detailed studies of patterns of whale and vessel distribution. Some high risk areas may be appropriate for designation as PSSAs with associated routing measures or speed restrictions. Paragraph 2.2 of the *Revised guidelines for the identification and designation of PSSAs* (Assembly resolution A.982(24), as amended by resolution MEPC.267(68)), identifies ship strikes of marine mammals as a physical impact that may cause harm to such mammals. Paragraph 4.4.2 also identifies "critical habitat" for an endangered marine species as an appropriate criteria for PSSA designation.

4 The aim of this document is to provide an update of relevant information to the Committee to complement MEPC.1/Circ.674, which may be of particular interest in the context of PSSAs and the identification and effectiveness of possible Associated Protective Measures (APMs).

### **Measures to reduce risk taken by the IMO since 2009 to reduce ship strike risk to whales**

5 In December 2012, changes to the shipping lanes in the Santa Barbara Channel, off San Francisco, California, United States were adopted in order to reduce ship strike risk to blue whales (COLREG.2/Circ.64).

6 A Traffic Separation Scheme to minimize overlap between shipping routes and humpback whale migration routes off the Pacific coast of Panama was adopted in May 2014 and came into effect on 1 December 2014 (COLREG.2/Circ.65). The measures also include a reduction in vessel speed for four months every year during winter.

### **Global database of ship strike incidents**

7 Since 2007, the IWC has been developing a global database of collisions between ships and whales with collaboration from several IMO Member Governments and the Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS). The objectives are to contribute to a better understanding of the scale of the problem, of the factors that relate to risk (such as ship type and speed), to estimate ship strike mortalities for whale populations, to identify high risk areas and inform mitigation measures. Since 2013, the IWC has employed two dedicated database coordinators. Following an overhaul to the database system there are around 250 new reported incidents that will be entered in 2016 adding to the circa 1,200 existing records.

8 The primary aim of the current phase of work is to increase collection of data on ship strike incidents. The IWC seeks collaboration with IMO Member Governments and requests that information on collisions with cetaceans that is gathered through national mechanisms be submitted to the Ship Strikes Database, following guidance MEPC.1/Circ.674 (MEPC 58/18/1). All entries will be verified by the IWC Ship Strike Data Review Group. The database is open to the public and records can be submitted via the IWC website (<https://iwcc.int/ship-strikes>).

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<sup>1</sup> IWC/63/CC8. Report of the Joint IWC-ACCOBAMS Workshop on Reducing Risk of Collisions between Vessels and Cetaceans

<sup>2</sup> IWC/65/CCRep01. Report of the Joint IWC SPAW Workshop to Address Collisions Between Marine Mammals and Ships with a Focus on the Wider Caribbean

## Further studies of the relationship between vessel speed and risk

9 The IWC Scientific Committee has identified the need for a better understanding of the relationship between vessel speed, the risk of death or injury to the whale and damage to the vessel. It has considered a number of studies and approaches since 2009 when MEPC.1/Circ.674 was adopted. All the studies considered have confirmed an increased risk with increased speed, supporting the use of speed restrictions as a way of reducing risk. Some studies have attempted to quantify the speed-risk relationship for specific whale species (Conn and Silber, 2013<sup>3</sup>) or the hydrodynamic forces in relation to speed (Silber et al., 2010<sup>4</sup>). Others (e.g. Wiley et al., 2011<sup>5</sup>) have evaluated the relative risk reduction that might be achieved by speed restrictions. In addition to studies based on collisions, studies based on observations of whales close to vessels have inferred greater collision risks with increases in speed (Gende et al., 2011<sup>6</sup>; Harris et al., 2012<sup>7</sup>).

10 In the five years after the enactment of mandatory 10 knot speed restrictions in several Seasonal Management Areas along the Atlantic coast of the United States, there were no right whale mortalities attributed to ship strikes either in, or within 45 NM of these areas. These results indicate a statistically significant reduction in right whale ship strikes in these areas suggesting that the speed limits have been effective (Laist et al., 2014<sup>8</sup>).

