Report of the Annual Meeting of the South Pacific Whale Research Consortium

5th February - 8th February 2008
Auckland, New Zealand

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Abstract

Members of the South Pacific Whale Research Consortium met at the University of Auckland from 5-8 February, 2008 to discuss (i) the results of fieldwork and analysis conducted during 2007 and, (ii) conservation initiatives in the region. As with previous synoptic surveys dating back to the austral winter of 1999, surveys of humpback whales were conducted to collect genetic samples, individual identification photographs and song recordings in the four primary regions: New Caledonia, Tonga (Vava'u), Cook Islands and French Polynesia (Society Islands). Other regions surveyed in 2007 included Samoa, American Samoa, New Zealand, Hervey Bay, Norfolk Island and Tuvalu. Satellite tagging was conducted in the Cook Islands and New Caledonia revealing patterns of movement between breeding grounds and documented the early stages of migration. A comparison of quality-controlled fluke photo-ID catalogues from the years 1999-2004 revealed only limited interchange between eastern Australia and Oceania (and only to New Caledonia, the closest breeding grounds of Oceania) and further evidence of interchange among breeding grounds of Oceania. A large-scale comparison of microsatellite genotypes from samples collected throughout the South Pacific provided new records of interchange between Oceania and the Antarctic and, for the first time, between French Polynesia and Colombia (breeding stocks F and G). Song analysis for the years 2002-2006 showed a pattern of sequential movement of unique song types from eastern Australia, east across the breeding grounds of Oceania. Members once again expressed their opposition to Japan's continued lethal research programme in the Antarctic, including the planned kill of fin and humpback whales and their concern that this could negatively impact small, recovering populations that are the subject of long-term non-lethal research by the Consortium.

Participants

Executive Committee: Scott Baker (University of Auckland, NZ & Oregon State University, USA), Phil Clapham (US National Marine Mammal Lab, USA), Claire Garrigue (Operation Cetaces, New Caledonia), Mike Donoghue (Department of Conservation, NZ), Michael Poole (Marine Mammal Research Programme, French Polynesia & National Oceanic Society, USA), David Paton (Blue Planet Marine & Southern Cross University, Australia), Nan Hauser (Cook Islands Whale Research, Rarotonga & Center for Cetacean Research & Conservation)

Executive officers: Rochelle Constantine (University of Auckland, NZ), Mike Noad, (University of Queensland, Australia), Debbie Steel (University of Auckland, NZ & Oregon State University, USA), Simon Childerhouse (University of Otago, NZ)

General members: Adrian Oosterman (Norfolk Island Whale Survey, Australia), Anton Van Helden (Te Papa Tongarewa/Museum of New Zealand, NZ), Wally Franklin (Oceania Project & Southern Cross University & Whale Research Centre, Australia), Nadine Bott (Department of Conservation, NZ), Aline Schaffar (Operation Cetaces, New Caledonia), Ellen Garland (University of Queensland, Australia), Jen Jackson (Oregon State University, USA), Marc Oremus (University of Auckland, NZ), Juney Ward (Ministry of Environment, Samoa), Sue Taei-Miller (IFAW & Conservation International, Samoa), Darren Kidleysides (IFAW, Australia)

Invited participants: Lyndon Brooks (Southern Cross University Whale Research Centre, Australia), Pamela Lovis (Te Papa Tongarewa/Museum of New Zealand, NZ), Jackie Thomas (WWF Solomon Islands), Caroline Schweder-Goad (BOP Polytechnic, NZ), Maryrose Gulesserian (Macquarie University Marine Mammal Research Group, Australia), Michael Double (ACAMMS & AAD & DEWHA, Australia), Viliamu Iese (Department of Environment, Tuvalu), Damien Higgins (University of Sydney, Australia), Eric Kniest (University of Newcastle, Australia), Pennina Solomona (WWF, Fiji), Alana Alexander (University of Auckland, NZ), Carrie Antolik (Eckert College, USA), Allan Bowe (Tongan Whale Watching Association, Tonga), Karen Baird (Department of Conservation, NZ), Jooke Robbins (Provincetown Centre for Coastal Studies, USA),

Apologies: David Mattila (Hawaiian Islands Humpback Whale National Marine Sanctuary, USA), Mick McIntyre (IFAW, Australia), Lui Bell (SPREP, Samoa), Trish Franklin (Oceania Project & Southern Cross University & Whale Research Centre, Australia), Kirsty Russell (University of Auckland)

Introduction

The ninth annual meeting of the South Pacific Whale Research Consortium (SPWRC) was held at the University of Auckland from 5th to 8th February 2008. Scott Baker was elected chair and Darren Kindleysides, Simon Childerhouse and Phil Clapham agreed to serve as rapporteurs, with assistance from other members. Baker welcomed participants and discussed the meeting agenda for the ensuing days. He thanked Rochelle Constantine and Debbie Steel for organising and convening the meeting. The Agenda is attached as Appendix 1.

Mike Donoghue welcomed returning members and new participants and thanked organisations for their ongoing support of the Consortium. The meeting was attended by 38 participants from 10 different South Pacific countries. He noted that the Consortium is now widely recognized as the lead forum for exchange of scientific information and coordination of research throughout the South Pacific (SP) region. The Consortium has played an increasingly pivotal role in providing scientific and conservation management advice to SP Governments and others on cetaceans in the region, including within the framework of ongoing developments within the International Whaling Commission (IWC). He noted that the Consortium had been involved in significant new initiatives in the region, including genetic analysis (with support from the Australian Government's Regional Natural Heritage Programme) and satellite tagging (with support from Greenpeace International).

Country and Project Reports

French Polynesia (Michael Poole)

Boat-based observational surveys in French Polynesia (FP) in 2007 started later than previous seasons and ended later. The first whale was seen on 2 August and the last whale on 8 December. No humpbacks were recorded during July, which was a first for this study. Michael Poole conducted boat surveys from 2 August to 8 December and Marc Oremus conducted boat surveys from 13 August to 18 September. Boat surveys were conducted on dedicated vessels and on platforms of opportunity (i.e. whale watching vessels). On some days at Moorea, both our dedicated vessel and a platform of opportunity were used and both vessels may have observed the same whales but, in general, the two boats operated in different parts of the island. Whales were observed on 60 (79%) of the 76 surveys conducted by Poole, and during 23 (77%) of the 30 surveys conducted by Oremus. Poole observed 108 pods for a total of 183 whales, of which 30 (16.4%) were calves, the highest percentage ever observed at Moorea. Mean pod size was 1.7 whales/pod. Overall, the season was characterised with the whales arriving later than usual, few singers, and many calves. These characteristics are unusual but are very similar to the 2003 season, another unusual year.

Poole photographically identified 47 whales and Oremus identified 27 whales. These two data sets have not yet been fully reconciled to each other or to the existing catalogue of whales identified from 1990 to 2006. However, at least 8 whales were resighted from previous years. The French Polynesia ID catalogue now contains 441 individuals from 1990-2007. There have been 47 resights of 41 different individuals. The average humpback whale group size for all years of study is 1.7 animals; calves comprise an average of 11% of all sightings. Poole and Oremus collected 105 skin samples (40 biopsies and 65 sloughed skin) and recorded 7.5 hours of song. Photographic matches to date between FP and other areas include American Samoa (5 individuals), the Cook Islands (2), Tonga (10), and New Caledonia (1).

There were no reports of humpbacks in the Marquesas Islands to the north of Moorea. The two whales filmed there in 2003 remain the only confirmation of humpback whales in the Marquesas. There were few reports of whales in the Tuamotu Archipelago to the east of Moorea.

Cetaceans continue to face potential threats from human activities in French Polynesia. During 2007 there was a humpback whale struck by a fast ferry entering a pass at Moorea. This is the third strike by fast ferries in five years. In addition, the port at Papeete, Tahiti undertook a harbour entrance deepening/widening project during the peak humpback season including coral blasting. Michael advised on the mitigation measures used which included air bubble nets for attenuation and visual survey/observations to allow shut down of blasting when whales or dolphins were sighted in the vicinity. There were no incidents of conflict between the blasting and cetaceans. Rawiri Paratene, a Trustee of the SPWRC, visited Poole's research site at Moorea twice during the 2007 season. Ellen Garland came twice for two weeks each trip and recorded humpback whale song. Michael Noad came once for one week. A representative of the Wild Dolphin Project in the Bahamas also visited Moorea.

Cook Islands (Nan Hauser)

Nan Hauser and the field team in the Cook Islands in 2007 operated from 1 July to 17 October (76 days in the field, 449 hours of effort). Fluke identification, song and skin sampling were conducted. There was a total of 90 encounters with 167 whales during boat based surveys. Thirty nine skin samples were collected. There were 14 acoustic recordings for a total of 9 hours. Reports of whales were also received from Atiu and Penryn. A mother humpback with calf was seen entangled and trailing 6.5 miles of longline, approximately 12 miles northeast of Rarotonga. The whales were approached by the fishers and 5.5 miles of longline were removed. Despite aerial searches, the whales were not relocated and the fate of the pair remains unknown. Running concurrently with the research programme were major education and advocacy programmes in the Cook Islands and internationally. Three Cook Islanders were part of the RNHP funded research project this year and one of them, Kees Napa, was taught how to attach a satellite tag onto a humpback whale. He successfully attached Sat Tag # 8 which migrated to American Samoa, Samoa and on to Fiji.

Eight satellite tags were deployed at Rarotonga, with the work funded by Greenpeace International. The research was undertaken in collaboration with Phil Clapham, Alexandre Zerbini (Alaska Fisheries Science Center, NOAA) and Ygor Geyer (Satellite Tagging, Instituto Aqualie, Brazil). The programme showed a consistent westward movement of whales from the Cook Islands towards Tonga and Samoa. Sakyo Noda (Greenpeace Japan) observed the tagging project to see the benefits of non-lethal research.

A *Ziphius cavirostris* stranded and died in Rarotonga and was necropsied. One sperm whale stranded in Aitutaki in November and tissue samples were retrieved.

For the first time in 10 years of research in the Cook Islands, a fluke match was made between a female humpback seen in 2006 and 2007 (with a calf). This is the first record of site fidelity since the project began. In addition, genotype matching revealed a resighting of a female humpback observed in Rarotonga in 2000 that was seen five weeks later in New Caledonia. Other genotype matches were also made between the Cook Island's and Tonga.

Hauser will be travelling throughout South Africa for the first 2 weeks of April presenting her research from the Cook Islands, along with the work of the Consortium.

Tonga (Rochelle Constantine)

The field team in Vava'u, Tonga in 2007, led by Kirsty Russell (University of Auckland), operated from 2 to 21 September (20 days in the field, 177 hours of effort). Fluke identification, song and skin sampling was conducted. There was a total of 56 encounters with whales during the boat based survey, an average of 2.8

encounters per day. The encounters comprised: 11 mother/calf pairs, 10 mother/calf and escort groups, 23 multi-whale groups and 12 singletons. Only one spinner dolphin group was sighted this season.

Approximately 1000 photos were taken of whale flukes. A total of 47 individuals were identified by fluke photographs. Forty-three of the 47 selected fluke photographs passed SPLASH scoring. These were matched to photo-IDs from Vava'u, Eua, Niuas and Ha'apai catalogues for 1991 to 2006. Twelve whales were matched as resights, dating back as far as 1991 (the first year of this research programme). Four whales sighted in 2006 were resighted in 2007. Four whales were multiple year resights.

Sixty-three skin samples have been extracted, sexed (29% female, 71% male) and sequenced for the mtDNA control region. Four whales biopsied in 2007 had been biopsied in previous years. A total of 10.5 hours of song was also recorded through acoustic monitoring as part of Ellen Garland's (University of Queensland) PhD research.

Vagi Rei (Department of Environment and Conservation, Papua New Guinea) and Samuela Pakileata (Department of Environment and Natural Resources Management, Kingdom of Tonga) joined the field research team for part of the season to learn marine mammal research techniques. This was supported by RNHP funding.

New Caledonia (Claire Garrigue, Aline Schaffar)

Fieldwork was conducted from 12 July to 19 September 2007 in the Southern Lagoon of New Caledonia. A satellite tagging programme (funded by Greenpeace International) was undertaken in collaboration with Ygor Geyer who joined the team for 4 weeks. Ellen Garland joined the team for 10 days to collect recordings of humpback whale songs her PhD at the University of Queensland. From 21 to 29 July, training in marine mammal research techniques was provided to Francis Hickey from Vanuatu, with financial support from RNHP.

