Noise, collisions and solutions

▸ Roundtable report

9 July 2024 - MSC Headquarters, Geneva

ifaw

Who is IFAW ?

The International Fund for Animal Welfare (IFAW) is a global non-profit organisation with expertise in wildlife protection and conservation. Over the past 50 years, IFAW has tried to address some of the major challenges in marine conservation and is currently advocating measures to reduce continuous underwater noise pollution from shipping and the risk of collisions between vessels and whales.

IFAW is currently working with industry and policy makers to reduce the impact of the shipping industry on marine biodiversity within European waters. IFAW is advocating for modest reductions in ship speeds ("Blue Speeds") as an economic, effective and easily implemented measure to reduce three major environmental threats: underwater noise pollution, ship strikes risk with whales, and greenhouse gas emissions.

This work is generously supported by:

PRINCE ALBERT II OF MONACO FOUNDATION

NATIONALE POSTCODE LOTERIJ

The roundtable

On 9 July 2024, the International Fund for Animal Welfare (IFAW) organised a roundtable event hosted by the Mediterranean Shipping Company (MSC) in Geneva to discuss the issues of underwater noise and ship strikes for marine life and explore the available solutions to address these threats.

Bringing together a wide range of representatives from the shipping industry as well as European and international policy makers, this event aimed to stimulate a discussion as an open exchange of information and exploration of opportunities to collaborate on these important conservation issues.

This report summarises the key points raised during the discussions.

Photo: © IFAW

Whales: welfare, conservation and biodiversity

IFAW started the roundtable with an introduction about cetaceans and their ecological characteristics.

They are highly intelligent, they play, they experience pain and suffering and have lifelong family bonds. Their communities are built upon complex structures and levels of interdependence, and some species use cooperative hunting strategies. Whales also play a valuable role in the marine ecosystem as they bring important nutrients from the depths of the ocean to the surface, which stimulates the growth of phytoplankton - the single most important ingredient of the marine food web.

However, these animals encounter many threats as they travel great distances across the world's oceans. Among these threats are underwater noise from human activities, and the risk of collision with ships.

▶ A sperm whale social unit of Kefalonia, along the Hellenic Trench. Photo: © A. Frantzis / Pelagos Cetacean Research Institute

Underwater noise from shipping

Noise impacts on marine biodiversity

There is much research available on the effects of underwater noise on marine life that demonstrates noise induces measurable behavioural and physiological responses on a wide range of marine species. Noise hinders marine animals from detecting and interpreting biologically important sounds. It can also change predator-prey interactions and community structure, compromise food web dynamics and stability, and risk ecosystem productivity and services. To date, no fewer than around 30 species of marine mammal, 66 species of fish, and 36 species of invertebrate (a total of approximately 130 species) have been shown to be impacted by anthropogenic underwater noise[1].

Commercial shipping is a major contributor to underwater noise pollution in the ocean and has changed the ocean soundscape globally. As well as causing stress and disturbance, continuous noise from shipping masks sounds that are critical for animal communication. In areas of high shipping traffic, the range over which animals can communicate has drastically reduced with individual and population level consequences. Measures are needed to reduce overall noise from shipping. However, half of all shipping noise only comes from 15% of the fleet[2], so there is a need to prioritise quieting the noisiest ships.

[1] Weilgart, L. 2018. *The impact of ocean noise pollution on fish and invertebrates.*

[2] Scott Veirs, Val Veirs, Rob Williams, et al. 2017. *A key to quieter seas: half of ship noise comes from 15% of the fleet.*

Existing legislative framework

In the European Union, a technical working group (TG Noise) was tasked by the European Commission to agree on ways to set limits for underwater noise, as part of the compliance process of the Marine Strategy Framework Directive (MSFD). This directive requires Member States to achieve good environmental status of EU marine waters. In 2022, TG Noise proposed an approach for setting threshold values of sounds that marine life can tolerate, i.e maximum acceptable levels for impulsive (for example from oil and gas exploration and extraction) and continuous (such as from shipping) underwater noise. Those threshold values were set in 2024 part of the MSFD and represent first-ever mandatory cap on underwater noise from human activities at sea. All 27 European Member States are now required to use underwater noise thresholds in their national legislation.

