# Report of the Working Group on Cetaceans and Ecosystem Functioning

## IWC Conservation Committee 67th Meeting of the International Whaling Commission

**Background**

In 2016, the Commission adopted Resolution 2016-3 on Cetaceans and their Contributions to Ecosystem Functioning. Among other operative decisions, the resolution:

- RECOGNISES the need to include consideration of the contributions made by live cetaceans and carcasses present in the ocean to marine ecosystem functioning in conservation, management strategies and decision making.

- RESOLVES to review the ecological, management, environmental, social and economic aspects related to the contributions of cetaceans to ecosystem functioning to people and natural systems, as a matter of importance.

- DIRECTS the Conservation Committee to undertake the review previously identified and directs the Conservation and Scientific Committees to further incorporate the contribution made by live cetaceans to ecosystem functioning into their work.

During a Conservation Committee Planning meeting conducted in 2017, a working group (WG) on Cetaceans and Ecosystem Functioning was established to make recommendations for the 67th IWC biannual meeting on how the Conservation Committee should address the Resolution 2016-3.

Currently, the WG consists of IWC representatives from the governments of Belgium, Chile, United Kingdom, United States and Slovenia, as well as the observer organizations Animal Welfare Institute, Centro de Conservacion Cetacea, Fundacion Promar, Grupo de Estudos de Mamiferos Marinhos da Regiao dos Lagos, Instituto de Conservacion de Ballenas, and Whale and Dolphin Conservation. Membership remains open and any other interested party or observer organization is encouraged to join.

At the 2017 IWC Scientific Committee meeting, an intersessional correspondence group (ICG) on cetaceans and ecosystem functioning was created to develop proposals for a way forward for consideration at SC/67b, and how to best integrate this project into the stream of work of the Scientific Committee. The ICG was focused, among other things, on compiling and reviewing relevant literature, as well as methodological approaches on how to assess and describe ecosystem functions and incorporate them into quantitative ecosystem models. Consequently, at SC67b meeting the Scientific Committee agreed*:*

*(1) to hold a workshop to (a) define short- and medium-term objectives to be addressed and (b) to identify what further research is required in order to begin initial modelling of the contribution of cetaceans to ecosystem function; and*
*(2) that the Secretariat in conjunction with the Steering Group (Annex Y) should contact CMS to*

*determine their interest in participating in such a workshop.*

In addition to the IWC's progress on this topic, a workshop sponsored by the governments of Chile and Belgium on the Role of Cetaceans in Ecosystem Functioning was held at the Society for Conservation Biology's 28th International Congress for Conservation Biology in Cartagena, Colombia in July 2017[1]. Also, during the 12nd COP of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), a resolution[2] was adopted that *inter alia* requested "to work with the Scientific and Conservation Committees of the International Whaling Commission to increase understanding of cetaceans' contribution to the functioning of marine ecosystems, including co-hosting a workshop to review the existing data and research and identify opportunities to expand this work".

**Proposed Terms of Reference for the WG:**

Based on the reading of the 2017 Committee report and resolution 2016-3, the following terms of references are proposed for the WG:

*To make recommendations to IWC67 on how the Conservation Committee could address IWC 2016-3 on Cetaceans and their Contributions to Ecosystem Functioning, including:*

a) *To propose options to undertake the review on the ecological, management, environmental, social and economic components of the contribution of cetaceans to the functioning of healthy ecosystems.*
b) *To propose options to further incorporate into the work of the Conservation Committee the contributions made by live cetaceans and cetacean carcasses to ecosystem functioning.*

**Summary of Outcomes**

The WG analyzed separately each component of the review (*i.e.ecological*, *management, environmental, social and economic)*, unless there were suggested synergies. The WG elaborated on:

1) what is the scope of each component,
2) identify any person or institutions that could assist on this topic,
3) identify aspects that should be directed to the Scientific Committee, in addition to those identified by the ICG on this topic, and;
4) propose recommendations on how the Conservation Committee could undertake the review of each component or any groups of them.

The WG noted that the definition of scope for each component could vary from more general to very specific topics.

There was general agreement on the following scopes:

[1] International Congress for Conservation Biology (ICCB). 2017. Report of the Workshop on the Role of Cetaceans in Ecosystem Functioning. 18pp. Available from IWC. http://bit.ly/2nQrgmp
[2] Convention of Migratory Species (CMS). 2017. Resolution on Conservation and Management of Whales and Their Habitat in the South Atlantic Region. UNEP/CMS/COP12/Doc.24.2.6

**Ecological**: Whales can influence marine ecosystems in at least four ways: as predators on fish and invertebrates, as prey to predators, as carcasses (and thus contribute to ecological processes and biodiversity at a local level) and as vectors for vertical and horizontal nutrient transfer, including from feeding to breeding areas (ICCB, 2017). Each one of these should be clearly identified and quantified.

