

# **Report of the Scientific Committee**

**Bled, Slovenia, 24 April-6 May 2018**

## **Annex V Report of the IWC-SORP Scientific Steering Committee**

**This report is presented as it was at SC/67b.  
There may be further editorial changes (e.g. updated references, tables, figures)  
made before publication.**

**International Whaling Commission  
Bled, Slovenia, 2018**



# Annex V

## Report of the IWC-SORP Scientific Steering Committee

**Members:** Double (Chair), Brownell, Burkhardt, Bjørge, della Rosa, Fortuna, Fruet, Galletti, Hielscher, Iñiguez, Jackson (SH Chair), Langerock, Luna, Lundquist, Lauriano, Reyes Reyes, Ridoux, Vermeulen, Zerbini

### 1. INTRODUCTORY ITEMS

Double welcomed members of the IWC-SORP Scientific Steering Committee.

Double recalled the IWC's Southern Ocean Research Partnership (IWC-SORP) was proposed to the International Whaling Commission (IWC) in 2008 with the aim of developing a multi-lateral, non-lethal scientific research programme that would improve the coordinated and cooperative delivery of science to the IWC. Currently, there are 13 member countries in the Partnership: Argentina, Australia, Belgium, Brazil, Chile, France, Germany, Italy, Luxembourg, New Zealand, Norway, South Africa and the United States. IWC-SORP is an open Partnership that welcomes new members. Its ethos is one of open collaboration, communication and data sharing.

There are currently five endorsed and ongoing IWC-SORP themes: (1) 'The Antarctic Blue Whale Project'; (2) A project aimed at describing the 'Distribution, relative abundance, migration patterns and foraging ecology of three ecotypes of killer whales in the Southern Ocean'; (3) The 'Foraging ecology and predator-prey interactions between baleen whales and krill' project; (4) A project to investigate the 'Distribution and extent of mixing of Southern Hemisphere humpback whale populations around Antarctica?' focused initially on east Australia and Oceania; and (5) the project 'Acoustic trends in abundance, distribution, and seasonal presence of Antarctic blue whales and fin whales in the Southern Ocean'.

#### 1.1 Apologies

Apologies were received from Herr and Charrassin.

#### 1.2 Documents available

Documents available were SC/67b/SH18, SC/67b/01.

### 2. IWC-SORP THEMES AND PROGRESS OF PROJECTS FUNDED IN 2016

The Steering Committee welcomed all the recent activities that have contributed to IWC-SORP's research themes (SC/67b/SH21) and the projects funded in 2016 (SC/67b/SH18)

The Steering Committee noted that overall the IWC-SORP has contributed to 126 peer-reviewed publications to date and 124 IWC-SORP related papers have been submitted to the Scientific Committee, 21 of which were considered by the IWC Scientific Committee this year.

### 3. FINANCIAL UPDATE OF STATUS OF THE IWC-SORP RESEARCH FUND AS OF JANUARY 2018

In 2009, the IWC Secretariat established an IWC Southern Ocean Research Partnership Research Fund (IWC-SORP Research Fund).

To date this fund has received voluntary contributions from Australia, the Netherlands, the United States, the International Fund for Animal Welfare, and WWF-Australia. IWC-SORP has also received support from the French and Chilean Governments for meetings and symposia. A detailed report on the current financial status of the IWC-SORP Research Fund is presented in SC/67b/01. £641,828 GBP remains unallocated and unspent in the IWC-SORP Research Fund.

The Steering Committee welcomed this report.

### 4. 2017/18 IWC-SORP FUNDING ROUND

#### 4.1 Background to Call and Assessment Process

The background to the current Call is provided in Appendix 1.

#### 4.3 Proposed allocation of funds

Fortuna, as Convenor of the Assessment Panel, presented the outcome of the assessment process. The outcome is summarised in Appendix 1, Table 1.

Bell noted that Proposals 6 and 10 will directly contribute to understanding the relationship between baleen whales and their prey (Antarctic krill), contributing to (but assessment outcome not influenced by) the request of the Australian Government that around £280,000 of their 2016 voluntary contribution be assigned to whale/krill research across any Calls for Proposals that disburse their contribution. A brief summary of each project proposal and assessment can be found in Appendix 1, Table 2.

The Steering Committee welcomed the outcome of the Assessment Group and **agreed** with the allocation of a total of £493,544 GBP from the IWC-SORP Fund to 15 projects (Appendix 1 Tables 1 and 2).

