

## ***IWC Guidance for Cruise Line Operators to Minimise Risk of Collisions with Cetaceans***

*Fabian Ritter, Simone Panigada*  
*April 2014*

Collisions between cruise ships and cetaceans have been reported for a number of species, with large whales being the most commonly reported hit. Many of these collisions have caused serious or fatal injury to the whale. Nevertheless, reported cases likely represent only a fraction of the total incidents.

Between 1999 and 2011, six collisions between whales and cruise ships were reported in Alaskan waters (Neilson et al., 2012). All of these ships had the whale stuck on their bow. Only a very small proportion of collisions are likely to result in the whale becoming stuck, but these are the ones that get noticed. In Antarctica, a humpback whale was killed after the collision with a cruise ship in 2007, and near misses have been reported, too (Ritter, 2010).

Many collisions go unnoticed, as a strike even with large whales may not be recognized by the ship's crew. This is even more likely for small cetaceans such as pilot whales, beaked whales or dolphins; these animals might very easily get struck without anyone knowing.

On the other hand, whales stuck on the bow receive a lot of (national and international) press attention, thus having a potential negative impact on the cruise company. For related reasons, captains or companies might be reluctant to report a ship strike, fearing "bad press" or even prosecution. (In 2007, a cruise ship company was fined with 750.000 \$ for failing to operate at slow speed around whales and hitting a whale in Glacier National Park, Canada).

Off the east coast of the United States, there are areas designed to reduce the collision risk for highly endangered North Atlantic right whales, where vessels are either required to avoid or, if transiting the area, to maintain speeds of less than 10 knots.

Moreover, the Traffic Separation Scheme (TSS) approaching the port of Boston has been moved so as to avoid the areas of highest whale density within the Stellwagen Bank National Whale Sanctuary. On the west coast of the USA, similar measures have been recently implemented including around the Channel Islands, a known hot spot for blue whales' presence. In the Mediterranean Sea, the TSS off Cabo de Gata (Southern Spain) was repositioned in 2006 due to a high abundance of pilot whales and other large vertebrate species. While these changes were implemented by IMO, mandatory shipping route systems can also be established by single nations within their territorial waters, e.g., in Glacier Bay National Park in Alaska, where shipping management measures were implemented by the US National Park Service. In the framework of their actions for the conservation of right whales, the US National Oceanographic and Atmospheric Administration (NOAA), in collaboration with the U.S. Coast Guards established a Mandatory Ship Reporting System for ships larger than 300 gross tons entering certain areas off New England and the States of Georgia and Florida to report their position, speed and trip details to a land based station. In return ships are informed about recent right whale sightings and precautionary measures to take in order to avoid strikes.

**A list of navigational mitigation measures currently in place is given in Annex 1.** It is important to note that in July 2009, IMO approved the Guidance Document "Measures to reduce ship strikes with cetaceans". This document identifies general principles for member states to monitor, assess, and mitigate vessel-strike risk in their waters.

There is currently insufficient information on the response of whales to approaching large vessels to suggest any technological solutions that are known to substantially reduce risk. The current options for reducing risk are therefore limited to avoiding actions by the vessel, reducing cruising speeds, or routing vessels away from areas with large numbers of whales. Taking action to avoid a collision requires both detecting the whale in time and an appropriate avoidance manoeuvre. Good visual lookouts may be kept on cruise ships with large crews in good sighting conditions during daylight hours, but their

effectiveness will be limited during poor weather or darkness. Cruise ships also have to comply with predetermined trip schedules. Consideration should be given for adjusting these schedules to allow for slower speeds in areas of high whale density.

Routing vessels away from known or likely concentrations of whales or timing passages during periods when whales are unlikely to be in the area will significantly reduce risk. This will be especially important for cruises that do not involve wildlife observation (i.e. whale watching) in their programme. In such cases, it will be comparably easy to adapt routes and plan voyages with a view to avoid sensitive areas. Also, during passages at night time, when no whale observation is possible (for both crew and passengers), it may be an option to move travel routes away from known or potential whale concentrations. There are a number of ways for providing routing advice or instructions at different spatial scales, depending on what data are available regarding whales for a specific region or area.