**Environmental**: The ecological role played by cetaceans in ecosystem functioning can contribute to fisheries productivity and help mitigate the impacts of climate change, among other functions. The link between/implications of the ecological role of cetaceans and other environmental topics like oxygen production and climate change should be investigated and evaluated.

**Management**: The role of cetaceans in ecosystem functioning can ultimately affect management decisions at different levels including international legal instruments concerned with climate change, fisheries management, and biodiversity. International, regional, and national organizations with jurisdiction and/or responsibility over such matters should be identified and approached to identify and explore opportunities to integrate this topic into their decision-making processes.

**Social**: The role of cetaceans in ecosystem functioning will ultimately benefit marine health and thus provide social benefits to communities, particularly by enhancing fishery production which, in turn, can improve livelihoods and benefit food security. Moreover, the health of marine ecosystems is closely connected to the health of global ecosystems. It will be necessary to identify and assess such issues.

**Economic**: The ecological role of cetaceans and its impact on other areas, such as productivity of certain fisheries, climate change, and social benefits, among others, may generate new ideas for internalizing the economic values of cetaceans into decision making and management processes. Economic valuation methods should be identified, and specific and targeted valuation should be undertaken to explore the scope and scale of these values and their impacts.

Annex 1 show all proposals considered for the scopes and key persons or institutions.

Synergies have been found across all these aspects. However, it is proposed that ecological and environmental components are considered together. Similarly, social and economic components could also be combined.

The WG thanks and acknowledges the work done by the Scientific Committee ICG and welcomes the planned workshop. It agrees that the review of the ecological components will be directed to the Scientific Committee and that the environmental component would particularly need the support and advice of the Scientific Committee. In this sense, the WG agrees that these two components should greatly benefit from the results of the workshop and inputs from the Scientific Committee.

Management, social and economic components are primarily considered as part of the Conservation Committee work, although they need to receive input from the Scientific Committee.

**Proposals and workplan**

The WG considered that the ecological review will be best assessed by the Scientific Committee and is looking forward for the outcomes of the workshop and results of the GAP analysis study that will take place in 2019.

The SC meeting is focused on research and modeling, however the attendance of social scientists and economists to the workshop may be of great value to facilitate the future integration of all these concepts into the Conservation Committee work.

A specialized workshop on the socio-economic values of the contribution of cetaceans to ecosystem functioning is also proposed for 2020 to analyze the social and economic components and report these advances to IWC68. The workshop will receive the inputs from the Scientific Committee work. The workshop will aim to assess the scope of economic and social benefits from the contribution of cetaceans to ecosystem functioning, identify each potential impact from a social and economic field and consider possible variables to be measured. A two day workshop is being considered for 15-20 participants, including at least ten experts from social and economic field. This proposal has financial implications of GBP25,000 and details are found in Annex 2.

Additionally, it has been proposed to set up a baseline report or literature review on studies highlighting the current understanding of the effects cetaceans have on ocean ecosystem functioning. It has also been suggested that advances on these topics could be incorporated into the voluntary progress report of the Conservation Committee.

**Annex 1 – Analysis of different components related to the contribution of cetaceans to ecosystem functioning**

| Component | Scope | Key persons or institutions |
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| Ecological | Whales can influence marine ecosystems in at least four ways: as predators on fish and invertebrates, as prey to predators, as carcasses (and thus contribute to ecological processes and biodiversity at a local level) and as vectors for vertical and horizontal nutrient transfer, including from feeding to breeding areas (ICCB, 2017). Each one of these should be clearly identified and quantified.<br><br>Moreover, the WG also proposed more detailed considerations that may be added in the context of the review:<br><br>• The role of whale defecation in the biogeochemistry of the ocean, especially in key feeding areas (for example Antarctica, the Bay of Fundy) is essential for cycling trace elements.<br>• The feeding behaviour of some whales (e.g., gray whales) disturbs the benthic environment on a scale equivalent to major ecological forces. This behaviour also serves to resuspend nutrients in the water column.<br>• Whale carcasses that sink to the seafloor (known as whale falls) create remarkable habitats on the ocean floor by producing concentrated sources of organic matter for a food-deprived biota as well as places of evolutionary novelty and biodiversity.<br>• Whale carcasses are important prey for scavengers in oligotrophic waters (e.g. shark scavenging).<br>• The sounds of cetaceans are very prominent in the ocean and may be used as cues to other animals. | Dr. Joe Roman, University of Vermont<br>Dr. Heidi Pearson, University of Alaska, Fairbanks<br>Dr. Trish Lavery, Flinders University<br>Dr. Stephen Nicol, University of Tasmania<br>Dr. Andrew Pershing, University of Maine<br>Dr. Lavenia Ratnarajah, University of Tasmania<br>Dr. Jame McCarthy, Harvard University<br>Dr. Craig Smith, University of Hawaii at Manoa |
| Environmental | The ecological role played by cetaceans in ecosystem functioning can contribute to fisheries productivity and help | Article 4.1 (d) of the United Nations Framework Convention on Climate Change (UNFCCC 1992) on “Nationally Determined Contributions” (NDCs) |

