Annual Report of the Southern Ocean Research Partnership 2010/11

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ABSTRACT

The Southern Ocean Research Partnership (SORP) was proposed by the Australian Government to the International Whaling Commission (IWC) in 2008 with the aim of developing a multi-lateral, non-lethal scientific research program that will improve the coordinated and cooperative delivery of science to the IWC. A framework and set of objectives for SORP were presented to the IWC in 2009 where they were endorsed. Several international research projects were presented to the IWC in 2010 and will form that basis of SORP research into the future. This paper reports on progress on the SORP since the IWC meeting in 2010.

KEYWORDS: SOUTHERN OCEAN RESEARCH PARTNERSHIP, IWC, SORP, ANTARCTICA

INTRODUCTION

In 2008 Australia proposed to the International Whaling Commission (IWC) the development of regional non-lethal cetacean research partnerships. These research partnerships would use modern, non-lethal, scientific methods to provide the information necessary to best conserve and manage cetacean species. The proposal was received very positively by IWC member nations. The Australian Government is now supporting the development of a Southern Ocean Research Partnership (SORP) using non-lethal methods. The aim of SORP is to develop a multi-lateral, non-lethal scientific research program that will improve the coordinated and cooperative delivery of science to the IWC.

In March 2009, the SORP was established to enhance cetacean conservation and the delivery of non-lethal whale research to the International Whaling Commission (IWC). The objectives, research plan, and procedural framework for the partnership were developed through a workshop attended by 50 participants representing 12 countries (Australia, Argentina, Brazil, Chile, Costa Rica, France, Italy, Mexico, New Zealand, South Africa, Uruguay and USA) and several research and environment consortiums.

A framework and set of objectives for SORP were presented to the IWC Scientific Committee (SC) at its Annual Meeting in June 2009 where they were endorsed. An Annual Report of SORP (Paper SC/62/O9) was presented to the IWC in 2010 which summarised progress with SORP including the setting up of a SORP Steering Group, holding a planning workshop in Seattle, developing six SORP research projects and agreeing a process for funding SORP projects through the IWC. This paper reports on progress on the SORP since the IWC meeting in 2010.

BRIEF SUMMARY OF PROGRESS

The following items detail the major progress that has been made by SORP since the last SC meeting. Further details of this work can be found on the SORP website presently hosted by the Australian Antarctic Division at http://www.marinemammals.gov.au/southern-ocean-research-partnerships-sorp.

SORP Year of the Whale project

This is one of the core SORP research projects. Based on discussions at two technical meetings and the SORP Paris Workshop, this project has been further scoped and developed. The exact focus for this project will be discussed at SC 63 but is likely to include the development of a circumpolar estimate of abundance for Antarctic blue whales based on mark-recapture methods from individual photo-identification and biopsy sampling. Surveys for Antarctic blue whales are likely to use vocalisations to the detection and track calling whales, thereby maximising encounters during surveys. Further information about this project is available in papers SC/62/O13 and SC/63/SH3 and this project will be discussed in detail at SC 63.

Funding for SORP Projects
Interim funding was provided for three SORP projects to support work since last SC. The projects that received funding were: (i) Distribution, relative abundance, migration patterns and foraging ecology of three ecotypes of killer whales in the Southern Ocean; (ii) Foraging ecology and predator-prey interactions between baleen whales and krill: a multi-scale comparative study across Antarctic regions; and, (iii) and What is the distribution and extent of mixing of Southern Hemisphere humpback whale populations around Antarctica? Phase 1: East Australia and Oceania.

Collaborative Research Expedition
A SORP collaborative research expedition to the Antarctic has been initiated since the last SC and is planned for the austral summer of 2010/11. The expedition will support the development and trialling of survey methodologies for Antarctic blue whales that will be fundamental to the SORP Year of the Whale Project. This will either be a joint South Africa-Australia expedition to Area III or will be an Australian lead expedition (with collaborators yet to be determined) to Area V, depending on availability of vessels. It is anticipated that other SORP member countries will contribute researchers to these voyages to facilitate sharing of expertise and capacity build across the region. Other potential collaborators include New Zealand, USA, Brazil and Argentina.

SORP Research Projects
Brief progress reports on each of the six existing SORP research projects are included in Annex 1.

SORP Paris Workshop
This workshop was a joint meeting of the SORP Steering Group (SSG) and representatives from the six SORP research projects. The aim of the workshop was to discuss the research projects in detail, consider and address comments received on each project at SC 62, report on progress to date and develop collaborative plans for the future. The workshop was attended by 17 scientists from nine countries. Regional summaries of SORP related research and developments were presented. The Workshop was generously supported by the Government of France. A full Report of the Workshop is available as Annex 2.

LIST OF SORP RELATED PAPERS AT SC 63

SC/62/O12	Annual Report of the Southern Ocean Research Partnership 2011
SC/62/O13	Revised project outlines for the Southern Ocean Research Partnership
SC/63/SH3	Survey options for Antarctic blue whales: A feasibility study
SC/63/SH10	Genotype matching of humpback whales from the 2010 Australia/New Zealand Antarctic Whale Expedition (Area V) to the South Pacific.
SC/63/SH11	Photographic Evidence of Interchange between East Australia (BS E-1) and West Australia (BS - D) Breeding Populations
SC/63/SH15	Preliminary Analysis of Scales of Foraging Using Speed and Position characteristics from humpback whale Tracks
SC/63/SH16	Comprehensive photo-identification matching of Antarctic Area V humpback whales

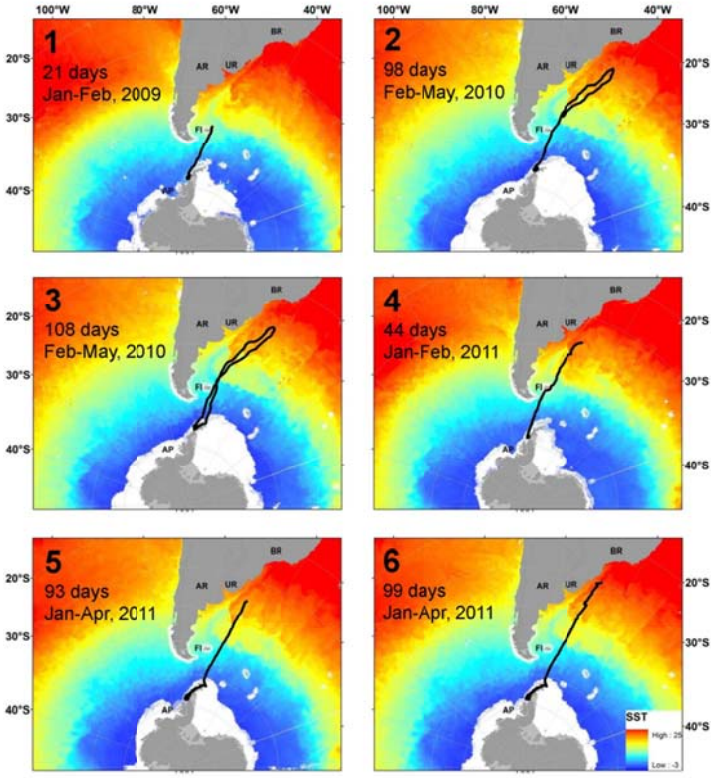
Annex 1: Progress Reports on the SORP research projects for 2010/11

