REPORT OF THE WORKSHOP ON

Maritime Transport and Biodiversity Conservation

DEVELOPING A PLAN TO REDUCE THE RISK OF WHALE – SHIP STRIKES

Santa Cruz de Tenerife (Canary Islands, Spain) · 25th -26th of October 2012

Endorsed by:

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0. EXECUTIVE SUMMARY

On October 25th and 26th 2012 a workshop was held in Santa Cruz de Tenerife (Canary Islands, Spain) to address the issue of ship-strikes with cetaceans. Although collisions between vessels and whales occur across various species and at varying frequencies dependent on the co-location of vessels and whale aggregations in certain geographic areas resulting from the convergence of shipping routes with whale migrations routes and feeding patterns, there have been no efforts to address this growing concern on a global or an ocean-basin scale. The workshop discussed in this report was convened to develop a comprehensive international program to aid mariners in ship-strike avoidance or reduction practices.

Convened by Alnitak, the workshop included over 25 participants from the maritime business sector, institutions and NGOs around an agenda to work towards the following objectives:

- To identify and assess ways and means to develop an **international mariner outreach and training program** to provide communication tools and delivery systems to educate mariners about actions that can be taken to reduce the risks to whales and other protected species and their habitats from maritime transport, while improving industry safety and cost-effectiveness.
- To begin to develop the framework of content of material available to mariners and exploration of efficient, cost-effective, and available delivery systems for providing information, on an ocean-basin or global scale, to aid in the reduction of ship strikes of whales.
- To assess key information systems that might also serve as a model that could be adapted to include the protection of a broad range of marine protected resources.

This report describes the workshop background (section 1); the key contents of the discussions that took place during the workshop (section 2); and the workshop main conclusions and recommendations (section 3).

The workshop discussions centered on two core questions:

- What information needs to be delivered to mariners to effectively reduce the risk of ship-strike of cetaceans? How (by what systems/technologies) can such information be delivered?
- What actions need to be taken and what key stakeholders need to be engaged to initiate the development of an international mariner outreach and training program?

The main conclusions and recommendations adopted reaffirmed the need of reducing the risk of ship-strike of cetaceans to ensure the success of whale conservation efforts around the Globe. Raising awareness of the maritime community about the issue and educating and training mariners was deemed necessary to efficiently address the issue in a cost-effective manner. Such efforts should be broad in (informational and geographical) scope and may take a number of different forms, but should contain sufficient specificity to provide explicit guidance to practitioners in the shipping industry.

It was agreed that the development of an **international mariner outreach and training program** should be mindful of encompassing various target audiences that represent different stakeholders of the maritime community in general and the shipping industry in particular. Particular emphasis, however, should be given to **mariners** as the **key target audience** for which training and education materials should be developed. A list of the basic information to

be delivered to each relevant stakeholder was drafted and is included in this report. It was furthermore agreed that the training and information needs of mariners should be addressed at two levels:

- Integrating risk mitigation of ship-strike of cetaceans in **mariner´s training curricula**;
- Providing both **static** and **real-time information** for the prevention of ship-strike of cetaceans to be used aboard a ship.

It was recognized that it is of utmost importance to integrate the international mariner outreach and training program into the **International Maritime Organization (IMO)'s formal processes** to contribute to the efforts already initiated through this organization and, given the IMO's scope and reach, to ensure industry acceptance of such program and other related programs. However, it was also recognized that action is also needed in short- and medium-term timeframes to build the foundations and to lay essential groundwork for active involvement by the maritime community towards reducing ship-strikes of cetaceans.

It was also agreed that short and medium-term goals could be attained by conducting a **Pilot Program** that may serve as a valid starting point for a wider, more ambitious initiative. Such a pilot program will be useful in testing the usefulness of the information that is provided to mariners and the most effective delivery systems, as identified during the workshop. A **Pilot Program** would endeavour to:

- Develop of a basic set of materials that could be used as a "corner stone" for addressing information needs of mariners world-wide:
  - A hard-copy, comprehensive collection of material that includes ALL the information that is relevant in terms of managing the risk of ship-strike of cetaceans.
  - An interactive CD with practical information and games to test and build the knowledge of mariners towards the issue of ship-strike of cetaceans.
- Define the content, format and delivery system of basic real-time information to be used aboard a ship.
- Specify the basic knowledge and skills to be incorporated in mariner´s training curricula to address ship-strikes of cetaceans and broadly distribute its content to mariner academies.
- Test the usefulness of all these actions on a shipping fleet (to be determined).

Participants also agreed that a regional approach for such a Pilot Program would be the best way forward in terms of testing the model before applying it globally.

Following the workshop conclusions, a proposal was made (section 4) to develop a Strategic Plan that provides the basis to follow-up on the results of the workshop. It was suggested that such a Plan would focus on:

- Describing the content, scope, milestones and timeline of the Pilot program.
- Developing a budget.
- Identifying key partners and stakeholders.
- Securing support of relevant authorities in Spain and developing a business case for engaging industry in developing and implementing a pilot program.

This report was adopted on February, 18th, 2013.

1. WORSKHOP BACKGROUND

1.1 The problem of ship-strikes with cetaceans

Collisions between vessels and whales occur across various species and at varying frequencies dependant on the co-location of vessels and whale aggregations in certain geographic areas resulting from the convergence of shipping routes with whale migrations routes and feeding patterns. Studies indicate that tens, or perhaps hundreds, of such collisions occur annually in all the world's oceans, and involve all large whale species and all vessel types (Laist, et al., 2001; Jensen and Silber, 2003; Van Waerebeek, et al., 2007). Often, the result is death or serious injury to the whales (Campbell-Malone et al., 2008, Moore et al., 2004). Ship-strikes of whales are an impediment to the recovery of a number of depleted or endangered whale populations.

A number of approaches have been taken to reduce the threat of vessel strikes of large whales in various geographic settings. These actions include (a) mariner awareness-raising programs, and (b) modifications to customary vessel operation practices including reductions in vessel speed and changes in vessel routing patterns (Tejedor, et al., 2007; Vanderlaan and Taggart, 2009; Silber et al., 2012).

To date, all such measures have been enacted regionally, i.e., in certain locations and times where local whale populations are adversely affected (Silber et al, 2012). **There have been no efforts to address this growing concern on a global or an ocean-basin scale.** The workshop discussed in this report was convened to develop a comprehensive international program to aid mariners in ship-strike avoidance or reduction practices.

The idea behind the workshop was shaped by ALNITAK Research Center as it endeavored to address vessel and cetacean interactions under Project LIFE+ INDEMARES[1]. The workshop was originally designed to assess and mitigate potential disturbance by commercial shipping to protected species. However, after some thoughtful analysis of initiatives undertaken around the world to address such disturbance, ship-strikes of cetaceans became an area of particular interest. If a comprehensive plan could be developed to address this issue, it could serve as a useful model for developing training and communication strategies that deliver solutions to more general global and regional issues that arise from the interaction of the industry with the marine environment.

On-going discussions with key governmental, non-governmental organizations and international experts, such as the United States National Oceanographic and Atmospheric Administration (NOAA), KAI Marine Services and representatives from the International Maritime Organization (IMO) confirmed the potential usefulness of such a model and lead to the conclusion that a workshop should be the first step to address the need of global action in the risk-management of ship-strike of whales.

1.2 Workshop Goals and Objectives

The objectives of the workshop were:

- To identify and assess ways and means to develop an **international mariner outreach and training program** to provide communication tools and delivery

[1] LIFE+ "Inventory and designation of marine Natura 2000 areas in the Spanish sea"

systems to educate mariners about actions that can be taken to reduce the risks of maritime transport for whales and other protected species and their habitats, while improving industry safety and cost-effectiveness.

- To begin to develop the framework of content of material available to mariners and exploration of efficient, cost-effective, and available delivery systems for providing information, on an ocean-basin or global scale, to aid in the reduction of ship strikes of whales.
- To assess key information systems that might also serve as a model that could be adapted to include the protection of a broad range of marine protected resources.

To achieve these objectives, it was recognized that a key starting point was to build on the progress made at the International Maritime Organization (IMO) with the IMO's 2009 adoption of a Guidance Document on "**Measures to reduce ship strikes with cetaceans**" (see Annex I) and by establishing programs within that framework. The IMO has also been a key player in establishing ship strike reduction measures in various geographic areas.

To address these goals, the Workshop was convened at the Chamber of Commerce of Santa Cruz de Tenerife, Spain, 25 and 26 October 2012.

1.3 Workshop Steering Committee, Chair, and Participants

A Steering Committee was convened to prepare Workshop Terms of Reference (Annex II) and to support the Chairman in the preparations of the Workshop's technical content and agenda. The Steering Committee consisted of: Ricardo Sagarminaga (Alnitak), Greg Silber and Shannon Bettridge (US NOAA), Ana Tejedor and Julia Vera (KAI Marine Services) and Miguel Palomares.

Miguel Palomares, former Director of the IMO's Marine Environment Division accepted to chair the workshop at the invitation of Alnitak.

Workshop participants consisted of shipping industry leaders, ship captains, shipping industry association representatives, exerts on the IMO, living marine resources scientists, public administrators, and other stakeholders. Prior to the workshop, each participant was provided with the Workshop Terms of Reference and draft agenda. Participants were charged with identifying and assessing ways to develop an **international mariner outreach and training program** to provide training and communication tools to educate mariners about steps that could be taken to reduce the risks of maritime transport for whales and other protected species and their habitats, while also ensuring industry safety and cost-effectiveness. The list of participants is provided in Annex III.

2. WORKHOP PROCEEDINGS

2.1 Convenors' opening remarks

As representative of the authorities of the Canary Islands and host of the Workshop, **Pedro Rodriguez Zaragoza**, President of the Port Authority of Tenerife, welcomed participants to Canarias and expressed his hope for very fruitful work. As representative of the General Directorate of Merchant Marine of the Government of Spain, the Maritime Captain of Tenerife, **Antonio M. Padrón y Santiago**, welcomed all participants and highlighted the importance of the sea to the economy, culture and life of the Canary Islands. He reminded the participants of the sad strike event between a high speed craft and a whale in the waters of the Canary Islands in the early 90s that resulted in severe injuries to 40 passengers and the death of the whale. Although he described this as an isolated incident, he explained how it triggered action by the local Government which has enacted laws geared to the tourism industry mainly to improve safety at sea and preserve whales as a key tourism resource for the Island. He then wished the participants a productive workshop.

Ricardo Sagarminaga, President of Alnitak and convenor of the Workshop welcomed participants and explained that the Workshop was being organized within the framework of the European Commission LIFE Nature project INDEMARES (www.indemares.es) and more specifically under its Action A14 – Laboratorio Mitiga, which deals with the development of practical measures to mitigate the impact of economic maritime activities on marine biodiversity, at a sectorial level. This Action specifically focuses on the identification, assessment and mitigation of the impacts of maritime traffic activities on marine biodiversity, with a special look onto cetacean's populations and marine protected areas. A special reference was made to Ana Tejedor and Julia Vera, of KAI Marine Services, and an acknowledgement of their technical expertise and hard work toward the coordination and convening of the workshop. Mr. Sagarminaga highlighted the opportunity and importance of bringing together policy makers, scientists, and the shipping industry to find realistic solutions to the sustainable use of marine resources.Finally, he thanked the members of the Workshop Steering Committee and expressed the wish that the Workshop will contribute to reduce the risks of maritime transport for whales and other protected species and their habitats, while improving industry safety and cost-effectiveness.