The EU Nature Restoration Law was recently adopted in June 2024 and sets specific, legally binding targets and obligations for Member States to restore a wide range of ecosystems, including marine areas. Underwater noise is included as a form of marine pollution that needs to be reduced. This legislation will provide an additional motivation for Member States to reduce underwater noise.

The International Maritime Organization (IMO) published voluntary guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life in 2014. After a very poor uptake, they were revised in 2023 and now provide an overview of approaches applicable to designers, shipbuilders and ship operators to reduce the underwater radiated noise of any given ship. They are intended to assist relevant stakeholders in establishing mechanisms and programmes through which noise reduction efforts can be realised. Measurements of ship noise signatures are a first step that can be followed by a plan for technical or operational modifications to reduce noise. The IMO is currently in an Experience Building Phase of implementing the revised guidelines and all stakeholders are encouraged to report on noise reduction measures. Many technical and design options to optimise energy efficiency also bring underwater noise reduction benefits, as highlighted during an IMO workshop in September 2023.

Opportunities for industry engagement

The participants discussed the available measures to reduce underwater noise pollution and which of these might be preferred by the industry, and conversation focused on speed reduction. It was recognised as an effective measure but with some challenges given the complexities of the logistical chain, which could impact the economic models of some sectors. In some cases, shipowners are bound by charterers who would be reluctant to increase transit times as this would potentially increase their costs. It was recognised that financiers were important stakeholders and should be included in conversations about structural changes to the industry that could support an economically attractive transition to slower speeds.

Participants noted that increasing awareness amongst the industry, general public and policy makers about this issue was essential. The members of industry that were present were invited to share the information learned at this roundtable with their crews. It was highlighted that resources were available, such as the collection of infographics on the impacts of underwater noise-generating activities created by IFAW, Armateurs de France and the French Environment Ministry.

Another challenge that was highlighted was access to data, as only a very small proportion of the global fleet is aware of their noise signatures today. Getting this information will be helpful to help shipowners to identify noise-reducing measures. The industry also needs to add their voice to NGOs' in urging Member States to make sure that appropriate measurement facilities are implemented. Concern was raised about the need for a standardisation and harmonisation of measurements globally.

