

SC/68B/RP/13

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EM - Cetaceans and Ecosystem  
Functioning - a gap analysis - UPDATE  
MAY 2020

IWC



INTERNATIONAL  
WHALING COMMISSION

## PROJECT PROPOSAL REQUEST

### 1 . PROPOSAL TITLE

#### Cetaceans & Ecosystem Functioning: A Gap Analysis – UPDATE MAY 2020

### 2 . BRIEF OVERVIEW OF THE PROPOSAL AND ITS EXPECTED OUTCOME

Experts on the role and impact of cetaceans on ecosystem functioning will participate in a **workshop/pre-meeting** to discuss the current state of knowledge on the ecosystem functioning provided by cetaceans as requested from the Scientific Committee in Resolution 2016-3. This Resolution directed 'the Scientific Committee to further incorporate the contribution made by live cetaceans to ecosystem functioning into [its] work' and asked 'the Scientific Committee to screen the existing research studies on the contribution of cetaceans to ecosystem functioning, to develop a gap analysis regarding research and to develop a plan for remaining research needs'.

A workshop **Steering Group (SG)** has been established to identify the workshop venue, prepare the workshop agenda, and to identify and invite relevant experts to participate in the workshop. The SG shall also identify organizations/groups where comparable modelling endeavours have taken place to make sure that appropriate experts will be invited.

Through a commissioned contract, a **review shall be conducted in advance** of the workshop/pre-meeting summarizing, in particular, existing scientific evidence documenting the role of cetaceans in ecosystem functioning (see draft agenda item 1). The terms of reference for this contract will be defined by the steering committee. This review is being prepared by Joe Roman (University of Vermont, US). A second review will be prepared by Paul Wassmann (University of Tromsø) and Martin Biuw (IMR).

Workshop **outcomes** will include a report:

- identification of gaps in our knowledge and data gaps/necessities;
- an evaluation of what can realistically be modelled and what not within the short, medium and long terms
- identification of potential geographical areas to be modelled
- develop a plan for remaining research needs

### 3 . RELEVANT IWC SCIENTIFIC COMMITTEE GROUPS OR SUB-GROUPS

The implications of cetaceans impacting ecosystem functioning are wide, and hence the outcomes of the workshop will have relevance to the work of the Ecosystem Modelling (**EM**), Environmental Concerns (**E**), Small Cetaceans (**SM**), and potentially Conservation Management Plans (**CMP**), Sanctuaries (**SAN**).

The workshop will have also relevance to the work of the **Conservation Committee** and its Small Working Group on Cetaceans and Ecosystem Functioning.

### 4 . TYPE OF PROJECT (PLEASE TICK)

Research project	
Modelling	
<b>Workshop</b>	X
Database creation/maintenance	
Compilation work/editing (e.g. on whalewatching regulations, SOCER, etc.)	
Other (please specify below)	

## 5. BRIEF DESCRIPTION OF THE PROPOSAL AND ITS CONNECTION WITH SCIENTIFIC COMMITTEE RECOMMENDATIONS (DO NOT EXCEED 1500 WORDS)

### (A) BACKGROUND, RATIONALE, AND RELEVANCE TO THE PRIORITIES IDENTIFIED BY THE IWC SCIENTIFIC COMMITTEE:

In 2016 at IWC66, the Commission adopted Resolution 2016-3 on cetaceans and their contributions to ecosystem functioning. The resolution asks the IWC Scientific Committee "to screen the existing research studies on the contribution of cetaceans to ecosystem functioning, to develop a gap analysis regarding research and to develop a plan for remaining research needs." The proposed workshop/pre-meeting intends to satisfy this request by developing a gap analysis and a plan to identify and prioritize research needs to address any identified gaps. To date, as this work stream on cetaceans and ecosystem functioning was just added to the IWC Scientific Committee's work stream in 2017, IWC Scientific Committee priorities or recommendations have yet to be identified. The gap analysis and other recommendations to be included in the workshop report will assist the Scientific Committee in identifying priorities and recommendations relevant to this research topic.