2.2 Opening remarks of Chair

Miguel Palomares, Chairman of the workshop, thanked the Maritime Authority of Tenerife, the Port Authority of Tenerife and the Chamber of Commerce of Tenerife for hosting the Workshop. He also thanked Alnitak for organizing the workshop, US NOAA for supporting the presence of several participants and KAI Marine Services for its in-kind contribution of technical and logistical input to the Workshop. He further thanked the Government of Tenerife, Tenerife Convention Bureau, Funcat Primero, Naviera Armas and Grupo DISA for their contributions to the workshop.

The Chairman welcomed all participants and highlighted the international nature of the workshop, with representatives from Argentina, Bulgaria, New Zealand, United Kingdom, United States and Spain. The Chairman also acknowledged the work of the

late Lindy Johnson, who he described as a true engine behind the work on ship-strikes with **cetaceans at an international level.**

The Chairman recalled the work that has been conducted under IMO to address the issue of ship-strikes with cetaceans, as reflected by the publication of **IMO MEPC.1/CIRC.674 Guidance Document for Minimizing the Risk of Ship Strikes with Cetaceans (2009)**. He highlighted that although some countries have implemented measures to reduce ship strikes of whales in their coastal waters, regrettably, these measures may not be fully effective unless action is scaled up to a broader geographical level and have the full support and participation of the shipping industry. One of the main challenges that needs to be addressed is giving mariners the information that they need to implement any guidance provided and thus to properly manage the risk of ship strike with cetaceans. The Chairman reflected that after several years of existence of the Guidance Document, perhaps what is needed is a program that addresses that challenge and that is developed under the auspices of IMO.

Mr. Palomares then specified the goals and objectives of the workshop (see section 1.2 of this document), and reviewed the agenda for the two-day workshop. He stressed the fact that the agenda of the workshop had been designed to facilitate active participation of all attendees, with one half-day of presentations to provide "input" for discussions and one full day of Working Groups and group discussions to ensure a fluent and productive exchange of ideas. The Chairman explained that the working groups had been given the task of responding to questions that addressed the overall goals and objectives of the workshop:

- **Working Group 1:** What information needs to be delivered to mariners to effectively reduce the risk of ship-strike of cetaceans? How (by what systems/technologies) can such information be delivered?
- **Working Group 2:** What actions need to be taken and what key stakeholders need to be engaged to initiate the development of an international mariner outreach and training program?

2.3 Adoption of the Agenda

The agenda (Annex IV) was adopted.

2.4 Presentations

A number of invited presentations were made to help provide a framework and to ensure participants understood the context for workshop deliberations.

The first set of presentations dealt with previous IMO work on ship-strikes with cetaceans, with the international nature and complexity of maritime transport and its potential impact on whales, as well as introducing existing experiences of navigation in environmentally sensitive areas and measures adopted to reduce affection to whales. Available tools for communicating with mariners aboard ships were also reviewed.

Both **Gurpreet Singhota**, Deputy Director of the Maritime Safety Division of IMO, and **Kathy Metcalf**, Director of Maritime Affairs of the Chamber of Shipping of America, referred to ship-strikes of cetaceans as an issue of growing concern internationally due to the increase in the number, size, and speed of ships, as well as to the expected increase in shipping activity as a result of growing international trade. Such concern, it was explained, had triggered calls for the IMO to take action to minimize this threat,

which lead in 2009 to the publication of IMO´s 2009 ship strike guidance document. This Guidance document outlines the important general principles that Member Governments to the IMO should take into account and possible actions that may be taken to reduce such risk. The issue was also recognized to be a growing concern for industry, according to **Elsa Naumann**, Environment and Communication Officer at Wallenius Wilhelmsen Logistics. Ms. Naumann described steps her company has taken to reduce impacts to marine ecosystems, including reducing ship strikes, and indicated that, at least in some organizations, there was a strong sense of employee pride in doing what was possible to help protect the marine environment.

The international nature of the shipping industry was highlighted and evidenced by current shipping traffic (see Figure 1), being described as an increasingly efficient, safe, clean and modern mode of transport for goods. Ms Metcalf outlined the industry in figures and reflected on the fact that shipping is a global industry that needs global rules. She further indicated that while past international regulatory frameworks have focused on safety at sea, most regulations nowadays focus on environmental issues that need to be conveyed to mariners for effective implementation. Speakers recalled the importance of cooperation among States and the need to apply a multi-stakeholder approach for action, engaging administrators (both from flag states and ownership nations), industry and NGOs to reduce the risk of ship-strikes of cetaceans. While recognizing that measures may differ from place to place depending on variables such as geography or species, it was agreed that the same questions need to be addressed globally: which areas may be environmentally sensitive due to the presence of cetaceans, how can traffic be better organized and what information needs to be communicated and in what format to support intelligent decision making that reduces the risk of strike. A reminder was raised with regard to the complexity of information that mariners have to manage on bridge of a ship nowadays and thus the need to be concise and precise with the information that is provided to them, avoiding information saturation that can ultimately lead to jeopardize safety. Also, it was noted that two out of three ships are from developing nations and that language is another relevant issue to consider.

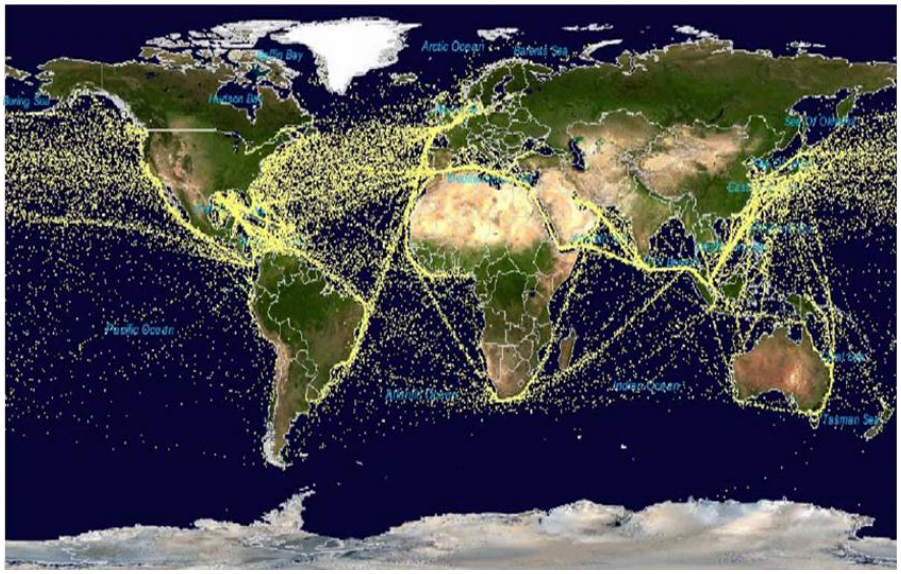

Figure 1: World Shipping Traffic

The current impact of ship-strikes on whale populations was addressed by **Ana Tejedor**, from KAI Marine Services, who indicated that there is evidence that such strikes are occurring in all ocean waters, with eleven species confirmed victims of ship-strikes. She reported that finback whales are the most often reported species hit, followed by humpback, North Atlantic right, gray, minke, southern right, and sperm whales (Laist et al., 2001; Jensen & Silber, 2003;). She also argued that regardless of the existing uncertainties on cetacean distribution and behaviour, it is possible to define certain areas and species where vessel strikes are a measurable impediment to the recovery of the species. This argument was further reinforced by **Rochelle Constantine**, from the University of Auckland, who stated that ship-strikes are currently the main cause of mortality of Bryde 's whales in the Hauraki Golf in New Zealand.

Large whale ship strikes have been recorded in waters off the United States, Australia, Canada, Spain, Japan, New Zealand, Panamá, South Africa and the Caribbean, among others. The mapping of these records, it was argued, is a reflection of the increasing intensity of cetacean monitoring effort which is concentrated mainly in some areas. **Greg Silber**, from the Office of Protected Resources at the National Oceanic and Atmospheric Administration (NOAA) of the United States of America (USA) described efforts in the USA and Canada to limit threats to whales. Similar efforts were described for Argentina by **Sergio Silva**, from the Maritime Prefecture of Argentina, for New Zealand by Rochelle Constantine, and for Spain by Ana Tejedor. Measures described included the implementation of establishing time and (or) area-specific modifications to vessel-traffic routing, mandatory and voluntary speed reductions, advance voyage planning, educating maritime industries and providing whale location information to mariners to increase their awareness and preparedness to avoid whales.

Most participants agreed that there are no simple solutions or existing technological that will completely “fix” the problem. Nevertheless it was also said that use of modified ship routing and advance voyage planning, was the most reliable approach.

Some of the ideas stemming from the presentations referred to the difficulty of whale detection and the difficulty of reaction of vessels to whale alerts, pointing at the importance of predictive modelling and voyage planning to reduce the risk of strike (i.e., avoiding areas with high probability of the occurrence of whales vs. reacting to the observation of whales in the vicinity). The experiences presented suggested that, when feasible, traffic re-routing is the most effective measure to reduce the probability of ship-strikes of cetaceans. Furthermore, it was noted that while industry generally interested in finding ways to reduce ship-strikes with cetaceans, vessel speed reductions may be difficult to utilize because of associated financial impacts. Maersk **Captain William Barrere** reinforced this idea, stating that it is easier for a vessel to avoid traveling in a given area than to slow down, due to the technical and financial implications of speed reduction.

Also addressing routing measures, Ricardo Sagarminaga described the situation in the SW Mediterranean and the work conducted in 2005 and 2006 to move the TSS of Cabo de Gata 20 nautical miles south from the environmentally fragile coast (Silber et al 2012) and compared achieved results to the speed reduction recommendation issued for the TSS of the Strait of Gibraltar. In the case of Cabo de Gata, a brief review was provided to illustrate the efficiency of the TSS reconfiguration, with a full compliance and a clear win-win situation for the shipping industry, fishermen and relevant authorities. The case

of Gibraltar was also discussed by highlighting that VHF communications made by the TSS control stations were infrequent initially and were not recommended by IMO given that the messages could not be considered related to navigational safety. The presentation of this case study emphasied the importance of a focus on "what" and "how" to communicate if we want to implement adequate measures without jeopardising safe navigation.

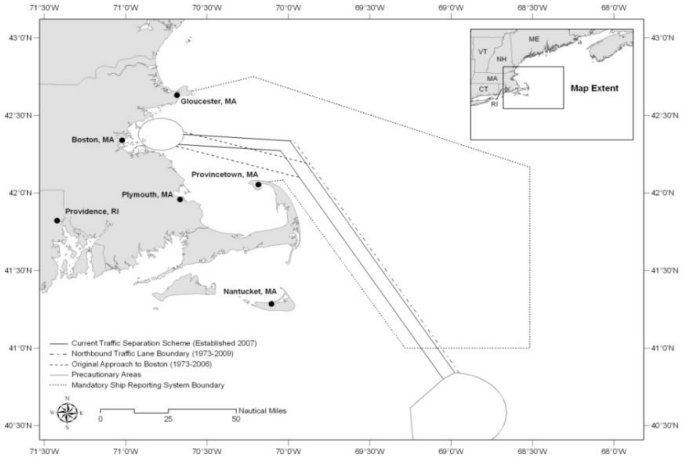

Fig. 2. Example of actions endorsed by the IMO to reduce the likelihood of vessels striking large whales. Right whale Mandatory Ship Reporting systems (MSR) in waters off New England and original and modified TSS in the approach to Boston. The TSS was modified following adoption by the IMO, including a 12 degree shift of the northern leg and a narrowing of both the north-south and east-west legs. Source: Silber GK, et al. 2012.