The Steering Committee noted this recommendation for the allocation of IWC-SORP funds would next be considered by the Scientific Committee.

If agreed by the Scientific Committee, these allocations will be presented to the Finance and Administration Committee during IWC67 (September 2018) for Commission endorsement. The proponents of successful proposals will be informed of the Commission's decision following IWC67. Contractual matters will subsequently be handled by the Secretariats of the IWC and IWC-SORP.

The Steering Committee thanked Fortuna for convening the Assessment Panel and expressed its gratitude to the Panel members who all provided valuable and thoughtful input into the assessment process.

#### **4.4 Timing of future call**

The Steering Committee discussed the timing of the next IWC-SORP Call for Proposals (Call) and **agreed** that the next Call should open prior to SC/68b (i.e. late 2019/early 2020) in readiness for IWC/68 (2020).

This timing would allow strategic prioritisation of the research toward which the Call is directed in order to meet IWC-SORP and IWC/SC priorities; allow knowledge gaps to be identified; and allow the IWC-SORP SSC to seek additional funding to augment the funds available in the IWC-SORP Research Fund.

### **5. PROPOSALS FOR NEW IWC-SORP THEME**

The Steering Committee received a proposal for a new IWC-SORP research theme: *The right sentinel for climate change: linking foraging ground variability to population recovery in the southern right whale.*

The specific objectives of the Theme would be to:

- (1) increase our understanding of southern right whale foraging habitats and ecology;
- (2) update our knowledge on southern right whale population dynamics in a comparative framework;
- (3) pursue integration of health assessment indicators with long-term monitoring data; and
- (4) investigate the impact of climate variation at foraging grounds on population recovery.

The Steering Committee noted that the proposed work is highly collaborative, has the capacity to support long-term research and scientific excellence, has clearly identifiable avenues for medium- to long-term funding and is likely to be highly productive.

It was proposed that the theme will be led by Drs Emma Carroll and Els Vermeulen, in close collaboration with colleagues from Argentina, Australia, Brazil, New Zealand and South Africa. The new theme will adhere to IWC-SORP's ethos of open collaboration, communication and data sharing.

The Scientific Steering Committee welcomed and supported this proposal and **agreed** to seek endorsement of this new theme from the Scientific Committee and to develop criteria to assess any new theme proposals.

### **6. NOMINATION OF VICE-CHAIR**

The current Chair of the IWC-SORP SSC, Dr Michael Double, will come to the end of his three-year term as Chair at the next Commission meeting.

Dr Helena Herr is currently vice-Chair and it is proposed that she adopt the role of Chair.

The IWC-SORP SSC **agreed** to seek nominations for the role of vice-Chair from IWC-SORP member nations, intersessionally.

## **Appendix 1**

### **IWC-SORP CALL FOR PROPOSALS (2017/18)**

#### **Background**

The process for the allocation of funds from the IWC-SORP Research Fund was originally adopted by the Commission following Annex R (IWC/SC/62).

At SC/66b (June 2016), this Annex was revised and endorsed by the Scientific Committee (IWC/66/Rep01, Annex W). The F&A Committee considered this revised procedure (as described in IWC/66/F&A06) in September 2016 and advised the Commission of its endorsement in October 2016 (IWC/66/Rep02).

Subsequently, two open, competitive, Calls for Proposals have taken place. The first in 2016, allocated £144,058 GBP to 10 research projects (details can be found in SC/67b/SH18).

In making their contribution of £758,325 GBP to the IWC-SORP voluntary fund in 2016, the Government of Australia requested that up to 20% of the contribution be allocated to IWC-SORP related projects before the start of the 2016/17 austral field season; this was achieved by holding a Call for Proposals in 2016 and disbursing funds after IWC66 (2016). The Australian Government also requested that about £280,000 GBP of their total voluntary contribution be assigned to whale/krill research across any Calls for Proposals held.

An IWC-SORP Call for Proposals was opened in September 2017 and closed on 05 January 2018.

### **Applications and Assessment**

Nineteen proposals were received by the IWC-SORP Secretariat and assessed for eligibility in accordance with criteria clearly stated in the guidelines associated with the Call (Appendix 2). All 19 proposals were deemed eligible and were distributed to an IWC-SORP Assessment Panel established by Chair of the IWC Scientific Committee (IWC/67/Rep01 (2017) Annex V, Appendix 1, pp 7-8).