The IWC data base currently holds a considerable number of cases where the species struck is known: fin, humpback, right and sperm whales accounted for 69% of reported collisions where species was identified, suggesting particular attention should be given to these species.

In the Mediterranean Sea for instance, fin and sperm whales are the only large whales commonly sighted and fin whales are the most threatened species by ship strikes. Fin whales tend to concentrate for feeding purposes in the summer months in known areas, such as the Pelagos Sanctuary in the Central Mediterranean Sea, thus allowing concrete routing schemes and speed reduction protocols. Specific attention should be devoted to the regional or local scale, where feeding aggregations may result more unpredictable and vary over the short-medium term. Sperm whales are strongly influenced by bathymetry and tend to prefer slope areas, as for example the Hellenic Trench off the Greek coastline.

Both humpback and sperm whales are relatively well studied in terms of their habitat characteristics and movements and so there is potential to suggest routing advice based on oceanography, bathymetry and movement patterns. In some areas there are also considerable data from sightings surveys (shipboard or aerial), regular whale watching activities, satellite telemetry projects or historical whaling records of areas where concentrations of animals are likely. Fin and humpback whales may also have a distinct seasonal distribution; the latter species in particular can be concentrated on quite narrow migration routes.

However, there may well be areas with concentrations of other species such that these present the greatest collision risk. Particular attention should be devoted to areas where species distributional overlap, considering that species-specific mitigation measures may apply for one species and for another one.

In addition, the following procedure is suggested:

### **(1) Collating baseline data**

Before voyage planning, gather data on the seasonal and temporal patterns of whale distribution and movements along the selected routes. In many cases there will be no data, but the voyage may pass through certain habitat types that may relate to whale concentrations and inferences about seasonal migration may also be possible. Some of these areas might be designated as Marine Protected Areas (MPAs) for whales and other marine life. Gathering information on protected areas might thus help identifying potential cetacean hot spots (see reference list). If in doubt, you may also contact IWC ship strike data coordinators.

### **(2) Route planning**

(a) At the planning stage of the cruise, try to define routes that will cross likely features that concentrate whales (e.g. continental shelf break, large oceanic fronts) as close to perpendicular as possible. Also try to avoid areas of complex bathymetry such as seamount and gullies, with appropriate routing instructions for captains.

(b) During voyage planning, also compile information about (voluntary and mandatory) speed restrictions along the route (see Annex 1)). Abide by all recommended speed limits and arrange voyage plans accordingly.

### **(3) Informing captains, crew and staff**

(a) Ensure your captains and watch officers are properly informed about the risk of ship strikes and areas where whales are most likely to be encountered, so that if possible they can consider posting additional lookouts in these areas.

(b) Provide captains and crew with general advice on the species most likely to be encountered. For example, whales tend to aggregate, therefore seeing one is an indication that there are likely to be others in the area. Some behavioural characteristics are also relevant to collision risk (e.g. a sperm whale lifting its flukes is likely to dive deep for over 30 minutes, whereas a humpback whale lifting its flukes may only dive for a few minutes). Other whales, such as fin whales, do not show the fluke and their movements may be therefore harder to assess.

(c) All captains and crew should be provided with briefing materials on what to do and look for in the event of a collision (see also below).

(d) There is a variety of information material available to date, including manuals, leaflets, websites and dedicated tutorials. Operators should make sure that they know about these materials and forward them to captains, watch officers and other relevant staff. **A list of available education materials and resources is provided in Annex 2.**

(e) It will be equally important to include the issue into curricula at maritime high schools, institutions, seminars, or even on-board presentations. IWC is currently reaching out to a variety of educational institutions. Cruise operators might want to consider giving special internal lessons to their staff or facilitate on board information.

### **(4) Operational measures**

#### *(a) Reducing speed*

Slowing down when a whale is seen will always be a sensible short term measure. Remember that seeing one whale is often an indication that there may be others in the area. Speed restrictions as an important and effective measure to mitigate collision risk have been established in different areas around the globe. Although they often are voluntary, cruise companies are encouraged to instruct captains to always abide by recommended speed limitations. If the voyage was planned accordingly (see also above), this should not cause problems with predetermined schedules. **A list of areas where speed limitations exist is given in Annex 1.** In addition, allowing more time at sea has several benefits including reduced fuel consumption but also giving passengers more opportunities to see wildlife.