1. *Distribution, relative abundance, migration patterns and foraging ecology of three ecotypes of killer whales in the Southern Ocean*

Pitman and Durban participated as 'visiting scientists' on board the tour vessel M/V National Geographic Explorer for three trips to the Antarctic Peninsula from 8 Jan to 6 Feb 2011. During the trips, we recorded 7 sightings of killer whales (i.e. 1 type A, 3 type B small form, 2 type B large form, 1 group type unknown) and collected 1000+ photo-ID images of at least 150 different animals. During 4 outings in the launch, we collected 10 biopsy samples (e.g. 3 type B large form, 7 type B small form), and satellite-tagged 5 individual whales (e.g. 3 type B large form, 2 type B small form). The biopsy samples are to be used in conjunction with an upcoming global assessment of killer whale phylogenetics and specifically to look at the relationship of large and small form type B killer whales in the Peninsula area. In conjunction with the latter, we are collaborating with colleagues at Northwest Fisheries Science Center in Seattle to compare stable isotope signatures of large and small type B whales. Again this year we saw large type B hunting for seals and small type B preying only on penguins. One of our satellite tags this year lasted 99 days and we now have tracks from 5 different groups of killer whales from 3 different years and they all moved northward to tropical waters off southern Brazil following almost the identical route (see Figure 1). We applied for and have received logistical support from NSF to tag type C killer whales in the western Ross Sea during Dec-Jan 2012-13 and 2013-14. This work has lead to one published one paper this year and another on our Antarctic killer whale satellite tracking results is nearly completed:

Pitman, R. L., and J. W. Durban. 2011. Cooperative hunting behavior, prey selectivity and prey handling by pack ice killer whales (*Orcinus orca*), type B, in Antarctic Peninsula waters. Marine Mammal Science. DOI: 10.1111/j.1748-7692.2010.00453.x

Figure 1. Satellite tracks from killer whales tagged at the Antarctic Peninsula between 2009 and 2011.



2. *Foraging ecology and predator-prey interactions between baleen whales and krill: a multi-scale comparative study across Antarctic regions*

To date, we have completed field work for the initial US National Science Foundation (NSF) supported research on multi-scale and interdisciplinary studies of humpback whales and prey. Data were collected in April-June 2009 and 2010. These data include over 350 hours suction-cup tag information (e.g. pitch, roll, heading, depth, acceleration, acoustics), over 30 biopsy samples, and over 200 hours of echosounder information. We have

analysed data and published several manuscripts relating to the foraging ecology of humpback whales as well as their density and distribution in relation to prey and oceanographic conditions. These manuscripts include:

Nowacek, DP, Friedlaender, AS, Halpin, PN, Hazen, EL, Johntson, DW, Read, AJ, Espinasse, B, Zhou, M, and Y Zhu. 2011. Super-aggregations of krill and humpback whales in Wilhelmina Bay, Antarctic Peninsula. PLOS One.

Johnston, DW, Friedlaender, AS, Read, AJ, Nowacek, DP. Accepted. Density Estimates of humpback whales (*Megaptera novaeangliae*) in the inshore waters of the Western Antarctic Peninsula during late autumn. Endangered Species Research.

Ware, C., Friedlaender, AS, and Nowacek D.P. 2010. Shallow and deep lunge feeding of humpback whales off the West Antarctic Peninsula. Marine Mammal Science. Doi:10.1111/j.1748-7962.2010.00427.x

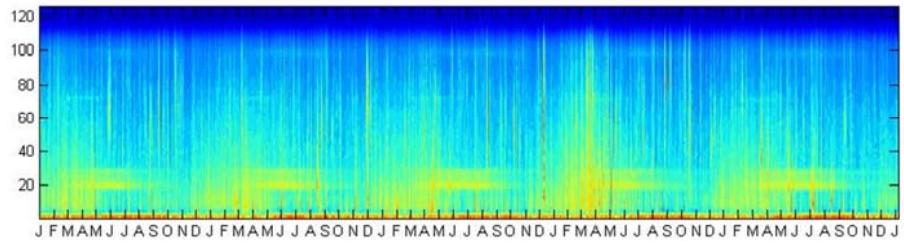
We are in the final stages of preparing our research proposal for submission to the NSF Office of Polar Programs, due in early June 2011. Likewise, we are continuing to analyse data and submit manuscripts for publication in the peer-reviewed literature. Recently, our research (Nowacek et al. 2011) was highlighted in Science on line and in several other media outlets (e.g. New York Times, CBC, and see fds.duke.edu/db/Nicholas/msc/faculty/dpn3/news.html for a more exhaustive list). We have also recently confirmed a research collaboration with the Australian Antarctic Division that will enhance our current research proposal submission and facilitate our abilities to deploy satellite-linked tags on humpback and minke whales in Antarctica. This will also benefit the respective Antarctic programs of both countries by sharing resources and building a more streamlined and portable methodological approach to studying the ecological roles of cetaceans in Antarctica.

3. Acoustic trends in abundance, distribution, and seasonal presence of Antarctic blue whales and fin whales in the Southern Ocean

This project aims to measure the relative acoustic density of blue and fin whale vocalizations to examine trends in relative estimates of abundance, distribution, and seasonal presence of these species. Whaling depleted both blue and fin whales to a fraction of their pre-whaling abundance.Current understanding of blue and fin whale life history characteristics, population abundance, and any post-whaling recovery is extremely limited. Blue whales thought to number ~1% of pre-exploitation abundance and are increasing at 7.3% annually (CI 1.4-11.6%). Fin whales are even less well understood with no recent abundance estimates or trends. Sightings surveys are traditionally used to obtain abundance estimates for cetacean populations. In the Southern Ocean however, these surveys are few and far between due to the particularly difficult working environment, and are also restricted by the inherent limitations of visual surveys (e.g. daylight, weather, sea ice, visual detection range, etc.). The acoustic techniques proposed in this project can overcome many of these difficulties through the collection of data that is relatively inexpensive to obtain, and can be collected continuously for years on end, under ice cover, and in any weather conditions or sea-states.

In recent years, there have been significant advances in acoustic techniques for the estimation of relative abundance. Comparison of relative abundance estimates from individual locations across many years, whether collected by visual surveys or acoustic surveys similar to those proposed here, can provide a measure of population growth. Comparison of relative abundance estimates within and between locations and years can further be used to assess trends in distribution and seasonal presence over time. This project proposes to begin with analyses of previously collected long-term datasets (e.g. Comprehensive Test Ban Treaty Organization (CTBTO) hydro-acoustic data) to assess the feasibility of this approach (See Figure 2). Following results from this work, a circum-Antarctic acoustic logger deployment strategy will be developed, taking into account data on historic and present distribution patterns of whales, and logistical constraints of shipping routes for deployment and retrieval of equipment. With long-term data series increasing the power to detect population trends, this project aims to initiate a Southern Ocean research program that will establish and maintain a consistent series of acoustic recording sites for years to come. This project has deferred the first year of its work from 2010/11 to 2011/12 due to key personnel being unavailable for the work in 2010/11 but expectations are that this work will be completed in 2011/12.