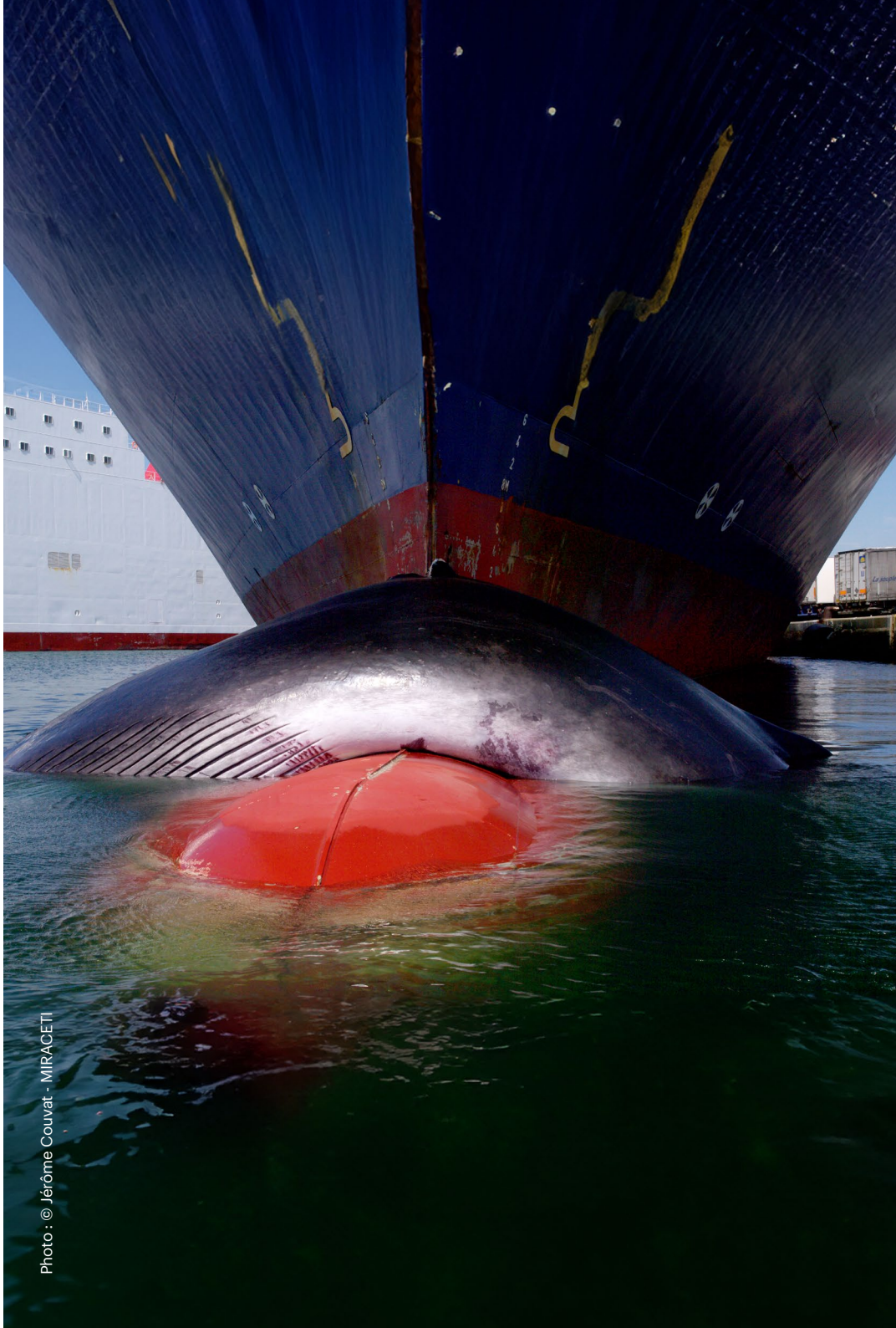
Collisions between ships and cetaceans

Collision threats and risk factors

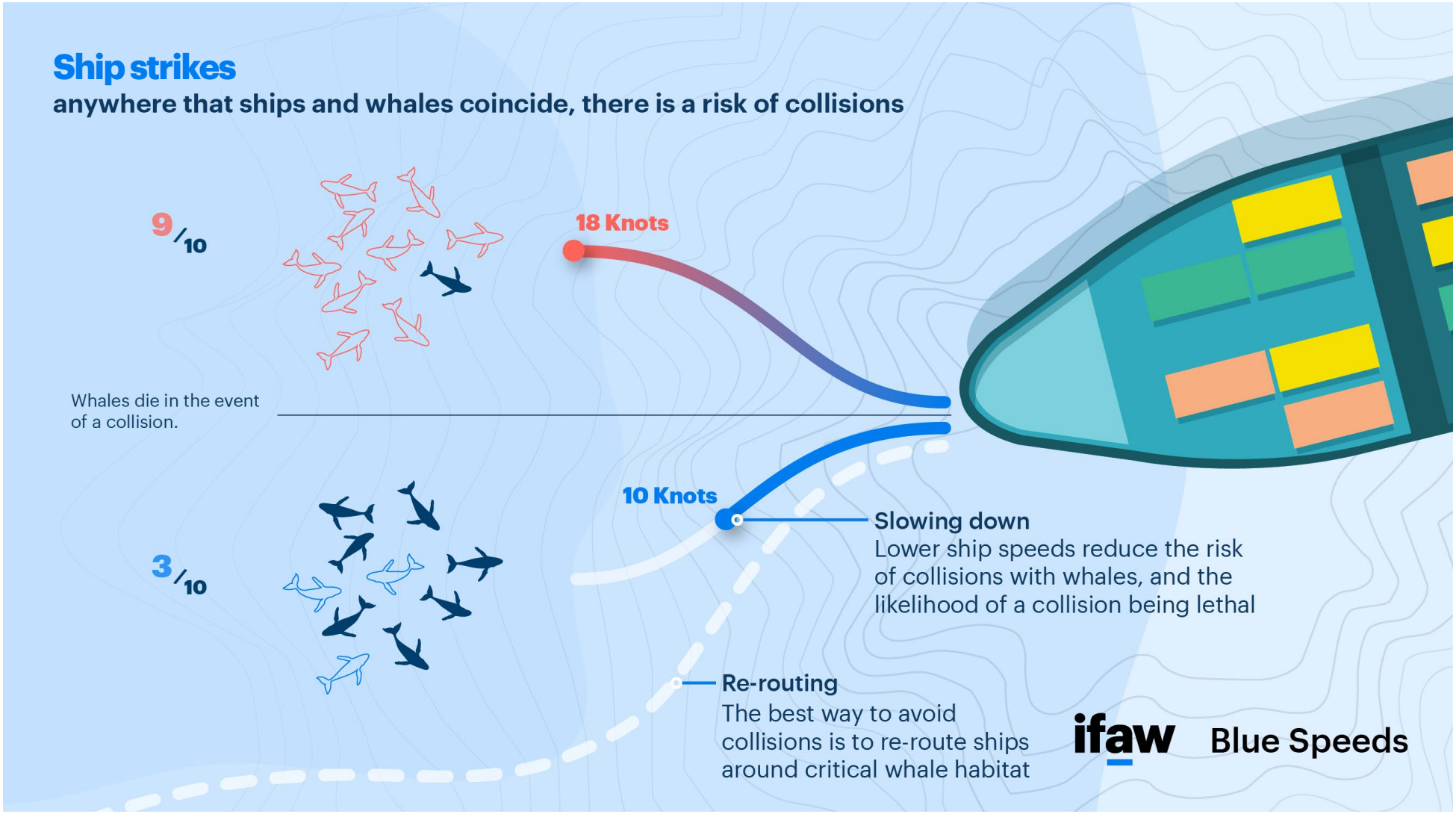
The risk of collisions is a global issue and a serious conservation and welfare problem for many marine species. The number of ships and the speed at which they can travel have increased in recent decades, meaning an increased risk of ship strikes and injury to whales, particularly where high densities of shipping overlap with important whale habitat. The risk of collision increases with vessel speed. Ship strikes are often unnoticed, as even an animal as large as a whale is insignificant compared to a 300-metre cargo ship.

Sometimes, struck whales can become lodged on the bulbous bow of a large ship and often the first the crew know of the collision is when they come into port.

The International Whaling Commission (IWC), the global body responsible for conservation of whales, has concluded that the only successful mitigation measures are to keep whales and ships apart or for ships to slow down where small changes in routing are not possible. Avoidance manoeuvres often have only a limited chance of success. These depend on where and how far away the whale is detected, as well as the size and manoeuvrability of the vessel. High-risk areas where mitigation measures are needed have been identified by the IWC, but action also has to be taken in areas with dispersed whale presence.



▶ A dead fin whale on the bow of a large cargo ship arriving into Marseille, France
Photo: © Jérôme Couvat


Ship strikes
anywhere that ships and whales coincide, there is a risk of collisions
9/10
18 Knots
Whales die in the event of a collision.
10 Knots
3/10
Slowing down
Lower ship speeds reduce the risk of collisions with whales, and the likelihood of a collision being lethal
Re-routing
The best way to avoid collisions is to re-route ships around critical whale habitat
ifaw
Blue Speeds

Existing legislative framework

The EU Habitats Directive requires Member States to adopt measures to ensure species are protected. Cetaceans are strictly protected under Annex IV and Member States have the obligation to maintain favourable conservation status and avoid deliberate killing or disturbance. Failure to take action to address a known problem such as collisions with shipping may put a Member State in breach of the Directive. This Directive embeds the precautionary principle, which is especially important regarding ship strikes because the exact numbers are not known. The main issue with legislation is the lack of implementation.