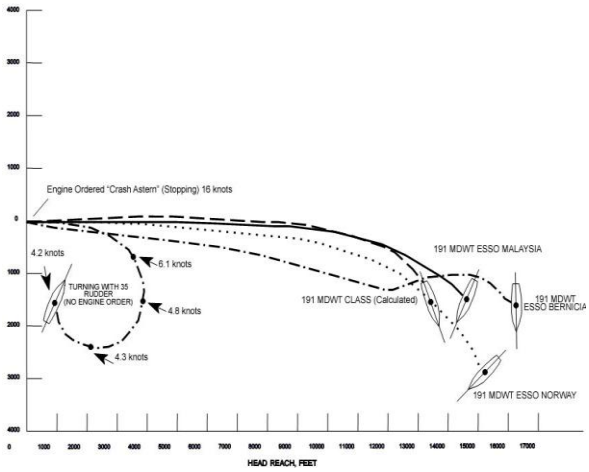

Fig 3. Example of how reducing collisions with whales can be a challenge because even if whales are detected, reaction might not be feasible. Source: Graphic provided by Robert Becker, Marine Institute of Technology and Graduate Studies (MITAGS) and used in Silber et al., 2009

A number of speakers indicated the effectiveness and desirability of mandatory vs. voluntary measures to address the issue of ship-strikes of cetaceans. **Steven Tucker**, United States Coast Guard, indicated an institutional preference for voluntary measures, given the short-falls of mandatory reporting systems and realistic monitoring capabilities. In this sense, he posited that while the US the government has gone to great lengths to meet its responsibility as trustee for the resource by supporting such

things as aerial observing programs, communication systems and staff for monitoring and coordination, this may not be sustainable as maritime activity increases and areas of potential conflict or co-occurrence proliferate. The industry engaging in activities that come with risk of collision should take responsibility for prudent measures that mitigate that risk, and could work to the significant benefit of all concerned through pro-active action such as defining a communication system for whale information, identifying additional prudent measures to be taken in high risk areas and supporting appropriate training and certification. He also remarked that the industry could avail itself of key role ensuring that approaches are more global, rather than confronting numerous parochial, disparate and potentially conflicting measures as they ply their trade. He also referred to the added complexity that mariners face when they navigate the waters of states that require them to comply with regulations that differ from those imposed by their flag state. With this in mind, he highlighted the importance of fostering environmental values in the maritime community. Several speakers reinforced this idea, suggesting that Education and Outreach to mariners is key to effectively address the issue of ship-strikes of cetaceans.

Stanislav Kozhuharov, representing the V. Group and the Cruise Lines Industry Association, spoke to the need of ensuring a "level-playing field" for the shipping industry, suggesting that training on mitigation of ship-strikes of cetaceans should be made compulsory to mariners by means of regulation. Introducing ways to monitor and evaluate the effectiveness of such training was also deemed relevant.

Shannon Bettridge, Office of Protected Resources of US NOAA, highlighted that compliance with any risk-mitigation measure requires first that mariners are aware of the issue of ship-strikes. She indicated that clear communication with mariners is therefore a must regardless of the legal nature (mandatory vs. voluntary) of applied measures. Some considerations were raised that require attention in any communication program, including:

- Timing, frequency of message (how often do mariners arrive at a particular port?)
- Message recipient (bridge? other crew? others?).
- Medium (choosing the right outlet, i.e., e-mail, radio, printed materials, etc.).
- Delivery agent (funnelling the information through an authority, i.e., flag state, coast guard, pilots?).
- Message content (how clearly and concisely can information be provided while also avoiding information overload).
- Language barrier concerns (English may not be the mariner's first language).
- Salience to the mariner.

Past education experiences presented suggest that, in order for outreach to be effective, the information should be as broadly and extensively distributed to mariners as possible, preferably using an array of methods, recognizing a varied audience (type of vessels and different responsibilities). Particular emphasis was made in understanding the "chain of command" (fleet owners and charterers; fleet management; Captains and bridge team; crew) and fine-tuning messages considering each target audience.

In subsequent discussion several participants noted the importance of getting feedback from the maritime community on the educational measures applied, in order to learn and improve their effectiveness.

Also touching on the issue of engagement of industry, Elsa Naumann highlighted the need to engage "managers" of vessels in any communication strategy aimed to support industry action towards minimizing the risk of ship-strikes of cetaceans, noting that an understanding and commitment of corporate management about the issue is critical for the initiation and continuity of any effective action at a corporate level. Engagement of management, it was argued, needs to reflect that shipping is a result-driven industry, therefore the business case for corporate action on the issue of ship-strikes of cetaceans should be made clear. Brand value, company reputation and employee morale and loyalty were signalled as core pillars of such business case.

Participants also indicated that popularity of whales amongst the public and emerging relevance of Corporate Social Responsibility in terms of reputation and brand value may open a window of opportunity for certification programs geared to promote and reward best practice in terms of risk management of ship-strike of cetaceans. Monitoring and follow-up of such programs was deemed necessary to avoid opportunistic "green-washing". Reference was also made to current tools - such as sustainability reporting - that offer industry a good framework to communicate to its stakeholders the efforts undertaken to contribute to the conservation of biodiversity. The Global Reporting Initiative was presented as a framework that could be useful to strengthen the business case of industry in terms of action to reduce ship-strikes with whales.

Other presentations dealt with means that are available for delivering upgraded training and information to mariners, as well as with the technological means available to deliver real time interactive training and warning aboard a vessel.

Presentations by **Germán de Melo**, professor at the University of Barcelona and **John Dickinson**, Head of IMO Delegation at the Nautical Institute, referred to a general shortfall of environmental education in the training curricula of mariners, although according to both speakers there seems to be a positive trend that supports increasing awareness on environmental issues amongst the maritime community due to company influence and consistent work conducted under IMO (e.g., the Manila Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers - STCW 78/95, which regulates minimum training requirements for mariners). In spite of progress, Dr. Melo's review of the content of STCW 78/95 indicated that the issue of ship-strikes of cetaceans and its consequences for maritime safety and the environment is specifically absent from formal curricula of mariners. The IMO Model Courses[2] were referred to as a possible tool to deliver training tools to mariners.

Gurpreet Singhota and **Esteban Pachá**, General Director at the International Mobile Satellite Organization (IMSO), indicated that some technologies may support the delivery of real-time information to mariners aboard a vessel to avoid collisions with cetaceans. It was noted that such information may address **whale detection at sea**, **tracking of ships** that represent a risk to the whales, and **transmission of information**, including notice to mariners, real-time information broadcasting, updated electronic

[2] The program of model training courses developed out of suggestions from a number of IMO Member Governments, following the adoption of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, (STCW), 1978, as amended. Assisted by contributions from various Governments, IMO has designed the series of courses to help implement this Convention and, further, to facilitate access to the knowledge and skills demanded by increasingly sophisticated maritime technology. The courses are flexible in application: maritime institutes and their teaching staff can use them in organizing and introducing new courses or in enhancing, updating or supplementing existing training material. For more information please see http://www.imo.org/OurWork/HumanElement/TrainingCertification/Pages/ModelCourses.aspx

charts, access to websites, etc. The technologies addressed are further specified in section 2.4 of this document.

The effectiveness of these technologies as delivery systems, it was argued, will depend on the content that needs to be transmitted. Various speakers noted that real-time location of whales is almost never available and of limited use to navigators, and therefore the most useful approach may be to advise mariners of specific areas in which they should maintain an enhanced lookout for whales, avoid high whale density areas when feasible, or engage in advanced voyage planning to account for known whale occurrence. Two time-scales were proposed: long-term advance information, based on information about whale aggregations, feeding and breeding locations, and migratory routes, provided in printed or static formats; and information given in weekly notices to mariners, or via a broadcast warning concerning the actual arrival of whales in such areas. A combination of static and real-time information thus may be most desirable, opening the door to the use of a mix of available technologies.

Speakers emphasized the future (but, presently limited) potential of satellite broadband and mobile broadband technologies that will allow for real-time and on-line information to be available, delivering early-warning systems to prevent risks, including collisions with whales.

One existing example of a comprehensive yet concise information delivery system was introduced by **David Wiley**, Stellwagen Bank National Marine Sanctuary (US NOAA). Dr. Wiley described the "Whale Alert ©", a smart phone mobile application that integrates GPS, Automatic Identification System (AIS), automatic underwater whale acoustic detection systems, Internet, and digital nautical chart technologies to alert mariners to NOAA's right whale conservation measures active in their immediate vicinity and beyond. If the appropriate technologies are available to them, captains can use Whale Alert to view their ship's location and all pertinent right whale management information in a single nautical chart display. Information can be updated via AIS or Internet feeds and includes both static (e.g., seasonal speed restrictions, areas to be avoided) and dynamic (e.g., whale acoustic detection technologies and dynamic management areas) information.

2.5 Working Groups

After the introductory presentations and a brief round of questions, answers and comments from participants (see section 2.5 of this document) the Chairman opened discussion of Working Groups. Based on the workshop discussions and the deliberations of the Steering Committee, the decision was made to work toward the development of a mariner outreach program that was comprehensive in scope, cost-effective to implement, and of value to the mariner in attempts to reduce ship strikes. The balance of the workshop therefore was dedicated to the types and extent of information to be provided to mariners, the best ways to get the information to them, and the most effective means for implementing such a program on a large scale. Participants separated in two working groups to start addressing these issues, as described below.

<u>Working Group 1</u>

Discussions in Working Group 1 were directed by Kathy Metcalf and Esteban Pacha, respectively. Following discussion, the Working Group concluded that the following minimum contents should be included in information provided to mariners:

- Background information on whales

- Motivations and importance of marine biodiversity conservation efforts
- Critical species descriptions
- Historical whale aggregation areas
- Real time data on whale locations and recent sightings
- Measures established and currently in place to reduce ship strikes
- What to do in case of accidentally striking a whale
- Voluntary ship strike reduction measures
- Ship strike reduction regulations
- International regulatory frameworks being used to reduce ship strikes
- Sensitive environmental areas
- Internet hub with resources

Participants also agreed that the extent and depth of such content would need to be adjusted depending on the target audiences. In this regard, participants agreed that any communication strategy should not only focus on mariners at sea but should also include others as well. The following audiences were identified as relevant:

- Ship bridge / crew.
- Ship and company management.
- Ship agents.
- Pilots.
- Flag states.
- Maritime associations and exchanges.
- Media.
- Environmental NGOs.

Participants indicated that mariners are often asked to adopt actions for environmental reasons, but that the reasons behind such measures are rarely explained to them. Therefore, particular emphasis was placed on developing material that would not only provide information and recommendations to be applied aboard a ship to reduce the risk of ship-strikes of whales, but also to include explanations about the motivations and rationale behind the need for a particular action and the need conservation of marine biodiversity generally. The suggestion was that such information also remained balanced with the need to deliver concise, specific action-oriented information. Another key conclusion arising from this Group was the need for an information hub using internet technologies that would serve as a resource center that provided comprehensive information on whales as well as references and a host of “links” to relevant international and national initiatives and measures being used to reduce the risk of ship-strikes of cetaceans.