A total of 338 hours were spent at sea covering 3104 nautical miles. One hundred and thirty one pods were encountered comprising 251 humpback whales. Fifty one days were spent at the land-based station consisting of 308 hours of observations, including 74 hours of theodolite tracking.

At sea, 4,369 photos were taken and used to identify 173 different whales by fluke and dorsal fin (109) or by dorsal fin only (64). A total of 33 whales identified in 2007 had already been encountered in New Caledonia in previous years (30%) but 76 whales were new individuals. Other species encountered included: ***Tursiops aduncus***, ***Stenella longirostris***, ***Balaenoptera acutorostrata*** and ***Pseudorca crassidens***. Two hundred and four hydrophone deployments were made. Songs were heard in 55% of these deployments. A total of 13 songs were recorded over the season comprising 14 hours of recording. In 7 cases the singer was also identified by photo-ID of the fluke and in some cases a skin sample was collected (6). One hundred and fifty skin samples were collected: 130 were actively collected either by biopsy using a crossbow (105), Paxarms (19), or during Argos tagging (6). Twenty samples were sloughed skin.

There were 187 groups of humpback whales sighted from the land-based station, of which 68 groups were tracked with the theodolite (20 with boats, 26 without boats, 22 both with and without boats). Mostly singletons (39%) and pairs (29%) were tracked. Twenty three tour operators offered 307 whale-watching tours in the Southern Lagoon, transporting a total of 3844 passengers. Each group of whales observed from the land-based station was accompanied by an average of 3 boats. Each boat spent an average of 59 minutes with a pod.

There were 5 stranding events throughout the year: 4 pygmy sperm whales, 1 sperm whale, and 2 dugongs.

2007 was the Year of the Dolphin declared by UNEP, CMS and WDCS. To mark the year, a dolphin puzzle from New Caledonia was created and distributed to all the primary schools of New Caledonia.

Samoa (Juney Ward)

Vessel based surveys were conducted in Samoa over nine days in September and October 2007. Humpback whales and spinner dolphins were identified plus several pods of cetaceans for which the species could not be confirmed. Overall, 24 humpbacks were encountered, comprising at least 18 unique individuals. A total of 6 skin samples were collected. Mean sighting rate during the survey was 2.7 whales/per day which was the highest sighting rate recorded to date. Since the survey started in 2001, 27 individual humpbacks have been identified and 17 fluke photo-IDs have been catalogued. Further survey work is planned to build on the existing research. During 2007 the Government of Samoa established a National Stranding Committee, comprising the Government, stakeholders, NGOs, the private sector and the University. A national strandings manual was also developed.

A whale and dolphin watching feasibility study was undertaken north west of the Island of Savaii. Eight groups of cetaceans were sighted over 5 days (mainly spinner dolphins). There appears to be some potential for cetacean watching in the area. A planned follow up survey will include identifying potential whale watching operators and assessing whether there are sufficient tourists to support an industry in Savaii. The survey conducted on the southern coast of Upolu also looked at the potential of whale and dolphin watching. It is recommended that this area could be a potential site as a starting location to initially set up the industry due to the high sighting rates of humpback whales encountered during the September to October Survey.

American Samoa (Jooke Robbins)

The fifth season of humpback whale research at American Samoa was conducted collaboratively by the Hawaiian Islands Humpback Whale National Marine Sanctuary (NMS), the Fagatele Bay NMS, the Provincetown Center for Coastal Studies, and the American Samoa Department of Marine and Wildlife Resources. Coastal surveys were performed from 25 September through 12 October, concurrent with surveys at Samoa. A total of 53 humpback whale groups were encountered in 79 hours of observation. The average group size was 2.4 whales, and all defined behavioural classes were represented. In total, 43 unique flukes and 60 unique dorsal fin IDs were added to the American Samoa catalogue. There were no re-sightings from previous years, but 13 individuals were seen on multiple days at American Samoa and seven exhibited within-season exchange with Samoa. Flukes previously contributed to the Antarctic Catalogue produced a match to a sighting at the Antarctic Peninsula by the Projecto Baleias Antarctica. This is the first high latitude match for American Samoa, the first live re-sighting between Oceania and the Antarctic Peninsula and a new distance record for humpback whales. Photo-ID and genetic studies have also been undertaken for odontocete species.

New Zealand/Cook Strait (Nadine Gibbs)

The survey in Cook Strait was run for the fourth consecutive year (2004 to 2007). The survey was undertaken in Tory Channel in Cook Strait and ran for two weeks from 23 June to 6 July to coincide with the historical peak in the northward migration. The survey consisted of a land-based site (using a theodolite) together with directed vessel work (photo-ID, biopsy and acoustic monitoring).

There were 111 hours of observations over 14 days, with 3 of 15 days lost to bad weather. 16 pods were observed involving 25 individuals. Only seven individuals were photo-ID'd as individuals were not fluking very much this year. Ten biopsy samples were obtained and these have been extracted, sexed and sequenced at the University of Auckland for genotype analysis. A southern right whale was also seen and a photo-id obtained.

From the four years of survey in Cook Strait, there are now 30 individuals photo-identified and 41 biopsy samples. There have been three photo matches from this project, all to Hervey Bay. MtDNA analysis suggests these whales are most closely related to New Caledonia and Tonga.

Seven new photo-IDs from Cook Strait in 2007 and one other photo-ID have been added to the NZ catalogue but no matches were found. The NZ catalogue now totals 49 photo identified individuals (2 matched to NC, 1 to Tonga, 3 to Hervey Bay, 1 within catalogue match).

Sponsorship has been secured for three years (starting 2008) and the survey period will be expanded to four weeks. A lookout on the North Island will also be investigated to determine the proportion of whales missed from the Tory Channel lookout (on the South Island) and the number of whales travelling up the east coast of the North Island instead of through Cook Strait. A new hut will be erected at the lookout site in 2008.

Hervey Bay (Wally and Trish Franklin)

The sampling effort in Hervey Bay during 2007 extended over 10 weeks (5 August to 12 October), for a total of 472 hours effort over 59 working days. 395 pods were sampled and 935 humpback whales encountered. The Hervey Bay Catalogue for the period 1992 to 2005 has been fully reconciled for intra-season and inter-season re-sights and contains 1964 flukes. The analysis of the 2006 and 2007 photography is in progress and is expected to yield a further 480 flukes, bringing the 1992-2007 Hervey Bay Catalogue to an estimated 2444 flukes. During the 2007 season 44 sloughed skin samples were collected bringing the total sloughed skin samples collected in Hervey Bay between 2000 and 2007, to 1400. A total of 27 hydrophone deployments, each of 15 minutes duration and distributed across the season, were completed. Singing and/or social sounds were present and recorded on each drop.

Over the history of this project (1992-2007), 4520 groups have been observed including 10,205 whales; there are 2736 individuals in the fluke catalogue. A total of 1631 skin samples have been collected over the course of the project. There are 374 individual life histories, ranging from 2-15 years in duration.

Collaborations are underway with Dan Burns (migratory interchange) and David Paton (abundance estimation). Southern Cross University has been funded to conduct studies of age determination in humpback whales using telomeres from samples collected at Hervey Bay. Finally, an analysis of spatial utilisation of Hervey Bay is underway to examine whether habitat use by humpbacks is changing as the population increases.

Two fluke photo-IDs from the Balleny Islands in the Ross Sea in 2006 were matched to Hervey Bay during 2007.

East Australian humpback whale relative abundance estimate 2007 (Mike Noad)

A six week land-based visual survey was undertaken at Point Lookout, Stradbroke Island, East Coast of Australia in 2007. This was the latest in a long series of surveys running since the late 1970s. The previous survey at Point Lookout was undertaken in 2004, and ran for 14 weeks. The numbers of humpback whales observed passing the study sight was considerably higher than 2004, peaking early in the survey (end of June) and declining towards the end of July. One hundred and thirty eight whales passed on the first day of the survey. A mean of 79.5 whales was recorded per 10 hour survey period in 2007. Placed in the context of the previous surveys, this gives a long-term rate of increase of 11.1% per annum (95% CI 10.5–11.5%). An absolute abundance estimate was not calculated for 2007 but if the long-term rate of increase estimate is used to extrapolate the 2004 population estimate, the population would be in the order of 9700 whales.

Aerial surveys were also undertaken in 2007. Two sets of transects were undertaken: (i) long transects from mid-Moreton Island to mid-North Stradbroke Island going 40km offshore to assess the distance from shore pods are passing and (ii) short (close to shore) transects off Point Lookout (the land-based survey site) to assess the detection rates of the land based survey. The findings confirm that only a small proportion of the population (3.4%) pass more than 10km offshore from Point Lookout. The mean distance from Point Lookout to a sighted pod was 2.9km indicating that most pods are passing close to shore. Despite this closeness to shore, the short transects indicate that in the region of 30% of whales are being missed by the land based surveys. This is surprisingly high and repeat surveys are required to test the robustness of this finding.

Norfolk Island (Adrian Oosterman)

Norfolk Island was the site of a major whaling operation at Cascade Lookout in the mid-20th century, with a total catch of 884 humpbacks from 1956 to 1962. Whale surveys in the coastal waters of Norfolk Islands have been undertaken from 2003 to 2007. In 2007 the survey sought to replicate a study undertaken by Bill Dawbin in 1956. The survey involved land based observation from 5 different sites in July and boat based surveys. Both humpback and minke whales were sighted and photo-identified. During the 1956 survey, 351 humpbacks were recorded. In contrast, during the 2007 survey, only 8 humpback whales were observed (i.e. < 0.35 whales observed per day). To date there has only been 1 match (in 2006) between Norfolk Island and New Caledonia.

Tuvalu (Viliamu Iese, Annie Wheeler, Marc Oremus)

Marine species surveys were undertaken in Tuvalu in May 2007 (supported by NZAid) with a focus on cetaceans, sharks, rays and turtles. In addition to the survey work, the team conducted training in marine species survey and capacity building with community groups. This is a significant element of the research programme. The survey focused on the atolls of Funatuti (9 small boat surveys in the lagoon, outside the reef and offshore) and Nukufetau (2 boat surveys). Field effort compromised 56 hours at sea. Eleven sightings were made of 3 species (spinner dolphins n=8, pantropical spotted dolphins n=1, *Kogia* sp. n=1, unidentified n=1). Spinner dolphin average group size was 33 individuals (group size of 6-60). A catalogue of 48 marked individuals has been established with between 15-20% of individuals showing distinctive markings. Twenty-one biopsy samples were also collected from dolphins (20 spinner dolphins, 1 pantropical spotted dolphin). The boat-based surveys will be repeated in April and August 2008, and extended to include a coral reef survey.

In addition to the systematic surveys, other mechanisms of data collection are being developed. Sighting forms and identification guides have been distributed to local fishermen. Strandings reports have also been received from the outer-islands (including a sperm whale in August in Nui), and work has begun with local communities to gather data from the strandings. Cultural significance surveys have also been undertaken. Turtle tagging and nest monitoring has been instigated in conjunction with SPREP.

East Australia and within Oceania comparison (Claire Garrigue, Rochelle Constantine)

Claire Garrigue outlined the results of the Eastern Australian (EA) - Oceania matching workshop. The primary aim of the work was to estimate the rate of interchange between Oceania and EA. The synoptic period chosen for matching was 1999-2004. Matching protocols and criteria from the North Pacific SPLASH project were adopted; quality control work was completed and about 30% of poor quality images from both the EA and Oceania catalogues were excluded. Rational pairwise matching was made to reduce the number of matches of all images. 1242 photos from east Australia were compared to 696 images from Oceania, for more than 710,000 pairwise comparisons. Given the size of the photo catalogues compared, surprisingly few matches were found: 4 matches between EA and New Caledonia (the closest breeding ground of Oceania) and a further 3 with New Zealand (a migratory corridor like EA). Results of this work have been presented in paper SC59/SH15 was presented to the Scientific Committee of the IWC in 2007 and posters presented to the Biennial Conference on Marine Mammalogy in Capetown in 2007.