The new Particular Sensitive Sea Area (PSSA) status of the North-Western Mediterranean Sea

This PSSA was jointly proposed by France, Italy, Monaco and Spain in order to "protect cetaceans from the risk of ship collisions, ship-generated pollution and to increase awareness on a critically important area for the fin whale and the sperm whale". The risk of collisions is estimated to be three times higher in this area than in the rest of the Mediterranean Sea. The Marine Environment Protection Committee (MEPC) of the IMO designated it as a PSSA in July 2023. Associated Protective measures – speed reduction (between 10-13 knots), safety distance, broadcasting the position of medium and large cetaceans observed and reporting of collisions – are now recommended in the area.

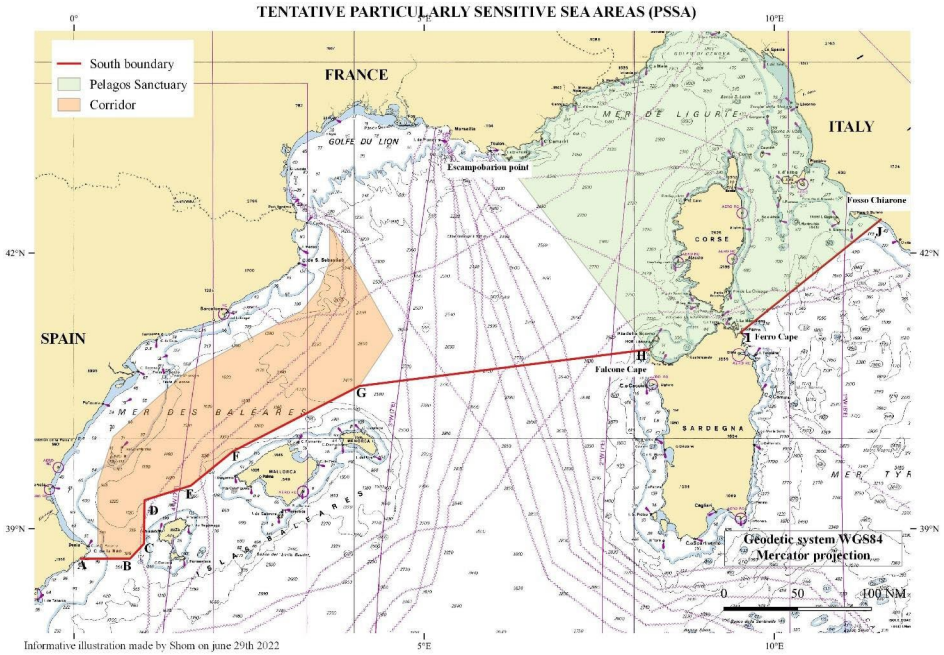
Workshops will be organised by ACCOBAMS with stakeholders to exchange information and better understand environmental impacts in the PSSA. France, Italy, Monaco and Spain will have meetings in the coming months to discuss next steps and to determine how to engage local authorities responsible for implementing measures in the area. No submissions for mandatory measures are planned before MEPC83 in Spring 2025.

As this PSSA constitutes a large area and the presence of whales is not easily predictable, re-routing measures will be hard to implement. The best option is to reduce speed, and a new study by Ocean Care showed that 48% of distances travelled by merchant vessels in the North-Western Mediterranean PSSA in 2023 were at speeds greater than 15 knots which is much higher than the global average.

When asked if they were planning to implement voluntary measures in the PSSA, shipping company representatives in the room replied that it was harder in this area compared to others as there was no scientific consensus on the most effective actions to take (in contrast to the Hellenic Trench or the area south of Sri Lanka). They also pointed out that the large size of the area means important constraints for transit time, so a 13 knots speed limit throughout the PSSA would be difficult to implement.

Engines of larger vessels are also designed for higher speed, so reducing speed to a fixed value such as 10 knots might have a negative impact on engine performance and Carbon Intensity Index (CII) for vessels that had been designed to operate at much higher speeds. It was recognised that possible speed management could be evaluated on a vessel by vessel basis.