Figure 2 Example of a spectrogram of 5 years (2003-2007) CTBTO dataset off Cape Leeuwin, Western Australia. Repetitive, seasonal bands of energy at ~20-30Hz, 70Hz, and 100Hz, are indicative of Antarctic blue and fin, pygmy blue, and fin whales respectively and is the kind of data that will be utilised in this project.



4. *What is the distribution and extent of mixing of Southern Hemisphere humpback whale populations around Antarctica? Phase 1: East Australia and Oceania*

The joint Australia – New Zealand Antarctic Whale Expedition (AWE) and year 1 of the French CETA (IPEV 1014 – Cetacean distribution in Terre Adélie) project contributed the largest collection of humpback whale data from Antarctic Area V since the whaling era. The AWE voyage travelled through Area V (150°W - 150°E) from 2 February until 15 March 2010 with approximately 30 days spent south of 60°S (Gales 2010). The CETA travelled through Area V (from 65 - 66°S and 140-145°E) from the 10-22 January 2010 to their base in Adélie Land (Garrigue et al. 2010). Photo-ID, biopsy tissue samples and sightings data were collected. The AWE also deployed 30 satellite tags and 103 sonobuoy deployments were made recording several cetacean species vocalisations (Gales 2010). A total of 61 photo-ID images of humpback whale flukes (59 from AWE and 2 from CETA) and 66 tissue samples (64 from AWE and 2 from CETA) from 60 individual humpback whales were collected. The satellite tagging reported short-term movements of whales primarily around the Balleny Islands and a short recording of humpback whale song was made; this was unexpected with the whales on their feeding grounds.

The results from the photo-ID and genotype analysis have been excellent with large collaborative matching efforts being undertaken by researchers from Western Australia, east Australia, New Zealand, Norfolk Island, the breeding grounds of west Oceania and the Antarctic Humpback Whale Catalogue (AHWC) holdings from southern hemisphere breeding stocks and the Antarctic feeding grounds. The AWE data were matched to 17,147 fluke images and 2,131 genetic samples. This was the first large-scale comparison of data from Area V to possible migratory corridors and breeding grounds. Forty-one percent (n = 25/61) of the photo-identified whales from AWE matched to east Australia (n = 24) and New Caledonia (n = 1). The genotype matches found a total of seven matches (n = 6 to east Australia and n = 1 to New Zealand). These data show clearly that the whales feeding at the Balleny Islands during the research period are mostly east Australian whales. The very low number of matches to west Oceania is surprising given the Balleny's position south of New Zealand. These results have been reported to the IWC this year (Constantine et al. 2011, Steel et al. 2011) and will be combined into a single, multi-author paper for publication in a peer-reviewed journal shortly.

The French CTEA project will continue and other SORP voyages will collect data on humpback whales in Antarctic waters. With this component of our research complete for now, we intend to focus our attention more on trying to resolve the feeding ground links for the endangered humpback whales of Oceania. A dedicated voyage to eastern Area V and through Area VI is unlikely in the near future, although opportunistic data may be collected from other voyages through this region. We intend on focusing on using satellite tagging of whales in two locations, tentatively the Kermadec Islands and American Samoa, in late 2013 hopefully as the whales begin their southern migration.

We are pleased that the first phase of the project; matching genotypes and photo-ID to east Australia and Oceania was completed so rapidly, this is due in large part to datasets held by several research groups and their willingness to collaborate. All objectives proposed for the first year of work have been completed. We are grateful for partial funding from the IWC SORP Research Fund and to the Scientific Committee of the IWC for useful comments. Now the task of preparing for the next phase of work involving satellite tagging work begins. There is a lot of interest in this work and we are currently writing funding proposals.

Project related publications include:

Constantine, R., Allen, J., Beeman, P., Burns, D., Charrassin, J.-B., Childerhouse, S., Double, M.C., Ensor, P., Franklin, T., Franklin, W., Gales, N., Garrigue, C., Gates, E., Gibbs, N., Hutsel, A., Jenner, C., Jenner, M., Kaufman, G., Macie, A., Mattila, D.K., Oosterman, A., Paton, D., Robbins, J., Schmitt, N., Stevick, P., Tagarino, A and Thompson, K. (2011) Comprehensive photo-identification matching of Antarctic Area V humpback whales. Paper SC/63/SH16 presented to the IWC Scientific Committee, 2011.

Gales, N. (2010) Antarctic Whale Expedition: Preliminary science field report and summary. Unpublished Report, Australia Marine Mammal Centre, Australian Antarctic Division, Hobart, Australia. 21 pp.
Garrigue C., Peltier H., Ridoux V., Franklin T., Charrassin J.-B. (2010b) CETA: a new cetacean observation program in East Antarctica. Paper SC/62/SH3 presented to the IWC Scientific Committee 2010.
Steel, D., Anderson, M., Schmitt, N., Burns, D., Constantine, R., Franklin, W., Franklin, T., Garrigue, C., Gibbs, N., Hauser, N., Olavarria, C., Paton, D., Poole, M., Robbins, J., Ward, J., Double, M., Harrison, P., Baverstock, P. and Baker, C.S. (2011) Genotype matching of humpback whales from the 2010 Australia/New Zealand Antarctic Whale Expedition (Area V) to the South Pacific. Paper SC/63/SH10 presented to the IWC Scientific Committee, 2011.

5. Living whales in the Southern Hemisphere

Planning for this Symposium is well advanced and a programme has been developed that will cover significant advances in non-lethal research techniques and their application to key research questions in the Southern Hemisphere. This programme consists of four sessions covering (*i*) molecular techniques, (*ii*) biologging, (*iii*) remote sensing and (*iv*) long term data sets which will each comprise a key note speaker, some detailed case studies, followed by a panel discussion. The Symposium will be followed by four workshops covering (*i*) health assessment of live whales, (*ii*) advances in tagging attachment techniques, (*iii*) non-lethal ageing techniques and, (*iv*) the estimation of diet and consumption rates. A date for this symposium was originally set for September 2011 but due to operational reasons, this date has been changed to March or April 2012, with final dates to be confirmed at Scientific Committee 2011. The venue will be Puerto Varas, 15km from Puerto Montt, in Chile and kindly supported by the Chilean Ministry of Foreign Affairs and Chilean Navy.

6. 2013/14 The SORP Year of the Whale

This is one of the core SORP research projects. Based on discussions at two technical meetings and the SORP Steering Committee Workshop in Paris, this project has been further scoped and developed. The exact focus for this project will be discussed at SC 63 but is likely to include the development of a circumpolar estimate of abundance for Antarctic blue whales. These surveys for Antarctic blue whales are likely to use vocalisations to detect and track calling whales, thereby maximising encounters during surveys. Further information about this project is available in papers SC/63/O13 and SC/63/SH3 and this project will be discussed in detail at SC 63.