## Collaborative workshops organized by the IWC and with IWC participation

11 A Joint IWC-ACCOBAMS Workshop on Reducing Risk of Collisions between Vessels and Cetaceans<sup>1</sup> was held in September 2010. Participants from 17 countries represented a broad range of research groups, shipping organizations, government agencies and NGOs. The scientific objectives of the Workshop were to identify high risk areas based on reported collision incidents and the overlap between whale distribution with shipping traffic, with a view to identifying and evaluating mitigation measures for these areas. The geographical focus was on the Mediterranean Sea and the Canary Islands. Italy, Spain, France and Monaco had previously presented work to address the ship strike issue in the Mediterranean (MEPC 59/18) including speed recommendations in the Strait of Gibraltar and alterations to the Cabo de Gata Traffic Separation Scheme.

12 A subsequent ship strike mitigation workshop<sup>9</sup> focusing on the Canary Islands, was held in October 2012, with strong participation from shipping interests. The Workshop noted interest in developing a compilation of information for mariners that describes precautions and regulations established to protect the marine environment. It also noted the importance of explaining to operators the rationale behind given protective areas. It recommended development of a mariner's guide to large whale conservation measures in the North Atlantic Ocean Guide, that, when completed, may be presented to the IMO.

<sup>3</sup> Conn, P. B. and G. K. Silber (2013). Vessel speed restrictions reduce risk of collision-related mortality for North Atlantic right whales. *Ecosphere* 4(4): 1-16.

<sup>4</sup> Silber, G. K., J. Slutsky and S. Bettridge (2010). Hydrodynamics of a ship/whale collision. *Journal of Experimental Marine Biology and Ecology* **391**: 10-19.

<sup>5</sup> Wiley, D. N., M. Thompson, R. M. Pace and J. Levenson (2011). "Modelling speed restrictions to mitigate lethal collisions between ships and whales in the Stellwagen Bank National Marine Sanctuary, USA." *Biological Conservation* 144: 2377-2381.

<sup>6</sup> Gende, S. M., A. N. Hendrix, K. R. Harris, B. Eichenlaub, J. Nielsen and S. Pyare (2011). A Bayesian approach for understanding the role of ship speed in whale-ship encounters. *Ecological Applications* 21(6): 2,232-240.

<sup>7</sup> Harris, K. R., S. M. Gende, M. G. Logsdon and T. Klinger (2012). Spatial pattern analysis of cruise ship-humpback whale interactions in and near Glacier Bay National Park. *Env. Manage.* 49: 44-54.

<sup>8</sup> Laist, D., A. Knowlton and D. Pendleton (2014). Effectiveness of mandatory vessel speed limits for protecting North Atlantic right whales. *Endangered Species Research* 23: 133-147.

<sup>9</sup> Tejedor et al. 2013. Report of a workshop to develop a plan to reduce the risk of whale – ship strikes. 25-26 October 2012. Santa Cruz de Tenerife (Canary Islands, Spain).

13 A joint IWC and UNEP-CEP-SPAW<sup>10</sup> Ship Strikes Workshop was hosted by Panama in June 2014<sup>2</sup>. A key recommendation with respect to IMO is to develop an appropriate mechanism to enable consideration of cetacean distribution and occurrences for proposed new or revised routing schemes and/or speed restriction.

### General advice on minimizing ship strike risks to whales and examples of actions taken

14 In 2015, the IWC Scientific Committee developed the following table as a summary of possible mitigation measures to reduce risk.