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| | mitigate the impacts of climate change, among others. The link between the ecological role of cetaceans and their implications to other environmental topics like oxygen production and climate change should be investigated and evaluated.<br><br>It is also suggested that seabirds, tuna and other fish probably benefit from feeding associations with cetaceans.<br><br>It has been noted that the strong link between the ecological role which cetaceans play on the environment will be difficult to be kept separate. It may be easier to consider these aspects synergistically i.e. carcasses and nutrient transfer as stated under "Ecological" and explore their impact on fisheries productivity and climate. | requires all parties to "*… promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all GHGs not controlled by the Montreal Protocol, including …coastal and marine ecosystems.*"<br><br>The Paris Agreement (adopted by all 196 Parties to the UNFCCC at COP21 in 2015) reiterates 'the importance of the conservation and enhancement, as appropriate, of sinks and reservoirs of the greenhouse gases referred to in the Convention' (Art.5.1) and notes 'the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity' (preamble).<br><br>Nationally Determined Contributions (NDCs) are Parties' voluntary contributions (including "nature based solutions") to addressing climate change and achieving the objective of the Convention. Parties submit (every 5 years) information on the scope and coverage of their mitigation and adaptation efforts. Parties already include coastal ecosystems in their NDCs (as well as their National Adaptation Plans, National Adaptation Plans of Actions and National Appropriate Mitigation Actions (NAMAs) for developing countries) but should also consider including their efforts to protect and enhance the carbon functions of cetaceans in oceanic, as well as coastal, marine ecosystems.<br><br>Convention on Biological Diversity (CBD):<br><br>Each Party to develop national strategies for the conservation and sustainable use of biological diversity, including enhancing ecosystem resilience, the contribution of biodiversity to carbon stocks, and climate change mitigation.<br><br>Objectives: Conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.<br><br>1995, adopted "Ecosystem Services approach" as the 'primary framework' for action (the basis for considering all the goods and services provided to |

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| | | people by biodiversity and ecosystems).<br><br>Revised Strategic Plan of the Convention (2011-2020):<br><br>The vision of the strategic Plan is a world of 'Living in harmony with nature' where by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential to people.<br><br>Take effective and urgent action to halt by 2020 the loss of biodiversity in order to ensure that ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication.<br><br>Blue Climate Solutions |
| Management | The role of cetaceans in ecosystem functioning can ultimately affect management decisions at different levels including legal instruments concerned with climate change, fisheries management, and biodiversity. International, regional, and national organizations with jurisdiction and/or responsibility over such matters should be identified and approached to identify and explore opportunities to integrate this topic into their decision-making processes.<br><br>It is also pointed out that the importance of key cetacean species may benefit transboundary discussion forums (*e.g.* Consórcio Franciscana http://www.pontoporia.org/) | See instruments above and,<br><br>Ocean Biodiversity Treaty<br><br>2015: U.N. authorized a two-year "Preparatory Committee" process to agree to the main elements of an ocean biodiversity treaty. U.N. General Assembly will convene an Intergovernmental Conference (IGA) to negotiate the specific terms of the high seas biodiversity accord.<br>→ legally binding text on the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction (high seas).<br>→ conservation outcomes would contribute to achievement of the UN's Sustainable Development Goal 14<br><br>Decisions on high seas biodiversity conservation should be guided by the need to protect marine ecosystem functions including contributions made by cetaceans. |