The 2017 IWC Scientific Committee report (page 85) states:

16.6.3 Review of other topics related to Ecosystem Modelling  
 SC/67a/EM13 took note of IWC Resolution 2016-3 'Cetaceans and Their Contribution to Ecosystem Functioning'. In the resolution, the Commission asked 'the Scientific Committee to screen the existing research studies on the contribution of cetaceans to ecosystem functioning to develop a gap analysis regarding research and to develop a plan for remaining research needs.' SC/67a/EM13 was intended to help this process and provided a bibliography of relevant scientific publications and suggestions for further research to help fill knowledge gaps. In response to a request for advice on how to build hypotheses into quantitative models, advice was presented on the use of tools such as EcoSim, as well as other papers and projects on animal movement and habitat use that speak to how and where animals can be part of ecosystem models using data, rather than simulations. The Committee encourages relevant submissions in the future, especially considering Resolution 2016-3.

An intersessional correspondence group was established (Annex W) to further develop proposals for a way forward in SC/67b, and how to best integrate this stream of work into the Scientific Committee. The ICG reported back to SC67b and it became clear that the gap analysis would be a priority to enhance further work within the SC.

### (B) SPECIFIC OBJECTIVES OR TOR AND DELIVERABLES/OUTCOMES:

Draft Terms of Reference for a proposed workshop/pre-meeting on cetacean and ecosystem services.

Resolution 2016-3 agreed at IWC66 requested that the IWC Scientific Committee "screen the existing research studies on the contribution of cetaceans to ecosystem functioning, to develop a gap analysis regarding research and to develop a plan for remaining research needs." To satisfy this request, the proposed workshop will facilitate discussions among relevant experts to produce a workshop report for submission to the IWC and its subsidiary bodies.

Terms of Reference:

1. Review relevant scientific studies, on the contribution of cetaceans to ecosystem functioning → will be accomplished in advance of the workshop/meeting through **contract**, results to be presented at workshop/meeting
2. Include presentations from selected experts on their research into how cetaceans affect ecosystem functions;
3. Identify knowledge gaps as well as data gaps in our understanding of cetaceans and their impact and role in ecosystem functioning;
4. Develop a prioritized list of recommendations for scientific research to fill identified knowledge gaps, including studies on methodological approaches to study how cetaceans affect ecosystem function and (quantitative) ecosystem modelling of such impacts, and
5. An assessment of what can realistically and reliably be modelled at this point in time in the short, medium and long term
6. Identification of potential geographical areas and species/taxa to be modelled

Expected outcomes:

A meeting report that will include a comprehensive summary of the workshop/pre-meeting discussions which cover the six objectives identified above, and deliver according recommendations.

A draft agenda is given as Appendix 2 below.

## (C) METHODOLOGICAL APPROACH/WORK PLAN/ADMINISTRATIVE DETAILS

In the case of workshops and meetings, include the broad work plan including any pre-requisites for the workshop/meeting to take place (apart from funding, e.g. completed analyses, papers etc.) and administrative details (e.g. location, dates, number of participants).

Workshop steering committee: A steering committee shall be established to help plan the workshop/pre-meeting including identifying the workshop location, workshop dates, developing a workshop agenda and detailed budget, and soliciting workshop funding from outside the IWC, interfacing with representatives of workshop venue on logistical issues, identifying and inviting workshop participants including relevant experts, and coordinating completion of the workshop report.

Once the relevant experts have been identified they will be asked to provide any relevant scientific publications for the workshop which will be compiled and made available to all workshop participants for their review prior to the workshop. See below for tentatively proposed steering committee members.

Proposed workshop location: Either a separate meeting in Bonn (possibly hosted by CMS) or as a pre-meeting to the IWC SC in Bled Slovenia in April 2021 (specific location to be determined by workshop SG based on location of relevant experts, costs, convenience of travel).