Rochelle Constantine provided an update of the 2005 and 2006 photo-ID images collected in Oceania. The matching of these years for Oceania was undertaken by Veronique Perard through funds provided by Fonds Pacifique. 212,413 pairwise comparisons were made of 128 photos-IDs from 2005 and 183 photo-IDs from 2006 to 683 photo-IDs from the Oceania Synoptic catalogue for the period 1999 to 2004. Eleven new matches were found. Some interesting results included matches between New Caledonia and Norfolk Island one month apart; Tonga and New Caledonia (2 matches);Tonga and American Samoa (3 matches); Tonga and French Polynesia (3); Tonga and American Samoa and French Polynesia (1); American Samoa and Samoa (1).

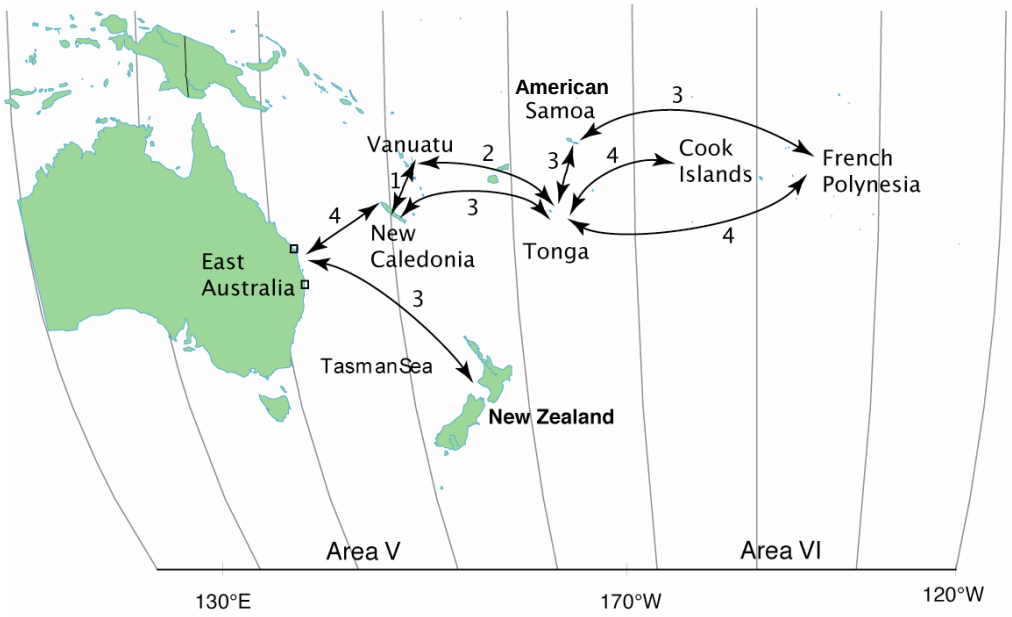
Table 1 Photo-ID matches between sites in Oceania and Eastern Australia for 1999-2004

Study sites	**BB**	**HB**	**NZ**	**NC**	**VT**	**FJ**	**SA**	**TG**	**NI**	**CI**	**FP**	**AS**
Bryon Bay (BB)		44		2								
Hervey Bay (HB)			3	2								
East Australia (BB+HB)			3	4								
New Zealand (NZ)												
New Caledonia (NC)					1			3				
Vanuatu (VT)								2				
Fiji (FJ)												
Samoa (SA)								1				
Tonga (TG)										4	4	2
Niue (NI)												
Cook Islands (CI)												
French Polynesia (FP)												3
American Samoa (AS)												

Table 2 New Photo-ID matches between sites in Oceania for 2005-2006

Study sites	**NO**	**NC**	**VT**	**FJ**	**TG**	**SA**	**AS**	**NI**	**CI**	**FP**
Nofolk Island (NO)		1								
New Caledonia (NC)					2					
Vanuatu (VT)										
Fiji (FJ)										
Tonga (TG)							3			3
Samoa (SA)							1			
American Samoa (AS)										1
Niue (NI)										
Cook Islands (CI)										
French Polynesia (FP)										

Figure 1 Photo-ID matches between sites in Oceania and Eastern Australia for 1999-2004. Other connections from the region from previous years are reported elsewhere (e.g. Garrigue *et al*. 2002; Constantine *et al*. 2007).



Research on small cetaceans in the South Pacific (Marc Oremus)

Marc Oremus presented a summary of small cetacean research across the South Pacific, including field work in Tuvalu, Samoa and French Polynesia in 2007. In 2008, a new research programme is being started in New Caledonia with the focus on *Tursiops aduncus* and spinner dolphins. The objectives of the project are to describe habitat use, behaviour, and community and population structure. There will be at least 4 study sites and the research will involve collecting photo-IDs and biopsies. Marc also provided an update on research on spinner dolphins in French Polynesia. The work was started in 1987 by Michael Poole. The dolphins form small, resident communities with some interchange between islands but the communities are still genetically different. Some individuals have been recorded as residents in French Polynesia for periods up to 20 years. The structure is a network of insular communities that are evolutionarily connected, and overall form a single large meta-population. At present spinner dolphin genetic samples have been collected from Samoa, Tuvalu, French Polynesia and New Caledonia.

The new work will both increase sampling in existing areas and extend it into new areas but also will seek existing samples that may be available. This research is focusing on spinner dolphins for the following reasons: (i) they appear to be the primary species found around island coastal waters; (ii) they have the biggest potential in terms of dolphin watching; (iii) they are probably the most vulnerable to human impacts due to their inshore nature; and, (iv) there is a long term data set available in French Polynesia.

Oceania and Antarctic Genotyping results (Debbie Steel)

Debbie Steel provided results of the genotyping of samples collected from the South Pacific and analysed with support of the Australian Government's Regional Natural Heritage Programme (RNHP). This work builds on existing work by many people, but Carlos Olavarria and Claire Garrigue in particular. A total of 1970 samples (sloughed skin and biopsy samples) were available from six winter breeding grounds (New Caledonia, Tonga, Samoa, Cook Islands, French Polynesia and the Pacific coast of Colombia) and six Antarctic feeding areas, during the years 1990 to 2005. Up to 17 microsatellite loci (mean = 11.5) were amplified and scored for each sample, along with sex and mitochondrial (mt) DNA control region sequences. Microsatellite loci and allele-binning followed standard protocols developed in collaboration with researchers involved in similar studies of humpback whales from Western Australia and the east coast of Australia.

Among breeding grounds, a comparison of the 1065 unique genotypes revealed 29 cases of movement: 17 between Tonga and Cook Islands, 6 between New Caledonia and Tonga, 3 between Tonga and French

Polynesia, one each between New Caledonia and Cook Islands, New Caledonia and French Polynesia, and French Polynesia and Colombia. The latter is the first documented case of individual movement between Breeding Grounds F and G. Among the feeding areas, the 175 unique genotypes revealed no cases of interchange across areas. Between breeding grounds and feeding areas, the comparison revealed 5 cases of movement: two between Tonga and Area I (western edge), one between Tonga and Area VI, one between Colombia and Area I (Antarctic Peninsula) and one between New Caledonia and Area V. The latter confirmed the migration of the New Caledonia breeding stock to Area V, the intended area of hunting for the Japanese scientific whaling programme in 2008/09.

A progress report was provided to RNHP for this work and a full summary of this research is available (i.e. Appendix 2 in RNHP Preliminary Report 30 June 2007. Outcome 3 - Genotype Matching of Humpback whales in Oceania). Work is underway for the publication of this research in peer-reviewed scientific journals. The results of this analysis mirror trends in the photo-ID and satellite tagging research. These genetic data from Oceania are now ready for matching with Eastern Australia and Western Australia. There are also some additional samples from New Zealand, American Samoa, Samoa and perhaps some further Antarctica samples that need to be analysed to complete the picture. It was noted that there was a match from a sloughed sample in Tonga provided by Liz Slooten. Following the discussion, Claire Garrigue provided some results of the resighting of four calves from genotyping at ages 1, 2, 2, and 4. This highlights the usefulness of biopsying calves for the determination of parameters such as age at first reproduction.

The SPWRC expressed its gratitude to RNHP for supporting the work that led to such significant advances in knowledge. It was **recommended** that the SPWRC formally thank the RNHP and Australian Government for the support of this work.

Migratory Allocation: Feeding areas to breeding grounds (Scott Baker)

Scott Baker, Debbie Steel, Carlos Olavarria, Rene Gibb and Carrie Antolik continued research on linking feeding grounds to breeding grounds. They used mtDNA and mixed stock analysis to describe the migratory destination of SH humpbacks. Mixed stock analysis is used to attribute individuals from one part of their range to the breeding stock. The primarily relevance of this is in the allocation of whales killed by commercial whaling on the feeding grounds to the appropriate breeding grounds. Genetic samples from around the Antarctic were analysed. There were different mtDNA haplotype frequencies for each of the recognised breeding grounds or migratory corridors. There were some significant differences between breeding grounds but there were also differences between feeding and breeding grounds. There needs to be significant differences between source stocks to use mixed stock analysis and while this is not strictly the case, it was assumed. The results gave the following estimated contributions to feeding areas: Area I - Colombia 78%, Cook Islands 15%; Area VI - TG 79%, NC 13%, FP 4%; Area IV - WA 33%, NC 31%, TG 18%. Overall, the mixed stock model seems to provide reasonable estimates of feeding area contributions to breeding stock despite relatively small sample sizes from Area I to Colombia and Area IV to TG. There are also surprising connections between Area IV to WA and NC. However it was noted that results are preliminary and sample sizes were small. The work highlights the critical requirement for additional samples from the Antarctic regions.

Satellite tagging (Claire Garrigue, Nan Hauser, Phil Clapham)

Claire Garrigue summarised tagging work in New Caledonia in 2007 funded by Greenpeace International. Overall, 20 tags were deployed, 12 in New Caledonia and the remaining 8 in the Cook Islands. The tags transmitted between 5 and 52 days, except for one tag. Most of the tagged whales travelled in a south or south easterly direction. The tagging project allowed the identification of some new locations used by whales such as a seamount to the south of New Caledonia, and Norfolk and Kermadec Islands. One whale followed a totally different path to the others and travelled west in the direction of the east coast of Australia. The next step for 2008 is to spend 3 weeks of survey work at the sea mount (50m deep) south east of the South Lagoon of New Caledonia.

Nan Hauser showed some footage of tagging and summarised tagging work in the Cook Islands in 2007 funded by Greenpeace International. Eight tags were deployed in 2007. All of the whales went west from the Cook Islands towards the Tongan Trench. Part of this research involves investigating how whales navigate. A mother with a calf that was tagged in 2006 was recorded travelling to Antarctic Area V. There was a 3 month period when the tag stopped transmitting but it later restarted again in the Antarctic. The route showed that “Jameson” didn’t stop travelling when it reached the Antarctic Convergence but continued south, unexpected for an individual that presumably hadn’t fed for many months. There was a brief discussion of the potential effects of tagging but a more in depth discussion was deferred until the specific working group held the following day.

Song analysis (Ellen Garland)

A summary of the results of song analysis from 2002 to 2006 across the western and central South Pacific were presented. Four different, distinct song types were present in the region in this time period (Table 3). Songs appeared to spread from the large east Australian population eastwards across the South Pacific in a stepwise fashion to French Polynesia. Song was very dynamic and appeared to change far more regularly than previously thought in the region. French Polynesia was highlighted as requiring further investigation due to unresolved song change within the population. Analysis of song recordings from 1998 to 2001 will be conducted to further elucidate song change in the region.

Table 3 Song types present in the western and central South Pacific region from 2002 to 2006. Populations are listed from west to east. Each colour represents a different song type.