The discussion then moved on to address the objectives of Working Group 2, namely, identifying the format, the systems or technologies that might be used in the delivery of the above information to the target audiences. Participants identified the following existing and under-development delivery systems/technologies and ranked them by priority (1= high priority; 2=medium priority; 3= low priority; priority was defined as a combination of usefulness, current availability, efficiency, and applicability of the technology to the issue of ship-strikes):

- Hard-copies (1)
- e-Mail (1)
- INMARSAT C (1)
- Existing and under-development Satellite broadband (1)

- Electronic navigational charts (ENC) ECDIS (1)
- Whale alert smart phone APP (1)
- Existing and under-development Automated Information Systems (AIS) (2)
- NAVTEX (2)
- SafetyNET (2)
- Radio equipment & systems (2)
- VTS system (2)
- Voluntary weather observation by ships at sea programs (2)
- Cellular phones (3)
- Automated Mutual Assistance Vessel Rescue System (AMVER) (3)

Participants suggested that priority should be given to those delivery systems that are formally endorsed by IMO and its use is therefore compulsory for the shipping industry, although it was recognized that informal systems (such as applications developed for smart phones and tablets) could have a great educational impact and serve as a test of the usefulness of the information that is delivered. Whale Alert was specifically referred to as a comprehensive tool that provides a useful example of the information that can be provided to mariners.

Discussion also differentiated between those technologies currently available and in use by mariners (e.g., INMARSAT) and the great potential of those under development (e.g., satellite broadband capabilities). For example, the concept of e-Navigation being developed under IMO in collaboration with IMSO was also addressed as a potential, powerful delivery system. IMSO is fully involved in facilitating new ITC platforms in order to promote the delivery of **e-services** and **m-services** through web-based platforms accessible on board ships. e-Training may be greatly facilitated once these platforms are fully operational.

During the discussions it was also recognized that different maritime sectors may have different information needs and require different delivery systems. Although addressing the shipping industry is the priority of this workshop, participants suggested that the information needs of other sectors such as the fishing industry or recreational boaters will need to be addressed at some point in the future.

Working group participants then developed a matrix (Annex V) summarizing the minimum content requirements and the suggested technologies and systems that can support the delivery of such content to target audiences.

Working Group 2

Discussions in Working Group 2 were directed by Gurpreet Singhota. The Group identified key stakeholders and developed a roadmap for action for the development of an international mariner outreach and training program.

The stakeholder map (Annex VI) included a variety of entities, companies, and member states that should be involved in one or more of the stages of the development, implementation, and monitoring of the initiative. This exercise also included an analysis of the resources needed to develop the program and the suggested role of each stakeholder.

In addition, a roadmap for developing the program was prepared (Annex VII). The roadmap is a six year plan which includes milestones related to the agenda of IMO, but also other international processes such as those of the International Whaling Commission (IWC) and IMSO.

Finally, an important finding of the group was that for this Working Group to best delineate the course for action and the identification of stakeholders in sufficient detail, a better understanding was needed of the content (as being developed in Working Group 1) and geographic scope of the program being developed.

2.6 Discussions

The discussions that took place among participants between presentations and sessions contributed greatly to the results of the workshop. Although it is possible to provide extensive details of the various views exchanged and observations made, the following discussions should be noted as relevant as they support the conclusions and recommendations of the workshop.

The need for a Pilot Program

The usefulness and desirability of a Pilot Program that could help shape the content and scope of the international mariner outreach and training program was introduced by the Chairman and reinforced by some speakers. Participants then collectively agreed that the idea of a pilot program should be promoted for the following reasons:

- To test the quantity/quality of information delivered to target audiences.
- To identify and evaluate the optimal delivery systems.
- To test other actions that could supplement the reception of information aboard vessels.
- To monitor, evaluate and improve the efficiency of the proposed program.

After agreeing on the need for a pilot program, the Chairman suggested that its development should take into account, and be built upon, a clear and common understanding of the specific nature of the proposed international mariner outreach and training program. Participants provided a specific definition for an International Mariner Outreach and Training-for-Action program (IMOTAP), as provided in Annex VIII.

Roles and responsibilities in next steps

The Chair stressed that progress on the initiative after the workshop would strongly depend on the willingness of individuals, companies or institutions to move the proposal for a pilot IMOTAP forward. **David Mattila**, representing the IWC suggested that a multiple stakeholder approach might indeed be the best way forward, engaging more than one country and possibly intergovernmental institutions and environmental NGOs. Participants agreed that the IWC could play a strong role in engaging countries to help seek national buy-in, if appropriate, since it is already working on finding solutions to the issue of ship-strikes of whales.

Ricardo Sagarminaga offered Alnitak's commitment to dedicate the remaining budget of Project LIFE + INDEMARES to develop a Strategic Plan that provides the basis to follow-up on the results of the workshop.

Ana Tejedor welcomed the proposal made by ALNITAK and confirmed the commitment of KAI Marine Services with the program and goals set forth in the workshop. In addition, she offered KAI´s technical support to develop the basic components of the Pilot Program building on existing initiatives in the South-Western Mediterranean and Atlantic contiguous waters. Participants also agreed that a regional approach for a Pilot Program could be the best way forward in terms of testing the model before applying it globally.

Governments and industry shared responsibilities

While many discussions revolved around building a sound business case to successfully engage industry in designing and implementing solutions to reduce the risk of ship-strikes, it was recognized that some nations have made a tremendous effort to develop measures to reduce such risk that are sometimes difficult to replicate because resources needed to do so may be limited. Participants agreed that industry has a role to play and that the cost of preserving the health of marine ecosystems and thereby marine resources may have to be shared. Therefore, industry was called upon to remain open to discussions about cooperating and remaining engaged with programs such as IMOTAP, which are geared to finding cost-effective solutions that may prevent future, higher costs of inaction.

Inclusion of training on risk mitigation of ship-strikes with cetaceans in formal curricula of mariners

Recognition that the risk of ship-strike of cetaceans falls out of the scope of the mariners' curricula set forth by the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 78/95) led some participants to suggest submitting a proposal to IMO to consider amending the Convention to address the issue. Other participants informed of the recent amendment of the Convention in 2010 to include, among other things, environmental considerations in training requirements to mariners (this changes to the Convention are informally known as the "Manila Amendments"). Participants noted that the possibility of further amendments to the Convention will most likely take a number of years before being opened again. The suggestion was made to propose a modification of the Convention to specifically include mariner training with regard to whales and reducing ship strikes, and the possibility of doing so in the coming years was suggested. It was generally agreed this would be a good action to take; however, it was agreed that doing so should not slow down the need for effective action embodied in the main thrusts and goals coming from this workshop as well as other actions that could be taken through various other (possibly less "formal") avenues.

3. CONCLUSIONS & RECOMMENDATIONS

In view of the presentations and the result of the discussions that took place during the workshop, participants agree to the following set of conclusions and recommendations:

- Reducing the risk of ship-strike of cetaceans is critical to ensure the success of whale conservation efforts around the Globe. Raising awareness of the maritime community about the issue and educating and training mariners is necessary to efficiently address the issue in a cost-effective manner. Such efforts should be broad in (informational and geographical) scope and may take a number of different forms, but should contain sufficient specificity to provide explicit guidance to practitioners in the shipping industry.
- The international nature of maritime traffic suggests that any efforts to provide training and communication tools that address the risk of ship-strike of cetaceans should also take place at an international level. Vessels involved in marine transport can predictably expect to encounter whale aggregations in a number of locations and ship strike measures have been implemented in some locations. There is a need to develop means to inform and educate mariners about established ship strike reduction

measures and to provide specific information that would enhance their voyage planning in a way that would help address this problem on a global basis.

- Therefore a proposal has been made to develop an **international mariner outreach and training program** that provides maritime organizations, corporations and mariners the information, education and training they need to take actions to avoid ship strikes of cetaceans.
- Development of such a program should be mindful of encompassing various target audiences that represent different stakeholders of the maritime community in general and the shipping industry in particular, including various roles comprising the industry´s "chain-of-command": ship-owners and ship-agents, management, captains and mariners at bridge, ship-crew, etc. However, it was agreed particular emphasis should be given to **mariners** as the **key target audience** for which training and education materials should be developed. Furthermore, the training and information needs of mariners should be addressed at two levels:
    - Integrating risk mitigation of ship-strike of cetaceans in **mariner´s curricula**;
    - Providing both **static and real-time information** for the prevention of ship-strike of cetaceans to be used aboard a ship.
- It was recognized that it is of utmost importance to integrate the international mariner outreach and training program into the IMO's formal processes to contribute to the efforts already initiated through this organization and, given the IMO's scope and reach, to ensure industry acceptance of such program and other related programs. However, it was also recognized that results from those processes may take years to materialize. **A long-term vision is a must; but action is also needed in short- and medium-term timeframes to build the foundations and to lay essential groundwork for active involvement by the maritime community towards ship-strikes of cetaceans.**
- Short and medium-term action can be triggered by conducting a **Pilot Program** that may serve as a valid starting point for a wider, more ambitious initiative. Such a pilot program will be useful in testing the usefulness of the information that is provided to mariners and the most effective delivery systems, as identified during the workshop. A **Pilot Program** would endeavour to:
    - Develop of a basic set of materials that could be used as a "corner stone" for addressing information needs of mariners world-wide:
        - A hard-copy, comprehensive material that includes ALL the information that is relevant in terms of managing the risk of ship-strike of cetaceans.
        - An interactive CD with practical information and games to test and build the knowledge of mariners towards the issue of ship-strike of cetaceans.
    - Define the content, format and delivery system of basic real-time information to be used aboard a ship.
    - Specify the basic knowledge and skills to be incorporated in mariner´s curricula to address ship-strikes of cetaceans and broadly distribute its content to mariner academies.

- Test the usefulness of all these actions on a shipping fleet (to be determined).

- Participants also agreed that a regional approach for such a Pilot Program would be the best way forward in terms of testing the model before applying it globally.
- To the extent possible, every effort should be made to inform and work through the IMO in developing and implementing such a program. The IMO is the appropriate international body for such action and it includes formal processes for either encouraging or requiring participation in such measures by the entire maritime transport industry. In addition, the IMO has already addressed the issue of ships strikes in a number of its actions, including IMO´s 2009 Guidance Document, further making it an appropriate body for the actions described here. Therefore, it was proposed that a summary of this workshop report would be transmitted to appropriate committees of the IMO along with the indication that more actions in this same regard will likely be forthcoming.
- Engaging industry and other relevant stakeholders in any initiative geared to tackle the issue of ship-strike of cetaceans is of utmost importance. Participants agreed that IMO provides a multi-stakeholder framework for the engagement of all key actors. Therefore, actions will be initiated by the Steering Committee to inform both the Marine Environment Protection Committee (MEPC) and the Sub-Committee on Safety of Navigations of IMO of these workshop conclusions and recommendations. To support this process, Alnitak will provide the resources for the development of a Strategic Plan that identifies a course of action (what, who, how, when) of the steps needed to implement the workshop recommendations.