Workshop date: Early 2021 (Jan-Apr) (workshop SG will identify specific dates based on availability of relevant experts, venue availability, and costs).

Note: If this becomes a pre-meeting, location and dates will follow consequentially from arrangement for the SC meeting

Workshop participants: Total number of participants in the workshop will not exceed 20 persons. This will include 10 acknowledged experts on different areas of cetaceans and ecosystem functioning, a workshop chair, a rapporteur, a representative of the IWC Secretariat, a representative of CMS as co-host, a representative of the IWC Scientific Committee, and up to two representatives from the host government. The workshop SG will be responsible for identifying and inviting participants to the workshop. The workshop budget will fully cover the costs of all invited experts but other participants may need to cover their own costs.

## (D) SUGGESTIONS FOR OUTREACH

The SG will provide the IWC Secretariat with a copy of all workshop materials, to be made available via a webpage accessible on the IWC website (if feasible). The workshop report will be submitted to the IWC Secretariat to be made available to IWC Contracting Governments and observers and to be submitted as a document for consideration at the IWC Scientific Committee meeting 69a in 2021.

In addition, at the recent Convention on Migratory Species (CMS) COP a resolution was passed which acknowledged "that cetaceans, particularly highly migratory great whales, make significant ecological contributions to the functioning of marine ecosystems that are beneficial to the global environment" and request the CMS Secretariat and its Scientific Council "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". The workshop will feed into this work stream by proposing ways of co-operation between IWC and CMS, and by providing the workshop report to CMS. CMS has agreed to co-host the workshop and is represented in the current SG.

## 6. TIMETABLE FOR ACTIVITIES AND OUTPUTS

Specify the timetable for project activities and expected outputs separately. For projects with multiple distinct elements please indicate interim goals and timeframes. Add as many rows as you need to the tables below. If publications are an expected output please note whether you will submit the manuscript to the IWC's Journal of Cetacean Research and Management.

Activity to be undertaken	Key person(s)	Start(mm/yy)	Finish (mm/yy)
Assemble workshop Steering Group (accomplished)			
Coordinate SG meetings to select workshop venue, dates, finalize workshop agenda and budget, identify workshop participants including experts and distribute invitations to the event, and contractee for the review (the latter has been accomplished)	Steering Group	06/2020	11/2020
Solicit materials from workshop experts, compile them, and make them available to all workshop participants; address any logistical issues (i.e., catering, room seating arrangements, equipment availability) with selected venue	Steering Group	11/2020	(beginning of ws), 04/2021 the latest
Conduct workshop or <i>pre-meeting</i> *	Chairperson and participants	approx 01/2021	approx. 04/2021

<i>*depending on available funds and offers to host the meeting, an intersessional workshop OR a pre-meeting will be held</i>		<b>04/2021</b>	<b>04/2021</b>
Complete workshop/ <b>pre-meeting</b> report, and submission to IWC Secretariat for	Chairperson, and steering committee	approx 01/2021 <b>04/2021</b>	approx. 04/2021 <b>05/2021</b>
Reporting back to SC	Chairperson / Workshop report	04/2021	05/2021
Distribution of report and final outcomes via notification to IWC Contracting Governments and observers	Chairperson, and steering committee		

<b>Expected outputs</b>	<b>Completion date (mm/yy)</b>
Complete report, report formatting, and submission to IWC Secretariat for distribution via notification to IWC Contracting Governments and observers	01-04/2021 <b>04-05/2021</b>
Development of a plan how to integrate cetaceans and ecosystem function as a permanent agenda item in meetings of the IWC Scientific Committee	02/2021 <b>04-05/2021</b>
Provide workshop materials including relevant studies reviewed by workshop participants to the IWC Secretariat to be made available via a workshop webpage created by the Secretariat and accessible via a link in the calendar on the IWC website	2021 (after SC)
Possible publication* of an article on the state of knowledge of the subject, the results of the workshop, and recommended research plan in the peer-reviewed literature	2021 ff.
Future publications* of articles resulting from the recommended research plan in the peer reviewed literature	2021 ff.
<i>*may be submitted to JRCM</i>	

