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## PROJECT PROPOSAL REQUEST

### 1. PROPOSAL TITLE

## ***Southern Right Whale acoustic presence detection near South Shetland Islands - Antarctic Peninsula***

### 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.*

During the years 2014-2017 a High-Frequency Acoustic Recording Package (HARP) was deployed in the Antarctic Peninsula, close to the South Shetland Islands. This HARP was deployed in order to monitor marine mammals and ambient ocean noise in partnership with SCRIPPS Whale Acoustic Lab. More than 15,000 hours were recorded without having carried out an analysis of these data addressing to SRW calls due to lack of funds.

This proposal is part of the research actions of the South Western Atlantic Right Whale CMP, more specifically the one referring to determine the movements, migratory routes and location of the feeding areas of this population. Therefore, the data that are intended to be analyzed in this project could provide important information on the knowledge of migratory routes and / or feeding areas in the Antarctic peninsula.

### 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:** This proposal is directly related to the CMP subcommittee and the actions relevant to the SWA-RW CMP. There is a lack of data from feeding grounds and migratory routes of this population. Thus, this data could provide important information about this issue which certainly is part of the CMP objectives.

**SH:** This subcommittee will take advantage of this data and results, since this information may be taken into account for future assessments of the species. Information is also relevant to the IWC-SORP theme: The right sentinel for climate change: linking foraging ground variability to population recovery in the southern right whale.

**E.** This subcommittee will benefit also of this data and results in relation to the work done on noise.

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

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

**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.*

In 2012, following the recommendations of the IWC and particularly considering the SRW unexplained die-off of right whale calves in Argentinean waters, a Conservation Management Plan (CMP) for the SWA-Right Whale population, drafted by Argentina, Brazil, Chile and Uruguay was endorsed by the IWC64 (IWC/64/CC7 Rev 1). This plan started to be implemented after a first workshop held in Buenos Aires, 2013 (IWC65/2014).

Nine high priority actions were originally identified for this CMP (IWC/64/CC7 Rev 1). Of these nine actions, one specifically refers to **Determine movements, migration routes and location of feeding ground(s)**. Although information coming from different sources, such as satellite tags and photo-id catalogs comparison have increased the knowledge in some way relative to migratory movements, there is no established consensus of the feeding areas where the individuals of the species migrate. Moreover, recent satellite tag whales in Islas Georgias del Sur/ South Georgia Islands showed the movement of an individual bound south to the Antarctic Peninsula (Amy Kennedy, in SWA-RW CMP WS report 2021) before heading north. In addition, individuals tagged by Zerbini et al. showed whale connectivity among different northern Patagonian gulfs and coastal habitats along the eastern coast of South America, and migratory routes and habitat use on feeding destinations, including the Patagonian shelf, the western South Atlantic basin, the Scotia Sea and the northern Weddell sea. Zerbini et al., also showed the use of open ocean oceanographic features by SRWs, presumably for feeding, in middle latitudes of the South Atlantic basin (Zerbini et al. in SWA-RW CMP WS report 2021).

Recent data presented by Gibbons et al. (in SWA-RW CMP WS report 2021), showed a number of sightings recorded in the eastern entrance of the Strait of Magellan. This data together with Belgrano et al (2008) data open questions about if this area is part of a feeding area and/or also constitutes an alternative new wintering area?, since most of the sightings were recorded in autumn and winter months, and finally this could be a transient area for migrating whales to the Antarctic Peninsula.

Thus, considering the previous, data coming from the Antarctic Peninsula are relevant to the identification of the feeding grounds and migratory routes of this population. In that sense, the use of data obtained from year-round systems such as HARPs, are of great value to identify these possible feeding areas and or migratory routes.

Fundación Cethus has all the information collected with HARP during 3 years (2014-2017) at the Antarctic Peninsula area and the plan to look for SRW signals in that dataset. At the moment, due to lack of funds it has been not possible to analyze SRW calls presence in this dataset.

During a period of four months, a bioacoustician from Fundación Cethus will visually inspect long term spectral averages, as well as a fraction of short term spectrograms

corresponding to over 15,000 hours of acoustic data looking for SRW calls. To aid visual inspection, a partially automatic detector will be developed. If SRW vocalizations are detected, monthly presence will be determined.

(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*

**Specific objectives**

- Analyse ~15.000 hours of acoustic data coming from a HARP deployment during the years 2014-2017 in order to look for Southern Right Whales' upsweeps.
- Look for other possible cetaceans among this data.