Annex 2: Report of the SORP Steering Committee Workshop in Paris, 29-31 March 2011

REPORT OF THE SOUTHERN OCEAN RESEARCH PARTNERSHIP (SORP)
STEERING COMMITTEE WORKSHOP

Muséum National d'Histoire Naturelle, Paris
29-31 March 2011

1. OPENING REMARKS AND WELCOME

The Workshop was opened by Nick Gales (Workshop Chair) at the *Muséum National d'Histoire Naturelle*, Paris. Participations (Annex 1) were welcomed by Martine Bigan (*Ministère de l'écologie, du développement durable, du transport et du lodgement)*, who expressed her thanks to Jean- Benoît Charrassin for his excellent logistic organisation. She encouraged the SORP 'Year of the Whale' project and noted that this workshop will provide a good opportunity to finalise this project and as there is now a requirement to secure funding now for this work in the future. She looked forward to having a real discussion about this project and SORP at the upcoming Commission meeting as it represents an excellent step for the IWC. Donna Petrachenko, Australian Commissioner to the IWC, also thanked the Government of France for their support of SORP and this workshop in particular. She also noted the 'Year of the Whale' project is Donna represents an exciting opportunity for SORP and the IWC and that it will address a specific need for increased information about whales in the Southern Ocean. SORP has been in a development and planning stage and is now poised to move into the implementation phase. Gales expressed his thanks to Government of France for providing support and funding for the workshop, including supporting the attendance of nine participants, all of whom will be key to the delivery and success of Southern Ocean Research Partnership (SORP).

The main objective of the Workshop was for the SORP Steering Committee (SSG) to critically evaluate and develop realistic implementation plans for the revised SORP project proposals. A representative from each SORP project was invited to present their respective projects and to answer questions about the project with a view to developing revised project plans that will be presented to IWC Scientific Committee (SC) later in the year. We will be looking for substantive input into the project review process to ensure the projects are of high quality, practical and achievable, and address both SORP and IWC priorities. It is absolutely essential that these projects are implemented this year and results can then flow back to the IWC.

The draft Agenda was agreed (Annex 2). Apologies were received from: Debi Palka, Greg Donovan, Alex Zerbini, Herman Oosthuizen, Scott Baker, Bob Pitman, Karl-Herman Koch.

2. REVIEW OF DOCUMENTS

Three documents were considered (Annex 3).

3. SUMMARY OF SORP PROGRESS TO DATE

a. Overview

Childerhouse provided an overview of SORP and a summary of progress over the last year. Excellent progress has been made over the last year and an annual report of SORP activities will be provided to the IWC SC later in May. Activities include the provision of interim funding to three SORP Projects, the successful delivery of milestones by some of the projects, some successful field seasons in the Antarctic and the welcome addition of Norway to SORP.

b. Regional representative reports

CHILE - Galletti

The Government of Chile continues to express its support for SORP during IWC meetings and is actively contributing towards the implementation of SORP. In particular, the symposium 'Living whales in the Southern

Ocean: Advances in methods for non-lethal cetacean research', has received strong support from Chile including the Chilean Navy and Ministry of Foreign Affairs and will be providing logistical and other support to the symposium. However, given the timing of budgetary issues, it will be difficult for them to allocate funding for this project during 2011. Regarding the Year of the Whale 2013/2014 project, the Chilean Navy has expressed its intention to contribute a research vessel; however a formal request with details on shipping time and route needs to be made as soon as possible to start the internal consultation process and to ensure that ship time is secured for 2013/2014. If project planning considers the use of Chilean Antarctic bases facilities, it should be also included in the formal request.

BRAZIL - Luna

Brazil has been developing cetacean research in Antarctica, through the Program PROANTAR. To this end, the team of Brazilian researchers has been using two navy vessels, the *NApOc Ary Rongel* (oldest and smallest) and *NaOCI Maximian*. Research is focused on density and abundance (transects and photo ID), genetics and pollutants (biopsy), ecology (phytoplankton and krill) with the key species of interest being Humpback, Minke, Killer whale and others. In October 2010, a meeting of experts in aquatic mammals of Latin Americana was held, and SORP was discussed with a view to seeking the involvement of more researchers and students of Latin America in Antarctic research and analysis of data. The CMA/ICMBio (National Aquatic Mammal Center) has begun talks to increase research in Antarctic, seeking use of marine vessels more effectively for cetacean research. Other progress related to SORP includes a discussion of SORP at the Latin American Aquatic Mammal Conference and the continued building of new Brazilian Antarctic research vessel which is not yet completed. It will be necessary to approach the Navy with specific requirements for SORP but sightings surveys are continuing during transits to and from the Antarctic on existing vessels.

FRANCE - Charrassin

France continues to have active engagement of SORP research projects including supporting research and researchers:

- *Killer whale project* : C. Guinet co-Principle Investigator, P. Tixier co-Investigator
- *Acoustic trends in Antarctic blue and fin whale populations* : Flore Samaran co- Investigator
- *Humpback connectivity in Oceania* : C. Garrigue co- Investigator
- *Year of the whale* (YOTW): JB Charrassin co- Investigator. Initial discussions have been held to start organisation of the French component of YOTW. The *R/V Marion Dufresne* will be requested to conduct a YOTW survey in the Southern Indian Ocean in Jan-Feb 2014. The ship will leave from Reunion Is, resupply Crozet Is, sail south to the sea-ice limit at around 40°E, move east until 60°E along the ice-edge, head North towards Kerguelen, then back to Reunion Is. The cruise will be multi-disciplinary, and a number of teams have been already approached (e.g. physical oceanography, primary production and phytoplankton, ocean CO2, krill distribution using active acoustics and ADCP, nekton sampling, benthos sampling). Although the cruise will focus on whales, multi-disciplinarily research will be crucial in order to secure funding of the experiment. The deadline for initial proposal (fleet commission) is in September 2011 and will be highly competitive, with approval based on the scientific quality of the project. Further funding will be sought once this first step achieved. In order to meet this initial deadline, the science rationale and protocol have to be fully developed for June 2011.

Other SORP related projects being supported by France include:

- CETA (Cetaceans in Terre Adélie ; IPEV/MNHN)
- Bioregionalisation for Antarctic Marine Protected areas (SCAR)

The Ministry of Ecology (MEDDLT) generously provided €15,000 in 2011 to support the SSG meeting in Paris (9 experts invited) and also supports Charrassin to coordinate SORP-related activities. Additional funding from a number of other sources for is being explored for the YOTW project (e.g. MEDDLT, IPEV, CNRS, IFREMER, MNHN)

GERMANY - Summary provided by Charrassin

Germany is unable to commit to anything at present but hopes to be able to explore opportunities within the next 6 months with a new Marine Research Institute being developed. Due to forth coming changes in the Federal organisation of German research programmes, German SORP projects cannot be determined before 6 months. Germany is already very involved in whale research in the Antarctic.

UK - Summary provided by Papastavrou

The UK has not yet engaged in SORP but the lead organisation is likely to be BAS, however it was noted that approaches need to be made at the Ministerial level to get BAS involved. There is a new UK IWC Commissioner which is an excellent opportunity to seek further engagement from the UK.

Papastavrou (International Fund for Animal Welfare) indicated that IFAW is seriously considering using its 22 metre sailing research vessel *Song of the Whale* as a contribution to SORP. The vessel is purpose built for whale research, particularly acoustic surveys, with equipment for handling towed hydrophone arrays and with a viewing platform for visual surveys. Further information about the vessel is available on www.ifaw.org/sotw.

NORWAY – Walloe

Norway has a long history of research in the Antarctic including some Antarctic research stations on the ice and an active involvement in CCAMLR. Norway's Antarctic programme is split between the Polar Institution and Institute of Marine Research. Norway has newly joined SORP and would consider supporting 2-3 SORP projects that are related to Norway's research interests. Norway has a strong interest in SORP and keen to get involved. Any funds made available from Norway are likely to go direct to approved projects and not through the IWC SORP fund. Norway' could include direct funding, funding in kind support as well as the involvement of Norwegian scientists.

