

SC/67b/RP10

CMP -Population dynamics of southern
right whales at Peninsula Valdes, Argentina
- the influence of kelp gull lesions



INTERNATIONAL
WHALING COMMISSION

PROJECT PROPOSAL REQUEST

1. PROPOSAL TITLE

Population dynamics of southern right whales at Península Valdés, Argentina: the influence of kelp gull lesions on the health, changes in increase and mortality rates in the context of a density-dependent process.

2. BRIEF OVERVIEW OF THE PROPOSAL AND ITS EXPECTED OUTCOME

Give a very brief overview (max 150 words) on your proposal and its expected outcomes. Use bullet point to list outcomes. Be succinct and clear as this may be used to summarise your project for the report.

The recent mortality of southern right whales at Península Valdés, Argentina is the highest ever recorded for the species. Understanding the causes is critical to propose management and mitigation actions. Preliminary results from glucocorticoids in baleen from stranded calves show that stress from injuries due to Kelp Gull attacks negatively affects their physiological homeostasis, potentially leading to death. Also, aerial counts show an important reduction in population rate of increase as a whole (from 7% in the past to 0.5% at present), and changes in distribution (mainly of adults) and density along the Argentine coast. The expected **outcomes** of this project include (1) necropsies of stranded whales during the 2018 season (June-December), (2) the collection and analysis of baleen plates to evaluate stress hormones and (3) eight aerial surveys to count whales and record their distribution in Península Valdés and in their expanded range in Golfo San Matías in 2018.

3. RELEVANT IWC SCIENTIFIC COMMITTEE GROUPS OR SUB-GROUPS

List all the IWC Scientific Committee groups or sub-groups that the outcomes of this work would be relevant to and provide a brief (1-2 lines) explanation of how it would contribute more widely to their ongoing programmes of work. Where possible, do not simply list only the sub-committee within which or for which the project proposal was generated.

CMP: expected outcomes of the proposed project are in keeping with the research priorities identified in the CMP for the SW Atlantic southern right whales, including:

- MON-01: Ensure long-term monitoring of abundance, trends and biological parameters
- MON-02: enhance existing stranding networks including the capacity for undertaking postmortem examinations
- MIT-02: develop and implement a strategy to minimize kelp gull harassment

SH: understanding the current changes in population dynamics of the SW Atlantic southern right whales is essential to understand the population structure of Southern Hemisphere right whales (Item 5 in SH agenda).

E: new information on the southern right whale mortalities in Península Valdés is relevant to E Agenda item 4: Strandings and mortality Events

4. TYPE OF PROJECT (PLEASE TICK)

Research project	X
Modelling	
Workshop/meeting	
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:

Provide a clear explanation of the background and rationale for the proposal and its relevance to Scientific Committee identified priorities. Clearly identify the most relevant and recent Scientific Committee recommendations.

At IWC62, the Commission endorsed a proposal to develop a CMP for southern right whales in Argentina in light of the recent calf mortality events in Península Valdés.

Outcomes 1 and 2:

The Southern Right Whale Health Monitoring Program (the "Program") began in 2003 in Península Valdés. It is run by a consortium of NGOs and Universities, in collaboration with local and foreign research centers and governmental agencies. Over the years the Program's researchers have acquired experience in whale forensics, and, with 15 years of information and samples collected, it has become an essential tool for monitoring the health status of this whale population.

The Program aims at evaluating the health status of southern right whales by conducting post-mortem examinations. It intends to diagnose the causes of death and their conservation implications for the species, giving special attention to recording and analysing kelp gull-inflicted lesions. In 2017 the Program completed its 15th consecutive season of work, having recorded and studied a total of 774 dead whales since 2003. The Program's efforts have been commended in 2010, 2013 and 2016 by the SC annual reports.

Paper SC/67B/CMP04 presented preliminary results to test the hypothesis that chronic stress from injuries due to Kelp Gull attacks negatively affects the physiological homeostasis of southern right whale calves and can lead to death.