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| Social | The role of cetaceans in ecosystem functioning will ultimately benefit the marine health and thus provide social benefits to communities, particularly by enhancing fishery production which, in turn, can improve livelihoods and benefit food security. Moreover, the health of marine ecosystems is closely connected to the health of global ecosystems. It will be necessary to identify and assess such issues.<br><br>The WG also proposed more detailed considerations that may be added in the context of the review:<br><br>• Wellbeing benefits e.g. both health and emotional benefits of being around / seeing cetaceans<br>• Fundraising (cetaceans are often the poster mammals for conservation fundraising)<br>• Cultural significance e.g. the importance of cetaceans in some community stories, values, shared identity, etc.<br>• Intrinsic value and how this is recognised/valuedby humans e.g. the extent to which we believe cetaceans have a right to exist for themselves (as opposed to for humans) an argument that may be particularly supported due to the high intelligence of cetaceans<br><br>It has also been proposed that social and economic components be combined as "Socio-economic" as this would alleviate some confusion on certain overlapping points such as "intrinsic value" or "fundraising benefits". | |
| Economic | The ecological role of cetaceans and its impacts on other areas such as productivity of certain fisheries, climate change, and social benefits, among others, may generate new avenues on how to internalize these hidden economical values of cetaceans into decision making processes. Economical valuation methods should be identified, and | The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)<br><br>The IPBES at its Third session in 2015 adopted Decision IPBES-3/1 which approved a scoping process for a global assessment of biodiversity and |

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| | specific and targeted valuation should be undertaken to explore the dimension of these hidden values and their impacts.<br><br>It was also noted that such economic values may be substantial. In 2005, for example, the Helmholtz Association of German Research Centres estimated the global value of pollinators (primarily bees) to the main crops that feed the word to be 217 billion US dollars. In a 2011 study published in Science, Boyles et al. estimated the ecological value of bats in North America to be approximately 22.9 billion US dollars annually.<br><br>Also, it was noted that the world economic forum has been consistently listing climate related issues as leading global risks[3]<br><br>In particular, it was also suggested to consider the livelihoods e.g. whale watching and tourisms. | ecosystem services (including open oceans).<br><br>"The global assessment will critically assess the state of knowledge on past, present and possible future multi-scale interactions between people and nature. It will examine the status, trends (past and future), drivers, values and response options regarding nature (including terrestrial, freshwater, coastal and marine biodiversity, ecosystem structure and functioning), nature's benefits to people (including ecosystem goods and services), and their interlinkages".<br><br>The component of the assessment focused on the oceans will include elements such as values, indirect drivers, scenarios associated with marine biodiversity and its benefits to people and management of marine resources. The assessment will also directly address how changes in human quality of life are linked to the trends in ocean uses and ocean biodiversity documented in World Ocean Assessment I.<br><br>It is expected that the Subsidiary Body on Scientific, Technical and Technological Advice at its twenty-third meeting (fourth quarter of 2019) will consider this assessment and its implications for the future work of the Convention on Biological Diversity, and that the fifth edition will be launched at its twenty-fourth meeting (second quarter of 2020).<br><br>The global assessment is also well placed in time to contribute to the elaboration of the Strategic Plan for Biodiversity 2021–2030, following up on the 2011–2020 plan, which will be considered by the Conference of the Parties to the Convention on Biological Diversity at its fifteenth meeting in the fourth quarter of 2020.<br><br>International Society for Ecological Economists<br><br>United States Society for Ecological Economists |

[3] http://www3.weforum.org/docs/WEF_GRR18_Report.pdf

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| | | Association of Environmental and Resource Economists<br>European Association of Environmental and Resource Economists<br>The Economics of Ecosystems and Biodiversity (TEEB)<br><br>Possible ecological economists:<br>Dr. Joan Martinez Allier, Universidad de Barcelona<br>Dr. Stephen Polasky, University of Minnesota<br>Dr. John Loomis, Colorado State University<br>Dr. Robert Costanza, Australian National Univeristy<br>Dr. Rashid Sumaila, University of British Columbia |

**Annex 2 - Template for Project Proposal and Budget**

1. **Project Title**

Workshop on the socio-economic values of the contribution of cetaceans to the ecosystem functioning.

2. **Lead Working Group**

*Please note which Working Group has recommended the project be taken forward.*

*Additionally, if other Working Groups or Subcommittees have interests in the work of this project, please list them here.*

- ✓ IWC Conservation Committee and its working group on the cetaceans and ecosystem functioning.
- ✓ IWC Scientific Committee and its working group on ecosystem modeling, as well as the workshop on cetacean and ecosystem functioning.