USA - Brownell & Friedlaender

The USA has an extensive Antarctic research programme with a large cetacean component. The USA is very supportive of SORP and funded the last SSG meeting in Seattle and supports the participation of several key US scientists (e.g. Pitman, Friedlaender). The currently NSF-funded MISHAP project completed its second field season of successfully tagging humpback whales and measuring prey fields. Likewise, the final work of the SO GLOBEC predator synthesis group published its results in a special issue of Deep-Sea Research II. Currently, Pitman and Friedlaender are in the process of determining the likelihood of requesting ship time on the NB Palmer, the US Antarctic ice-breaking research vessel, through the UNOLS program. Such a request would be made to facilitate researchers to work around the Antarctic Peninsula in April/May 2012 in order to deploy satellite-linked tags on killer whales, minke whales, and humpback whales to begin to understand the long-term movement patterns of each species around the Antarctic Peninsula and with respect to other species. Likewise, Friedlaender has secured 1-2 berths on the Palmer LTER research cruise to talk place in January 2012. During the cruise, visual survey, photo-ID, biopsy sampling and potentially satellite tag deployment will take place opportunistically. Friedlaender and colleagues are in the process of generating proposals for submission to the US NSF Office of Polar Programs in June 2011.

NEW ZEALAND – Chilvers & Constantine

New Zealand (NZ) is impressed by the progress of SORP and continues to support and encourage non-lethal cetacean science in the Southern Ocean. NZ continues to support the participation of NZ scientists and in 2010 jointly funded the SORP Antarctic Whale Expedition (AWE) with the Australian Government using the *R/V Tangaroa*. Vessel time for AWE was funded as part of the NZ Governments Oceans 20/20 programme but any future use of the *R/V Tangaroa* for SORP work would require securing vessel time a source(s) of funding to pay for the time. This could potentially be in collaboration with another SORP member country. In short, NZs' participation in the continuation of SORP will require an additional funding commitment by Cabinet and, given the current financial constraints (e.g. rebuilding of Christchurch City after the devastating earthquake), it will be difficult to obtain additional allocation from the Government at the present time. However, there is continued support and commitment from NZ and its scientists to the SORP objectives as demonstrated by the Governments support of two scientists (Drs Rochelle Constantine and Louise Chilvers) to the SORP meeting in Paris March 2011.

SOUTH AFRICA – Summary provided by Oosthuizen

South Africa (SA) continues to support the work of SORP. The major SORP initiative for SA is the proposed joint Antarctic Research Expedition supported jointly by SA and Australian in the austral summer of 2011/12 aboard the *R/V Africana*. This Expedition is in the final stages of approval within SA and it is hoped that it will be confirmed by SC. The Expedition will likely focus on Antarctic blue whales and support several of the SORP projects, including the development of new techniques for the SORP Year of the Whale.

AUSTRALIA – Gales

Australia continues to actively support SORP through a variety of different approaches. The Australian Antarctic Division (AAD) hosts the SORP Secretariat that supports and coordinates the work of SORP. The SORP Antarctic Whale Expedition (AWE) in 2010 was successfully undertaken in collaboration with New Zealand and there are plans for future collaborative Expeditions with South Africa and France in the austral summer of 2011/12. Australian scientists are actively involved in several of the SORP research projects Plans are well underway for the Australian contribution to the SORP Year of the Whale project.

ARGENTINA - Iniquez

Argentina will begin to analyse data on cetaceans collected by scientists aboard Argentinean supply vessels transiting to Antarctic bases. Preliminary discussions have been held towards developing a specific cetacean research programme to contribute towards SORP research projects for the austral summer in 2011/2012.

4. REVIEW OF SORP PROJECTS

The six SORP projects were discussed in detail including a summary of progress to date, a discussion of comments received from IWC SC in 2010, and plans for the future. Each project is covered separately below.

a. Distribution, relative abundance, migration patterns and foraging ecology of three ecotypes of killer whales in the Southern Ocean (Guinet)

Project summary

A complex population structure of Antarctic killer whales has emerged in the last decades, with four different ecotypes being identified, each characterised by genetic, morphological and foraging ecology differences. The aim of this work is to complement the existing data set and collect new data to provide a better understanding of killer whale population structure. To address these questions, a combination of different approaches will be implemented.

- The global distribution and movement of the different ecotypes will be investigated by promoting the collection of geo-referenced lateral pictures of killer whales taken from research, supply, fishing and tourist vessels operating in the southern ocean. The aim of this work will be to *i*) get a better understanding of the circumpolar summer distribution of killer whales ecotypes, and *ii*) to investigate residency versus long distance movement of previously photo-identified killer whales. This approach will be completed from satellite tracking operations conducted from different locations (e.g. Antarctic Peninsula, Ross Sea, Crozet and Marion Island). Tags will be deployed on known killer whale ecotypes.
- Dietary preferences according to the ecotype and localities will be completed by compiling existing observation data available and collecting new information. Direct observation will be completed by indirect information i.e. stable isotopes and fatty acid analyses from biopsies collected on different killer whales ecotype and location.
- Population structure will be determined from genetic analyses of skin biopsies collected in different locations (e.g. Antarctic Peninsula, Ross seas, Crozet, Marion) and on different morphotype of killer whales. Opportunistic acoustic recording will be collected in relation to different morphotypes and locations to investigate the possibility of differentiating them acoustically to assess the possibility in the longer term of monitoring ecotypes year-occurrence through acoustic mooring already used to monitor large whale occurrence.
- Long term trend in killer whales population rates will be conducted on dedicated sites where long term photo-identification program have been run (e.g. Crozet, Marion) or have been more recently implemented (e.g. Antarctic peninsula, Ross seas)

With respect to analyses, 'Ecotype' will not be an apriori variable but an aposteriori result of the analyses (i.e. double blind analyses). At the international level, new contributors will be encouraged to join this effort by collecting pictures, biopsies and deploying satellite tags.

Discussion

M. Bester (South Africa) and G. Lauriano (Italy) have already been in discussions with the PIs and it is hoped that they will join the project. Including these collaborators was strongly encouraged. It was suggested that there were other potential collaborators in NZ and Australia (Tasmania & Macquarie) that would be worth contacting. The IATO tourist operators meeting in Hobart offers an opportunity t provide some profile for this project and spread the word about the opportunistic collection of photos for this project (**Action**: Guinet to provide a definition of what kind of photos are useful and simple protocol for photos). It was suggested that it would be best to target biologist/naturalists and/or reps on vessels to provide coordination and transfer of data to a centralised location for collection and then distribution to appropriate researchers. Comments from IWC SC 2010 include a request for an improved description of the analytical framework and also a better explanation of the framework for integrating what appears to be a group of separate projects.

b. Foraging ecology and predator-prey interactions between baleen whales and krill: a multi-scale comparative study across Antarctic regions (Friedlaender)

Project summary

Friedlaender presented material on the progress of current research and analysis on the foraging ecology of baleen whales in the waters around the Western Antarctic Peninsula. Results of on-going work are highlighted in manuscripts focusing on the kinematics of lunge feeding in humpback whales from multi-sensor tags, the description of an extraordinary region of high krill and krill predator density in Wilhelmina Bay, and modelling of krill predator habitat and subsequent resource partitioning. All of these studies are linked in their utility

towards generating a unified proposal to study the foraging ecology of humpback and minke whales in distinct regions around the Antarctic Peninsula that differ in their physical structure (e.g. sea ice versus no sea ice). The project proposal being developed would incorporate field-tested methods for determining prey distribution and abundance linked with tag-derived data and visualizations of feeding events from individual whales. The research proposals will be submitted to the US NSF on 2 June 2011, with anticipated field work opportunistically in 2012, and fully supported in 2013 and 2014. The other main goal of this research proposal is to develop methodologies that can are portable and executable across Antarctic regions, namely East Antarctica. Support from SORP would be sought to facilitate travel for the opportunistic ship time in 2012 and to purchase satellite tags for deployment on minke and humpback whales.