▼ Map of the North-Western Mediterranean PSSA © ACCOBAMS-SHOM



Feedback from industry: the experience of MSC in implementing ship strikes reduction measures

Robert Masse, Specialist of Fleet-Network-Terminal Efficiency for MSC, presented the measures implemented by the company to avoid collisions with whales south of Sri Lanka and in the Hellenic Trench area of Greece. In January 2022, MSC decided to reroute their ships off the west coast of Greece to reduce the risk of collision with sperm whales and followed a few months later with the implementation of another rerouting off the southern coast of Sri Lanka to reduce strike risk of collisions with blue whales. In addition, vessels going closer to shore need to apply a speed restriction below 10 knots. MSC has since not recorded any whale sightings in both areas so they believe they have been successful in avoiding whale habitat. Scientific experts confirmed there were no strandings of sperm whales in the Hellenic Trench since action was taken by MSC and other companies. MSC noted that small changes in routing were often straightforward to implement with modest economic costs.

MSC has started retrofitting their fleet with the inclusion of propeller boss cap fins to reduce propeller cavitation and underwater noise. They also deployed ORCA AI seapod cameras on 250 of their vessels. The software of these high-resolution cameras was upgraded to detect whales at a distance up to 10 nautical miles, including during restricted visibility times (night or fog). The feedback they received from their crew is that the system is helpful for navigation. MSC intends to undertake effectiveness assessments in the coming months and to improve the automation of data sharing and transmission.

Presentation of the WSC Whale Chart

Wei-Jun Mun, Director of Public Affairs at the World Shipping Council, presented the Whale Chart. This navigational aid is the first global mapping of all mandatory and voluntary governmental measures to reduce harm to whales from ships. It is available for free to all interested parties and will be regularly updated. Mr MUN reported very positive reactions and responses to the chart so far. A new version will be released in September 2024 to include new areas and suggested measures.

▲ Picture taken during ORCA AI seapod cameras' software development showing the detection of a ship and a whale © MSC

Presentation of Blue Speeds – IFAW

IFAW presented its Blue Speeds initiative, which would introduce speed ceilings differentiated per ship category, requiring ships to slow down by 5 to 10% on average, depending on the ship type.

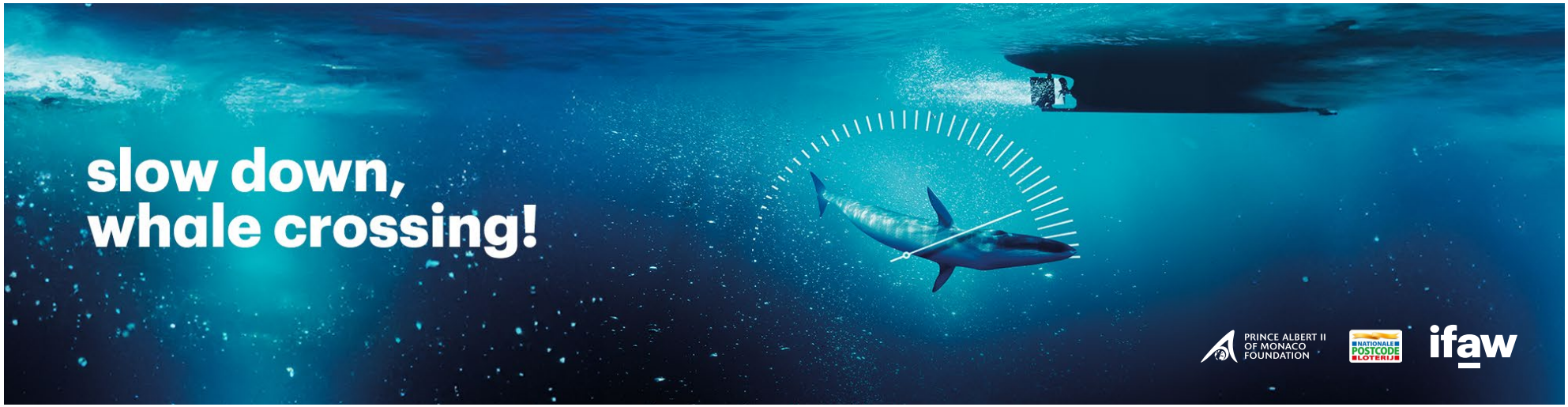
This can reduce the risk of ships colliding with whales, underwater noise and greenhouse gas emissions from the sector, while also allowing the shipping industry to save on fuel consumption. In addition to the ecological benefits, the socioeconomic benefits of Blue Speeds are estimated to be between 3.4 billion and 4.5 billion euros per year.