	East Australia	**New Caledonia**	**Vanuatu**	**Fiji**	**Tonga**	**Samoa**	**American Samoa**	**Cook Islands**	**French Polynesia**
2006	Green	Yellow			Yellow	Yellow	Red/Yellow intermediate		Blue & Red
2005	Yellow	Red					Red	Blue	Blue & Red
2004	Red	Blue & Red					Blue	Blue	Blue
2003	Red	Blue	Blue		Blue		Blue	Blue	
2002	Blue	Blue		Blue	Blue				

Comprehensive Assessment and modelling (Jen Jackson)

Jen Jackson provided a summary of her work in reconstructing the history of exploitation and recovery for humpback whales in the SP. The aim of the work is to assist the Comprehensive Assessment of humpbacks in the SP and estimating the present level of recovery of whale populations in the SP. The work is timely as Japan has proposed killing humpbacks in the Southern Ocean. A combined assessment of Areas V and VI feeding grounds and the corresponding breeding grounds (E1, E2, E3, F) was undertaken as some of the SP breeding populations (e.g. TG) appeared to utilise both Area V and VI. Total catches for Areas V and VI were 56,522 of which almost half were taken in just two seasons (1959/60 and 1960/61). A Bayesian Logistic "Hitter" model was used to run the assessment using the best available information (e.g. catches, abundance, population growth, minimum population bottleneck size (Nmin)). A two stock (east Australia separate from Oceania) and a single stock model structure were explored. There was considerable difference between the population trajectories where the model was constrained to fit the Nmin value and where it wasn't. Overall, the high rate of population increase observed in east Australia (10.6%) was incompatible with the Nmin-constrained model run. This suggests that the overall rate of population increase across the South Pacific was lower than has been observed in east Australia. The model suggests that the presently accepted IWC assessment models may not be sufficient to deal with these population characteristics. Median estimates of pre-exploitation abundance were 46,000 and 59,000 for the single and two stock model respectively. The current level of recovery (2008) is estimated at 29% for the single stock model and 22% (E1) and 9% (Oceania) for the two stock model. Timeframes to recovery (54% of k) for the single stock model are 2013 or 2019 with different assumptions of population growth rate (10.6% and 6.7% respectively). Overall, it is evident that further exploration of the two stock model needs to be performed, with separate population growth rates for east Australia (E1) and Oceania (E2, E3, F) across a range of catch allocation scenarios.

Telomeric ageing (Peter Harrison)

Peter Harrison summarised progress towards the ageing of humpback whales using non lethal methods using telomeres. The focus of the study to date has been on using sloughed skin samples from Hervey Bay and biopsy samples from Alaska. Ageing whales from ear plugs is one of the major stated requirements in the lethal sampling of whales and so this work represents an important step in addressing this issue. Preliminary results show very strong differences between calves and older whales. Future work will focus on mother-calf samples and ageing.

Computer fluke matching (Eric Kniest)

Eric Kniest summarised the development of a computer based fluke matching programme. The aim of the work is to help reduce the time, effort and cost of visual matching as sample sizes for comprehensive matches as now more than 200,000 pairwise matches are required. The basic approach uses geo-referencing around 5 reference points and measuring regions and features (e.g. % of black, calculation of angles and distance) and storing the information in a database. The programme then searches for a match with results displayed in decreasing order of similarity. Initial test run resulted in 97% of flukes ranked in the top 21% and the results are extremely promising. Further development is planned to increase the proportion of successful rankings.

A new beaked whale species in Oceania? (Scott Baker)

Scott Baker presented recent results describing a possible new species of beaked whale from Oceania (Dalebout *et al*. 2007). The initial description was made from some material collected in the Gilbert Islands and Palmyra Atoll.

Balleny SP matching

Nine good quality fluke photos from the Balleny Islands (the "Balleny nine") in the Ross Sea were matched at the meeting against 775 photos from the Oceania Synoptic Catalogue for 1999-2004 (TG=9, NC=160, FP=159, NZ=41, CI=36, AS=31, Vanuatu+Niue+Samoa+Fiji= 11, Norfolk=5) but no matches were found. In contrast, the "Balleny nine" were previously matched against some EA photos (HB=1556, BB=916, BA=648) and 5 matches from 2 individuals were found as has been reported previously (i.e. SC/59/SH18). Plans for the future include matching the "Balleny nine" against photo-IDs from Oceania for 2005-2007.

Sponsors and Institutions – updates

IFAW (Olive Andrews)

Olive Andrews summarised the work of IFAW in the SP Region over the last year. The IFAW Pacific team comprises Sue Taei, Filipe Tonga, Darren Kindleysides and Olive Andrews. IFAW supports a new position of Pacific Officer (Olive) based at SPREP in Samoa that supports the work of the SPREP Marine Species Officer, Lui Bell. IFAW has assisted in the review and finalisation of SPREP Marine Species Action Plans that were formally endorsed by SPREP meeting in Apia, September 2007. The funding for the SPREP Marine Species Officer is likely to continue after formal funding ends later in the year and an Assistant Marine Species Officer is also likely to be employed.

Other IFAW projects include: (i) the National Day of Action in May 2007, a regional event with simultaneous events in Australia, New Zealand and Tonga; (ii) Jonah and the Whale Campaign, (iii) Presentations at national Marine Mammal Workshops in PNG and Fiji; (iv) Commissioned and finalised a Pacific wide whale watching economics report and economics of whale watching in Tonga report. Both to be published in 2008; (v) Supporting the development CMS Dugong MOU in the SP.

Work for the future includes: (i) Regional Whale and dolphin watching workshop in April, (ii) National Day of Action; (iii) continued support for SPWRC (in excess of A$300,000 to date); and (iv) continued support for the implementation of the SPREP WDAP.

ACAMMS (Mike Double)

The Australian Centre for Applied Marine Mammal Science (ACAMMS) was established in 2006 to conduct and promote strategic, applied research required for the informed management and conservation of marine mammals. The ACAMMS-managed competitive grant scheme allocated over AUS$700,000 to eleven research projects in 2007. Funded projects included a population estimate of the western Australian humpback whales and a genetic examination of humpback whales movement between eastern and western Australia. Scientists within the ACAMMS hub at the Australian Antarctic Division in Hobart lead on IWC-related issues, provide regional management advice and conduct a wide variety of research and survey work on marine mammals in Australia and the Antarctic. One major project currently being planned is a yacht-based survey of eastern Antarctica, with a focus on tagging, biopsy, photo-id, diet sampling and acoustics of humpback and minke whales. The creation of ACAMMS by the Australian Government demonstrates a great commitment to research and is a good example for the New Zealand Government to consider following.

INACH (Carlos Olavarria)

Carlos Olavarría presented a summary of the work of Fundación CEQUA (Centre for Quaternary Research). Supported by the Chilean Antarctic Institute (INACH), CEQUA have undertaken research on humpback whales around the Antarctic Peninsula during summer from 1993/94 to 1998/99 and then from 2005/06 to 2007/08. Research has also been undertaken in Magellan Strait from 2002/03 to 2006/07. Photo-ID work has been compiled in a catalogue of 102 individuals from Magellan Strait and 166 individuals from the Antarctic Peninsula. To date no matches have been found between these areas.

Fifty two genetic samples have been collected and analysed between 2002/03 and 2004/05 in Magellan Strait. Thirty four samples collected in 2005/06 and 2006/2007 have yet to be analyzed. One hundred and twenty nine samples have been analyzed between 1995/96 and 2002 (including those collected by INACH, SO-GLOBEC, IWC) in Antarctic Peninsula. Twenty one samples collected by CEQUA/INACH in 2005/06 and 2006/07 have yet to be analysed. Additionally, 20 samples collected in northern Patagonian channels, near Chiloé by the Blue Whale Centre will also be analysed. To date, significant differences have been found when mtDNA control region sequences have been compared between Magellan Strait and Antarctic Peninsula.

CEQUA proposes to undertake a collaborative project with SPWRC members for a full comparison of Antarctic Peninsula and Magellan Strait photo-id catalogues. Initially, the comparisons are intended to include French Polynesia, Cook Islands, American Samoa, Samoa, Tonga and New Caledonia breeding grounds as well as the New Zealand migratory corridor. Eventually, Eastern Australia could be included in the comparisons but due to size of EA catalogues this may need to be done once all of the EA catalogues have been reconciled. To do this comparison, electronic or hard copies of catalogues could be sent to the participants, with the aim of performing independent and blind catalogue comparisons by two researchers, one from each group. Field data will be required only when matches occur. Comparison of French Polynesia and Antarctic Peninsula will be part of Renee Gibb's MSc thesis. One peer-reviewed paper and a report to be presented to the SC/IWC 2009 is intended to be the result of such a comparison. This manuscript would be focused on the level of migratory connection of Antarctic Peninsula/Magellan Strait humpback whale feeding areas and Central and Western South Pacific breeding grounds.

SPREP (Mike Donoghue on behalf of Lui Bell)

Lui Bell sent his apologises as he was unable to attend the meeting. Mike Donoghue presented a short summary of the work of Secretariat for the Pacific Regional Environment Programme (SPREP). SPREP is an inter-governmental organisation with membership consisting of 21 Pacific Island nations and territories, as well as four developed countries. SPREP's overall objective is to sustain the integrity of the ecosystem to support biodiversity in the region. SPREP has developed action plans for whales, dolphins and dugongs.

WDCS (Mike Double on behalf of Cara Miller)

The first national workshop on cetacean conservation in Papua New Guinea (PNG) was held in November 2007. This workshop resulted from collaboration between the PNG and Australian Governments and the WDCS. The workshop was attended by 40 local participants from 15 of PNGs 18 provinces and aimed to strengthen the expertise of those directly involved in the protection and management of cetaceans in PNG waters and also provide opportunities for research, community programmes and local education. The workshop included 6 days of practical boat-based training sessions. The WDCS will follow up this workshop with research funding from the WDCS International Science Projects Programme.

Conservation Updates

Regional update (Mike Donoghue)

Mike Donoghue presented a summary of Regional Initiatives in the SP on behalf of Lui Bell from SPREP. Items covered were SPREP Whale and Dolphin Action Plan 2008-2012; CMS MoU; NBSAPs; various NGO initiatives from agencies such as IFAW, WWF, WDCS, Greenpeace, Pew Foundation, Conservation International, and whale watch operators; NZAID; RNHP; and, Jonah and the Whale Programme. One of the recurring themes was that the SPWRC needs to improve communication with SP governments, as there is a constant flow of Japanese propaganda material that needs to be critiqued and rebutted. It was also noted that the Global Environment Facility (GEF) is making available a grant of up to US$250,000 to each Pacific Island Government to develop a network of Marine Protected Areas, and that there could be opportunities for the Consortium to provide input into the development of such networks to provide for the needs of cetaceans in the design of MPAs.

JARPA II and IWC (Phil Clapham)

JARPA II is the Japanese Scientific Whaling Programme that is ongoing in the Antarctic each summer. The Japanese were planning to take 50 humpback whales as part of the JARPA II programme but have postponed that part of the programme for 2007/08 but intend to kill over 900 minke and 50 fin whales. Despite the killing of more than 720,000 in the Southern Hemisphere, relatively little is known about them. The status of fin whales in the Southern Hemisphere remains unclear and it is possible that the Japanese catches represent more of a conservation issue for fins than for humpbacks (despite the much higher visibility of the latter species). With respect to the IWC, the balance of the membership appears to be supportive of conservation rather than whaling at the present time. However, neither side has anywhere close to the three-quarters majority required to make major changes (such as lifting the Moratorium). An intersessional meeting will occur in March which will discuss whether the existing impass can be broken and progress made.

The SPWRC welcomed the announcement of new photo-ID and genetic matches illustrating the movements of humpback whales between the island groups of Oceania and the new information provided by satellite tagging.

The SPWRC reiterated its opposition to the JARPA II so called "scientific" whaling programme and its deep concern that the inclusion of humpback whales in the JARPA II programme in Area V would provide a grave threat to some of the small and critically-endangered populations of humpback whales in the South Pacific such as Fiji, Cook Islands, and New Caledonia.

Pew Charitable Trust (Mike Donoghue)

The Pew Charitable Trust has recently funded a series of meetings related to whales and whaling with a view to moving past the present stalemate. Records and details of these meetings are available at www.vardagroup.org and www.pewwhalessymposium.org.

Jonah and the Whale Campaign

Melino Maka (Tongan Advisory Council) introduced the Jonah Lomu and the Whale campaign concept, which evolved from several previous efforts to support the conservation of whales in the Pacific Islands region. Linda Bercusson is currently preparing a strategic plan for the campaign. Melino thanked the Consortium for its technical and scientific contributions and looked forward to continuing engagement between the Consortium and Pacific Island communities in New Zealand.