## 7. researchers' (or steering group) NAME(s) and AFFILIATION

Tentative initial list of participants – suggested members of steering group are highlighted in **green**  
 -to be continued: steering committee to determine final list of participants

Please note that this list has now been updated on the basis of who had been contacted (and invited, respectively) before. This list includes a larger number than the workshop budget allows. It is, however, assumed that not all experts will be available in the future.

Name	Affiliation	Connection with decision
<b>Fabian Ritter</b>	IWC/SC member, convener of ICG on Cetaceans and Ecosystem Functioning	
<b>Barbara Galletti</b>	IWC/SC; President of Centro de Conservacion Cetacea	
<b>Doug Butterworth</b>	IWC/SC member, University of Cape Town	
<b>Toshihide Kitakado</b>	IWC/SC EM chair, Tokyo Univ. Marine Science and Technology	
<b>Robert Suydam</b>	IWC/SC vice-chair, North Slope Borough Department of Wildlife Management, USA	
<b>Greg Donovan</b>	IWC secretariat	
Beth Fulton	CSIRO	
<b>John McKinley</b>		
Eva Plaganyi	CSIRO	
Gunnar Steffansson	Iceland	
Paul Fernandez	University of Aberdeen	
Andre Punt		
<b>Dr. Joe Roman</b>	Conservation Biologist, Fellow in the Gund Institute for Environment, and Research Associate Professor, University of Vermont	
Daniel Palacios	NOAA	
Steven Lutz	Grid Arendahl, NOR	
Daniel Costa		
George Watters		
<b>Heidrun Frisch</b>	CMS	
Jeremy Kiszka		
Viv Tulloch		
Andrew Pershing		
Ari Friedlaender		
Christopher Doughty		
Mike Lomas		
<b>Tore Haug</b>		
Paul Wassmann		
<b>Martin Biuw</b>		
Sarah Gaichas		
Lavenia Ratnarajah		
Heidi Pearson		
Jeanette Gann		

## 8. TOTAL BUDGET

Breakdown into: (1) salaries/wages (include name/position of each individual and breakdown of time and duties i; (2) travel/subsistence expenses (breakdown by person and justification) unless for IPs for workshops where a total estimate based on an average for the total number of IPs is acceptable; (3) services (e.g. aircraft/vessel time, consultancy fees, ARGOS fees, etc.); (4) reusable capital equipment (e.g. reusable equipment such as a hydrophone, cameras, etc. Note that this equipment will have to be registered at the IWC Secretariat and will remain property of the IWC at the end of the project). (5) expendable capital equipment (e.g. consumables, tags, stationery), (6) shipping costs, (7) insurance costs, (8) in kind co-funding (specify whether other funding is available for personnel/name, equipment, venues, etc.). Note that "Overheads" are not admissible. Add as many rows as you need to the table below.

Type	Detailed description	Cost in GB pounds
(1) Salaries (by person)	The salaries of those invited to participate in the workshop will not be covered by the workshop budget	-
(2) Travel/subsistence (by person or est. total for IPs)	Costs (i.e. flight, hotel, ground transportation, and per diem) of the reputable experts invited to participate in the workshop will be covered in full by the workshop budget	1,800/expert ** (10 experts) = 18,000
(3) Services (by item)	Cost of venue (fee or rental) Catering for event (i.e., coffee breaks/lunches)	3,600 1,500
(4) Reusable equipment	Cost of power point projector/microphone system (if necessary)	500