#### *(b) Avoidance of whales*

In case of a whale sighted ahead of the vessel, an avoidance manoeuvre might have to be initiated. Firstly, turning the vessel away from the spot where the whale (or its blow) has been sighted is paramount. Ideally, the ship will turn towards the opposite direction of the travel direction of the whale. This implies that helmsman or staff were able to identify the swimming direction of the animal, which is not always easy. Also, depending on their general behaviour, cetaceans can frequently change their direction while below the surface, thus surfacing unexpectedly. The longer the whale can be observed before the vessel comes so close that a collision risk evolves, the better the ship crew will be capable to adjust the vessels behaviour. Under ideal conditions, a whale might be seen miles ahead with several minutes remaining to (re)act.

#### *(c) If a collision occurred*

In the unfortunate case that a strike has happened, it is important that the animal is observed closely for as long as possible, to identify possible injuries and whether the whale still appears to be alive. Blood seen in the water would be indicative of major injury. Importantly, one must not forget to continue looking out closely for other whales in the vicinity, as cetaceans tend to congregate in certain areas. If the species and possibly an age class can be identified, this will be key information when reporting the

incident. Collecting navigational information at the time of an impact is most important. Ship speed, location, time of day, visibility, number of watch keepers as well as propeller RPM and any damage to the vessel will later help scientists to identify collisions risk and circumstances. All information should be compiled immediately and reported later on-line (see below).

*(d) If a near-miss occurred*

The IWC is also very keen on reporting near-miss events. Reports of events where a collision was narrowly avoided are very encouraged. Details on how the collision was avoided are important and should be described.

### **(5) Operational guidelines during whale watching activities**

In some situations a cruise ship may encounter whales and if the schedule allows, the decision might be taken to stay and observe them. If the whales are observed from the cruise ship then slowing down is the first response to reduce collision risk and allow passengers to view the whale. Numerous operators also include dedicated whale watching activities in their programme, e.g. from own Zodiacs during Artic/Antarctic expedition cruises. If small boats will be launched, whale-watching guidelines and local regulations for approaching whales and dolphins should be followed. In National EEZs or MPAs they should know and abide by any National whale watching regulations or guidelines]. Generally, it is most important to adhere to guidelines such as the ones developed by IAATO for both large ships and small boats (see <http://iaato.org/wildlife-watching-guidelines>), or take seriously into considerations the recommendations by the Scientific Committee of the IWC (see <http://iwc.int/wwguidelines#manage>).

### **(6) Technological solutions**

There is currently no technological solution available to ensure ships strikes can be effectively avoided. However, a number of options have been tested so far and/or are being further developed. They include night vision binoculars, infrared cameras, passive acoustic systems, real time transmission of whale sightings, etc. Cruise companies might consider applying some of them routinely or even contribute to research into technologies by testing them and documenting the results.

### **(7) Reporting**

Reporting ship strikes is paramount. Only through knowing how many collisions occur on a national, regional or global basis, scientists will be able to estimate collision risk for certain areas or mortality rates for whale species. In several countries, reporting of ship strikes is mandatory or requested. Mariners should familiarize themselves with reporting protocols in these countries.

Collecting data on collision events is critical to help understanding the problem and developing mitigation measures. The International Whaling Commission (IWC) has developed a global database and all incidents should be reported to the IWC (<http://iwc.int/ship-strikes> or by email to [shipstrikes@iwc.int](mailto:shipstrikes@iwc.int)).

Please note that reporting to the IWC data base is *for data collection purposes only*. Providing as much details as possible (including photographs or video) is important, as accurate reporting is essential for ultimate prevention. On the other hand, not reporting to appropriate National authorities is more likely to lead to negative consequences.

### **Conclusion**

As more information becomes available through co-operation between cruise companies and the shipping industry in general, there will be scope for developing more effective mitigation measures. At present however a good lookout and careful voyage planning are the most effective ways of reducing risk. If collisions with whales are taken into account at the planning stage then choosing routes and speeds to minimise risk will benefit whales and cruise operators alike.