The Chair of the IWC Scientific Committee established an IWC-SORP Assessment Panel that included 15 members of the IWC Scientific Committee. The composition of this Panel was agreed by the Scientific Committee at SC/67a (IWC/67/Rep01(2017) Annex V, Appendix 1, pp 7-8).

- Chair of the Scientific Committee.
- Vice Chair of the Scientific Committee.
- IWC Head of Science.
- Current Convenor of the SH sub-committee.
- Two to three ex-Convenors of the SH sub-committee.
- A representative from the IWC-SORP Secretariat.
- Chair and Vice-chair of the IWC-SORP Scientific Steering Committee.
- Additional members deemed necessary by the Chair to facilitate the assessment of proposals. These assessors will be drawn from the Scientific Committee.

All 19 eligible proposals were distributed to the IWC-SORP Assessment Panel. Proposals were assessed against seven criteria tabulated in the guidelines associated with the Call (IWC/67/Rep01(2017) Annex V). The assessment included a determination of how well the proposals aligned with IWC-SORP and IWC/SC objectives and priorities. In addition, the Panel considered any conditions associated with voluntary contributions as specified by donors.

Assessors reviewed between three and eight proposals each. Each proposal was reviewed by a minimum of four independent Assessors.

This process aimed to provide robust scientific oversight and probity whilst meeting the request of the Contracting Parties making voluntary contributions. The assessment process was coordinated by the IWC/SC Chair.

### **Measures taken to ensure probity and handle Conflicts of Interest**

As part of their proposal application proponents were required to declare Conflicts of Interest that would impact on or prevent the applicant from proceeding with the project or any Contract it may enter into with the IWC. Where a proponent subsequently identified that an actual, apparent, or potential conflict of interest existed, or might arise, in relation to their application for funding, the applicant was required to inform the IWC-SORP Secretariat and IWC/SC Chair in writing immediately. See Appendix 2 for more details on this process.

IWC-SORP Assessment Panel members that were involved in the assessment process were also required to declare any Conflicts of Interest to the IWC-SORP Secretariat and IWC/SC Chair prior to assessment of applications. The IWC/SC Chair decided on a case-by-case basis if the Panel member(s) should be excluded from the assessment of individual project(s). See Appendix 3 for more details on this process.

In total, 22 Conflicts of Interest were declared by six Assessors. These Assessors did not assess the proposals for which a Conflict of Interest had been declared and abstained from subsequent Panel discussions regarding these proposals.

### **Outcome**

Projects recommended for funding by the Assessment Panel are presented in Table 1 and the associated project summaries are provided in Table 2.

Table 1  
List of the funding allocations by project recommended by the IWC-SORP Steering Committee.