4. PROPOSAL FOR AN STRATEGIC PLAN FOR THE DEVELOPMENT OF AN IMOTAP CASE STUDY

As noted above, Ricardo Sagarminaga offered Alnitak's commitment to dedicate the remaining budget of Project LIFE + INDEMARES to develop a Strategic Plan that provides the basis to follow-up on the results of the workshop. He suggested that such a Plan would focus on:

- Describing the content, scope, milestones and timeline of the Pilot program.
- Developing a budget.
- Identifying key partners and stakeholders.
- Securing support of relevant authorities in Spain and developing a business case for engaging industry in developing and implementing a pilot program.

Ana Tejedor welcomed the proposal made by ALNITAK and confirmed the commitment of KAI Marine Services with the initiative. In addition, she offered KAI´s technical support to develop the basic components of the Pilot Program building on existing initiatives in the South-Western Mediterranean and Atlantic contiguous waters.

Greg Silber noted the importance of the conclusions of the Workshop and reiterated his belief that the actions identified here are likely to have great potential to reduce ship strikes of whales and protect marine resources. He indicated that the Endangered Large Whale Program in NOAA's Office of Protected Resources was committed to providing technical expertise and guidance, as feasible and where needed, toward developing the outreach information and systems discussed and in helping to move the program toward implementation.

5. ADOPTION OF REPORT

The report was adopted 'by email' on February, 18th, 2013.

6. ACKNOWLEDGMENTS

We thank the participants of the workshop who have made this report possible with their contributions. We also wish to thank the European Commission, NOAA's National Marine Fisheries Service, and Fundación Biodiversidad for the funds provided to organize the meeting. We are grateful to Capitan Padrón, Capitan Nogueira and Juan Otero from the Spanish Ministry of Transport as well as to Ms. Itziar Martin for their support in the organization of the workshop. Special thanks to Javier García- Atance, Federico Esteve and José Luis Cerezo, from the Spanish Maritime Cluster for their interest & commitment to enroll industry in the marine conservation initiatives. Finally, we wish to thank the Chairman of the Workshop, Mr. Miguel Palomares for the leadership and wisdom provided that helped lead to the results provided here.

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8. ACRONYMS

AIS	Automatic Identification System
GPS	Global Positioning System
IMO	International Maritime Organization
IWC	International Whaling Commission
MEPC	Marine Environment Protection Committee at IMO
MSR	Mandatory Ship Reporting systems
NGO	Non-Governmental Organization
NOAA	United States National Oceanographic and Atmospheric Administration
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
TSS	Traffic Separation Scheme
USA	United States of America

9. LIST OF FIGURES

10. ANNEXES

ANNEX I: IMO GUIDANCE DOCUMENT

INTERNATIONAL MARITIME ORGANIZATION
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IMO

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Ref. T5/1.01

MEPC.1/Circ.674
31 July 2009

GUIDANCE DOCUMENT FOR MINIMIZING THE RISK OF SHIP STRIKES WITH CETACEANS

1 MEPC 58 (6 to 10 October 2008), having considered a submission by the United States (MEPC 58/18) which provided a draft guidance document for minimizing the risk of ship strikes with cetaceans, agreed to invite delegations to provide comments on the draft with a view to approval at MEPC 59 (MEPC 58/23, paragraph 18.7).

2 MEPC 59 (13 to 17 July 2009), taking into account relevant comments, approved the guidance document and requested the Secretariat to issue it as an MEPC circular.

3 Member Governments are invited to bring this circular to the attention of all interested parties, including Administrations, recognized organizations, shipping companies and other stakeholders for action as appropriate.

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MEPC.1/Circ.674

ANNEX

GUIDANCE DOCUMENT FOR MINIMIZING THE RISK OF SHIP STRIKES WITH CETACEANS

Introduction

1 The purpose of this document is to provide guidance to Member Governments in reducing and minimizing the risk of ship strikes of cetaceans. This document sets forth important general principles that should be taken into account and possible actions that may be taken to reduce such risk.

2 A Member Government should ensure that in its consideration of the issue of reducing and minimizing the risk of ship strikes of cetaceans it takes into account all interests: those pertaining to its biological objectives, those of relevant government agencies, scientists and researchers, the shipping community, port authorities, environmental non-governmental organizations, and other interested stakeholders.

Background

3 Ship strikes of cetaceans are an issue of growing concern internationally. With the increase in the number, size and speed of ships, the threat of ship strikes of cetaceans may also increase and thus there have been calls for the Organization to take action to minimize this threat. This document responds to these calls by providing guidance to Member Governments in taking action to reduce and minimize this threat.

4 Collisions between cetaceans and ships occur worldwide where there is an overlap between cetaceans and vessel activities. Such collisions involve a wide variety of vessel types, including recreational, commercial and governmental vessels. Damage to vessels, ranging from minor to extreme, has resulted from ship strikes of cetaceans. Such damage includes cracked hulls; damaged propellers, propeller shafts, and rudders; damaged port and starboard aft strut actuators; broken steering arms; and ruptured seawater piping[1]. In some cases, in particular involving large vessels, captains may be unaware that a collision with a cetacean has occurred.

5 Although the vulnerability among species varies, a wide variety of cetaceans have been involved in ship strikes[2]. Evidence of a strike has been noted by blood in the water; animals seen with cuts; propeller gashes or severed tailstocks; animals observed sinking after strikes indicating death; fractured skulls, jaws, and vertebrae; or haemorrhaging, massive bruising or other injuries noted during a necropsy of an animal[3]. There are gross and histological evidence of sharp and blunt trauma in such species as North Atlantic right whales (*Eubalaena glacialis*), fin whales (*Balaenoptera physalus*), and sperm whales (*Physeter macrocephalus*) killed by vessels. Improvements in necropsies have resulted in the ability better to identify when a ship strike results in the death of a whale. Notwithstanding, many animals subject to ship strikes likely go undetected or unreported because ship strikes may occur in remote areas or the carcasses may sink or drift out to sea.

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1 Koen Van Waerebeek and Russell Leaper, Second Report of the IWC Vessel Strike Data Standardization Working Group, SC/60/BC 5 (2008); Jensen and Silber, Large Whale Ship Strike Database (2003).

2 Glass *et al.*, Mortality and Serious Injury Determinations for Baleen Whale Stocks Along the United States Eastern Seaboard and Adjacent Canadian Maritimes, 2002-2006 (2008).

3 Campbell-Malone *et al.*, 2007.

General principles

6 If a Member Government seeks to reduce and minimize ship strikes of cetaceans in its waters, it should first clearly define the problem. This involves identifying what specific species is at risk: what physical characteristics, distribution, and behaviour make it susceptible to ship strikes; when (i.e. what time of year) is the risk present and in what specific areas; and what vessel traffic characteristics (e.g., types of vessels, traffic patterns, and densities) contribute to this risk.

7 A Member Government should take into account the following principles when taking action to reduce and minimize ship strikes of cetaceans:

.1 maritime safety is of paramount concern;

.2 any actions taken should seek to accomplish the biological objective of reducing and minimizing the risk of ship strikes while also taking into account adverse impacts on the shipping industry and other interested entities;

.3 documentation and the best available research on the identified species of concern as well as information pertaining to the vessel traffic in the area (e.g., types of vessels, traffic patterns, and density of traffic) should be gathered and analysed to determine the risk of a whale/ship interaction;

.4 any measures adopted should be based on the best available science and be narrowly tailored to the time when, and areas where, the species is present;

.5 action taken to address ship strikes should be part of an overall strategy for protection and recovery of the identified species;

.6 a range of possible solutions to address ship strikes should be carefully analysed in light of the risk to the populations or species, the relative threat posed by ship strikes, and the impact on maritime safety and commerce; and

.7 all actions taken should be reviewed periodically to determine their effectiveness and whether they should be adjusted to further reduce and minimize the risk of ship strikes.

Possible actions to be taken at national level

8 There are several actions that could be considered to reduce and minimize the risk of ship strikes of cetaceans. In considering the appropriate actions to take, a Member Government may determine to first pursue those actions that are the most feasible and most expedient to implement or it may decide to pursue various actions simultaneously. Any actions taken must, of course, be fully consistent with international law.

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Possible actions to be taken at national level

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See also MEPC 58/INF.15. Maritime Safety Committee circular MSC/Circ.1060 on the Guidance Note on the Preparation of Proposals on Ships' Routeing Systems and Ship Reporting Systems for submission to the Sub-Committee on Safety of Navigation is a useful guide in developing such proposals.

.2 Measures should also be taken to minimize ship strikes during offshore sailing races. Such races should be planned such that the route minimizes the overlap with densities of cetaceans and cetacean habitat, and at times when there may be fewer cetaceans in the area. Competitors should be provided with appropriate information to avoid ship strikes, such as where cetaceans are most likely to be encountered so that a lookout might be provided and what to do in the event of a collision.

Possible actions to be taken at international level

13 *Coordination with other States* – Since a cetacean may be susceptible to a ship strike throughout its range, a Member Government should coordinate with the other States in whose waters the species inhabit. Such coordination may include:

.1 at a minimum, the identification and exchange of information on threats to the identified cetacean of concern and its habitat, provision of mutual assistance, identification of authorities responsible for handling this issue, and coordination in the event of an emergency situation involving a ship strike including collaboration on recovering carcasses found at sea and in conducting necropsies and sample analysis to determine the cause of death and to improve the understanding of the interactions between ships and whales;

.2 designing and implementing measures to reduce and minimize the risk of ship strikes, including the development of education and outreach materials and other guidance, and joint management plans;

.3 facilitation of co-operative research and unfettered exchange of scientific data on the species of concern, including monitoring the species' distribution and occurrence particularly in relation to vessel traffic;

.4 coordination and, where possible and appropriate, development of proposals for specific measures at international organizations such as the International Maritime Organization; and

.5 adoption of agreement and/or memoranda of understandings to formalize the relationship among relevant States to address the issue of ship strikes of the identified cetacean of concern.

14 A Member Government that has identified an issue with ship strikes of a particular cetacean in its waters should also coordinate with other Member Governments in appropriate international fora such as the Organization, the International Whaling Commission, and the Convention on Migratory Species.

Implementation

15 Any actions taken to implement a ship strike reduction strategy should be disseminated broadly to the maritime industry and made clear through the appropriate channels to the affected industry.

16 A Member Government should provide a mechanism for comments, reports, and observations of the measures adopted and, if necessary, adjust the measures accordingly. Collecting data on collisions with cetaceans is critical to understand the issue and developing mitigation measures. Thus any information gathered through national mechanisms should be provided to the International Whaling Commission (IWC), which has developed a global ship strikes database. Data entry should be done using the IWC web-based interface: http://www.iwcoffice.co.uk/sci_com/shipstrikes.htm or by e-mailing the IWC Secretariat at: shipstrikes@iwcoffice.org.

17 Member Governments should take the necessary measures to promote compliance by ships flying their flag with measures adopted by the Organization to reduce and minimize ship strikes of cetaceans.

ANNEX II: WORKSHOP TERMS OF REFERENCE

INTERNATIONAL WORKSHOP

MARITIME TRANSPORT AND BIODIVERSITY CONSERVATION

CONCERTING EFFORTS FOR A COHERENT MANAGEMENT OF THE RISK OF WHALE – SHIP STRIKES

Santa Cruz de Tenerife, Canary Islands (Spain) · 25th -26th of October 2012

EXECUTIVE SUMMARY

The international shipping industry helps drive commerce economics around the world. But, as a global business community, it also faces environmental challenges that affect its daily operations and its responsibilities as a contributor to the economies of countless industries. Vessel operators can play a leading role in integrating environmental information into their voyage planning to reduce the impact of their activities on the marine environment while improving the cost-effectiveness of their operations through sound risk management and risk reduction. Vessel collisions with large whales (or "ship strikes") is an economic and safety concern for the industry. Developing ways to successfully mitigate the impact of this costly interaction may serve as a useful model for developing communication and delivery systems to address more general global and regional issues that arise from the interaction of the industry with the marine environment.