IFAW is working across the EU to make this small change a reality, so we can keep our seas quieter and safer for whales, while also making our air cleaner. Exemptions could be applied for shipping sectors transporting perishable goods.

In reaction to Blue Speeds, it was raised that speed limitation would increase the number of vessels at sea. However, research[3] shows that bringing idle or laid up vessels back into service would allow the container fleet to reduce speeds and transport the same volume of goods without requiring more ships to be used. Even with more vessels, there would still be an overall reduction in noise.

Speed reduction needs to be combined with the optimisation of the logistical chain: if port call times are reduced by handling cargo more efficiently, it is possible to transport the same amount of cargo while also slowing down. It was noted that port congestion can be due to external consequences, and there may be circumstances such as extreme weather or conflicts where delays cannot be avoided. It was also acknowledged that reduced speeds would have a positive impact on CII.

[3] Faber, J., Huigen, T., and Nelissen, D. (2017). *Regulating speed: a Short-term Measure to Reduce Maritime GHG Emissions.*



The way forward – perceived barriers and opportunities

As an introduction to this session, a tour de table was taken to ask participants to share relevant projects underway or remarks regarding the elements addressed during the previous sessions.

Some of the main barriers to the implementation of underwater noise/ship strike reduction measures mentioned by participants were the lack of available data and systematic measurements. Shipowners would be more open to implementing voluntary measures when they are based on scientifically reliable data. Participants welcomed all opportunities to understand the link between noise and shipping and recognised the need to work together with NGOs and scientists more closely and frequently. The organisation of future roundtables or information sessions was suggested.

The PIAQUO project was mentioned: aimed at reducing the acoustic impacts of maritime traffic and adapting it in real time to the ecosystems, it plans to give tools to shipowners to develop noise management plans.

The debate turned to the importance of incentives to encourage shipowners to implement underwater noise/ship strike reduction measures. Ports play a significant role and the shipping sector recognised that financial or non-financial incentives, provided by ports, such as priority berthing, would encourage them to implement noise reducing measures.

The Port Authority of Cartagena presented their PortSounds project aimed at reducing the impacts of underwater noise on the marine environment of the port. Hydrophones will be deployed in the water in the coming months to identify and analyse underwater noise sources in cooperation with the University of Valencia. The next step will be to develop noise management tools and identify mitigation measures to be implemented by vessels.

While voluntary measures were deemed important by some participants as they pave the way, harmonised mandatory regulation was also highlighted by others as a key driver to progress on these issues.

▲ Blue whale and ship in Sri Lanka - Christian Loader © IFAW

Conclusion

Many solutions exist today to reduce both underwater noise and the risk of ship strikes, including some in synergy with energy efficiency. Shipowners feel they need better access to data to be able to test solutions and choose the most appropriate measures to apply to their fleet.

Raising awareness about these issues is also key to drive initiatives by the shipping industry and to encourage policy makers to develop mandatory legislation to reduce the impacts of the sector on marine biodiversity. Shipowners welcome collaboration with NGOs to continue learning more about the issues of underwater noise and collisions with whales.

IFAW would like to sincerely thank all participants for their attendance and for the good and professional efforts that led to a transparent, positive and constructive dialogue during this roundtable. Special thanks to MSC for graciously hosting this event.

IFAW welcomes any suggestion from the industry to host the next roundtable and encourages shipowners to share contacts of other important stakeholders, such as charterers and financiers, to make sure they are included in the next conversation.

Contact: **Aurore Morin, Campaign Manager**

amorin@ifaw.org

▲ Participants of the roundtable © IFAW