**Outcomes**

- The results of this project will be presented during the next IWC SC (2022), and will be submitted to a peer-review journal and conferences.
- The results will be discussed into the CMP framework.

(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).*

PAM data was collected from a HARP system provided by Scripps Whale Acoustic Lab, deployed and refurbished on 2014, 2015, and 2016. During the 2014 period the recorder acquired data for five minutes every 6 minutes from March 2014 to July of the same year. Its position was 60°53.2 S and 55°57.2 W at the North West of Elephant Island in 760 m water depth. For the 2015 period the HARP recorded continuously from February 2015 to January 2016, and was deployed at the Northwest of Isla 25 de Mayo / King George Island (61° 27.469' S, 57° 56.515' W). In 2016 the autonomous package recorded continuously from February to January 2017 nearby Isla 25 de Mayo / King George Island (61° 15.11' S, 53° 29.01' W). All three years the acoustic data was sampled at a rate of 200 kHz with 16-bit quantization.

For the detection process, a combination of manual and automated tools will be implemented. Initial visual and aural inspection will be done manually using the MATLAB-based (Mathworks, Natick, MA) custom software program Triton (Wiggins and Hildebrand 2007). Recordings will be downsampled to reduce data size while keeping relevant low frequency bandwidth. Long Term Spectral Averages will be computed and scanned, and individual spectrograms further analyzed when high energy is detected in the frequency range of interest.

To aid visual detection, available detectors will be used including those built in PAMGuard software and Low-Frequency Detection and Classification System (LFDCS) (Baumgartner and Mussoline 2011). In addition, custom written energy detectors will be developed, and at a second stage, spectrogram correlation techniques will be applied building synthetic kernels or by using manually detected and confirmed SRW sounds if any.

All sounds detected as probable SRW calls by human and software will be manually validated by comparing them to published literature.

If SRW sounds are detected, acoustic signal parameters will be described, and sound production activity levels will be quantified monthly.

**(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.*

**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)
HARP data clean	AM, VR	08/21	10/21
HARP data analyses	AM, VR	10/21	12/21
IWC manuscript writing	AM, VR, MI, JPTF	12/21	05/22
Peer-reviewed paper writing	AM, VR, MI, JPTF	12/21	06/22

Expected outputs	Completion date (mm/yy)
IWC manuscript writing	05/22
Peer-reviewed paper writing	06/22

**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
Vanesa Reyes	Fundación Cethus, Argentina	
Juan Pablo Torres-Florez	ICMBio/CMA, Brazil	
Alexander Marino	Fundación Cethus, Argentina	
Miguel Iñíguez	Fundación Cethus, Argentina	



8.

TOTAL BUDGET

PROJECT BUDGET					Please indicate when funds will be needed		
	Description	Cost per unit	Number of units	Total Cost £GBP	2022	2023 +	Co-funding
(1) Salaries (by person)	Data cleaning and analyses	580	4	2280	2280		
(2) Travel/subsistence (by person or est. total for IPs)							
(3) Services (by item)	Office facility	250	4	1000			1000
(4) Reusable equipment							
(5) Consumables							
(6) Shipping & Customs (by Item)							
(7) Insurance (by item)							
(8) Other	Laptop and software	3900		3900			3900
				<b>TOTAL</b>	<b>7180</b>		4900

Co-funding Memo:

Source	Purpose of Funding	Amount	Secured/Tentative?
Fundacion Cethus	Laptop and software	3900	
Fundacion Cethus	Office facility	1000	
	<b>TOTAL</b>	<b>4900</b>	

<b>Total value of project:</b>	<b>£GBP</b>
Funds requested from IWC	<b>2280</b>
Co-funding	<b>4900</b>
<b>TOTAL</b>	<b>7180</b>

## 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)).

## 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:

## 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:			
Key criteria	Explanation of scoring	Score	Supporting Remarks
<i>Relevance to Scientific Committee priorities</i>			
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	
<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.			
<i>Approach and methodology</i>			
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		
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		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		
5 a	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		
5 b	Are any proposed intermediary targets timely and achievable?	1 – No or unlikely 2 – Partially 3 - Probably 4 - Yes		
5 c	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		
5 d	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		
6 a	<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		
<p><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.</p>				
<p><b>Project team and Project management</b></p>				

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		