A workshop, "**Maritime Transport and Biodiversity Conservation**", is being convened and invites shipping industry leaders, living marine resources scientists, public administrations and other stakeholders to identify and assess ways to develop an **International Mariner Outreach & Training-for-Action Program** that will provide communication tools and delivery systems to educate mariners about steps that can be taken to reduce the risks of maritime transport for whales and other protected species and their habitats while improving industry safety and cost-effectiveness.

The workshop will take place in the Canary Islands, **Spain**, in **October 2012** (initial date proposal from **25th -26th of October**). It seeks to develop environmental protection materials and delivery systems to assist mariners grappling with environmental requirements and guidelines in ways that will reduce impacts to living marine resources, possibly reduce damage to vessels, and allow efficient transport of goods. The workshop will regard the international shipping industry as a single global population that is interested in elevating environmental impacts, and one that would welcome guidance on ways to recognize and adhere to environmental regulations. The workshop also seeks to identify efficient and cost-effective delivery systems to provide information to the industry. It will also consider feedback and monitoring mechanisms to assess and improve a dynamic outreach program. Finally, it will help establish steps needed to build and maintain such an environmental protection program.

Expected outcomes include an **information paper** to be submitted to and presented at the International Maritime Organization (IMO), a content proposal for an **International Mariner**

Outreach & Training-for-Action Program and a technical proposal for the integration of environmental information on the daily operation of industry vessels.

WORKSHOP CONTEXT

A vast network of infrastructure and fleets supports global transport of goods and raw materials. The network and related intermodal transport systems extends to all of the world's coasts and oceans. There are many conditions that apply to all large scale and international shipping operations in all locations; the most important of these is the need to move goods around the world safely and efficiently. National and inter-connected international economies depend upon it. In this regard, all international shipping interests might be regarded as a single community. There are certain conditions, nonetheless, such as specific navigational hazards, continental geographies, and wind and current patterns that differ by location. And, the types of goods and services delivered, economies, and other features may be specific to regions, nations, or continents.

Because international shipping can have a negative impact on such things as living marine resources and air quality, it must also heed various regionally-specific environmental safeguards. These might include the need to help protect such things as coral reefs, particularly sensitive sea areas, aggregations of endangered species, and to reduce the impact of introduction of invasive species, exchanged ballast water, fuel and oil spills, and waste dumping. International conventions and agreements (and some international regulations) have been entered into to address some of these, e.g., the United Nations Environment Programme and its Regional Seas Conventions; the IMO´s Ballast Water Convention, PSSA´s and MARPOL.

In spite of progress, there remains a need to establish a centralized or common source for communicating to mariners the locations of environmentally sensitive locations to inform vessel operators how they might best respond to protect those resources. This is highlighted by the fact that in many cases, regional management efforts could be rendered ineffective given that a majority of vessels on passage through their waters are of fleets that are not being exposed to guidance, communication and capacity development efforts.

There is therefore a clear need for providing the shipping industry and other relevant stakeholders with **guidance and information on environmentally sensitive locations, protected living marine resources and endangered species** tailored to large-scale, interconnected, and intercontinental shipping interests. This includes the development of materials and information delivery systems that are carefully adjusted to ensure their efficiency in attaining their intended purpose, ease of use for vessel operators, and clarity and utility to maritime transport sectors in pursuit of collaborative efforts to protection of endangered species and sensitive marine ecosystems.

SHIP STRIKES AS A USEFUL MODEL FOR EFFECTIVE INDUSTRY ACTION

The issue of vessel collisions with large whales (or "ship strikes") serves as a useful model for developing, monitoring, and evaluating a program whereby mariners making intercontinental voyages are provided with relevant environmental information that includes generalized yet regionally-specific recommendations on steps that mariners can take to reduce impact to marine resources. Vessel collisions with cetaceans occur in all waters, globally, and can be inflicted by nearly all vessel types. Vessel collisions with whales can result in damage to ships which may lead to delays and costly repairs. In addition, these occurrences may be impeding the population growth of a number of endangered species. Concern is growing about this issue and measures are being implemented both domestically and internationally (e.g., Report of the Joint IWC-ACCOBAMS Workshop on Reducing Risk of Collisions between Vessels and Cetaceans) to address the threat.

The workshop will use the issue of ship strikes of cetaceans as a model for more generic environmental issues to be addressed, analysing key considerations for the development of a pilot **International Outreach & Training for Action Program** for the industry. The Program should be geared to support mariners to identify areas in which conservation measures are in place, and deliver them information about steps that can be taken to reduce the risks for whales and other protected species and habitats. The design and implementation of such a Program must be considered carefully to ensure its efficacy. This is particularly important to avoid counterproductive effects. It is essential to involve stakeholders in the design to, for example, to avoid such things as information saturation and continuing to ensure navigational safety.

WORKSHOP OBJECTIVES AND CONTENT

The workshop "**Maritime Transport and Biodiversity Conservation**" invites shipping industry leaders, living marine resources scientists, public administration representatives and other stakeholders to develop an **International Outreach & Training for Action Program** that will provide communication tools and delivery systems to educate mariners on steps that can be taken to reduce the risks of "ship strikes", protecting whales and other protected, sensitive species and habitats while improving industry safety and cost-effectiveness.

The workshop will address:

- **Importance of a global approach to the management of risk to biodiversity associated with shipping as collisions with whales:**
  There is a clear need for providing the shipping industry and other relevant stakeholders with guidance and information adapted to large-scale, intercontinental shipping. Ships of all flags travel worldwide on passage through sites of high risk for collisions with whales. In particular, we note the establishment of vessel speed restriction zones to protect right whales where over 6,000 separate vessels utilize U.S.

east coast ports, most of which are flying foreign flags (Bettridge and Silber, 2011). The Gibraltar Strait hosts over 25% of the world's shipping; a number that represents a large percentage of the world's international shipping fleet and there are environmental protection concerns, including vessel strikes of whales in this area as well. Certain vessels are making trips between these two areas and it would behove both the mariner and marine resource managers if information for both regions could be provided in a single package. Some routes and destinations for an individual vessel can be global in scope and regional resource protection information for the mariner could be provided to the industry as a whole.

Issues to be discussed:

- Whale – shipping interactions, review of the situation - AIS modelling of shipping vs cetacean population modelling.
- Ship-strike mitigation measures.
  - How mariners may/may not adhere to requirements or guidance, and how this can be monitored (case studies - AIS information).
  - How measures imposed at national or regional level may not be fully effective if not addressed to the ships utilizing the site managed.
  - How certain ship-strike mitigation measures are common to a number of locations, globally.
- Interest of the industry and other relevant stakeholders for a common type of communication and outreach protocol for all mariners making inter-continental and inter-ocean voyages.

- **Proposed steps towards the development of a pilot "International Mariner Outreach & Training for Action Program" focused on vessel strikes of large whales.**

  It is important to establish a coherent communication strategy in terms of making the best use of available knowledge and means. The design, production and distribution of specific or generalized information and awareness-raising materials should be adapted to be useful for the shipping industry and other key stakeholders, taking into account that some things are common to all shipping operations and all locations (i.e., there may be outreach and information sharing that can be common to all mariners) while some are unique (among these are the living marine resources that occur in certain locations and may be unique by region or specific location). It is necessary to identify what tools are available for getting information to mariners and consult the industry and other key stakeholders to assess their effectiveness.

  Issues to be discussed:

  - Outreach package content and format
    - User-friendly, easy to understand
    - What means are available? - determine the types and content of communication packages (e.g., printed material, electronically distributed material; and how best to distribute)?
    - What type of medium, e.g., printed, electronic, web-based

- What type of information will be included
- How can communications be made?
  - Lessons learned in other locations about content and relative effectiveness of outreach media.
  - Identify best ways to distribute the information to mariners
- What factors should be considered negative impact (e.g. saturation of information or "lost" information).
- Development of a pilot program
  - Key steps and timeline for developing and implementing a pilot program (Who will do what, how and when?)
- Consideration of a monitoring/feedback program
  - Can we develop a draft monitoring/feedback program to build into the system from the beginning?
  - What are the questions to be addressed by this monitoring/feedback programme?
    - Is the program working; if not, how can it be improved in the future.
    - Are mariners using it, if it actually changes their behaviour?
    - Are there ways to improve the content or delivery of the package through time?
  - How will we do this?
- Future agenda challenges.
  - How might the pilot program be useful for the conservation of other protected marine resources?
  - Emerging issues – e.g. arctic
  - How it maybe useful for other purposes e.g. ECA´s, PSSAs, MARPOL Special Areas…etc.

EXPECTED OUTCOMES

Expected workshop outcomes include:

1. **Key content** to be addressed by a pilot **Outreach & Training for Action Program** (international curricula and materials) for all interested parties including shipping companies, Governments, recognized organizations and other stakeholders, as appropriate.

2. A **pilot program** involving a shipping company (e.g MAERSK, ACCIONA) that on a voluntary basis will implement the program on its fleet.

3. **Technical proposal** for the integration of ship strike reduction materials and information into voyage planning guidelines and licensing programmes; prominently featured notes on charts and in other nautical publications regarding the possibility of

ship strikes; and inclusion of information on relevant websites with an international coherence.

4. **INFO Paper** to be presented at the International Maritime Organization (IMO) as a follow up to the IMO *"Guidance document for minimizing the risk of ship strikes with cetaceans"*, especially with regards to the implementation of its international cooperation provisions.

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LIFE+ INDEMARES – LIFE07NAT/E/00732

This workshop is coordinated by ALNITAK in the context of Action A14b of the EC LIFE+ Project INDEMARES.

The INDEMARES Project, coordinated by Fundación Biodiversidad counts on the collaboration of several partners. The project has the global goal of developing the "Inventory and designation of marine Natura 2000 areas in the Spanish sea". In this context, ALNITAK, as co-financing partner develops Action A14 with the aim of mitigating the risks to biodiversity with concrete management measures through collaboration with the sectors of transport, defence, energy, fishing and tourism to find pragmatic solutions.