Sue Taei reported that the Conservation Working Group had discussed the Jonah and the Whale campaign and had concluded that:

- It provides an unsurpassed opportunity for raising awareness and action for whale conservation in the Pacific;
- In developing the campaign in the Pacific, cultural values are a fundamental basis for Jonah in addition to economic values from whale watching;
- SPWRC is seen as key source of scientific advice for J&W campaign;
- Encouraged NGOs, public sector and others to join and support this campaign – will circulate draft business plan to interested parties.

General SPWRC business

Membership

Applications to join the SPWRC were received from Mike Double (ACAAMS) and Eric Kniest (Newcastle University). Their applications were considered and endorsed by the Executive. Mike and Eric were welcomed as general members to the SPWRC. Sue Taei-Miller (IFAW & Conservation International, Samoa) and Debbie Steel were confirmed and welcomed as Officers of the Executive.

Meeting 2009

The 2009 meeting was proposed for 11-15 February at the University of Auckland. This will be the 10th anniversary of the SPWRC. The final date will be confirmed by the Executive Committee by March 31 and communicated to all members.

Overview of SPWRC Activities (Scott Baker)

Scott Baker summarised publications, reports and presentations by SPWRC members or projects to which the SPWRC contributed. Members of the SPWRC contributed to more than 15 scientific and other publications during the last year. A list of relevant publications by SPWRC members is attached as Appendix 4.

Pacific Whale Foundation (PWF)

An application for collaboration with Pacific Whale Foundation (PWF) was considered and discussed. The matter was referred to the Executive Committee for consideration.

Major tasks for the next year

Consortium priorities for the coming year depend in part upon how well the major research questions have been answered to date, and what is needed to provide significantly better answers in the near future (or what new questions should be posed). There was a general discussion of potential work for the Consortium in the coming year.

Major tasks include continuation of work on humpback whale abundance, status and population structure relative to the IWC Comprehensive Assessment; expansion of survey effort into other areas; genetic analysis of archived samples; continued outreach to Pacific island nations with involvement of local people in research and conservation efforts.

Expansion of work might include a survey or acoustic monitoring of the Chesterfield Islands (northwest of New Caledonia, which may be a link between New Caledonia and East Australia), as well as surveys in Niue and Tuvalu, and a repeat survey of Fiji. A 60-foot catamaran funded by NZ Aid will be undertaking a dedicated cruise in Tuvalu funded by NZAid and an appropriately qualified scientist needs to lead this research. A survey of Niue is also desirable, with some funding rolled over from last year when the work was precluded by lack of availability of a local contact. Work in Fiji could involve a repeat of the shore surveys conducted by Paton and Gibbs (replicating Bill Dawbin's surveys from the 1950's), as well as on-water work if a suitable boat is available; the former effort is considered very important given the lack of recovery evident in the 2002/03 surveys.

There may be a chance to conduct additional satellite tagging, but funding is not clear at this point and may well be contingent upon development of better tag attachments than were used this year.

There is a need to match 2007 humpback whale flukes to those from previous years (notably the synoptic period of 1999-2005), although not all 2007 datasets have been internally reconciled within region. Rochelle Constantine will produce a budget for the work and present it to the Executive for consideration. Genetic analysis of archived samples from Samoa, American Samoa and the Antarctic as well as from the major Consortium areas has yet to be undertaken, and funding is also required for this.

Publications (for IWC and/or for journals) should include the 1999-2005 synoptic abundance estimates and implications for assessment; results of satellite tagging; new photo-id and genotypic information on humpback whale movements, including the matches between French Polynesia and Colombia, American Samoa and the Antarctic Peninsula, Oceania and East Australia, and the Antarctic and the Balleny Islands; Jackson's updated assessment and mixed stock allocation; new data on East Australia growth rates; song analysis; and a study of the impacts of whale-watching in New Caledonia.

Expansion of the Consortium page(s) on the Web should be undertaken; Hauser will explore this.

Possible projects include (including requested budget):

1. Chesterfield survey (not seeking funding but endorsement)
2. Fiji survey (3 weeks) $9k
3. Niue survey $3k
4. Eastern French Polynesian survey $8k
5. Tuvalu survey (August) $5k
6. Fluke matching 2007 $4k
7. Employment of a coordinator $20k
8. Genetics (genotyping of 400-500 samples) $12k
9. Replacement of stolen equipment $3-5k
10. Solomon Islands survey $2.5k

11. Norfolk Island survey $7200
12. SP Core region projects (NC, CI, TG, FP) A$30
13. Sample kits for field collection for $1000

These projects were forwarded to the Executive Committee for consideration.

Reports from Working Groups

Satellite tagging

Garrigue and Hauser, working with Phil Clapham, Alex Zerbini and Ygor Geyer attached 20 satellite tags to humpback whales in New Caledonia (12) and Rarotonga (8). Results have been reported above. Nick Gales placed tags on blue and humpback whales last year, but there was almost immediate failure, suggesting electronic problems. Gales' tags are deployed using a pneumatic line launcher, which allows tagging from a greater distance. Gales' group has switched to Wildlife Computers for tag production. They are also moving towards deeper attachments with blades, so will now be more similar to tags used by others.

The principal areas of discussion include ethics and prioritisation of work. On the former, the major issues are whether pain/discomfort is involved in tagging and whether an implantable tag can lead to infection and significant health issues. Clapham noted that some right whales tagged in the North Atlantic had been resighted, and that no serious issues were apparent, although scarring at the tag site was sometimes apparent. He said that a workshop had been organized by New England Aquarium on the topic of tag impacts and that a report on this is available. Clapham also reported that humpback whales tagged many years ago by Bill Watkins and others, using tags that were much larger than those in use today, had been resighted up to 30 years later. A paper summarizing these results is in preparation.

It was noted that existing SP tagging projects were conducted by individual research groups and not by SPWRC. Most Consortium members are comfortable with the use of tags that do not penetrate the muscle and all acknowledge the importance of the data in terms of addressing scientific and management questions.

The major ethical issue continues to be whether the tag attachment extends across the fascia into muscle, which usually increases attachment time but which might introduce a pathway for infection. Noad noted that it would be very helpful if tags could somehow monitor conditions in the tissue and report on that. He also noted that there is a medical orthopedic mesh that is artificial collagen and which could, if incorporated into a tag, potentially cause collagen to knit to the tag mesh, closing up the gap between the tag and the tissue and potentially increasing attachment time. Nan Hauser has been in touch with a medical supply company in NZ that is interested in getting involved in this issue.

After much discussion, it was agreed that a working group would be formed under Noad which would: a) review the existing data on effects of tags on whales, including reports from the New England Aquarium workshop on right whale tagging, and a workshop from the San Diego biennial; b) critically assess the possible medical concerns for tags penetrating the muscle, and how infections might be visible (and over what time period); c) examine the possibility of incorporating medical technology (as above); and d) explore the idea that tagged whales could be followed and their condition periodically assessed through resighting. The working group will report back to Consortium members intersessionally. In the meantime, project PIs will make their own decisions about involvement in tagging projects in 2008 (as was the case last year).

Priority areas, assuming people are comfortable with the tags being used: French Polynesia, American Samoa, East Australia, New Caledonia. Other important but potentially logistically or politically difficult areas are Fiji and Tonga.

Abundance estimation

Note: that all estimates given below are preliminary and provided solely for the purpose of discussion, and should not be cited.

A range of mark-recapture abundance estimates have been calculated by the Consortium for the years 1999 to 2004. These include a closed model photo-ID estimate of about 3600. However, after quality control (using SPLASH protocols) the sample size was substantially reduced and the resulting estimate went down to about 2000. It is not clear why this occurred; one possibility is that one class of whales (e.g. females) were disproportionately removed from the sample.

Genotyping provided a range of estimates for all individuals of about 3600; a male-only estimate was 2600. For this, the period 2000-2003 is probably most representative because whales were reasonably well sampled in all four areas (NC, TG, CI and FP). For the purpose of assessment modelling, our best estimate is probably double the male estimate for 2000-2003, or about 5200 whales. Using all genotypes for 2000-2003 would involve some bias because females probably have lower probability of capture on the breeding grounds. This could potentially be accounted for with an adjustment but the extent of this adjustment will have to be examined. The assessment model should probably also include the lowest estimate (the post-quality control photo-id estimate), since on current knowledge we cannot categorically exclude this; however, interpretation of the resulting model output would have be qualified given the likely biases involved.

There was discussion about whether to exclude calves from a genotype estimate but no conclusion was reached.

Song and acoustics

The plan for the 2008 Oceania season was discussed. 2007 was a very successful season for Ellen Garland in terms of visiting the main research programmes (including FP twice). However, the number of recordings obtained were lower than hoped for. This was not due to lack of effort but represented an apparently lower rate of singing at some sites and the usual weather restrictions. The ideal level of recording that would enable songs to be examined at both between-year and within-year levels would be 6 songs per singer and 2 singers per week. In reality it was acknowledged that this is not always possible. There was some discussion about how to quantify song changes but it was reiterated that song changes at the between-year scale are reasonably obvious. In any case techniques to quantify change are being explored included using Levenshtein Distance. Timing for Ellen to visit the field sites was discussed. The general feeling was that later was better. October is probably the best time in CI and FP. It was noted that Claire is not working in her main area this year as they no longer have accommodation. Instead she will be spending three weeks in mid-Sept to the first week of October on a yacht at an offshore sea mount and the rest of the season working in comparatively low density areas off the east or west coasts. Tonga might operate differently this year as Kirsty Russell is moving up there. There may be a longer season but logistic support might be more difficult. August to September are probably the peak months in TG. The best months in Samoa are likely to be September to October (as with and FP and CI). Autonomous data loggers are being developed at UQ and it is hoped some will be available for deployment this season. The highest priority area is probably Tonga (although this may change if Kirsty is there for a longer season) followed by French Polynesia as the song appears to be doing strange things there (i.e. the simultaneous presence of two different song types).

Anatomy and pathology of whale ears (Damien Higgins, Michael Noad)

Damien Higgins and Michael Noad are starting a project looking at the anatomy and pathology of whale ears. All cetaceans are of interest but beaked whales are the highest priority. They requested that if any of the PIs had the opportunity to collect heads and freeze them, then that would be of great assistance. Ideally heads need to be scanned (CT and/or MRI) before dissection and this should be done in-country if facilities were available. Ears dissected from heads would also be useful especially if no freezer facilities were available. This is the start of what is hoped will develop into a larger project once funding is sourced. Nan Hauser has two ***Ziphius cavirostris*** heads in her freezer in Rarotonga that will be sent to Brisbane on an Air New Zealand flight. Cites permits are presently being processed

Data management (Debbie Steel)

The issue of data base management and the archiving of information was discussed. Debbie will send a template file to the PIs so that they can fill in the relevant data that they are comfortable about providing. No consensus was reached about the application of a unique identifier for each individual consistent across skin samples and photos.

EA matching (Michael Noad)

A brief meeting of the east Australian humpback whale researchers was convened (Double, Harrison, Brooks, Paton, Franklin, Gulesserian, Oosterman, Kniest, Noad). A list of current projects and people working on the east coast humpback whales was developed. This included photo-ID work in Hervey Bay, Byron/Ballina (although no collection currently), Cape Solander, Eden and Tasmania; theodolite tracking work at Peregian, Point Lookout (2007 but not 2008), Cape Byron and Cape Solander; sloughed skin collection at Hervey Bay, Byron/Ballina (not currently); biopsies at Peregian (planned later in 2008), and Tasmania.

The group also discussed the creation of an east Australian photo-ID (and genetics) catalogue. There was strong support from all parties for this to be progressed. The necessary software development and data-basing facilities are available at the Antarctic Division and the curation here would be appropriate. It was agreed that facilitation by ACAMMS would be helpful. It was also agreed that data-basing could only proceed once adequate data sharing and IP protection agreements were reached and that this should be actioned through a small steering committee and involving SCU. Mike Double undertook to talk to Nick Gales about support for this.