By taking the issue of collision with whales seriously, companies are creating additional benefits. Making changes for whales can easily be used as a marketing tool, which is especially important for cruise line

managers. “Selling” whale friendly behaviour will likely increase recognition by customers. At the same time, operators can use their engagement to setting examples within the industry, thus encouraging other companies to follow the same route.

Finally, accurate reporting of incidents is essential for ultimate prevention. IWC’s data base serves as the global online tool to facilitate reporting collisions with whales. Reporting to the IWC data base is for scientific data analysis purposes only.

It has also to be stressed that *not* reporting to appropriate national or international authorities is more likely to lead to negative consequences than reporting and that legal liability only can apply if legislation has been breached. As long as the guidance given in this document is being followed, this should not be the case.

### **Outlook**

In the future, if awareness will be raised on a broader scale within the shipping industry, we envision a close co-ordination within associations e.g. via umbrella associations such as IAATO, AENA, etc. It might even be the case that a label for “best whale friendly practice” will be developed. In that sense, we emphasise that all measures and actions laid out in this document have to be adaptive. We should accommodate our rules and procedures accordingly when new knowledge arises. Working together with the IWC to develop mitigation measures and facilitate their practical application is recommended.

To foster the dialogue between scientists, shipping companies and cruise operators, the IWC has established two ship strike coordinators. To get in touch with the IWC ship strike data coordinators use the following email addresses:

Fabian Ritter - [ritter@m-e-e-r.de](mailto:ritter@m-e-e-r.de)

Simone Panigada - [panigada@inwind.it](mailto:panigada@inwind.it)

For further information on ship strikes please have a look at:

<http://iwc.int/ship-strikes>

**Annex 1:** Navigational mitigation measures, see page 6

**Annex 2:** Education materials & resources / reporting, see page 7

**ANNEX 1: Navigational ship strike mitigation measures currently in place**

**A) Relocation of shipping lanes**

State	Area (State)	Shipping lane/port affected	Measure(s)	Implementation	Implemented b	Cetacean related rationale	Notes
US	East Coast (Massachusetts)	TSS into Boston	reduction of width of shipping lane	Jun 2009	IMO	To avoid important large whale habitat within the Stellwagen Marine Sanctuary	<a href="http://www.nero.noaa.gov/shipstrike/doc/rm.html">http://www.nero.noaa.gov/shipstrike/doc/rm.html</a>
US	West Coast (California)	Channel Islands	TSS shifted northwards TSS shifted northwards New alternative TSS south of Santa Barbara Channel	Jun 2013	IMO	To avoid important blue whale habitat	<a href="http://channelislands.noaa.gov/focus/management.html">http://channelislands.noaa.gov/focus/management.html</a>
US	West Coast (California)	TSS into San Francisco	All three navigation lanes were extended	Jun 2013	IMO	To avoid overlap with blue and humpback whale feeding grounds	
CAN	East coast, Bay of Fundy	TSS Bay of Fundy	Funnels of navigation lanes became straight channels relocation of northern extent of TSS	Jul 2003	IMO	To avoid right whale concentrations	<a href="http://www.rightwhale.ca/shippinglanes.routesnavigation_e.php">http://www.rightwhale.ca/shippinglanes.routesnavigation_e.php</a>
ES	South Coast, Mediterranean Strait of Gibraltar, Alboran Sea	TSS off Cabo de Gata TSS Strait of Gibraltar	Relocation of TSS to the south Modification of TSS	Dec 2006 Dec 2006	IMO	To avoid important cetacean habitat	