Proposal number	Chief Investigator	Co-Investigators	Title	Requested amount (£)	Recommended amount (£)	Level of funding
1	Baker, C. Scott; Steel, Debbie	Ari Friedlaender, Renee Albertson, Michael Poole, Susana Caballero, Logan Pallin, Jooke Robbins, Ana Lucia Cypriano-Souze, Rochelle Constantine	Is migratory connectivity of humpback whales in the Central and Eastern South Pacific changing? A decadal comparison by DNA profiling	27,598	26,375 (deducted in house instrument expenses)	Partial
2	Charrassin, Jean-Benoit	Laurene Trudelle, Virginia Andrews-Goff	Application of satellite telemetry data to better understand the breeding strategies of humpback whales in the Southern Hemisphere	21,200	21,200	Full
3	Branch, Trevor	-	Modelling somatic growth and sex ratios to predict population-level impacts of whaling on Antarctic blue whales	32,594	32,594	Full
4	Friedlaender, Ari; Constant-ine, Rochelle	Jooke Robbins, Scott Baker, Claire Garrigue, Logan Pallin	Pregnancy rates in Southern Ocean humpback whales: implications for population recovery and health across multiple populations	29,334	19,984 (equipment deducted and some analytical costs)	Partial
5	Herr, Helena	Sacha Viquerat, Simone Panigada, Bettina Meyer, Anna Panasiuk, Natalie Kelly, Jennifer Jackson, Paula Olson, Ursula Siebert	Recovery status and ecology of Southern Hemisphere fin whales ( <i>Balaenoptera physalus</i> )	82,300	81,900 (equipment deducted)	Partial
6	Friedlaender, Ari; Constant-ine, Rochelle	Alex Zerbini, Ben Weinstein	A circumpolar analysis of foraging behaviour of baleen whales in Antarctica: Using state-space models to quantify the influence of oceanographic regimes on behaviour and movement patterns	34,711	34,711	Full
7	Buchan, Susannah; Miller, Brian	Flore Samaran, Danielle Harris, Kate Stafford, Ken Findlay, Ana Širović	A standardized analytical framework for robustly detecting trends in passive acoustic data: A long-term, circumpolar comparison of call-densities of Antarctic blue and fin whales	43,369	41,369 (publication costs)	Partial
8	Lang, Aimee; Archer, Frederik	Robert L Brownell, Kelly Robertson, Michael R McGowan	Inferring the demographic history of blue and fin whales in the Antarctic using mitogenomic sequences generated from historical baleen	22,710	22,710	Full
9	Zerbini, Alex; Clapham, Phillip	Yulia Ivashchenko, Mike Double, John Bannister, Els Vermuelen, Ken Findlay	Assessing blubber thickness to inform satellite tag development and deployment on Southern Ocean whales	22,646	22,426 (supply costs deducted)	Partial
10	Širović Ana, Stafford Kate,	-	Acoustic ecology of foraging Antarctic blue whales in the vicinity of Antarctic krill studied during AAD interdisciplinary voyage aboard the <i>RV Investigator</i>	34,183	30,107 (airfares deducted)	Partial
12	Kelly, Natalie; Maire, Frederic	Amanda Hodgson, David Peel, Helena Herr, Phil Trathan, Jennifer Jackson; Guy Williams	Development of statistical and technical methods to support the use of long-range UAVs to assess and monitor cetacean populations in the Southern Ocean	30,576	30,576	Full
13	Reisinger, Ryan; de Bruyn, Nico	A. Rus Hoelzel, Christophe Guinet, Simon Elwen	An integrative assessment of the ecology and connectivity of killer whale populations in the southern Atlantic and Indian Oceans	33,650	33,650	Full
14	Bengston Nash, Susan	Ari Friedlaender, Frederik Christiansen, Juliana Castrillon, David Johnston	Implementation of humpback whales for Antarctic sea-ice ecosystem monitoring; Inter-program methodology transfer for effective circumpolar surveillance	91,202	51,555 (equipment costs deducted)	Partial
17	Carroll, Emma; Torres, Leigh; Graham, Brittany	Luciano O Valenzuela, Darren Gröcke, Scott Baker, Rochelle Constantine, Ken Findlay, Robert Harcourt, Pavel Hulva, Petra Neveceralova, Larissa Rosa de Oliveira, Paulo Henrique Ott, Per Palsbøll, Vicky Rowntree, Jon Seger	Circumpolar foraging ecology of southern right whales: past and present	21,290	21,290	Full
18	Iñiguez Bessega, Miguel	Simone Baumann-Pickering, Marta Hevia, John Hildebrand, Alexander Marino, Mariana Melcoón, Maria Venesa Reyes Reyes, Ana Širović, Juan Pablo Torres Florez	Habitat use, seasonality and population structure of baleen and toothed whales in the Scotia sea and the western Antarctic Peninsula using visual and passive acoustic methods and genetics	26,579	23,097 (equipment costs reduced and communication/network costs deducted)	Partial
			<b>TOTAL</b>	693,195	493,544	

Table 2

A brief summary of each project recommended for funding.