Discussion

Comments from IWC SC 2010 were reviewed and discussed. It was suggested that the inclusion of depth data for satellite tags would be useful in providing additional detail about foraging behaviour. There was considerable discussion about the development of statistical models to assess feeding rates and the strengths and weaknesses of these approaches. Another suggestion was to expand the project into other Antarctic regions which would broaden the focus under the SORP. IN response, it was noted that there are plans under development to undertake similar research in Area III as part of the proposed joint South African-Australian SORP expedition in early 2012. A discussion of gulp volume followed and some useful feedback was received.

c. Acoustic trends in abundance, distribution, and seasonal presence of Antarctic blue whales and fin whales in the Southern Ocean (Gedamke)

Project summary

This project aims to measure the relative acoustic density of blue and fin whale vocalizations to examine trends in relative estimates of abundance, distribution, and seasonal presence of these species. Whaling depleted both blue and fin whales to a fraction of their pre-whaling abundance. Current understanding of blue and fin whale life history characteristics, population abundance, and any post-whaling recovery is extremely limited. Blue whales thought to number ~1% of pre-exploitation abundance and are increasing at 7.3% annually (CI 1.4-11.6%). Fin whales are even less well understood with no recent abundance estimates or trends. Sightings surveys are traditionally used to obtain abundance estimates for cetacean populations. In the Southern Ocean however, these surveys are few and far between due to the particularly difficult working environment, and are also restricted by the inherent limitations of visual surveys (e.g. daylight, weather, sea ice, visual detection range, etc.). The acoustic techniques proposed in this project can overcome many of these difficulties through the collection of data that is relatively inexpensive to obtain, and can be collected continuously for years on end, under ice cover, and in any weather conditions or sea-states. In recent years, there have been significant advances in acoustic techniques for the estimation of relative abundance. Comparison of relative abundance estimates from individual locations across many years, whether collected by visual surveys or acoustic surveys similar to those proposed here, can provide a measure of population growth. Comparison of relative abundance estimates within and between locations and years can further be used to assess trends in distribution and seasonal presence over time. This project proposes to begin with analyses of previously collected long-term datasets (e.g. Comprehensive Test Ban Treaty Organization (CTBTO) hydro-acoustic data) to assess the feasibility of this approach. Following results from this work, a circum-Antarctic acoustic logger deployment strategy will be developed, taking into account data on historic and present distribution patterns of whales, and logistical constraints of shipping routes for deployment and retrieval of equipment. With long-term data series increasing the power to detect population trends, this project aims to initiate a Southern Ocean research program that will establish and maintain a consistent series of acoustic recording sites for years to come. Collaborators are from Australia, France, USA and Germany.

Discussion

Comments from IWC SC 2010 were reviewed and discussed. The standardisation of equipment was considered as a critical element in ensuring the compatibility of data across the region and so as to facilitate robust analyses of data sets to ensure they are directly comparable. The AAD continues to develop standardised, low cost equipment that will be available to SORP collaborators however this work has stalled recently due to staff turnover. It was highlighted that international collaborations are essential to the success of the project as nationals can easily gain access to national data whereas the same data is not so readily accessible to overseas researchers. It was agreed that there needs to be a clear definition of the scope of what standardised capabilities will be required for this work so development can focus on these areas. It was suggested that it would useful to provide details of why the project is only restricting recording to low frequencies. In response, it was noted that high frequency recordings have a short effective detection distance and high battery and memory requirements. There was a discussion about potential locations for moorings and the following Antarctic programmes were considered as potential options for deployments and retrieval operations: Australian, Norway, USA, Korean,

French, German, and Argentina. However, it was recognised that the project would require long term commitments if it was to develop a long term project. It was suggested that it would be useful to look at Antarctic shipping maps (e.g. COMNAP) to assess potential locations against ship traffic to assess the suitability of sites. There was some discussion of survey methodology and it was suggested that it might be better to target areas every 2-5 years rather than every year. Some investigation of the best approach would be necessary and it may be useful to look at the power to detect changes through the use of existing CCBT data sets. The advantage of moving loggers around between areas means that overall there would be a large effective coverage of the Southern Ocean. Considering making loggers multi-functional is likely to be advantageous and it would broaden and increase participation and potential cost sharing. The first step for this project should be the analysis of existing data and undertaking a consistent analysis to investigate what is feasible. Friedlaender offered to investigate the potential use of the US LTER programme for the deployment and retrieval of loggers in Margarite Bay.

d. What is the distribution and extent of mixing of Southern Hemisphere humpback whale populations around Antarctica? Phase 1: East Australia and Oceania (Constantine)

Project Summary

The East Australia (EA) and Oceania humpback whales are recovering at different rates, with the most recent report of around 10% recovery for the EA population and currently no detectable trend of recovery for the Endangered Oceania population. There are low-level linkages on the breeding grounds, especially with whales from the far west of the Oceania region such as New Caledonia. The level of mixing of these populations is poorly known with a few reports of photo-ID matches between EA and Antarctic Area V. Satellite tagging studies have shown whales generally moving in a south easterly direction on their southern migration to Antarctic feeding grounds and linkages between EA and New Zealand (NZ), EA and Area V, and New Caledonia and NZ. Satellite tags deployed on humpback whales in Rarotonga, Cook Islands in late September – early October showed a predominantly western movement towards Tonga and the Samoa region, rather than a southern migration as anticipated.

From 1st February to 15th March 2010 the Australian and NZ governments funded the Antarctic Whale Expedition (AWE) the first collaboration under the SORP agreement. The *RV Tangaroa* sailed to Antarctic Area V between 150°W and 150°E with researchers aiming to satellite tag, fluke photo-ID, record acoustics and genotype whales south of 60°S. The majority of sightings were humpback whales with concentrated effort around the Balleny Islands due to poor weather conditions and low whale aggregations in other areas. Due to technical issues, most of the satellite tags failed shortly after deployment and records of whales moving from their feeding grounds to breeding grounds were not possible. The photo-ID (n = 62 whales; 60 from the AWE and 2 from the French CETA project) data were matched by the catalogue holders to existing catalogues from west and east Australia, NZ and Oceania (New Caledonia to Samoa) as well as the College of the Atlantic catalogue covering feeding Areas I-VI and some of the breeding grounds and migratory corridors. Over 700 hours of matching to over 17,000 flukes (with an unknown number of replicates between catalogues) resulted in 40% (n=25) of the photo-IDed whales being matched to Area V. The majority of matches (n=24) were to EA catalogues with one match to New Caledonia. The microsatellite genotype data from 1305 Oceania whales and 865 EA whales were matched to 175 individuals from the feeding grounds Areas I-VI (IDCR-SOWER, INACH and SO-GLOBEC samples) and 58 individuals from Area V collected during the AWE trip in 2010. The 58 samples from AWE increased the previous sample size considerably from Area V from 9 to 67 genotyped individuals. Of the 865 EA genotyped individuals, 9 match to Area V (1 on the Area IV-V border) with no matches outside of this Area. A total of 6/58 2010 AWE individuals matched to EA but there were no confirmed matches of the AWE samples to anywhere else despite the large Oceania sample size (n=1350). Six Oceania whales have been previously matched to Areas V, VI and I; there was only one match between New Caledonia and eastern Area V.