**SUMMARY TABLE OF SHIP STRIKE MITIGATION MEASURES THAT HAVE BEEN IMPLEMENTED WORLD WIDE**

| Measure  | Situation to which it might be applied  | Implementation process (and observations)   | Examples   |
|--|---|---|--|
| <b>Keeping vessels away from whales</b>                              |   |   |  |
| Permanent routing measures through TSS, ATBA or port approach routes | Long-term patterns of whale distribution are sufficiently predictable and well understood to enable a robust analysis of the risk reduction that might be achieved              | Implemented through IMO or national regulation if within territorial sea. Proposals should follow the IMO process including data on the problem, the risk reduction achieved and implications for shipping. (Generally well respected by industry.) | Bay of Fundy, Canada; Boston, United States; California, United States; Panama; Cabo de Gata, Spain          |
| Seasonal routing measures  | Similar requirements to permanent routing but applicable where there are strong seasonal patterns in whale distribution   | As above.   | Roseway Basin, Canada; Great South Channel, United States  |
| Recommended (voluntary) routes                                       | Similar requirements to permanent routing through TSS or ABTA but not mandatory   | Implemented by IMO or coastal State as a non- mandatory measure.  | Peninsula Valdez, Argentina; Hauraki Gulf, New Zealand; Glacier Bay, United States; Ports on U.S. east coast |
| Short-term (days – weeks) and Dynamic routing measures               | Implemented in response to short- term observations of whale aggregations or known high risk areas. Need almost real-time reporting systems that can identify such aggregations | Voluntary measures that need to be communicated to mariners. (Can be difficult to encourage compliance.)  | DMAs off U.S. east coast; Gibraltar Strait   |

<sup>10</sup> United Nations Environment Programme – Caribbean Environment Programme - Protocol Concerning Specially Protected Areas and Wildlife

| Slowing vessels down   |   |  |  |
|--|---|--|--|
| Permanent speed restriction zones  | Long-term patterns of whale distribution are predictable and well understood but routing measures are not practicable   | Can be voluntary or mandatory if implemented in national waters.   | East coast of United States (mandatory); Glacier Bay, United States; Hauraki Gulf, New Zealand |
| Seasonal speed restriction zones   | As above but applicable where there are strong seasonal patterns in distribution  | As above.  | Panama; California, United States; Peninsula Valdez, Argentina                                 |
| Dynamic Management Areas for speed restrictions  | Implemented in response to short-term observations of whale aggregations or known high risk areas. Need reporting systems that can identify such aggregations                   | Voluntary measures that need to be communicated to mariners. (Can be difficult to encourage compliance.) | United States east coast   |
| Avoidance manoeuvres   |   |  |  |
| Real-time alerting tools to warn vessels of the presence of whales or aggregations that allow vessels to alter course or slow down | A rapid reporting network of whale sightings or acoustic detections alerts all vessels transiting an area to the locations of whales so that they can alter course or slow down | Individually designed and implemented reporting systems.   | REPCET, ACCOBAMS, Mediterranean Sea; WhaleAlert, Boston, United States                         |
| Observations from the vessel that allow avoiding action to be taken  | Only effective for vessels capable of rapid maneuvers to avoid whale sightings (e.g. vessels of a few thousand GT or less)  | Additional dedicated observers, education and outreach to mariners.                                      | Many initiatives   |

### Specific advice for shipping sectors

15 The IWC has also discussed developing specific guidance for other classes of vessels where there may be specific ship strike issues to that type of vessel not covered by the general guidance in MEPC.1/Circ.674. This may for example be useful to the cruise ship industry, where vessels are purposely visiting environmentally sensitive areas, or engaging in whale watching. Additionally, the ship strike data coordinators have been regularly reaching out to shipping companies, shipping associations and maritime high schools to disseminate awareness information and exchange views.

16 Collisions between sailing vessels and cetaceans have been reported for a number of species and vessel types. Many of these collisions have caused serious damage to the vessel or vessel loss, injured passengers or crew, as well as serious or fatal injury to the whale. Paragraph 12.2 of MEPC.1/Circ.674 states that measures should be taken to minimize ship strikes during offshore sailing races including planning routes to minimize the overlap with densities of cetaceans and cetacean habitat, and at times when there may be fewer cetaceans

in the area. The IWC has developed a further detailed guidance to provide information on the ship strike issue to sailors and regatta/offshore race organizers as well as highlighting mitigation options. The guidance covers four main subject areas, i.e. collating baseline data, route planning, informing sailors and reporting. In 2015, the IWC collaborated with WWF and the Volvo Ocean Race to develop specific guidance for competitors and organizers.