**B) Mandatory/recommended shipping routes**

State	Area (State)	Waters/port affected	Measure(s)	Time frame	Implementation	Cetacean related rationale	Notes
US	East Coast (Massachusetts)	Cape Cod Area	recommended shipping routes		Nov 2006	NOAA	To avoid important right whale habitat <a href="http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm">http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm</a>
US	East Coast (Georgia)	Brunswick	recommended shipping routes		Nov 2006, updated Nov 2012	NOAA	To avoid important right whale habitat <a href="http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm">http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm</a>
US	East Coast (Florida)	Jacksonville	recommended shipping routes		Nov 2006	NOAA	To avoid important right whale habitat <a href="http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm">http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm</a>
US	East Coast (Florida)	Fernandina	recommended shipping routes		Nov 2006	NOAA	To avoid important right whale habitat <a href="http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm">http://www.nmfs.noaa.gov/pr/shipstrike/routes.htm</a>
US	West coast (Alaska)	Glacier Bay National Park	recommended shipping routes		1981 (latest update Jul 2013)	Park Service	To avoid humpback whale concentrations <a href="http://www.nps.gov/giba/parknews/whale_waters-update-13jul2013.htm">http://www.nps.gov/giba/parknews/whale_waters-update-13jul2013.htm</a>
ARG	Province of Chubut	Golfo Nuevo, Peninsula Valdez	recommended navigation corridor	1 Jun - 30 Nov	2009 (latest update 2010)	Argentine Coast Guard	To reduce encounter probability between ships and southern right whales

**C) Areas to be avoided (ATBA)**

State	Area (State)	Waters/port affected	Measure(s)	Time frame	Implementation	Cetacean related rationale	Notes	
US	East Coast (Massachusetts)	Great South Channel off Boston	ATBA for ships larger than 300 GT	1 Apr - 31 Jul	Jun 2009	IMO	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/shipstrike/archive.htm#routing">http://www.nmfs.noaa.gov/pr/shipstrike/archive.htm#routing</a> <a href="http://www.nea.gov/conservation_and_research/projects/tools_for_conservation/gis/projects/right_whales_and_gis/shipping_lanes_and_gis/roseway_basin_01">http://www.nea.gov/conservation_and_research/projects/tools_for_conservation/gis/projects/right_whales_and_gis/shipping_lanes_and_gis/roseway_basin_01</a>	only applies to ships > 300 GT
CAN	East Coast (Nova Scotia)	Roseway Basin	ATBA for ships larger than 300 GT	1 Jun - 31 Dec	May 2008	IMO		recommendatory for all vessels > 300 GT

**D) Speed reduction**

State	Area (State)	Waters/port affected	Measure(s)	Time frame	Implementation	Cetacean related rationale	Notes	
US	East Coast (Massachusetts)	Cape Cod Bay SMA*	Seasonal SMA, mandatory 10 knots speed restriction	1 Jan - 15 May	2008, renewed in 2013	NOAA	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/shipstrike/archive.htm#routing">http://www.nmfs.noaa.gov/pr/shipstrike/archive.htm#routing</a>	applies to all vessels equal or greater than 20 m
US	East Coast (Massachusetts)	Off Race Point SMA*	Seasonal SMA, mandatory 10 knots speed restriction	1 Mar - 30 April	2008, renewed in 2013	NOAA	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/shipstrike/">http://www.nmfs.noaa.gov/pr/shipstrike/</a>	applies to all vessels equal or greater than 20 m
US	East Coast (Massachusetts)	Great Sout Channel SMA*	Seasonal SMA, mandatory 10 knots speed restriction	1 May - 31 Jul	2008, renewed in 2013	NOAA	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/shipstrike/">http://www.nmfs.noaa.gov/pr/shipstrike/</a>	applies to all vessels equal or greater than 20 m
US	US - Mid Atlantic	6 Seasonal SMAs*	mandatory 10 knots speed restriction	1 Nov -30 Apr	2008, renewed in 2013	NOAA	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/shipstrike/">http://www.nmfs.noaa.gov/pr/shipstrike/</a>	applies to all vessels equal or greater than 20 m
US	US - Southeast	Brunswick, Fernandina, Jacksonville SMA*	mandatory 10 knots speed restriction	15 Nov - 15 Apr	2008, renewed in 2013	NOAA	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/shipstrike/">http://www.nmfs.noaa.gov/pr/shipstrike/</a>	
US	US - Northeast	DMA**	recommendation to avoid these areas or reduce speed to 10kn		2002	NOAA	To protect unexpected aggregations of right whales <a href="http://www.nero.noaa.gov/whaletrp/plan/dam/">http://www.nero.noaa.gov/whaletrp/plan/dam/</a>	
US	West coast (Alaska)		General provision that "vessels operate at a slow, safe speed when near a humpback whale"			NOAA	<a href="http://www.nps.gov/giba/2010-07-08.htm">http://www.nps.gov/giba/2010-07-08.htm</a>	
US	West coast (Alaska)	Glacier Bay National Park	mandatory 10 kn speed limitation			Park Service	To protect humpback whales <a href="http://www.gpo.gov/fdsys/pkg/CFR-2012-title36-vol1/pdf/CFR-2012-title36-vol1-sec13-1174.pdf">http://www.gpo.gov/fdsys/pkg/CFR-2012-title36-vol1/pdf/CFR-2012-title36-vol1-sec13-1174.pdf</a>	
US	West Coast (California)	Shipping lanes into Los Angeles and Long Beach	recommended 10 kn speed reduction when blue whales are in the area			NMFS, US Coast Guards	<a href="http://channelislands.noaa.gov/focus/alert.html">http://channelislands.noaa.gov/focus/alert.html</a>	
ES	Strait of Gibraltar		recommendation to reduce speed to 13 kn	Apr - Aug	Jul 2007	IMO		
ARG	Province of Chubut	Golfo Nuevo, Peninsula Valdez	10 knots speed limit within navigation corridor	1 Jun - 30 Nov	2009	Argentine Coast Guard	To reduce collision risk between southern right whales and ships	