Map of the ten sites where the INDEMARES is conducted

ANNEX III: PARTICIPANTS LIST

Title	Name	Last name	Title	Organization
Mrs.	Natacha	Aguilar	Director, Cetaceans Research Line	BIOECOMAC, University of La Laguna
Mr.	William	Barrere	Captain	Maersk
Mr.	William	Butler	Captain	Crowley Marine Transport
Mrs.	Shannon	Bettridge	Office of Protected Resources	NOAA-NMFS (US)
Mrs.	Rochelle	Constantine	School of Biological Sciences	University of Auckland
Mr.	German	De Melo	Professor	University of Barcelona
Mr.	John	Dickinson	Head at IMO	The Nautical Institute
Mr.	Lorenzo	Fernandez	Technical Adviser	Maritime Authority of Tenerife
Mr.	Luis	Guerrero	Director Marine Division	Bureau Veritas
Mr.	Stanislav	Kozhuharov	Manager	V Group
Mr.	David	Mattilla	US Delegation to IWC	NOAA-ONMS (US)
Mrs.	Kathy	Metcalf	Director Maritime Affairs	Chamber of Shipping of America
Mrs.	Elsa	Naumann	Environment and Communications Officer	Wallenius Wilhelmsen
Mr.	Manuel	Nogueira	Technical Adviser	Maritime Authority of Tenerife
Mr.	Esteban	Pacha	Director	International Mobile Satellite Organization
Mr.	Antonio	Padrón	Maritime Captain	Maritime Authority of Tenerife
Mr.	Miguel	Palomares	Chairman	Chairman
Mr.	Ricardo	Sagarminaga	President	Alnitak
Mrs.	Mª Dolores	Septien	Chief CCS Tenerife	Maritime Safety Agency (Spain)
Mr.	Greg	Silber	Office of Protected Resources	NOAA-NMFS (US)
Mr.	Sergio	Silva	Major Prefect	Maritime Prefecture Argentina (Argentina)
Mr.	Gurpreet	Singhota	Deputy Director/Head Operational Safety Section, MSD	International Maritime Organization
Mrs.	Ana	Tejedor	Partner	KAI Marine Services
Mr.	Steven	Tucker	Deputy Chief for Marine Protected Species	US Coast Guard
Mrs.	Julia	Vera	Partner	KAI Marine Services
Mr.	Dave	Wiley	Stellwagen Bank National Marine Sanctuary	NOAA (US)

ANNEX IV: WORKSHOP AGENDA

INTERNATIONAL WORKSHOP ON MARITIME TRANSPORT AND BIODIVERSITY CONSERVATION

Concerting efforts for a coherent management of the risk of whale – ship strikes

25 - 26 October 2012 · Santa Cruz de Tenerife (Canary Islands, Spain)

Escuela de Negocios de las Islas Canarias (ENIC) · Plaza de la Candelaria, 1 Edificio Olympo

Workshop General Objective

To identify and assess ways and means to develop an **International Mariner Outreach & Training-for-Action Program (IMOTAP)** that will provide communication tools and delivery systems to educate mariners about actions that can be taken to reduce the risks of maritime transport for whales and other protected species and their habitats, while improving industry safety and cost-effectiveness.

Workshop Specific Goals and Expected Outcomes

Specific goals:

- (1) To move forward the International Maritime Organization (IMO) agenda for reducing ship strikes with cetaceans and assess the steps needed to build and maintain an IMOTAP.
- (2) To identify which knowledge and skills mariners need to successfully tackle the reduction of ship strikes.
- (3) To identify efficient and cost-effective systems that support the integration of environmental information on the daily operation of industry vessels.

Expected outcomes:

- (1) An **information paper** to be submitted to and presented at IMO.
- (2) A **training content proposal** for IMOTAP.
- (3) A **technical proposal** identifying potential, efficient and cost-effective delivery systems.

Workshop Agenda

Day 1 (Thursday, October25th)

TIME	THEME	PRESENTATIONS & SPEAKERS	ISSUES TO BE ADDRESSED
9.00 - 9.10	**Welcome and opening of the Workshop.**	**Pedro Rodriguez Zaragoza.** President, Port Authority **Antonio M. Padrón y Santiago.** Maritime Captain, Maritime Authority of Tenerife. **Ricardo Sagarminaga**. President, Alnitak. **Miguel Palomares.** Chairman of the workshop.	• Welcome to all participants, presentation of the agenda and introduction of Key Note Speaker.

9.10 - 9.25	**Key Note Address.**	**Brief Introduction to the IMO Guidance document "Measures to reduce ship strikes with cetaceans".** Gurpreet Singhota. Deputy Director/Head of the Operational Safety Section (IMO).	• Achievements and challenges with regard to action undertaken at the IMO to reduce ship strikes with cetaceans.
9.25 - 9.30	**Workshop objectives and expected outcomes.**	**Objectives and expected outcomes of the Workshop**. Miguel Palomares. Chairman of the workshop.	• Terms of reference, objectives and expected outcomes of the workshop.
PANEL 1: STRATEGIC MOTIVATIONS BEHIND A GLOBAL APPROACH TO RISK MANAGEMENT WITH RESPECT TO WHALE - SHIP STRIKES			
9.30 - 9.50	**World shipping: The context**	**A global outlook of the shipping industry worldwide.** Kathy Metcalf. Director, Maritime Affairs, Chamber of Shipping of America.	• Overview of the shipping industry (market revenue and profile, fleet size, number of trips annually, main routes and route profiles, drivers of change). • Voyage planning (how is it done, critical factors influencing its development).
9.50 – 10.45	**Whale – shipping interactions: The challenges**	**Impact of ship-strikes on whale populations and effectiveness of current action.** Ana Tejedor. Partner, KAI Marine Services **Navigating in environmentally sensitive areas. Case studies:** • **Ana Tejedor.** Partner, KAI Marine Services • **Greg Silber.** Office of Protected Resources, NOAA-NFS • **Sergio Gustavo Silva**. Prefecto Mayor, Argentine Naval Prefecture • **Rochelle Constantine.** University of Auckland. **Natacha Aguilar**. University of La Laguna.	• Whale behavior and distribution. How ship strikes affect populations and existing mitigation measures applied to reduce the risk of strikes. • Case studies: existing experiences in environmentally sensitive areas (environmental threats posed by maritime transport, mitigation and risk management measures applied by / enforced on mariners and success and challenges of such measures).
10.45 - 11.15	**COFFE BREAK** offered by Naviera Armas		
PANEL 2: DEVELOPMENT AND IMPLEMENTATION OF A PILOT "INTERNATIONAL MARINER OUTREACH & TRAINING FOR ACTION PROGRAM (IMOTAP)"			
11.15 - 12.30	**Responding to challenges (I): Learning from the past (and from the main actors!).**	• **Lessons learned from past outreach programs. Shannon Bettridge**. Office of Protected Resources, NOAA-NFS. **Ricardo Sagarminaga**. President, ALNITAK • **The industry perspective on information delivery to mariners**. Elsa Naumann, Wallenius Wilhelmsen. • **Discussion.** All participants.	• Lessons learned with regard to the content and effectiveness of previous mariner outreach programs. • Factors that need consideration when designing a communication strategy. • Industry and other relevant stakeholders interest in a common type of communication protocol for mariners

			making inter-continental and inter-ocean voyages. • Negative impact e.g. saturation of information or "lost" information. Industry perspective about the types of communication modes that do/don't work. • Incentives versus enforcement/punishment. • Using the GOOS project as a case study: How was the education and training process for the development of this program?
12.30 – 13.30	**Responding to challenges (II): Building awareness and capacity for practical, successful solutions.**	• **What skills, training and knowledge should be provided in navigation academies to mariners?** Germán de Melo. Professor, University of Barcelona. • **What means are available for delivering upgraded training and information to mariners?** John Dickinson. The Nautical Institute • **Other contributions:** Gurpreet Singhota. Deputy Director/Head of the Operational Safety Section (IMO). • **Discussion.** All participants.	• Relevant processes for including an International Mariner Outreach & Training for Action Program in the basic training of (future) mariners. • Training and information through environmentally sensitive voyage planning. • Potential of shipping companies training workshops and upgrading courses. • Available information aboard vessels. • Other relevant options/industry perspective.
13.30 – 14.30	**LUNCH** offered by KAI Marine Services		
14.30 – 15.15	**Responding to challenges (III): Identifying available, supporting technologies.**	• **What technological means are available to deliver real time interactive training and warning?** Esteban Pacha & Andy Fuller, International Mobile Satellite Organization. • **Other contributions.** David Wiley. NOAA • **Discussion.** All participants.	• Systems available and future possibilities.
15.15 – 15.20	**Introduction to Working Groups.**	• **Miguel Palomares.** Chairman of the Workshop.	• Discussion of scope: geographical area & environmental issues to be covered by a pilot IMOTAP. • Specific terms of reference, objectives and expected outcomes for each of the 3 working groups.
15.20 – 18.00	**Working Groups I & II:**	• **WG Leaders: Kathy J MetCalf (WGI) / Esteban Pacha (WGII)** • **Number of participants:** 10-15 participants	• What type of information needs to be included in a pilot IMOTAP and delivered to mariners and vessel operators?

	WGI: What information should a capacity building program focus on? **WGII: What delivery system should IMOTAP target?**	• **Rapporteurs:** Ricardo Sagarminaga. President, Alnitak (WGI) / Julia Vera. Partner, KAI Marine Services (WGII).	• Expected outcome WG1: List of information that IS relevant and that is NOT relevant and/or feasible to deliver to mariners aboard an operating vessel. • What delivery system should IMOTAP use to make the information available to mariners and vessel operators? • Expected outcome WG2: Ranked list of communications media that provide the best and most efficient way to deliver information to mariners and vessel operators.
15.20 – 18.00	**Working Group III: What key stakeholders should IMOTAP address to effectively engage mariners?**	• **WG Leader: Captain Singhota.** • **Workshop participants:** 7-10 participants • **Rapporteur:** Ana Tejedor. Partner, KAI Marine Services	• Identify key political mechanisms and stakeholders to involve in IMOTAP for its effective endorsement by mariners. • Expected outcome WG3: Roadmap of action. What, Who, When and How.
18.00 – 18.30	**Summary presentations of proposals from Working Groups & discussion.**	• WG Leaders and/or group appointed spokesperson • Workshop participants (everyone)	• Key points of agreement. • Chairman if necessary, convene outstanding discussions for following morning
18.30 – 19.45	Drafting of session reports (rapporteurs)		
20.00	Reception offered by **Port Authority Santa Cruz de Tenerife** at workshop venue.		

Day 2 (Friday, October26th)

TIME	TALK TITTLES	SPEAKERS	ISSUES TO BE ADDRESSED
PANEL 3: MONITORING AND UPSCALING A PILOT "INTERNATIONAL MARINER OUTREACH & TRAINING FOR ACTION PROGRAM (IMOTAP)"			
10.00 – 10.45	**Monitoring and evaluating the success of a pilot IMOTAP.**	• **Ensuring mariner adherence to environmental safeguards.** Steven Tucker. US Coast Guards. • **Assessing the effectiveness and return on investment (avoided accidents and reputation & brand value of corporate social responsibility action) of training efforts from an industry perspective**. Stanislav Kozhuharov. V. Group & Cruise Lines Industry Association.	• Can a monitoring / feedback system be put into place from the beginning of IMOTAP to evaluate its results? What are the questions to be addressed by this monitoring/feedback program? ▪ Is the program working; if not, how can it be improved in the future. Are mariners using it, does it actually changes their behavior? ▪ Are there ways to improve the content or delivery of the package through time? • What is the "business case" for industry players to support an IMOTAP? • How should we approach the implementation of a monitoring system? • What role could the IMO play in promoting the observation of the recommendations set forth in the Guidance document?
10.45 – 11.30	**Implementation challenges.**	• **Miguel Palomares**. Chairman of the Workshop. • **Discussion.** All participants.	• Inspiring change from within: industry commitment and possibilities to raise the environmental awareness and capacity of its crews. • Resources needed to develop and implement IMOTAP and financing possibilities. • When and who could/should develop infrastructure to support the development of awareness-raising materials for IMOTAP? What additional expertise is needed (technological)?
11.30 - 12.00	**COFFE BREAK** offered by Grupo DISA		
12.00 – 13.30	**The Way Ahead: Next Steps & Future agenda challenges**	• **Potential of the IMOTAP for future Environmental Challenges. Ana Tejedor.** Partner, KAI Marine Services	• How might IMOTAP be useful for the conservation of other protected marine resources or other purposes (e.g ECA´s, PSSAs, MPAs, MARPOL Special Areas, etc.). • How to move this Agenda forward.
13. 30	**Closing of Workshop**		
13.30 – 17.30	**LUNCH & EXCURSION** offered by Cabildo de Tenerife, Tenerife Convention Bureau and Funcat Primero SL		