17 The IWC has reviewed possible technical solutions for helping to avoid collisions. These include acoustic deterrents to encourage whales to move away from vessels; infrared cameras and sonar systems to allow vessels to detect animals. However there are currently no technical devices available that have demonstrated practical and effective risk reduction.

**Areas identified as high risk to date by the IWC Scientific Committee where specific actions have been identified which result in proposals to the Committee**

***South Coast of Sri Lanka, Blue Whales***

18 Shipping routes across the northern Indian Ocean converge at the southern tip of Sri Lanka resulting in one of the highest open ocean densities of ship traffic globally. These routes, and the lanes associated with the Traffic Separation Scheme off Dondra Head, overlap with very high density areas of blue whales, concentrations of whale watching activity and coastal fisheries. Results of surveys designed to investigate blue whale distribution in relation to shipping have suggested that shifting the current TSS to the south would substantially reduce the ship strike risk and improve maritime safety. The IWC initiated a dialogue with the Sri Lanka authorities and shipping interests about possible routeing measures.

***Hellenic Trench, Greece, Sperm Whales***

19 Ship strikes are a recognized problem for the Mediterranean sperm whale sub-population which is classified as Endangered by IUCN. The Hellenic Trench southwest of Greece is a known area of high sperm whale density which coincides with major shipping routes. Given the high overlap of sperm whale sightings with shipping tracks, and the high incidence of evidence of ship strikes from stranded sperm whales, the IWC has initiated a dialogue with the Greek authorities on possible re-routeing measures and will also work closely with ACCOBAMS on this issue.

***Hauraki Gulf, New Zealand, Bryde's Whales***

20 The entrance through the Hauraki Gulf to the Ports of Auckland, New Zealand holds a year-round population of endangered Bryde's whales with 85% of known deaths being attributed to ship strikes (Constantine et al., 2015<sup>11</sup>). Whales are broadly distributed throughout the Gulf so re-routing traffic would not lessen the threat of vessel-strike. Ports of Auckland have issued a protocol for vessels transiting the Hauraki Gulf which includes recommendations such as allowing for reduced speed<sup>12</sup>.

***Canary Islands, Sperm Whales***

21 A Working Group for the Prevention of Ship-Strikes around the Canary Islands was established in 2014. Collisions with sperm whales are a particular concern, although a number of other species are also affected. The PSSA in the Canary Islands may facilitate

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<sup>11</sup> Constantine, R., M. Johnson, L. Riekkola, S. Jervis, L. Kozmian-Ledward, T. Dennis, L. G. Torres and N. Aguilar de Soto (2015). Mitigation of vessel-strike mortality of endangered Bryde's whales in the Hauraki Gulf, New Zealand. *Biological Conservation* 186: 149-157.

<sup>12</sup> [http://www.poal.co.nz/news\\_media/publications/POAL\\_HG\\_Protocol.pdf](http://www.poal.co.nz/news_media/publications/POAL_HG_Protocol.pdf)

implementation of ship strike mitigation measures. The mandatory reporting system for ships entering the PSSA could be a mechanism for relaying relevant information and guidelines to ships. Such measures might be coordinated through development of a dedicated regional conservation management plan for sperm whales in the Canary Islands.

### **Summary of information and materials available from IWC**

22 The IWC website introduces the issue of ships strikes to the general public and contains more detailed information and further reading, including links to the documents highlighted above. The ship strikes page is at <https://iwc.int/ship-strikes>, and the IWC Ship Strike Database can be accessed via <https://iwc.int/ship-strikes>.

23 The IWC has produced a range of other resources, including an information banner and a ready-to-use PowerPoint presentation. IWC Member Belgium produced an information leaflet on ship strikes with further advice to help reduce the risk of collisions.

### **Action requested of the Committee**

24 The Committee is invited to:

- .1 note this information and assist in making mariners and authorities aware of the ship strike issue including reporting any incidents to the IWC Ship Strike Database; and
  - .2 bring this information to the attention of Member Governments and international organizations to help inform mitigation actions.
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