Prenatally grown baleen tissue in 5 calves examined (one N Atlantic, four southern right whales) exhibited a distinctive profile of elevated glucocorticoids (GC) that declined shortly before birth, similar to GC profiles reported from baleen of pregnant females. After birth, GC profiles in calf baleen correlated significantly with the degree of wounding from gull attacks. In particular, two calves with high numbers of gull wounds (51 and 39 lesions) had pronounced elevations in baleen GC in postnatal baleen, followed by a precipitous decline shortly before death, a profile suggestive of prolonged chronic stress.

Thus, baleen may present a promising and valuable tool for defining the baseline physiology of whale calves, and may prove useful for addressing conservation-relevant questions such as distinguishing acute from chronic stress and, potentially, determining the role of gull attacks and cause of death.

Outcome 3:

Since 1999, the Marine Mammal Lab at Centro Nacional Patagónico in Puerto Madryn, Argentina has monitored the Valdés whale population using aerial surveys, to investigate the seasonal changes in abundance within and throughout the years. A total of 73 aerial surveys were carried out in 1999, 2000, and from 2005 to 2017 and models to estimate relative abundance and population trend were created.

The trend of the population is still positive, but in the surveyed area for the whole population the rate of increase is 0.5%, with confidence interval including the 0. For the calves the trend it is also positive, but much lower than in previous years, with a 2.44%. The rate of increase of calves is higher than that of other age classes indicating a change in age distribution.

The distribution of SRW also changed in the last 20 years. At the end of the 90's the whales were within the coastal zone, during the 2000's they occupied more offshore areas in the gulfs. Density also increased in the monitoring area as well as in offshore waters, but the increase is not even in the area and shifts are being recorded. The whales also appear to be expanding to other areas like Golfo San Matías, 300 km to the north of Península Valdés. Mother-calf pairs, breeding groups and solitary individuals were found in higher concentrations around Bahía de San Antonio, indicating the possible establishment of a new breeding area (see SC/67B/CMP01, SC/67B/CMP02, and SC/67B/CMP05 for further details).

The IWC Scientific Committee recognized the importance of the population trend and abundance of right whale monitoring since 2010 repeatedly, recommending its continuation. This is a critical moment to continue monitoring the population, due to the increase in population size, the changes in distribution and in density. We will consider a successful completion of the project if at least 4 flights are carried out in each area (Península Valdés and Golfo San Matías), as close in time as possible.

Some of the most relevant and recent Scientific Committee recommendations include:

IWC/66/Rep01 (2015): the Committee (...) **recommends** that the priority actions outlined SC/66a/Rep9 be undertaken to the address the gull harassment problem.

SC/66b/BRG Report (2016) item 4.1 (southern right whales) contains **eight recommendations** to continue working on understanding the causes of the right whale mortalities, including research related to kelp gulls and monitoring the whale population dynamics in Península Valdés.

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

Provide the specific objectives and the expected deliverables. In the case of workshops and meetings, include the Terms of Reference (ToR) and expected outcomes.

Outcomes 1 and 2:

To continue investigations of right whale health and mortality at Península Valdés. Specifically, we will:

- A) Dedicate staff and supplies to operating the Program, in order to maintain our team in a constant state of readiness to access and necropsy dead southern right whales during the 2018 SRW breeding season at Península Valdés (June-December).
- B) Conduct bi-monthly aerial surveys of the Península Valdés coastline to find stranded whales in good post-mortem condition for collection of quality diagnostic samples that are missed by the volunteer stranding network.
- C) Deepen current investigations of potential factors associated with SRW mortalities by collecting data and samples that will allow us to address the potential health and welfare impacts of repeated gull harassment.
- D) Collect and curate data and samples for novel diagnostic approaches to identify signs of stress in whale calves harassed by gulls (ie. by measuring stress hormones in calf baleen and feces).

We will consider our work successful if we:

- 1- record and necropsy all SRWs that strand at Peninsula Valdes in 2018 in a timely manner;
- 2- conduct an aerial survey every 2-3 weeks between June and December (pending weather conditions);
- 3- sustain or improve the quantity and quality of samples collected from dead whales;
- 4- obtain precise metric and photographic records of gull-inflicted lesions on dead whales;
- 5- attain ecological, pathological and biological data associated with whale mortality to assess potential causes of death;
- 6- enable studies that measure stress hormones in calf baleen and feces that might suggest links to gull harassment.