<p>PROPOSAL 1 BAKER, STEEL <i>ET AL.</i>: IS MIGRATORY CONNECTIVITY OF HUMPBACK WHALES IN THE CENTRAL AND EASTERN SOUTH PACIFIC CHANGING? A DECADAL COMPARISON BY DNA PROFILING</p>
<p>This proposal will investigate decadal changes in connectivity between Breeding Stock G and the ‘adjacent stocks’ of Oceania humpback whales using DNA profiling, including sex and 10 microsatellites for individual identification and sequencing of the mtDNA haplotype for maternal lineages. For this continue previous collaborative efforts to assemble a ‘DNA register’ of profiles representing 2,104 individual humpback whales sampled on wintering grounds and in the Antarctic from 1991 to 2005. The proposal is scientifically interesting, highly collaborative, uses existing samples, and is applicable to a wider geographic area. The proponents are very capable and demonstrably productive. The project will contribute to the IWC-SORP Humpback Whale Connectivity Theme.</p>
<p>PROPOSAL 2 CHARRASSIN <i>ET AL.</i>: APPLICATION OF SATELLITE TELEMETRY DATA TO BETTER UNDERSTAND THE BREEDING STRATEGIES OF HUMPBACK WHALES IN THE SOUTHERN HEMISPHERE</p>
<p>This highly collaborative proposal will analyse satellite tracking data collected in Madagascar, Australia, Central America, Brazil, Gabon, and New Caledonia in order to compare the whale coastal movements and habitat use of five Southern Hemisphere breeding grounds, to increase our knowledge of humpback whale distribution patterns and habitat preferences. This proposal is closely aligned with the priorities and objectives of two IWC-SORP Themes: the Humpback Connectivity and Baleen Whale Foraging Ecology Themes.</p>
<p>PROPOSAL 3 BRANCH: MODELLING SOMATIC GROWTH AND SEX RATIOS TO PREDICT POPULATION-LEVEL IMPACTS OF WHALING ON ANTARCTIC BLUE WHALES</p>
<p>This proposal aims to build a sex-specific age-structured model to predict changes in mean Antarctic blue whale population length as a result of whaling, and compare the predictions to catch length distributions to estimate how much mean population length declined during whaling. In addition to more precise estimates of growth, the proposed project will have immediate utility in converting recent non-lethal measurements of blue whale lengths from the air into ages; and will be able to predict whether trends in mean lengths from aerial methods have sufficient precision to track population recovery of Antarctic blue whales. This is a well-defined proposal addressing an important topic of relevance to the IWC/SC. It will explore existing data that has received little attention in recent decades. The proposal will contribute directly to the IWC-SORP Antarctic Blue Whale Project.</p>
<p>PROPOSAL 4 FRIEDLAENDER, CONSTANTINE <i>ET AL.</i>: PREGNANCY RATES IN SOUTHERN OCEAN HUMPBACK WHALES: IMPLICATIONS FOR POPULATION RECOVERY AND HEALTH ACROSS MULTIPLE POPULATIONS</p>
<p>This highly collaborative proposal will use existing biopsy samples collected by IWC-SORP researchers to perform the largest and most extensive non-lethal analysis of pregnancy rates in Southern Hemisphere humpback whales using newly established and validated biochemical techniques. The project will produce a current reference point for the rates of pregnancy in humpback whales within the Southern Hemisphere, providing an opportunity to assess the impact of future climatic trends on the recovery of these populations. The proposed work will make very important contributions to both the IWC-SORP Baleen Whale Foraging Ecology and Humpback Connectivity Themes.</p>
<p>PROPOSAL 5 HERR <i>ET AL.</i>: RECOVERY STATUS AND ECOLOGY OF SOUTHERN HEMISPHERE FIN WHALES (<i>BALAENOPTERA PHYSALUS</i>)</p>