Comprehensive Assessment for IWC (Scott Baker, Jen Jackson)

It was **agreed** that the SPWRC would prepare two papers for the CASH volume: (i) an update of interchange rates within Oceania (i.e. SC/59/SH15), and (ii) first assessment of interchange between EA (i.e. SC/59/HW14). These papers will be updated from the papers that were originally presented at the CASH meeting [**Action**: Claire sends papers to IWC). For the assessment modelling, it was agreed that a preliminary assessment paper should be prepared with existing data for Oceania. Two-stock (Oceania and east Australia) and one stock (all regions) models will be explored. East Australia will be included in this modelling as it accounts for a substantial proportion of the Antarctic catches in Area V but this assessment will focus on stocks E2, E3 and F combined. Discussion centred on how to best account for sex bias in captures on the breeding grounds, which may be driven by unequal probabilities of capture between the sexes or a true bias towards males on the breeding grounds. Two abundance estimates were **agreed** on for use in the population modelling.

1. A sex-stratified genotype estimate of abundance for Oceania, from which the estimate of male abundance will be used.
2. A male adjusted quality controlled photo ID estimate of abundance will be determined from the 1999-2004 synoptic catalogue for NC, FP, CI and TG. The adjustment for males is yet to be determined but can potentially be acquired from Smith (1999), Palsboll (1997) or the sex ratio used in the West Indies: (1:1.75).

Abundance scenario (2) will provide an overall population history while abundance scenario (1) will be used to reconstruct a male-only population history and can be doubled for comparison between scenarios. Current abundance estimates for east Australia will be taken from 2004 shore counts 7090 (+/- 660). A constraint on minimum past population size will be provided by current haplotype diversity estimates from the region (Olavarría et al. 2007). These will be fitted to discovery curves in order to account for additional unsampled haplotypes (as described in Jackson et al. 2007).

It was recognised that some funding is required to support further work on this assessment prior to IWC61. The potential for using CPUE data and sightings rates from the region in future modelling was discussed and the group agreed that this is an important avenue to explore though not practical to include in the model prior to IWC60.

Conservation Working Group (Sue Taei, Mike Donoghue, Olive Andrews)

The Conservation Working Group (CWG) met. Notes of the meeting are attached as Appendix 2. The SPWRC is contributing to 11 out of 24 of the objectives of the SPREP Whale & Dolphin Action Plan (Appendix 3), of which SPWRC is a key partner organisation. Meeting record of the CWG reflects the discussion of the group and identifies actions for CWG members in 2008 and recommended actions for the SPWRC.

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APPENDIX 1

Agenda for the Ninth Annual Meeting of the South Pacific Whale Research Consortium
University of Auckland: 5-8 February, 2008

Tuesday 5 February General meeting members of the Consortium and invited participants

9.00 a.m. **Welcome and appointment of chair and rapporteur**
9:30 a.m. **Regional results for 2007 season**
French Polynesia (Michael Poole)
Cook Islands (Nan Hauser)
Tonga (Rochelle Constantine)
New Caledonia (Claire Garrigue, Aline Schaffar)
Samoa (Juney Ward, Lui Bell)
American Samoa (Jooke Robbins)
New Zealand (Nadine Botts)
Hervey Bay (Wally Franklin)
East Australia (Stradbrook population survey inc. aerial survey) (Michael Noad)
Norfolk Island (Adian Oosterman)
Surveys in Tuvalu (Marc Oremus, Vili Iese)
Small cetaceans in SP (Marc Oremus)
12:30 **Lunch**
1:30 p.m. **Analysis results**
EA/Oceania comparison (Claire Garrigue)
Oceania update 2005 /2006 (Rochelle Constantine)
RNHP Genetics (Debbie Steel)
Migratory Allocation: Feeding Areas to Breeding Grounds (Scott Baker)
Tagging (Claire Garrigue, Nan Hauser and Phil Clapham)
Acoustics (Ellen Garland)
Comprehensive Assessment and modelling (Jen Jackson)
Telomeric aging (Peter Harrison)
3:30 p.m. **Sponsors and Institutions - updates**
IFAW (Darren Kindleysides)
SPREP (Mike Donghue)
SCU Whale Research Centre (Peter Harrison)
ACAMMs (Mike Double)
Report from DEWHA (Milena Rafic)
Other
4:30 p.m. **Conservation update**
Regional update (Mike Donoghue, Lui Bell)
JARPA II and IWC (Phil Clapham)
Tokyo: Pew Charitable Trust (Mike Donoghue, Scott Baker)
Overview of Consortium Activities (Scott Baker, Dave Paton)

Wednesday 6 February (Waitangi Day – National Holiday)

9:00 a.m	Plenary - review of timetable for working groups
	Technical/Scientific - working groups and schedules
	Conservation/Management - working groups and schedules
10:30 a.m	Working groups convene
4:00 p.m	Plenary
6:00 p.m.	Consortium dinner

Thursday 7 February

9:00 a.m	Review of previous day and agree timetable for the day
9:30 a.m	Working groups convene
12 – 2 p.m.	Meeting of Executive with Board of Trustees
4:00 p.m.	Plenary
5:30 p.m.	Reception with Trustees, 'Jonah and the Whale' team and media
7:30 p.m.	Meeting of Executive Committee and Board of Trustees

Friday 8 February

9:00 a.m	Review of previous day and agree timetable for the day
9:30 a.m	Working groups convene and finalise reports
	Convenors compile reports
1:00 p.m	Plenary:
	Work programme in core sites
	New sites for work programmes
	Collaborations
	Funding
4:00 p.m.	Adoption of report

Working groups

Photo-ID catalogue
Genetics
Acoustics
Abundance and interchange
Comprehensive Assessment
International conservation (IWC and CMS)
Regional conservation:
- Whale watching research proposals and management advice?
- Capacity-building
- Surveys (including Tuvalu, Solomon Islands, Kiribati)
- Pew workshop on whales and fish

Jonah and the Whale campaign
Funding and sponsorship

APPENDIX 2

4th CONSERVATION WORKING GROUP
@ 9th SPWRC 6-8 February 2008
MEETING RECORD

Agenda items:

1. Welcome and Introductions

Mike Donoghue (MD) and Sue Taei (ST) welcomed participants to the Conservation Working Group's (CWG) 4th meeting at the 9th SPWRC meeting. List of participants is attached.

2. Agenda Adoption

Agenda adopted with additional issues of sample ownership to be addressed. Agenda attached.

3. Purpose and Ground Rules for CWG

The CWG's purpose and operation was discussed and reaffirmed as:

"An informal group of NGOs, agency representatives and scientists to provide a forum for information sharing, strategy development and task allocation towards a coordinated approach to marine mammal research & conservation in the South Pacific region." SPWRC CWG 2006 report

It was noted that the CWG had helped foster coordinated planning and action on whale conservation eg CMS Pacific Cetacean MOU development in the region and identification of tasked actions was an important function of the group. It was agreed that the meeting report was available to the SPWRC but was not for 'public' distribution; rather a brief summary would be drafted for the main SWPRC meeting report.

4. Review 2007 CWG report and actions achieved

A brief overview of the 2007 CWG discussions and actions implemented including:

- Good follow-up to 2006 regional training (stranding, capacity building) workshops eg Lui Bell has provided stranding kits to SPREP members, including manuals and preservatives.
- Successful review of SPREP regional Whale and Dolphin Action Plan and new 2008-2010 WDAP developed by governments and collaborators (March 2007).
- First meeting of the Parties to the CMS Pacific Cetacean MoU (March 2007)
- Cetaceans and fisheries interactions in the Pacific Islands Region (Government of Australia) (March 2007)
- SPREP member governments endorsed new/revised 2008-2012 Whale and Dolphin Action Plan (September 2007)
- NZAID DOC Tuvalu Marine Species Programme under full implementation.
- Two national cetacean conservation and training workshops held in Fiji and PNG with, in both cases, participants from neighboring countries attended.

- SPREP (Lui Bell) has built an excellent SPREP cetacean network (68 members) with regular contact, information and news eg strandings provided regularly

Many SPWRC members and CWG participants contributed to these outcomes and the 2007 meeting significantly helped ensure a well informed coordinated plan and supporting group of people/agencies for this work. The 2007 CWG has also outlined basic research priorities; species inventory, cultural values, whale watching and impacts, fisheries interactions. Participants noted limited access to SPWRC reports.

RECOMMENDATION to SPWRC: SPWRC reports to be made available online - link to SPREP website?(report to be sent to SPREP?) SPREP to distribute to PICTs.

5. Mindmap CWG 'top of mind' issues / priorities for 2008

CWG participants top of mind cetacean conservation issues were listed and used as a check list on the agenda; e.g. samples ownership, whale-watch impacts and management, climate change and whales, interface between technical data and P.I. communities, depredation and management of impacts, JARPA II and Pacific whales, capacity-building, resourcing, species inventory, strandings/entanglement capacity-building, fisheries interactions with beaked whales, educational (possible Tohora travelling exhibition), Solomon Islands dolphin research and management, IWC engagement (or non-engagement), sanctuary management, NZAID programmes, cultural values.

CWG ACTIONS:

- ***MD to supply Simmonds et al paper on whales and climate change***
- ***Investigate Tohora travelling exhibition 'containerized' – links to Jonah and the Whale (Anton, Pamela)***

6. New SPREP Whale and Dolphin Action Plan (WDAP) – priority 2008 actions and issues arising.

Participants discussed the new SPREP WDAP and the importance of the annual SPWRC meetings to facilitate collaboration and cooperation in support of this action plan. It was agreed that priority 2008 actions would be distilled out of the agenda items of this meeting for all to consider.

Subsequently Lui Bell (SPREP) provided a written SPREP update and participants noted the urgent need to secure funding for the SPREP Marine Species Officer and a possible new Associate MS Officer to support the new SPREP Action Plans. Lui's SPREP update is attached.

7. Discussion and update PICT Gap research/effort matrix

A brief purpose and outline of the original PICT Gap research/effort matrix was given, noting this had largely served its purpose. It was agreed that the new framework of the WDAP would be used to highlight gaps and priorities for SPWRC consideration and CWG support, also noting that SPWRC current effort should be clearly summarized in this WDAP matrix.

- ***CWG Action: Jackie Thomas and Olive Andrews to prepare WDAP table showing priority gaps discussed by CWG and SPWRC current effort clearly shown.***

N.B. Many if not all of the actions proposed for the Consortium by the CWG can be related to the WDAP Action Plan and MoU. This should be used as leverage in funding applications.

8. CMS Pacific Cetacean MOU

Progress and issues in the CMS MOU for the Conservation of Pacific Cetaceans and their Habitats was reviewed noting the first Meeting of Parties (March, 2007 report available), informal MoP at SPREP meeting (September 2007) and the need to find resources to support CMS and SPREP for MOU coordination and implementation. Participants recognized that SPWRC members have been playing a key role in providing scientific advice and that the SPWRC was seen as the 'scientific adviser' to this MOU and the SPREP Action Plan.

RECOMMENDATION TO SPWRC– SPWRC to sign MoU (at next SPREP Meeting in Pohnpei, FSM) and thus obtain recognition and formalize its role for:

- ***Provision of scientific advice to SPREP and member governments***
- ***Support leveraging of funds to meet research priorities***
- ***Provide Annual Report to CMS Scientific Council***
- ***Provide paper to CMS Scientific Council showing contribution of Consortium to Action Plan, including gaps and opportunities***
- ***Promote value of MoU to non-signatory governments***

Vili Iese (Tuvalu) appealed to Consortium to expand its range of activities (eg training on sightings, whale watch management etc) to other areas of the Pacific where there has been little research so far. The support of WDCS (Cara Miller, Margi Prideaux) was noted and that Cara was working with PICTs based on requests to WDCS.

RECOMMENDATION TO SPWRC – invite Cara Miller to be a SPWRC member.

CWG ACTION & RECOMMENDATION TO SPWRC: non-signatory countries should be encouraged to sign the CMS MOU and SPWRC, CWG members could promote this in their work in the region, especially in Tonga, Tuvalu, and Tokelau in 2008.