ANNEX V: INFORMATION & DELIVERY SYSTEM MATRIX (WORKING GROUP 1)

WHAT	GENERAL BACKGROUND INFO	CRITICAL SPECIES DESCRIPTION	HISTORICAL AGGREGATION AREAS	REAL TIME DATA AND RECENT SIGHTINGS	MEASURES TO REDUCE SHIP STRIKE	WHAT TO DO IN CASE OF SHIP STRIKE	REPORTING MECHANISM	VOLUNTARY MEASURES	MANDATORY COMPLIANCE REGULATIONS	INTL REGULATORIY FRAMEWORKS	SENSITIVE ENVIRONMENTAL AREAS	INTERNET HUB WITH RESOURCES											EXISTING	UNDER DEVELOPMENT	VOLUNTARY SYSTEMS	PRIORITY (1=highest; 2; 3=lowest)	COMMENTS
HOW																											
INMARSAT C				X			X																X			1	
SATELLITE BROADBAND				X			X					X												X		1	TRAINING MODULES, REAL TIME UDATES
AIS				X																			X	X		2	THE MEANS ARE THERE BUT HAVE NOT BEEN DEVELOPED
LONG RANGE IDENTIFICATION AND TRACKING (Irit)																							X				DISREGARD. ALTHOUGH IT IS A TOOL TO TRACK SHIP POSITION AND TO IDENTIFY SHIPS A RISK OF ENTERING A SENSIBLE AREA
e-MAIL	X	X	X		X	X	X	X	X	X	X	X											X			1	
ELECTRONIC NAVIGATIONAL CHARTS (ENC) ECDIS			X		X					X	X													X		1	UPDATES ARE NOT FREQUENT ENOUGH
WHALE ALERT SMART PHONE APP	X	X	X	X	X	X	X	X	X	X	X	X											X	X	X	1	Dfficult to expect tihis resources to become mandatory to have onboard ships although its use could be recommended.
e-NAVIGATION				X			X					X												X			NEW CONCEPT TO INTEGRATE INFO ABOARD SHIP IN ONE SOURCE. INCLUDE WHALE INFO!
NAVTEX				X	X						X												X			2	
SafetyNET				X	X						X												X			2	
AMVER				X	X						X												X		X	3	VOLUNTARY SYSTEM
RADIO EQUIPMENT & SYSTEMS				X	X	X	X	X	X		X												X			2	Local notice to mariners GMDSS local radio systems WWNAVIGATIONAL DSC
VTS System				X	X	X	X																X			2	THIS IS A SYSTEM , NOTTECHNOLOGY
Hard copies	X	X	X		X	X	X	X	X	X	X	X											X		X	1	Pilots ship agents TRAINING MODULES
Cellular phones																							X		X	3	
Wheather routing information	X		X																				X		X	2	
TO WHOM																											
CREW	X	X	X	X	X	X	X	X	X	X	X	X															DIFFERENT SECTORS NEED TO BE ADDRESSES (WITH DIFFERENT TECHNOLOGICAL CAPABILITIES?)
MANAGEMENT	X	X	X		X	X		X	X	X	X	X															OWNERS, SHIP MANAGERS, CHARTERERS
PILOTS				X																							
MEDIA	X	X	X		X			X	X	X	X	X															PUBLIC AT LARCH (OUTREACH)
FLAG STATES	X	X	X		X	X		X	X	X	X	X															
SHIP AGENTS	X	X	X		X	X		X	X	X	X	X															
MARITIME ASSOCIATIONS AND EXCHANGES	X	X	X		X	X		X	X	X	X	X															
FISHING INDUSTRY?																											NOT COVERED BY IMO
RECREATIONAL BOATERS?																											
ENVIRONMENTAL NGOs																											

ANNEX VI: STAKEHOLDER MAP (WORKING GROUP 2).

Stakeholder	Stage of engagement (Design, Implementation, Monitoring)	Inputs	Role at IMO	Resources to mobilize	Other considerations?
Spain	D+I+M	Technical & political support	1)Submission of document 2)Petition to include a new unplanned output addressing avoidance of ship strikes with whales. 3) Support	- DGMM - Shipping companies	- IMOTAP initiative pilot Programme development.
USA	D+I+M	Technical & political support	Co – sponsor the document	- NOAA + USCG - Shipping companies - Technology	- IMOTAP initiative pilot Programme development. - Economic support?
New Zealand	D+I+M	Technical & political support	Co – sponsor the document	-Auckland University	- IMOTAP initiative pilot Programme development.
Canada	D+I+M	Technical & political support	Co – sponsor the document	?	- IMOTAP initiative pilot Programme development. Economic support?
Australia	D+I+M	Technical & political support	Co – sponsor the document	?	- Economic support?
Argentina	D+I+M	Technical & political support	Co – sponsor the document	- Prefectura Naval	- IMOTAP initiative pilot Programme development.
Belgium	D+I+M	Technical & political support	Co – sponsor the document	?	- Economic support?
Monaco	D+I+M	Technical & political support	Co – sponsor the document	?	- Economic support?
Japan	D+I+M	Technical & political support	?	- Shipping companies - Technology	- Economic support?
ROK	D+I+M	Technical & political support	?	- Shipping companies - Technology	- Economic support?
Norway	D+I+M	Technical & political support	Co – sponsor the document	- Shipping companies - Technology	- Economic support?

Stakeholder	Stage of engagement (Design, Implementation, Monitoring)	Input	Role at IMO	Resources to mobilize	Other considerations?
ACCOBAMS	Implementation	Cetacean population information	Political support	Grants	- Economic support?
European Commission	D+I+M	Political support	Co – sponsor the Info Paper Support at MEPC	EMSA	- Economic support?
IMO	D+I+M	Technical support		MEPC /MSC	
International Mobile Satellite Organization (IMSO)	D+I+M	Technical support	Support at MEPC /MSC		
International Hydrographic Organization (IHO)		Technical support			
International Whaling Commission (IWC)	Implementation	Cetacean population information	Political support	Grants	- Economic support?
Stakeholder	**Stage of engagement (Design, Implementation, Monitoring)**	**Input**	**Role at IMO**	**Resources to mobilize**	**Other considerations?**
Advisory Committee on Protection of the Sea (ACOPS)	D+I+M	Environmental action	Support at MEPC /MSC		
BIMCO	D+I+M	Users experience	Support	Shipping	Economic support?
Cruise Lines International Association (CLIA)	D+I+M	Users experience	Support	Shipping	Economic support?
Friends of the Earth International (FOEI)	D	Environmental action	Support at MEPC /MSC		
Global Maritime Education and Training Association (GlobalMET)	D	Technical Training knowledge	Support		

Greenpeace International	D	Environmental action	Support at MEPC /MSC		
International Association of Institutes of Navigation	D	Technical Training knowledge	Support		
Stakeholder	**Stage of engagement (Design, Implementation, Monitoring)**	**Input**	**Role at IMO**	**Resources to mobilize**	**Other considerations?**
International Association of Maritime Universities (IAMU)	D	Technical Training knowledge	Support		
International Chamber of Shipping (ICS)	D+I+M	Users experience	Support	Shipping	Economic support?
International Fund for Animal Welfare (IFAW)	D	Environmental action	Support at MEPC /MSC		
International Association of Dry Cargo Shipowners (INTERCARGO)	D+I+M	User experience	Support	Shipping	Economic support?
INTERFERRY	D	User experience	Support	Shipping	Economic support?
International Association of Independent Tanker Owners (INTERTANKO)	D+I+M	User experience	Support	Shipping	Economic support?
Stakeholder	**Stage of engagement (Design, Implementation, Monitoring)**	**Input**	**Role at IMO**	**Resources to mobilize**	**Other considerations?**
International Sailing Federation (ISAF)	D	User experience			

International Transport Workers' Federation (ITF)	D	Labour input	Support		
International Union for Conservation of Nature (IUCN)	D	Environmental action	Support at MEPC /MSC		
The Nautical Institute	D	Technical knowledge	Support		
World Wide Fund For Nature (WWF)	D	Environmental action	Support at MEPC /MSC		

Stakeholder	Stage of engagement (Design, Implementation, Monitoring)	Input	Role at IMO	Resources to mobilize	Other considerations?
Maersk	D+I+M				
WW	D+I+M				
NYK	D+I+M				
Norwegian Line	D+I+M				
Others?					

ANNEX VII: ROADMAP FOR ACTION (WORKING GROUP 2)

2012

- International Workshop on Marine Transport and Biodiversity Conservation & IMOTAP initiative kick-off
- Development of a road map including a case study to develop IMOTAP and inform MEPC
- Preparation of an IMO paper about the IMOTAP initiative
- Preparation of a request to MEPC to include a new unplanned output addressing avoidance of ship strikes with whales.
- Engagement of the shipping industry & other key stakeholders in the IMOTAP initiative through ICS, BIMCO, IWC etc.
- Start the awareness campaign for the IMOTAP initiative to include funding.
- Preparation of a formal request to IMSO for assistance regarding radiocommunications. issues

2013

- Development of the IMOTAP initiative pilot Programme.
- Endeavor to submit a document to MEPC 65 describing the IMOTAP initiative.
- Submit a request to the MEPC 65 to include a new unplanned output addressing avoidance of ship strikes with whales.
- Preparation & Development of an MEPC Side Event about the IMOTAP initiative at MEPC 65 (2013)

2014

- If necessary, endeavour to submit an IMO document about the IMOTAP initiative to MSC /NAV depending on the MEPC decisions
- Do likewise with IMSO
- Further development /implementation of the IMOTAP pilot Programme.

2015

- Finalize the development /implementation of the IMOTAP pilot Programme.
- Submission of a firm proposal for IMOTAP under IMO auspices (MEPC 67?)

2016

- On the basis of the final evaluation of the IMOTAP pilot Progremme, propose to the MEPC for the revision of the Guidance Document for minimizing the risk of ship strikes with cetaceans (MEPC.1/Circ.674) and issue the revised version as Guidelines under cover of a MEPC Resolution.

ANNEX VIII: DEFINITION OF AN IMOTAP

What is an International Mariner Outreach & Training for Action Program (IMOTAP)?

IMOTAP is a Program geared to provide maritime organizations, corporations and mariners the information, education and training they need to take actions to avoid ship strikes of cetaceans. It is also an evaluation process that determines understanding and the process that rewards successful compliance.

What does IMOTAP do?

- Identifies and prescribes relevant information for mariners and other maritime interests.
- Provides content guidelines for the development of training and information.
- Facilitates contact with institutions that are developing technologies to ensure compatibility with the dissemination of whale ship-strike information.
- Promotes the integration of ship-strikes with cetaceans into environmental education for mariners.
- Facilitates integrating measures to reduce ship-strikes with whales into vessel daily operations.
- Identifies possible reward systems.