**E) Other measures**

State	Area (State)	Waters/port affected	Measure(s)	Time frame	Date of Implementation	Cetacean related rationale	Notes	
US	East Coast (Massachusetts)		Mandatory Ship Reporting systems (MSR)	year round	Jul 1999	IMO	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/pdfs/shipstrike/coastpilots.pdf">http://www.nmfs.noaa.gov/pr/pdfs/shipstrike/coastpilots.pdf</a>	all commercial vessels > 300 GT are required to report to shore-based stations when they entered either of the two regions
US	East Coast (Georgia & Florida)		Mandatory Ship Reporting systems (MSR)	15 Nov - 15 April	Jul 1999	IMO	To reduce collision risk between right whales and ships <a href="http://www.nmfs.noaa.gov/pr/pdfs/shipstrike/coastpilots.pdf">http://www.nmfs.noaa.gov/pr/pdfs/shipstrike/coastpilots.pdf</a>	

\* SMA = Seasonal Management Area (mandatory)

\*\* DMA = (Voluntary) Dynamic Management Area set up dynamically as right whale aggregations are reported

**ANNEX 2- Ship strike mitigation measures (educational & reporting)**

**A) Educational resources**

State	Applicable	Resource	Title	Developed by	Contents
US	Right whale habitats	Interactive CD-ROM	A Prudent Mariner's Guide to Right Whale Protection	US stakeholders	Information on right whales ship strikes reduction <a href="http://www.nero.noaa.gov/shipstrike/doc/mtr.html">http://www.nero.noaa.gov/shipstrike/doc/mtr.html</a>
US	World wide	Interactive CD-ROM		Holland America Line	Information for cruise operators <a href="http://www.hollandamerica.com/sustainability">http://www.hollandamerica.com/sustainability</a>
BE	World wide	Leaflet		Govt. of Belgium, IFAW	Available in English, Franch, Spanish, Chinese & Arabic <a href="http://www.lwcoffice.org/ici.com/shipstrikes.htm">http://www.lwcoffice.org/ici.com/shipstrikes.htm</a>
IT	Mediterranean Sea	Ship strike poster	Collisions with cetaceans in the Med	Tethys Research Institute	What to do in case of a strike <a href="http://www.tethys.org/collision/download/poster_collisions_en.jpg">http://www.tethys.org/collision/download/poster_collisions_en.jpg</a>
US	Right whale habitats	Ship strike placard	Guidelines for mariners	NOAA	Precautionary measures <a href="http://www.nero.noaa.gov/shipstrike/doc/guidelines%20placard_high.pdf">http://www.nero.noaa.gov/shipstrike/doc/guidelines%20placard_high.pdf</a>
	World wide	Global Map of MPAs	Cetacean habitat directory for MPAs and sanctuaries		<a href="http://www.cetaceanhabitat.org/finst_mpa_advocate1.edu">http://www.cetaceanhabitat.org/finst_mpa_advocate1.edu</a>