(5) Consumables	Minor consumables	500
(6) Shipping (by Item)	-	-
(7) Insurance (by item)	Workshop insurance – set against cancellation	300
(8) Co-funding	The Animal Welfare Institute has committed GBP 5,000	-5000
(9) Other	Costs (i.e., flight, hotel, ground transportation, and per diem) for one member of the Secretariat	1,800
<b>Total</b>		(25,300) 20,300

\*\* Ideally, this number will be smaller, allowing for more experts to attend. Also, some participant my participate self-funded

It is noted that depending on the outcome of the workshop/pre-meeting proposed here, a follow up workshop will be necessary to fully address the request from the Commission per Resolution 2016-3. In this case, and possibly before that, a close(r) collaboration with CMS will be sought to make sure sufficient funding will be available.

## 9. DATA ARCHIVING/SHARING

Please state your plans for data archiving and sharing. Note that data collected primarily under IWC grants are considered publicly available after an agreed period of time for publication of papers, usually about two years. The work of the IWC depends on the voluntary contribution of data to the various databases and catalogues IWC supports. Please consult the Secretariat ([secretariat@iwc.int](mailto:secretariat@iwc.int)). In preparation for the workshop, workshop experts will be asked to provide copies of relevant published studies to be shared with all workshop participants and made available to interested Contracting Governments and observers that are authorized by the IWC to access workshop document via the IWC website. When soliciting published literature from experts they will be made aware of the interest in making the studies available to IWC governments and observers to ensure that any required permissions can be procured from the relevant journal or other publication.

## 10 . PERMITS (PLEASE TICK)

Do you have the necessary permits to carry out the field work and have animal welfare considerations been appropriately considered?	NA
Do you have the appropriate permits (e.g. CITES) for the import/export of any samples?	NA

If 'Yes' please provide further details and enclose copies where appropriate:



## Appendix 2 – DRAFT SCORING SHEET

If a project presents multiple primary objectives which are achieved using sub-projects, a sheet should be used to evaluate each single sub-project. Note that not all criteria are equally applicable depending on the nature of the project (e.g. field work versus workshops).

IWC SCIENTIFIC COMMITTEE PROPOSALS FOR FUNDING - REVIEW CRITERIA - TEST			
<b>TITLE OF THE PROJECT/sub-projects:</b>			
<b>PRINCIPAL INVESTIGATOR:</b>			
<b>Key criteria</b>	<b>Explanation of scoring</b>	<b>Score</b>	<b>Supporting Remarks</b>
<b>Relevance to Scientific Committee priorities</b>			
<b>1</b>	How well aligned are the scientific outcomes of the project/activity with the current SC priority areas?	1 - Not aligned/poorly aligned (e.g. too vague or generic reference to general SC priorities) 2 - Reasonably aligned (e.g. some aspects may be vague or links are not clear) 3 - Well aligned (e.g. outcomes clearly deliver in the most part on priority areas, may also address longer term or potential future issues). 4 – Closely aligned (e.g. of interest for multiple sub-groups or delivers on specific SC high priority topics/recommendations in the immediate or short term).	
<b>2</b>	To what extent will the outcomes of the project/activity contribute to improvements in the conservation and management of cetaceans?	1 -Not at all 2 - Poorly 3 - Reasonably or over the longer term 4 - Well or over the medium term 5 - Excellently or to almost immediate effect	
<b>Note:</b> if in each of the two above key criteria under this section the project does not score singularly at least 2 points, do not proceed in further evaluation. Of course, proposals within a sub-group would only be developed if in their estimation scores were of 4 or above.			
<b>Approach and methodology</b>			
<b>3</b>	What degree of scientific merit/value is there in carrying out the work?	1 - Not demonstrated or of low scientific value 2 - Useful/basic scientific value 3 - Very good scientific value 4 - Excellent/innovative scientific value	
<b>4</b>	Is the proposed methodology scientifically sound and feasible in terms of field and analytical methods?	1 - Feasibility unrealistic & poor methodology or not properly addressed 2 - Feasibility & methodology acceptable but would benefit from some substantial amendments	