9. Stranding Network update – 2008 plans

CWG had an extensive discussion on cetacean stranding work noting key issues:

- Auckland University has WORLD'S 2nd largest cetacean tissue archive in the world. This collection is owned but not resourced by DOC.
- Auckland University is not resourced for analysis of NZ tissue samples, let alone Pacific Islands tissue samples, but they can archive material without cost.
- Confirmation that ownership of samples provided from P.I. remains their property and can be returned at any time.
- Provision of basic information is ca $50 per sample, defining relationship of an individual to other members of the species/pod, etc is several hundred $$$.
- If a paper is to be written that draws on this information, an agreement would be made on appropriate recognition for all parties involved.
- Gathering information from stranded animals by molecular analysis is a much cheaper way than taking large vessels out for weeks at a time.
- Establishment of a '*Pacific Islands Collection'* archive (e.g. funded by NZAID?) would be valuable alongside the NZ DOC owned collection. This could be linked to a web-based database system with GIS capabilities, potentially with sightings also included.
- Via email Lui Bell (SPREP) reported:
    - Maintenance and improvement of network of 68 members
    - Provision of stranding kit to many members (need more resources)
    - Support for national efforts to develop local networks
    - Compilation of stranding events in the region for distribution – via network

Vili Iese undertook to improve networks for dealing with strandings in Tuvalu. Mike Donoghue noted that both Pacific Development and Conservation Trust and Marine Conservation Action Fund could be approached for up to US$10K.

RECOMMENDATION TO SPWRC: should write to Lui Bell (SPREP) commending him for his efforts on strandings and offering technical support, including application for small grants of up to $10K to further these efforts.

RECOMMENDATION TO SPWRC & CWG ACTION : Agreed to further examine the idea for the establishment of a Pacific Islands tissue archive for stranding material and development of a web-based system for reporting strandings in the P.I. region. (Rochelle, Lui, Anton/Pamela, Mike, Sue)

10. Solomon Islands Dolphin Export /Cetacean Management– status/where to from here

Jackie Thomas (WWF) reviewed events over past 5 years related to captive dolphin exports. Permit originally issued in July 2003 for export to Cancun, Mexico. SI Govt then imposed a ban, but in 2006, exporters challenged ban in High Court and it was overturned. Company then received a further export permit in October 2007 for export to Dubai. Both Mexico and Dubai are CITES members, which SI now also has become. Serious credibility gap about the non-detriment finding of SI under CITES. Minister of Fisheries has stated that there are between 300,000 and 800,000 dolphins in SI, so exporting 100 p.a. isn't harmful.

Only scientific assessment of dolphins in SI is Ben Kahn's contribution to the TNC led REA (Rapid Ecological Assessment Survey) in 2004, in which he made a number of recommendations. Japanese researcher 1990-1994 in Malaita reported catches in drive hunts of up to 865 in 12 days.

SI Govt (Ministry of Fisheries and Ministry for Environment) very keen to have reliable information on numbers of dolphins and species in SI waters, so that a management plan can be developed.

Minister Nollen Leni still Minister of Fisheries, despite change in Government. Permanent Secretary for Fisheries is well-informed (ex WorldFish Center) and supportive of population research. Permanent Secretary for Environment, is ex-WWF. Time is therefore right for undertaking work surveys, esp in light of CMS MoU and new SI Govt policies.

***ACTION FOR CWG & SPWRC MEMBERS : Under the CMS MOU framework* WWF, IFAW, WDCS, SPWRC, SPREP to collaborate, plan and resource a programme with the Government of Solomon Islands, based on lessons learned from recent Fiji and PNG workshops, with a priority on dolphins, including:**

- ***Capacity-building /Awareness raising workshop***
- ***Training in survey techniques***
- ***Extend/follow species inventory/survey work (Kahn)***
- ***Line-transect surveys of selected locations***
- ***Feasibility for marine mammal tourism***

RECOMMENDATION TO SPWRC & CWG ACTION: Agreed that Jackie Thomas will prepare a background paper summarizing available information, and that the Consortium will provide technical support and assistance, subject to provision of funding, for any actions arising. Ben Kahn and David Paton should contribute to the paper.

Jackie also noted that SI is seeking technical support to build capacity in its role as CITES Management Authority and also to align the Schedules of Wildlife Act, to bring them into line with CITES Appendices. Mike undertook to communicate with Rod Hay of DOC, who currently represents Oceania on the CITES Standing Committee.

11. JARPA II and next steps – PICs and IWC 2008

MD summarized JARPA II recent developments and the potential for humpback take by JARPA II to detrimentally affect PI populations eg Fiji, Tonga. Need to maintain messaging that PI humpbacks (and fin whales) should be permanently taken off the list. Acknowledge and welcome change in Japan stance and ask that it be sustained.

Sue recalled the establishment of a P.I. Ministerial Task Force at the Auckland PIF meeting (2004?), at Chris Carter's initiative. Task Force has not been very active so far, but it may be possible to reinvigorate it with two new Ministers in Australia and NZ. Their support would perhaps assist Pacific countries to speak up together on JARPA II. Key issues would be keeping humpbacks off the target list and the precarious status of fin whales.

Attendance of an NGO representative from P.I. member(s) of IWC would be an idea worth examining.

RECOMMENDATION TO SPWRC: Promote SPWRC's work as the only viable alternative to proposed JARPA II humpback scientific whaling – use this to build further support to SPWRC.

RECOMMENDATION TO SPWRC/CWG: When writing to PICT Ministers/Governments with report of this year's meeting, mention JARPA II and draw attention to the list of SWPRC publications, in which data were gathered by non-lethal methods.

CWG ACTION: explore support to restart the Pacific Ministerial Taskforce on Whales.

12. Global Marine Mammal Protected Area Conference

Plans for the March 2009 NOAA hosted First International Conference on Marine Mammals and Protected Areas (information available from Mike, Lui – Steering Committee members). Discussions suggested:

- Preparing a map of MPAs / whale sanctuaries in the region
- Profiling PIPA, Micronesian Challenge, national MPA network development etc as significant protected area potential to include cetacean conservation needs

CWG Action: The NOAA ICMMPA conference is a great opportunity for P.I. participants – ensure support and profile of Pacific work at this conference.

RECOMMENDATION TO SPWRC - ICMMPA Information flyer to be attached as an annex to the SPWRC report. Ensure a profile of SPWRC work at the conference and to potential donors, with particular emphasis on whale sanctuary development.

13. Oil & Gas Activities in the region

Extensive information has been provided by Ben Kahn to this meeting. Melanesia, Tonga (Lau Basin), Solomons all have current exploration – Nautilus Ltd. Discussions noted:

- We do not have a good handle on effects of noise on cetaceans. Large 5-10 km 'streams of bubbles generated. With oil issues many areas are being increasingly explored. Evidence of marine mammals reacting and avoiding areas – do not know if they are just reacting or significant impact.
- Many countries eg Australia have guidelines for seismic vessel operation eg if marine mammals near vessels have to move away or shut down operations. Best mitigation to do this work when whales eg humpbacks not there. Impacts on other animals are also of concern. Australia has Advisory Board with NGO input to review guidelines.
- Could suggest to SPREP that SPWRC members are available to give advice on mitigation that could be considered. Look at adopting the Australian guidelines and these be part of permitting. The key is to have government observers. This is regional issue as companies move quickly around the region.
- WDCS paper on this issue (from website) by Sarah Dolman
- Australia Oil and Gas funding work and Noad et al looking to apply.

RECOMMENDATION to SPWRC create an interested group to track/monitor this issue, track and provide input and advice to PICTs via SPREP, eg provide guidelines. Possible help to provide marine mammal observers. (Mike N, David P, Ben K). Alert SPREP to issue and provide guidelines and contacts for follow up.

Mike Noad to send Allan Bowe contacts for consultant in this area.

14. Jonah and the Whale – Business Plan/Campaign Strategy and next steps (Linda Bercusson, Consultant)

Sue played the trailer, with the theme "Keep Our Legends Alive". She emphasized the great potential offered by the campaign, and the opportunities for other NGOs to join as sponsors and supporters. Pamela suggested that the trailer could become part of the Te Papa 'Tohora' exhibition, which would be a media opportunity if Jonah visited for the launch.

The item was held open for Linda Bercusson to attend the following day (Thursday) to discuss the production of a Strategic Plan. Linda described the principles of social marketing, and how it might apply to the project. Jonah is intended to be used as the public face of a campaign to stop the killing of Pacific whales. Reaching audiences in Japan and Pacific Islands is an essential part of the campaign. Sue noted that an important role for the Consortium is to make certain that everything that Jonah says about whales is factually correct and can be supported. She also recalled that fin whales are probably more endangered in the South Pacific and that the campaign should perhaps be targeting all Pacific whales, rather than just humpbacks.

Discussion noted campaign needs to be holistic – tackle from different angles ie: Whales for science, children and health, cultural and economic, benefits in the Pacific.
Use a Japanese champion who has had an experience of whales so they speak from the heart ie: Kohji Nakamura (Japan underwater films) or Konishiki Yasokichi, Sumo wrestler, just retired, daily children's programme.

RECOMMENDATION to SPWRC: SPWRC should be profiled as scientific adviser to the Jonah and the Whale campaign, with associated resources to do so for SPWRC from campaign fund raising.

RECOMMENDATION to J & W campaign:

- ***humpbacks used as the flagship but for wider 'whale' conservation – minimize risk of losing message impact if Japan pulls humpbacks again.***
- ***Maximize cultural importance of whales to Pacific eg Tuvalu link is to ancestors not to economics. In Tonga the economic arguments are important and strong and need to be used well.***
- ***focus on Pacific component first eg Tonga whale sanctuary***
- ***consult with IFAW, WWF and other groups already operating within Japan to identify appropriate strategies for the Jonah and the Whale campaign. Cultural argument may be the most effective ie: from Pacific side – "this is our culture, these are our waters". Need to do research to find out what Japanese people understand about the whaling ie is it for food or for research?***

CWG ACTION: NGOs and other interested parties to foster a 'consortium' of support for the campaign and contribute to its further design and implementation. Formalise communication links with supporters/potential supporters. REQUEST WWF consider joining the Jonah and the Whale campaign.

15. Pacific Whale Watching update (Olive A/Aline S):

a) Update and final reports of regional, humpback and Tonga whale watching reviews

Olive Andrews updated status and availability of whale watching reports and these will now be launched in 2008 and available:

- IFAW/SPREP/SPWRC/SPTO Ecolarge Regional Whale Watch Economics review – to be launched at April Pacific Working Group on Whale Watching
- Updated economic assessment of whale watching in Tonga – more consultation on draft report with industry and government, get endorsement from GoT, launch at IWC.
- Operation Ceataces Pacific Regional Humpback Whale Watching – first version in French (FFEM funded) and a translation of report – available in French and English (includes Aus, NZ) contact Aline (IWC report last year)
- All these reports available to SPWRC

b) Regional Pacific Whale and Dolphin Watching Workshop

Pacific Working Group 2-4 April – goal of developing Pacific Regional Guidelines on Whale and Dolphin Watching – government, industry, NGOs and scientists to work on those guidelines. This is part of the SPREP WDAP.

RECOMMENDATION to SPWRC : SPWRC member support eg Rocky and links with NZ tour.

c) Behavioral study in Vava'u, Tonga

Aline updated proposed behavioral study and preparation work. Main aim is to describe whale watching, see if whales behave differently in the presence of boats and/or swimmers. Visit in October 2007 presented study to operators and government and feasibility of land base. Project well received form government and operators, research site feasible. Two year study. Next step to agree to support project and get funding. Proposed that this be a SPREP project under the Action Plan supported from a range of sources eg IFAW. Operators concerned that limited range may note be representative of whale watching in wider area. Operators do not want a 1 year survey - needs to be a multi year study.

Allan Bowe agreed to get letter of endorsement from TWWOA – verbal approval given in October 2007.

CWG ACTION : cultivate operator support for research. Could provide this as a condition of the permit but if this too hard ask operators to contribute levy to TWWOA on a voluntary basis and build from there. Allan will raise the funding issue at the next Association meeting.
Need to ensure Tongan involvement in the research – working alongside researcher. Look at an advisory group (govt, operators, NGO, SPREP etc) to help project.

RECOMMENDATION to SPWRC : under this as a SPREP WDAP project, to provide scientific mentoring or advice where applicable.

Note : Tongan Whale Watch Regulations have been approved by Cabinet. TVB is yet to announce who has licenses for the 2008 season. Key issue is enforcement.

d) NZ tour by P.I. delegations

Mike updated the CWG on PI whale watching tour plans. Will be bringing delegations from a range of Pacific Islands to NZ to provide a full and frank disclosure of marine mammal tourism operations in NZ and their business models. Also will meet scientists, managers, operators, and expertise from Auckland Business School. Samoa (3), Niue (1), Solomon (1), Tonga (3), PNG (2) – important is cultural exchange aspects. SPREP participating (Lui B). Could be further study tours if this works.

e) Other whale-watch issues

Aline reported on the problems encountered with her research in New Caledonia– boat rammed, equipment shed locked and defaced, lack of guidelines and regulations.