**B) Training courses**

State	Applicable	Resource	Title	Developed by	Contents	Notes
US			Voyage Planning and Marine Environmental Protection Measures to Avoid Collisions with the North Atlantic Right Whale	NMFS/scientists	Information material for teachers, etc.	<a href="http://www.nmfs.noaa.gov/">http://www.nmfs.noaa.gov/</a>
			Merchant Mariner Training Curriculum	NOAA	Curriculum online available	<a href="http://www.nero.noaa.gov/shipstrike/doc/mm.en.html">http://www.nero.noaa.gov/shipstrike/doc/mm.en.html</a>
US	Hawaii		Be Whale Aware	Pacific Whale Foundation (PWF)	Free training course	<a href="http://www.pacificwhale.org/BWA">http://www.pacificwhale.org/BWA</a>
FR	Mediterranean Sea		Shipping and cetaceans: How to improve their relation?	Fr. Superior School of Shipping of Marseille/ Souffleurs d'écumes	Free training course for mariners	

**C) Reporting**

Applicable	URL	Developed by	Notes
World wide	<a href="http://www.lwcoffice.org/ship-strikes">http://www.lwcoffice.org/ship-strikes</a>	Online IWC ship strike data base	IWC
US waters	<a href="http://www.nmfs.noaa.gov/health/coordinators.htm">http://www.nmfs.noaa.gov/health/coordinators.htm</a>	Contact details for NMFS regional offices	NOAA, NMFS
Australian waters	<a href="http://data.marinemammals.gov.au/">http://data.marinemammals.gov.au/</a>	Online reporting tool (coming soon)	Australian Marine Mammal Centre
Mediterranean Sea	<a href="http://tethys.org/collision/index.htm">http://tethys.org/collision/index.htm</a>	Online reporting tool	Tethys Research Institute
Pelagos Sanctuary	<a href="http://www.souffleursdecume.com/etudes_collisions.html">http://www.souffleursdecume.com/etudes_collisions.html</a>	Reporting sheet via download	Souffleurs d'écumes

**C) Websites**

URL	Developed by	Contents	Notes
<a href="http://www.nmfs.noaa.gov/pr/shipstrike/">http://www.nmfs.noaa.gov/pr/shipstrike/</a>	NOAA	Ship Strikes and North Atlantic Right Whales	
<a href="http://channelslands.noaa.gov/focus/alert.html">http://channelslands.noaa.gov/focus/alert.html</a>	NOAA	Reducing ship strikes on large whales	
<a href="http://www.lwcoffice.org/ship-strikes">http://www.lwcoffice.org/ship-strikes</a>	IWC	Ship strikes and cetaceans	Access to IWC data base via this site
<a href="http://m.e-e.de/index.php?id=473&amp;L=2">http://m.e-e.de/index.php?id=473&amp;L=2</a>	M.E.E.R. e.V.	General information and awareness raising (special focus on Canary Islands)	Bilingual English/German
<a href="http://www.pacificwhale.org/BWA">http://www.pacificwhale.org/BWA</a>	Pacific Whale Foundation	Awareness raising	
<a href="http://souffleursdecume.com/english/index_EN.html">http://souffleursdecume.com/english/index_EN.html</a>	Souffleurs d'écumes	General information on ship strikes (special focus on the Mediterranean Sea)	Bilingual English/French
<a href="http://uk.whales.org/Issues/boat-traffic">http://uk.whales.org/Issues/boat-traffic</a>	Whale and Dolphin Conservation, WDC	Info on ship strikes with reference to research projects	

**E) Further reading**

Medium	Author(s)	Title	Notes	Web	Notes
Book	Erich Hoyt	Marine Protected Areas for Whales, Dolphins and Porpoises		<a href="http://www.cetaceanhabitat.org/Cetacean_protected_areas.php">http://www.cetaceanhabitat.org/Cetacean_protected_areas.php</a>	
Document	IMO	Guidance Document for Minimizing the Risk of Ship Strikes with Cetaceans	MEPC.1/Circ.674, 31 July 2009	<a href="http://imo.org/blast/blastDataHelper.asp?data_id=26244">imo.org/blast/blastDataHelper.asp?data_id=26244</a>	