		3 - Feasibility & methodology good, some small changes beneficial 4 - Feasibility & methodology excellent or a highly promising innovative approach to an important question facing the Committee		
5	What is the likelihood of success based on the proposed overall approach and methodology?	1 – No chance of success 2 - Low chance of success/better approaches available 3 - Medium chance of success/some changes to the approach necessary 4 - High chance of success/little or no changes to the approach necessary		
5a	Are objectives of the research likely to be achieved within the proposed time-frame?	1 – No or unlikely 2 – Partially or potentially ambitious 3 - Yes with some minor suggestions 4 – Yes		
5b	Are any proposed intermediary targets timely and achievable?	1 – No or unlikely 2 – Partially 3 - Probably 4 - Yes		
5c	Is the proposed time-frame/work necessary (e.g. can the project produce results in a shorter time period)?	1 – No or unlikely 2 – Partially 3 - Probably 4 - Yes		
5d	Is the sample size adequate to achieve the stated objectives?	1 – Not demonstrated/not properly addressed 2 – No or unlikely (too low/too high) 3 – Probably (additional analysis needed) 4 - Yes		
6	Is the project likely to affect adversely the population(s) involved?	1 - Not properly addressed/ unknown 2 - Yes severely 3 – Possibly at a low level 4 - No		
6a	<b>IF YES</b> , are analyses provided on simulations of the effects using different time-frames for the project if applicable?	1 – No 2 – Partially 3 - Yes		
<b>Note:</b> if in each of the above key criteria under this section the project does not score singularly at least 2 points, do not proceed in further evaluation. Of course, proposals within a sub-group would only be developed if in their estimation scores were of 3 or above.				
<b>Project team and Project management</b>				

7	To what extent does the team have the relevant expertise, experience, and balance?	1 – Poor or not demonstrated 2 – Sufficient 3 - Very good 4 - Excellent		
8	Contingency plan: To what extent have potential problems/risks been considered and appropriate mitigation proposed?	1 – Poor or not demonstrated 2 – Sufficient but could be improved 3 - Fully or requiring only minor suggestions or not applicable		
<b>Value for Money</b>				
10	Does the project represent good value for money?	1 – No or significant amendments would be needed 2 – Yes but with some minor amendments 3 – Yes		
11	Have sufficient links been made to the wider research community/other organisations/capacity building.	1 – No 2 – Some but significant amendments needed 3 – Yes but with some minor additions 4 – Yes or not applicable		

## Appendix 2

### Cetaceans & Ecosystem Functioning: A Gap Analysis Workshop

#### Draft Agenda

1. *Presentations of existing knowledge [review paper to be produced ahead of the workshop and other presentations].  
Consideration of cetaceans' actual and relative contribution to:*
  - 1.1 *Nutrient circulation: carbon sequestration; nutrient flux, etc.*
  - 1.2 *Ocean fertilisation (vertical: 'whale pump' and horizontal: 'whale conveyor belt')*
  - 1.3 *Whale falls*
  - 1.4 *Cetaceans as predators (trophic cascades)*
  - 1.5 *Current quantification/modelling approach*
2. *Identification of key data needs and gaps*
  - 2.1 *Nutrient circulation: carbon sequestration; nutrient flux, etc.*
  - 2.2 *Ocean fertilisation (vertical: 'whale pump' and horizontal: 'whale conveyor belt')*
  - 2.3 *Whale falls*
  - 2.4 *Cetaceans as predators (trophic cascades)*
  - 2.5 *Current quantification/modelling approaches*
3. *Ways forward and recommendations (including the role of stakeholders: scientists and organisations)*
4. *Conclusions and review of report*
  - 4.1 *Defining research needs*
  - 4.2 *Identifying quantitative models*
  - 4.3 *Identifying future focus (plus proposed work plan)*