<p>This project aims to investigate the recovery status, population structure, ecology and migratory patterns of Southern Hemisphere fin whales (SHFW) around the Western Antarctic Peninsula (WAP), where increasing SHFW numbers have been reported, and the Scotia Sea. Targeted research will be conducted during research cruises in 2019 and 2020. Dedicated vessel-based visual surveys will collect sightings information for abundance estimation; feeding ecology will be investigated through concurrent krill surveys; genetic samples will be collected for the assessment of population structure; and habitat use, movements and migratory pathways analysed using satellite telemetry. Data on SHFW that have been collected opportunistically by various research groups during past decades will be combined and analysed together to assess recent changes of SHFW abundance and distribution around the WAP. This excellent proposal closely aligns with IWC-SORP and IWC/SC priorities.</p>
<p>PROPOSAL 6 FRIEDLAENDER, CONSTANTINE <i>ET AL.</i>: A CIRCUMPOLAR ANALYSIS OF FORAGING BEHAVIOUR OF BALEEN WHALES IN ANTARCTICA: USING STATE-SPACE MODELS TO QUANTIFY THE INFLUENCE OF OCEANOGRAPHIC REGIMES ON BEHAVIOUR AND MOVEMENT PATTERNS</p>
<p>The proposed project will bring together senior and early career researchers and a large, multi-national satellite telemetry dataset, to develop state-space models that will allow the comparison of humpback whale foraging behaviour around the Antarctic continent, and contrast how regional differences in sea ice and other critical oceanographic parameters influence whale foraging behaviour and distribution. This excellent proposal aligns well with IWC-SORP priorities and will make important contributions to both the IWC-SORP Baleen Whale Foraging Ecology and Humpback Connectivity Themes. It was ranked the highest of all proposals received by the IWC-SORP Assessment Panel.</p>
<p>PROPOSAL 7 BUCHAN, MILLER <i>ET AL.</i>: A STANDARDIZED ANALYTICAL FRAMEWORK FOR ROBUSTLY DETECTING TRENDS IN PASSIVE ACOUSTIC DATA: A LONG-TERM, CIRCUMPOLAR COMPARISON OF CALL-DENSITIES OF ANTARCTIC BLUE AND FIN WHALES</p>
<p>This highly collaborative proposal seeks to implement a standardized analytical framework for estimating calibrated call densities of Antarctic blue whales and fin whales, with a long-term view of using call densities to determine animal densities and examine population trends of Antarctic blue and fin whales in the Southern Ocean, based on existing IWC-SORP Acoustic Trend Working Group passive acoustic datasets. The aims of this study are extremely relevant to IWC-SORP priorities and will help to ensure that acoustic data across the Antarctic can be analysed in a comparable fashion in order for accurate estimates of trends in abundance to be obtained.</p>
<p>PROPOSAL 8 LANG, ARCHER <i>ET AL.</i>: INFERRING THE DEMOGRAPHIC HISTORY OF BLUE AND FIN WHALES IN THE ANTARCTIC USING MITOGENOMIC SEQUENCES GENERATED FROM HISTORICAL BALEEN</p>
<p>This proposal aims to use a combined dataset consisting of both contemporary and historical mitogenome sequences to examine the demographic histories of Antarctic blue and fin whales in the Antarctic using techniques such as Bayesian skyline plots and Approximate Bayesian Computation. The proposed work is important because there is currently no means of assessing trends in abundance for fin whales, the species with the highest catch by modern whaling in the Southern Oceans, and it will provide much needed information on fin and blue whale population structure, aligning with IWC/SC and IWC-SORP priorities.</p>
<p>PROPOSAL 9 ZERBINI, CLAPHAM <i>ET AL.</i>: ASSESSING BLUBBER THICKNESS TO INFORM SATELLITE TAG DEVELOPMENT AND DEPLOYMENT ON SOUTHERN OCEAN WHALES</p>
<p>This interesting proposal seeks to review whaling and stranding records in order to evaluate the variation of blubber thickness in whales, taking into consideration species, sex, age/length, season and life history information. Statistical models will be developed to predict blubber thickness for five species of large whales commonly tracked with implantable satellite tags and results will be used to propose species-specific parameters that will guide development and future deployments of implantable satellite tags. The proposed work will provide results and guidance highly relevant to all IWC-SORP Themes and to the wider IWC Scientific Committee. The proponents are recognised experts in the area of tag development and deployment.</p>