Outcome 3:

- A) Continue to perform aerial survey counts in Península Valdés.
- B) Expand the systematic aerial surveys to the north in the more recent right whale concentration areas in Golfo San Matías.
- C) Train a new group of observers to be able to continue with the monitoring
- D) Maintain and depurate the data base that contains the records of the aerial surveys
- E) Develop further models that include the new surveyed area into the estimates of the population increase rate
- F) Explore new models that takes into consideration the temporal variation in the presence of the whales during the surveyed area

We will consider our work successful if we:

- 1) Perform 4 complete flights during the season from April to December in Península Valdés area
- 2) Perform 4 complete flights during the season from July to December in Golfo San Matías
- 3) Train at least two new observers
- 4) Are able to produce a new set of records of the flights performed in the both areas that can be integrated into a single data base
- 5) Set the basis for new models that give us an insight of the within-year dynamics
- 6) Are able to integrate the record in both areas in a preliminary model to estimate trend of the population including both surveyed areas

(C) METHODOLOGICAL APPROACH/WORK PLAN/ADMINISTRATIVE DETAILS

Specify the methods to be applied (novel methods require more explanation than standard ones) and the broad workplan – the detailed timetable appears under Item 5 below.

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).

Outcomes 1 and 2:

The Program's veterinarians and biologists are on call 24/7 for 7 months (June through December) to respond to stranding reports and proactively search for strandings via aerial and terrestrial surveys. They perform necropsies and collect and store tissue samples from all stranded whales, depending on carcass condition. Baleen tissue accumulates stress hormones (glucocorticoids, GC) as it grows. In whale calves, a single piece of baleen contains hormones deposited across the lifespan of the animal (pre- and post-birth). We will collect baleen plates to determine cortisol and corticosterone patterns typical of right whales subjected to the chronic stress of repeated wounding (calves with high numbers of gull wounds) vs. those with little or no evidence of chronic stress (calves with few/zero wounds). All samples and accompanying data required for these studies will be collected, catalogued and archived with support from this grant.

Outcome 3:

The monitoring areas cover a coastal strip of 620 km of Península Valdés and 350km of Golfo San Matías along the coastal zone parallel to the coastline at an altitude of 500 feet. Mother-calf pairs, solitary individuals and breeding groups are counted and their location recorded with a GPS.

The flights perform in each area should be carried out in consecutive days in order to avoid or minimize the movements of whales from one area to the other. Records are registered in an application developed specifically to the task in Cibertracker ®.

(D) SUGGESTIONS FOR OUTREACH

Please, note that successful proponents will be requested to produce ad hoc material that will be used by the IWC Secretariat for dissemination and outreach.

The results of this study will be made available to government agencies responsible for whale management and conservation to support policy aimed at improving the well-being of SRWs and the long-term sustainability of the Península Valdés population. We will use social media, internet platforms and a carefully developed network of science- and conservation-minded journalists to disseminate the project's outcomes to the general public. We anticipate at least three publications in key journals, as well as reporting of findings in relevant scientific conferences.

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)
Aerial and terrestrial surveys to locate stranded whales	Matias Di Martino, field assistants	06/18	12/18
Necropsies	Matias Di Martino, field assistants	06/18	12/18
Analyses of baleen plates and other tissues collected	Alejandro Fernández Ajó, Marcela Uhart, Denise McAlouse, lab assistants	10/18	06/19
Aerial survey counts along Península Valdés and Golfo San Matías	Mariano Coscarella, Enrique Crespo, Raúl González, Nicolas Sueyro, Magdalena Arias, research assistants	04/18	12/18
Data base management	Mariano Coscarella, Nicolás Sueyro, Magdalena Arias	05/18	01/19

Modelling	Enrique Crespo, Mariano Coscarela, Raúl González	02/19	09/19
Training of new observers	Enrique Crespo, Mariano Coscarella, Nicolàs Sueyro	04/18	12/18

Expected outputs	Completion date (mm/yy)
Technical reports to research permit granting authorities in Argentina	03/19
Technical reports to IWC Scientific Committee	05/19
Publications in peer reviewed journals	08/19
Popular publications in the media	12/18

7. RESEARCHERS' (OR STEERING GROUP) NAME(S) AND AFFILIATION

Please, also specify if the project team has any direct connection (e.g. same research group or institute, collaborator on common project) with people involved or likely to be involved in taking the funding decision (e.g. IWC SC heads of delegations, SC convenors, etc.). Add as many rows as you need to the table below.