3. **Project Description**

*A very brief overview of the project proposal and its expected outcomes.*

The workshop will be aimed to assess the scope of economic and social benefits from the contribution of cetaceans to ecosystem functioning, identify each potential impact from a social and economic field and consider possible variables to be measured.

A two day workshop, or pre-meeting with the Conservation Committee meeting, may be considered. In case it is conducted separately from the IWC meetings, the number of participants may be limited to 15 to 20 persons, including at least ten experts on social science and ecological economics, a workshop chair, a rapporteur, a representative of the IWC Conservation Committee, a representative from the IWC Scientific Committee that has been involved in and is familiar with the 2019 SC workshop on ecosystem functioning, and up to two representatives from the host government. If the workshop is conducted back to back with Conservation Committee meeting, a wider audience can be expected and will help to better inform participants about the extent of each topic.

The workshop should start with a brief presentation of Scientific Committee outcomes from the workshop on cetacean and ecosystem functioning, including a list of identified topics on how cetaceans affect ecosystem functions. A workshop round table should identify for each topic, any potential impact and it extend that could be addressed from the social and economic perspectives. Experts from social science and economists will also be requested on the current knowledge of valuation techniques and considerations to include ecosystem functions and impacts.
The workshop outcomes should identify several possible areas of social and economical research work, propose strategies to advance in the knowledge and review of this emerging issue, propose set of methodological tools to assess them and provide a list of basic studies that could be explored on the short-term to start getting information on this issue from a social and economical perspective.

This workshop is planned to take place on 2020, after results from the first workshop or pre-meeting of Scientific Committee and/or the gap analysis review are available. The workshop on social and economic aspects is considered essential to advance on the work of the Conservation Committee in the review particularly considering that the Scientific Committee work will be limited to ecological and possible environmental review.

A workshop steering committee shall be established to identify the workshop venue, prepare the workshop agenda, and to identify and invite relevant experts to participate. The steering committee shall also identify related organizations/groups to make sure that appropriate experts will be invited.

**4. Project Justification**

*Demonstrate connections to relevant recommendations and Resolutions endorsed by the Commission including, where relevant,the Conservation Committee's Strategic Plan.*

In 2016, the Commission adopted the resolution on Cetacean and their Contribution to Ecosystem Functioning (Resolution 2016-3). It directed the Conservation Committee to undertake the review of ecological, management, environmental, social and economic aspects related to the contributions of cetaceans to ecosystem functioning to people and natural systems, as a matter of importance.

During a Conservation Committee Planning meeting conducted in 2017, a working group (WG) on Cetaceans and Ecosystem Functioning was established to make recommendations for the next IWC biannual meeting on how the Conservation Committee should address the resolution.

Considering that the Scientific Committee will be focus on scientific components, this proposal is essential to evaluate the social and economic components of the review on cetaceans and ecosystem functioning.

**5. Relevant IWC Voluntary Funds**

*Please list all relevant IWC Voluntary Funds and which criteria this project meets.*

Voluntary Conservation Fund - Projects addressing emerging issues and new threats to whale populations

**6. Overview of activities**

| Activity | Expected Results | Timeline | Budget Implications | |
|---|---|---|---|---|
| | | | Type (Salary, Travel, Meeting Services, Equipment, Other)* | Estimated Cost (GB pounds) |
| Workshop | 15-20 participants, including ten experts on social science | 08/20 | Flights, local travels, | GBP 25,000 |

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| | and ecological/environmental economics | | accommodations and subsistence. | |

*Salary costs should include salaries for additional staff to be recruited but exclude staff time of existing Secretariat staff (core time), which is outlined below. Travel costs should include a breakdown of flights, accommodation and subsistence. Please contact the Secretariat for guidance on subsistence rates.

**7. Core Secretariat support required**

| Type | Detailed description | Number of days |
|---|---|---|
| IT/database | Create an online repository (dropbox or other) with existing literature and relevant documents for the workshop | 0.25 |
| Communications | Web article about the workshop | 0.25 |
| Meeting Services | Booking accommodation and flights | 2 |
| Project management | | |
| Other | | |
| **Total** | | |

**8. Potential partners or funders**

*Please include a list of all potential partners and funders and their role in this project.*

**9. Project requirements/Permits/Insurances**

*Please list any constraints or other considerations e.g. field work permits, CITES permits, welfare concerns, security considerations etc*

*Please confirm that all relevant insurances are secured.*

All relevant insurances are secured.

**10. Possible Risks**

*This should include all possible risks or uncertain factors that might have a negative impact on the project and their possible consequences. Add mitigation options, if possible.*

✓ Not applicable