<p>PROPOSAL 10          ŠIROVIĆ, STAFFORD <i>ET AL.</i>: ACOUSTIC ECOLOGY OF FORAGING ANTARCTIC BLUE WHALES IN THE VICINITY OF ANTARCTIC KRILL STUDIED DURING AAD INTERDISCIPLINARY VOYAGE ABOARD THE RV INVESTIGATOR</p>
<p>This well founded proposal seeks to deploy a fixed acoustic mooring during a ship-based survey focusing on Antarctic blue whale behaviour and krill dynamics (the 2019 IWC-SORP RV Investigator voyage). Coupling moored data collection with ship-based, real-time passive and active acoustics will better enable the interpretation and quantification of the presence of Antarctic blue whales and their prey. This project will make substantial contributions to both the IWC-SORP Antarctic Blue Whale Project and Acoustic Trends Theme.</p>
<p>PROPOSAL 12          KELLY, MAIRE <i>ET AL.</i>: DEVELOPMENT OF STATISTICAL AND TECHNICAL METHODS TO SUPPORT THE USE OF LONG-RANGE UAVS TO ASSESS AND MONITOR CETACEAN POPULATIONS IN THE SOUTHERN OCEAN</p>
<p>The proposed project will involve synthesis of existing work to produce a toolbox of statistical methods for the use of aerial digital imagery (particularly that derived from long-range UAVs), to generate unbiased and precise estimates of abundance and the distribution of whales. Subsequently, the proponents will employ machine learning methods, such as deep neural networks, to test their utility for automated detection of animals in extensive collections of digital images. The proposed work is highly relevant to all IWC-SORP Themes and to the wider IWC Scientific Committee and beyond.</p>
<p>PROPOSAL 13          REISINGER, DE BRUYN <i>ET AL.</i>: AN INTEGRATIVE ASSESSMENT OF THE ECOLOGY AND CONNECTIVITY OF KILLER WHALE POPULATIONS IN THE SOUTHERN ATLANTIC AND INDIAN OCEANS</p>
<p>The proponents propose to integrate data on killer whale habitat use, feeding ecology (though stable isotope, photo-identification and telemetry data), population history and connectivity (through genetic analyses), historical population dynamics and regional patterns of diversity, from three locations in the southern Atlantic and Indian Oceans using state-of-the-art methodologies. This work builds on long-term studies of killer whales in waters around the Prince Edwards and Crozet Islands, by providing new data to help address key questions about essential prey and habitat resources, and the evolutionary implications of killer whale movement patterns and insularity. This project will address key conservation and management questions directly relevant to IWC-SORP killer whale thematic priorities through a better understanding of range extent and overlap, population structure and environmental dependencies.</p>
<p>PROPOSAL 14          BENGSTON NASH <i>ET AL.</i>: IMPLEMENTATION OF HUMPBACK WHALES FOR ANTARCTIC SEA-ICE ECOSYSTEM MONITORING; INTER-PROGRAM METHODOLOGY TRANSFER FOR EFFECTIVE CIRCUMPOLAR SURVEILLANCE</p>
<p>The proponents seek to integrate the findings and ongoing efforts of Southern Hemisphere humpback whale programs that have been investigating humpback whale foraging ecology in relation to the dynamics of their principal prey item, Antarctic krill. They will use existing biopsy samples and UAV morphometry measures, as well as initiating the collection of new samples/images, to compare and validate analytical methods and conduct same-year feeding vs. breeding ground population comparisons (diet and energetic reserves). The project will make valuable contributions to both the IWC-SORP Baleen Whale Foraging Ecology and Humpback Connectivity Themes. Good support was received for this proposal but the requested budget was substantially higher than all but one of the other proposals received. The IWC-SORP Assessment Panel considered the equipment costs unsupportable and proposed that analytical costs be reduced.</p>
<p>PROPOSAL 17          CARROLL, TORRES, GRAHAM <i>ET AL.</i>: CIRCUMPOLAR FORAGING ECOLOGY OF SOUTHERN RIGHT WHALES: PAST AND PRESENT</p>
<p>This proposal aims to compile a large stable isotope dataset comprising existing stable carbon and nitrogen isotope data from all major extant southern right whale wintering grounds. These data will be combined with spatial models of isotope distributions (isoscaples) of the Southern Ocean in order to identify and describe major southern right whale foraging areas. The proponents will then compare contemporary foraging habitat with historical foraging habitat identified using historical whaling data, to examine how habitat use has changed through time. Additional data will be generated by analysing historical bone samples to augment our understanding of historical foraging ecology. The proponents also plan to undertake a pilot study to investigate heterogeneity in foraging ecology linked to demographic class. This excellent proposal is closely aligned to IWC/SC priorities and prompted the recommendation of a new IWC-SORP Theme (See Section 6).</p>
<p>PROPOSAL 18          INIGUEZ <i>ET AL.</i>: HABITAT USE, SEASONALITY AND POPULATION STRUCTURE OF BALEEN AND TOOTHED WHALES IN THE SCOTIA SEA AND THE WESTERN ANTARCTIC PENINSULA USING VISUAL AND PASSIVE ACOUSTIC METHODS AND GENETICS</p>
<p>The proponents propose to develop ecological models for cetaceans in the western Antarctic Peninsula region by integrating passive acoustic data with remotely sensed environmental parameters, such as sea ice concentration, sea surface temperature, and chlorophyll a concentration. Comparisons with acoustic data collected in 2001-2003 will be made to examine changes in baleen whale patterns within this ecosystem over the past decade. In order to complement the information obtained, acoustic recordings, genetic, acoustic and photo identification studies will be carried out to investigate density, population structure and the behaviour of baleen and toothed whales in these waters. The substantial co-investment documented in the proposal budget was deemed worthy of note. The proposed work will make valuable contributions to both the IWC-SORP Antarctic Blue Whale Project and Acoustic Trends Theme.</p>