Name	Affiliation	Connection with decision
Dr. Mariano Sironi	Instituto de Conservación de Ballenas, Argentina and Southern Right Whale Health Monitoring Program	
Dr. Marcela Uhart	University of California, Davis and Southern Right Whale Health Monitoring Program	
Dr. Matías Di Martino	Southern Right Whale Health Monitoring Program	
PhD candidate Alejandro Fernández Ajó	Instituto de Conservación de Ballenas and University of Northern Arizona	
Dr. Enrique Crespo	Centro Nacional Patagónico, CONICET, Argentina	
Dr. Mariano Coscarella	Centro Nacional Patagónico, CONICET, Argentina	
Dr. Raúl González	Centro de Investigación Aplicada y Transferencia Tecnológica en Recursos Marinos Almirante Storni, CONICET, Argentina	
Ph.D. candidate Nicolás Sueyro	Centro Nacional Patagónico, CONICET, Argentina	
Ph. D. candidate Magdalena Arias	Centro de Investigación Aplicada y Transferencia Tecnológica en Recursos Marinos Almirante Storni, CONICET, Argentina	

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)	Stranding program field coordinator x 7 months @ 940	6,580 *
(1) Salaries (by person)	Stranding program field assistant x 7 months @ 650	4,550 *
(2) Travel/subsistence (by person or est. total for IPs)		
(3) Services (by item)	Airplane rental for aerial survey counts x 8 flights @ 1,000	8,000 **
	Airplane for surveys to locate dead whales	2,200 *
	Stranding response, vehicle, maintenance	8,000 *
	Sample analyses, inventory, storage	17,500 *
(4) Reusable equipment	Field supplies	1,900 *
(5) Consumables		
(6) Shipping (by item)	Stranding samples shipping and export	1,100 *
(7) Insurance (by item)	Necropsy field team insurance	150 *
(8) Co-funding	Private stakeholders	2,000**
	Salaries of researches involved in aerial surveys	40,000**
	Salaries of PI's in stranding program	34,000 *
(9) Other		
Total		125,980
Total Co-funding		106,850
Total requested from the IWC SC		19,130 ***

Funds requested from the IWC SC are shown **in bold with grey shading**.

*Member organizations of the Southern Right Whale Health Monitoring Program provide senior staff salaries, field vehicle, aerial and terrestrial surveys, complete necropsy equipment, storage facilities, diagnostics, cooperation with external scientists and labs.

*** Private stakeholders provide \$ 2,000 for aerial surveys, CONICET-CENPAT and University of Comahue provide lab facilities and the salaries of the personnel estimated as three full time professor and two fellows salaries for 8 months.*

****The proposed activities can be carried out even if a budget reduction takes place. Although not ideal, the salaries of the field team can be reduced or partly supplemented from other sources and the proposed flight schedule can be reduced.*

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).

Samples and data from necropsies and lab analyses are archived by the Southern Right Whale Health Monitoring Program and are available to any interested scientists for comparative analyses and cooperative work.

Data from aerial survey count curated in a data base and are available to researchers that propose collaboration.

10. PERMITS (PLEASE TICK)

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

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

Research permits for the three components in this proposal have been grantede by the Province of Chubut, Argentina for the past 15-18 years. CITES and other permits to export/import tissue samples are being prepared at present. Multiple exports/imports of samples have been done by the Southern Right Whale Health Monitoring Program with the appropriate permits, so we do not foresee any problems with this respect.

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				
TITLE OF THE PROJECT/sub-projects:				
PRINCIPAL INVESTIGATOR:		Enrique Crespo, Marcela Uhart, Mariano Coscarella, Mariano Sironi		
Key criteria		Explanation of scoring	Score	Supporting Remarks
Relevance to Scientific Committee priorities				
1	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).		
2	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		
Note: 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.				
Approach and methodology				
3	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		
4	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	IF YES , are analyses provided on simulations of the effects using different time-frames for the project if applicable?	1 – No 2 – Partially 3 - Yes		
Note: 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.				
Project team and Project management				

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		
Value for Money				
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		