In summary, the AWE data have conclusively shown that humpback whales from the Balleny Islands Area V are predominantly from the EA population. Despite large photo-ID and genotype catalogues from Oceania and West Australia there are very few matches to Area V humpbacks. We conclude that Phase 1 of this project has successfully been achieved and these data will be presented to the IWC 2011 Scientific Committee meeting in June and written for publication in a peer-reviewed journal.

With regards to the next phase of the project, Mike Double, Rochelle Constantine and Jooke Robbins discussed the options, taking into regard the Scientific Committee comments from 2010. The logistics of a dedicated satellite tagging whales south of Oceania (far eastern Area V and all of Area VI) to determine feeding-breeding ground linkages was considered extremely challenging. Unless SORP members could devote expensive, dedicated ship time to these remote waters, it is unlikely this work will occur. It was agreed that opportunistic

photo-ID data would be requested from IATA and other research vessels transiting these waters. Instead, it was decided that a dedicated satellite tagging project would be developed covering the western and eastern sides of the Oceania population, whilst taking into consideration the best sites to deploy tags. The next phase of the project will be developed further by the project steering committee and presented to the IWC Scientific Committee in June, 2011.

Discussion
Comments from IWC SC 2010 were reviewed and discussed. It was suggested that there needs to be more clarity of the specific aims of this project and how they relate to IWC priorities. It was also suggested that the project would benefit from having more of an emphasis on demography, including looking at differences in parameters such as survival, calving interval, and body condition. Further consideration should be given to placing more emphasis on increased effort on breeding grounds. There was a general discussion on the future tagging programme for this project and discussion explore a plan for 2013 tagging of western (e.g. Kermadec Island in New Zealand) and eastern (e.g. American Samoa and/or French Polynesia) areas of the South Pacific. The deployment of 30 tags in each location was suggested with the expectation that between 1/3 and 1/4 of tags may last until the whale reach their destination feeding grounds. It was noted that securing research permits could take up to 2 years to get for NZ and USA. Such a project would require a budget in the order of $270k for tagging in the Kermadec Islands and in American Samoa. Potential funding sources include the New Zealand Government, USA MMSP, and IFAW. It was note that the US ship the Nathanial Palmer is going back from Ross Sea to Ushuaia along the ice edge and that this presents some excellent opportunities to get someone on area to south of South Pacific to collect biopsies and photo-IDs. There are some potential synergies between tagging in this project (e.g. tagging on breeding grounds in 2013 for southward migration) and the proposed Year of the Whale Project (e.g. deploy tags on the feeding grounds in 2013/14 for northward migration).

e. Living whales Symposium in Chile September 2011 (Baker/Galletti)
Project summary
This proposal is for a technical conference/workshop to review the strengths and weaknesses of available non-lethal research methods for studies of living whale in the Southern Ocean and their ecological roles in the Southern Hemisphere. The objectives are to advance the synergies of non-lethal methods for investigations addressing a range of research themes. Presentations at the workshop will focus on methodological or technological advances to non-lethal methods, including those that are still under development, or with specific applications to populations in the Southern Hemisphere. Preliminary planning has been undertaken and it is likely to be held in Chile in late 2011. It was suggested that the workshop could take place in association with the proposed Assessment workshop on southern right whales planned for Argentina in September 2011.

Discussion
Comments from IWC SC 2010 were reviewed and discussed. There was considerable discussion about whether the proposed date of September 2011 was realistic given the work required to get the Symposium fully funded and developed. The consensus was that this was not realistic and that it made good sense to delay it until next year. The date proposed was late March 2012. It was suggested that that it could be useful to explore the possibility of recording it and webcasting it to reach an international audience. The context for the work should include a robust exploration of the lethal vs. non-lethal research debate with a genuine review of what can and can't be achieved by both methods. There needs to be some further thinking about the big topics that link the workshops into the symposium. It may be useful to prepare a glossy brochure summarising the outcomes of the symposium and workshop for Commissioners. There was a detailed discussion about the proposed programme and how much to retain the focus on marine mammal research. It was suggested that the Symposium would benefit from inviting some world leading researchers who are not marine mammal folk but are leading related fields. The idea being that these people could provide some direction to the marine mammal community in some of the areas we are interested in e.g. ageing.

f. 2013/14 The SORP Year of the Blue Whale (Childerhouse/Double)
Project summary
As one of the major initiatives within the SORP, the Committee discussed a proposal for a multi-vessel, circumpolar research project to focus on Antarctic blue whales in the austral summer of 2013/14. The proposed objectives for this 'Year of the Blue Whale' would be to:

1. To provide a circumpolar abundance estimate of Antarctic blue whales
2. To improve our understanding of Antarctic blue whale stock structure
3. To improve understanding of linkages between blue whale feeding and breeding grounds
4. To characterise foraging habitat of blue whales

All directly related to recommendations made by the SC and endorsed by the Commission. Preliminary work has been focus on investigating the feasibility of estimating abundance from mark-recapture techniques from biopsies and photo-IDs. These build on discussions held at SC in 2009 and 2010 and two small, technical workshops held in Hobart in 2011 and 2011. A full project proposal will be presented to SC 2011 which will be followed by dedicated experiments in the Antarctic in 2011/12 with joint South Africa/Australia and France/Australia expeditions.

Discussion

Comments from IWC SC 2010 were reviewed and discussed. There was a robust discussion that covered the following issues

- This project is ambitious but it was questioned how realistic were the sample sizes required? Based on some preliminary simulations and modelling, it was expected that these were achievable, given sufficient vessel time being available. Given the existing samples already available, it is important to confirm the exact number of different number of individuals these represent.
- The identification of hotspots of blue whale activity will be key to ensuring the success of this project but much of this work can done well in advance of surveys starting.
- Getting enough DIFAR buoys can be problematic but nations should collaborate to achieve the required resources. While it was acknowledged that this could be a problem, it was not thought to be insurmountable.
- Marketing of this project is critical if there is to sufficient but in from SORP member nations and other nations. Perhaps some outside, specialist advice could be sought to help with this.
- Suggested team sizes for dedicated research vessels as in the order of 4-6 sightings people, and 3 acousticians. This would of course vary by vessel but it was noted that appropriately skilled people would be essential (e.g. acousticians) and that these people may be in short supply.
- It will be necessary to have a full time paid project leader/coordinator. As well as taking the lead on this work they would need to facilitate standardised training and the development of methodological standards and manuals.
- To ensure compatibility between vessels and research teams, there will need to be a standardised approach with methodology clearly articulated in manuals.
- While the focus on the research will be on blue whales, other parallel research should be encouraged e.g. krill and oceanography.
- Spatial modelling (which can be used to determine hot spots of distribution and also abundance) requires collection of real time covariate date and therefore oceanography and other data will be important to collect. Closely aligned with this is the post-processing of satellite data can be equally as useful in developing spatial modelling.
- There are presently plans for two dedicated surveys this austral summer 2011/12 that will undertake experiments to support the work this project. It was suggested that a workshop following this summer season could be useful to explore those results and to determine if further experimental work is required
- A Planning workshop for developing capacity in DIFAR will probably be required as part of a major training opportunities in 2012
- This project assumes that using acoustic detections and localisations will improve encounter rates (and therefore the number of biopsies and photo-IDs). This has been demonstrated for surveys of North Pacific right whales but requires some exploration for Antarctic blue whales but it is expected to be practical.
- The catch data provides a useful source of information but there is a question related to the accuracy of some of the data, especially the early catch records. It would be useful to seek the advice of experts familiar with this data (e.g. Allison, Branch, De La Mare) to provide an indication of which data coordinates for catches that are thought to accurate.
- Guinet is testing acoustic loggers that will be deployed on elephant seals this summer and it will be interesting to see if these might be useful for determining real time locations of hot spots of blue whales.
- It was noted that there is considerable scope for opportunistic data (e.g. photo-IDs) to be collected and contributed by other platforms of opportunity (e.g. supply vessels in transit, tour vessels). It was agreed that a description of data that could be collected for blue whales by IATO be developed and provided to them for dissemination. Gales offered to speak at the upcoming IATO meeting in Hobart to get the word out and develop initial contact. It was noted that while such sources can be useful, frequently much of the data provided is unusable and therefore some specific guidance on what photos format are required would be useful. CCMALR may also be a potential source of opportunistic data as well as IATO. A SORP brochure how people can contribute to this project would be useful and could be provided to tour operators and staff. It may be possible for the AAD to develop a central website for SORP to facilitate the collection of data send out to key contact person. This would be relevant to not only blue whale data but also killer whales.

- The title 'Year of the Whale' is a little misleading as this it will not be a single year of research. It was agreed that the project title should be 'SORP Antarctic Blue Whale Project'.
- The following people will be added to the Steering Group for this project: Charrassin, Brownell, Galletti, and Stafford.

g. Summary

Based on the discussions and input at the workshop, the six SORP projects will be redrafted to take account of the issues raised at this workshop and also at IWC SC 2010. Furthermore, it was **agreed** that each of the six projects would:

- Redraft project proposals based on feedback at this workshop and the IWC SC in 2010 for resubmission to the IWC SC in late May 2011. Deadline: 30 April 2011.
- Development of a short (1/2 - 1 page) project summary to be used for a glossy brochure summarising outputs. This needs to be readable, reasonably high level, list tangible outputs and include 2-3 pretty images for inclusion in the brochure. Deadline: 30 April 2011.
- Progress of Report from the last year detailing progress and any impediments. Deadline: 30 April 2011.

5. SORP FINANCIAL ISSUES

There was a discussion of financial issues related to SORP. There was a request for more clarity about what the IWC SORP funds can be used for. It can be used to facilitate travel and workshops, seed money for project work, and to support the coordination of SORP and SORP projects. The process for applying for funds is that SORP projects can request support from the fund but they can also make requests from general IWC SC funds. It was suggested that £20-30k is a reasonable figure to consider when applying to the SORP fund.

There is a limited amount of funding available and there is insufficient to run entire projects but it can be used as seed funding for projects which is perhaps where it is best spent. However, it was suggested that rather than spreading the SORP funds thinly across many projects, it would be better to focus a significant part of the fund into a single project and get that project up and running. There was discussion about what that project might be. The Acoustics project was suggested as it has proposed an initial year of analyses of data that has already been collected and that this would be a very productive use of the fund. It was suggested that co-funding from SORP fund and IWC SC core fund for this project might be a positive way to proceed. Another suggestion was the analysis of existing tag data and also for analysis time for tagging projects that are confirmed as going ahead could also be useful. A third suggestion was support for the SORP Antarctic blue whale project which could support regional organisations in developing comprehensive budget bids for personnel and ship time. There was no agreement on which project to support.

6. DATA SHARING AGREEMENT

There has been discussion about whether SORP needs a specific data sharing agreement. Several models were considered (e.g. Antarctic Blue whale catalogue, SPLASH) but it was **agreed** that as SORP is an IWC initiative, the most appropriate agreement would be the already approved IWC Data Availability Agreement (DAA). Details of this (or at least a link) should be added to the SORP website.

7. PLANS FOR THE FUTURE

Gales reported on plans for two dedicated Antarctic whale expeditions during the austral summer of 2011/12 to be run jointly with South Africa aboard the RV Africana and with the France aboard the *L'Astrolabe*. Both these expeditions will be developing and trialling methods for use in the SORP Antarctic Blue Whale Project as well as collecting other data relevant to the IWC research priorities.

8. OTHER ISSUES

Gales was thanked for his excellent Chairing and Charrassin for his great organisation and hosting of the workshop.

Annex 1 List of Participants

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Annex 2 Workshop Agenda

1. Opening remarks and welcome
2. Review of documents
3. Summary of SORP progress to date
    a. Overview (Childerhouse)
    b. Regional representative reports
    c. Other
4. Review of SORP projects
    a. Distribution, relative abundance, migration patterns and foraging ecology of three ecotypes of killer whales in the Southern Ocean (Guinet)
    b. Foraging ecology and predator-prey interactions between baleen whales and krill: a multi-scale comparative study across Antarctic regions (Friedlaender)
    c. Acoustic trends in abundance, distribution, and seasonal presence of Antarctic blue whales and fin whales in the Southern Ocean (Gedamke/Samaran)
    d. What is the distribution and extent of mixing of Southern Hemisphere humpback whale populations around Antarctica? Phase 1: East Australia and Oceania (Constantine)
    e. Living whales Symposium in Chile September 2011 (Baker/Galletti)
    f. 2013/14 The SORP Year of the Blue Whale (Childerhouse/Gales)

    The plan is to discuss all the existing six SORP projects in detail using the following criteria:
        i. Overview power point presentation by PI
        ii. Review of aims of objectives
        iii. Review of existing and potential collaborators
        iv. Review of revised proposal
        v. Determination of realistic timelines
        vi. Summary of logistical and funding requirements (this is a key part as we will be wanting to determine exactly what resources are required i.e. shipping)
        vii. Potential contributions by SORP member Governments and other funding sources
        viii. Recommendations for revisions of project proposal for presentation to SC in May
5. National and regional sources of logistic and fund support
6. Data sharing agreement (Brownell)
7. Policy linkages with SORP
8. Plans for the future
9. Other issues

Annex 3 List of documents

1. SC/62/O9 Annual Report of the Southern Ocean Research Partnership 2009/10
2. SC/62/O12 Project outlines for the Southern Ocean Research Partnership
3. SC/62/SCRep Excerpt of Section 19 [Southern Ocean Research Partnership] from Scientific Committee Report 2010