***CWG ACTION* – need to have NGO involvement and support IFAW, WWF, WDCS, CI ie write joint letter to NC/Province Sud Government advising concern and offer to help eg workshop. Encourage SPREP (Lui) to also write indicating support/links to WDAP. Also support from IFAW for training**

materials and or workshop for the whale watching operators. Need to explore this for French Polynesia also.

Other whale watch issues mentioned:

- Possible no go zones for whale watching should be investigated. Link to Tonga proposed MPA design under NBSAP/CBD
- Perception in Tonga that 'rules' don't apply to them

***RECOMMENDATION to SPWRC*: - when Tonga (and other PICTs eg Samoa) design its PA network ensure SPWRC input for cetacean needs eg no go zones for whale watching.**

- Allan expressed concerned that Vava'u used as a case study but creates unrealistic expectations for building whale watching operations. Suggest focus is on dolphin watching.

- Allan noted lots of tourism fluke shot/film – opportunity to get more input to SPWRC.

***RECOMMENDATION to SPWRC* : SPWRC to advise interested operators of contact – Nan Hauser - provide basic information of what photos and sound is useful (Rocky) – supply TWWOA and any others with SPLASH protocols to filter info and SPWRC to advise who/where to send it. One contact point desirable.**

16. Pew International Whale Network - Tokyo meeting, Pacific node opportunity & Whales and Fisheries Research & Workshops 2008

Sue and Mike updated CWG on range of Pew work (Tokyo, proposed Pacific node, whales and fisheries research). The Pew Tokyo was briefly revisited which provided opportunity for free and frank exchange of views, notable for Japanese criticism of Japanese policy and interest shown by politicians and a packed media conference. Discussion noted that the SPWRC/CWG 'network' was really 'seed' of node and opportunities should be explored to enable Pew to support the further development of this.

CWG Action: Sue to keep CWG SPWRC up to date with Pew developments for Pacific Node and Whales and Fisheries workshops. Encouraged all to track Pew website for Tokyo meeting.

17. 2008 key dates/timeline and how CWG could work beyond the Consortium meeting

1. Te Papa Whales Tohora – until 11 May (Anton/Pamela) touring USA from August 2008
2. NZ Whale Watch Tour -25 March -1 April (Mike, Anton)
3. Lusseau convening IWC supported workshop April 2008 (Lusseau et al) standardized approach to studies for assessing impacts of vessels on cetaceans.
4. Scientist working at IWC meeting Italy (1-3 March 2008) (Mike)
5. IWC Intercessional meeting on Conflict Resolution (6-8 March, UK) (Mike)
6. IFAW/SPREP/Operation Cetaceans Pacific Working Group on Whale and Dolphin Watching (2-4 April 2008) (Aline/Olive/Lui)
7. Solomon Islands Cetacean Capacity Building workshop (tbc) (Jackie, Ben K)
8. Solomon Islands – whale watching feasibility (tbc) (Olive)
9. Fiji – Fisheries developing Sanctuary Management Plan and follow up to capacity building component to workshop – field work, sightings (Penina)
10. IWC prep and briefings to PICTs eg Solomons (Penina, Olive, Darren, Vili)
11. Samoa – 2008 Field Season (Juney) – needs money - 6 mth survey
12. Samoa – finalise stranding manual (Juney, Lui, Olive)
13. Samoa – Action Plan for Cetaceans (Species of Conservation Concern Programme)
14. Samoa – review Sanctuary Management Plan (Juney)
15. Tuvalu – Marine Survey Research May (Funafuti – Nukulaelae –Niulakita) (Vili, Annie)
16. Tuvalu – continue the marine species awareness programme (Vili, Annie)
17. Tuvalu – research expedition on whales, dolphins, sharks (August) (Vili, Mike, Mark etc)
18. Tonga – Behavioural Study next steps October 2008, (Aline)
19. Tonga – WW economics report, SPREP/IFAW review (Olive, Lui, Sue)
20. Tonga – IFAW Marine Awareness Centre, Vava'u (Filipe Tonga, Olive)/ Princess visit?
21. Vanuatu – Whale Sanctuary Management Plan – national workshop (Olive) (tbc)
22. "Two Samoa" – example cetacean conservation for cooperative management (March 2008)
23. IWC June 2008 Chile!!!
24. NZ, Aus, Tonga – National Day of Action pre IWC (Olive)
25. Dissection Workshops tbc (Anton)

26. PIF - Niue - October?
27. SPREP – FSM (September) – possible CMS Pacific Cetacean MOU Meeting?
28. SPTO - ?
29. IFAW Song of the Whale - project plan July – October 2009 – prep now, tbc (Olive)
30. Jonah and the Whale - Strategic Plan (March for circulation) (Mike, Sue, Linda)
31. IUCN Congress 4-14 October, Spain (Mike) – large Oceania presence planned
32. CMS Conference Rome 9-21 Nov – Samoa, NZ, Aus, Cooks – Pacific presence!
33. Pew – whales and fisheries workshop – May 2008 (Sue)
34. SPWRC CWG (Feb 2009)
35. NOAA ICMMPA March 2009 (Lui, Mike)

Contact Lui for his schedule

18. Resourcing - summary of prospects and commitments from initiatives discussed above.
    - List UNDP PoWPA contacts. – MPA network design
    - Pew Foundation
    - NZAID (see above)
    - NZ Government – legal support for marine issues in Pacific (Mike)
    - SPWRC provision of equipment where possible/applicable
    - GEF PAS Coral Triangle?
    - Refer to list above.

19. Any other business/actions

- Concern that Pacific states flagging ships for krill catch from Vanuatu and Cook Islands – concern that unsustainable harvest of whale food source.
- Cultural significance - Erin Watson's Master's Thesis on Cultural Significance of Cetaceans in Tuvalu still not available – Olive to follow up. Jackie has electronic version of Japanese research in Malaita (1994) – available on web. 'Tohora' exhibition has collected information on Maori attitudes. These may all be of interest to 'Jonah and the Whale'. Vili should contact Lui for more information.
- Sanctuary management plans - Lui, Penina (Fiji), Juney (Samoa), Cook Islands (request) and Olive (Niue) all working locally need to share plans/ideas/info. NZ government has a fund that may be available to support such work – Mike to investigate and advise.
- Impacts of climate change on cetaceans - Mike to distribute Simmonds et al paper. CMS website should have report of workshop on Climate Change and Migratory Species at COP 8 - potential to raise issue again at COP 9, esp with respect to CMS MoU.
- Access to technical information - SPREP (Lui and website) and WDCS (Cara Miller and Philippa Brakes) good sources of information if needed.
- Depredation and mitigation - ACAMMS has lost funding for depredation research, so new funding source is required – need to bring this to Pew's attention. Possibility of incorporating depredation into proposed Pew workshop on whales/fisheries.
- Capacity-building and priorities - Encourage participation of representatives from other P.I. countries at SPWRC meetings.
- Agreed to communicate/work together between meetings and when other meetings allow opportunistically. Sue volunteered to regularly update table with everyone in the interim.

CWG Action – CWG recognized need for core operational support for SWPRC which has reached a critical mass and serves a vital role for scientific advice and networking across the region.

Attachment 1 List of CWG Participants

Name	Organization	email
Mike Donoghue	NZ DOC	donoghue@ihug.co.nz
Sue Miller Taei	IFAW/CI	staei@conservation.org
Penina Solomona	WWF South Pacific Programme	psolomona@wwfpacific.org.fj
Jackie Thomas	WWF Solomon Islands	jthomas@solomon.com.sb
Anton van Helden	Te Papa Museum of NZ	antonvh@tepapa.govt.nz
Darren Kindleysides	IFAW	dkindleysides@ifaw.org
Olive Andrews	IFAW	oandrews@ifaw.org
Aline Schaffar	Operation Cetaces	aline.schaffar@laposte.net
Maryrose Gulesserian	Marine Mammal Research Group, Macquarie University, Australia	mgulesserian@gse.mq.edu.au
Juney Ward	MNRE Samoa	Juney.Ward@mnre.gov.ws
Damien Higgins	University of Sydney, Aus	
Pamela Lovis	Te Papa Museum of NZ	pamelal@tepapa.govt.nz
Allan Bowe	Whale Watch Vava'u	
Viliamu Iese	Department of Environment, Tuvalu	s97008214@yahoo.com
Not present		
Phillipa Brakes	WDCS	philipa.brakes@wdcs.org
Lui Bell	SPREP	luib@sprep.org
Cara Miller	WDCS	cara.miller@wdcs.org
Margi Prideaux	CMS/WDCS	margi.prideaux@wdcs.org
Ben Kahn	Apex Environmental	bkahn@apex-environmental.com
Milena Raffic	DEWHA	
Nick Gales	ACAMMS	Nick.Gales@aad.gov.au

CONSERVATION WORKING GROUP
AGENDA

Times: ***Wednesday 6 February 10:30am – 4:00 pm***
Thursday 7 February 9:30am – 12:00 midday
Friday 8 February 9:30am – 1:00pm

Facilitators: Sue Miller Taei & Mike Donoghue

1. Welcome and Introductions
2. Agenda Review and Confirmation
3. Purpose and Ground Rules for CWG
4. Review 2007 CWG report and actions achieved (Mike D)
5. Mindmap CWG 'top of mind' issues / priorities for 2008 (used to guide discussions below) (Sue T)
6. New SPREP Whale and Dolphin Action Plan – priority 2008 actions and issues arising (Lui B, SPREP)
7. Discussion and update PICT Gap research/effort matrix (Darren K)
8. CMS Pacific Cetacean MOU – status update and next steps (Lui B, WDCS CMS)
9. Pacific Whale Watching update (Olive A/Aline S):
10. Update and final reports of regional, humpback and Tonga ww reviews
11. Regional Pacific Whale and Dolphin Watching Workshop
12. Behavioral study in Vava'u, Tonga
13. NZ tour by P.I. delegations (Mike D)
14. Other whale-watch issues
15. Stranding Network update – 2008 plans (Lui B)
16. Solomon Islands Dolphin Export – status/where to from here (Jackie T)
17. JARPA II and next steps – PICs and IWC 2008 (Mike D)
18. Oil & Gas Activities in the region (Ben K to provide written brief)
19. Jonah and the Whale – Business Plan/Campaign Strategy and next steps (Linda Bercusson, Consultant)
20. Global Marine Mammal Protected Area Conference (Lui B)
21. Pew International Whale Network - Tokyo meeting, Pacific node opportunity & Whales and Fisheries Research & Workshops 2008 (Sue T, Mike D)
22. Resourcing & Capacity Building - summary of prospects and commitments from initiatives discussed above. (Sue T)
23. 2008 key dates/timeline and how CWG could work beyond the Consortium meeting
24. Any other business
25. Summary of action arising
26. Roles for Consortium in action arising
27. Report to SWPRC Plenary

APPENDIX 3

SPWRC work relating to the SPREP Whale and Dolphin Action Plan

WDAP 2008-2012 THEMES AND OBJECTIVES – SPWRC LINKS, CONTRIBUTIONS AND SUGGESTED ACTIONS

The SPWRC is currently contributing to 11 out of 24 objectives of the WDAP as listed below.

Theme	Objectives	SPWRC	Note
NATIONAL, REGIONAL AND INTERNATIONAL COLLABORATION AND COOPERATION	1. Promote and enhance national, regional and international coordination, collaboration and partnership for whale and dolphin conservation in the Pacific Islands region	1. YES	1. SPWRC Annual Meeting and Conservation Working Group meeting
THREAT REDUCTION	2. To develop, test and disseminate effective mitigation techniques that reduce depredation and incidental by-catch, and to document the impact of Illegal, Unreported and Unregulated fishing on whales and dolphins in the Pacific Islands Region	2. YES **2. GAP**	2. Consulted on depredation issues. **Consortium to liaise with ACAMMS /PEW looking to host workshop as follow up to 2007 Whales and Fisheries Workshop.**
	3. Limit direct take to sustain populations		**3. Solomon Islands – dolphin population/species surveys**
	4. Improve our understanding on impacts of climate change on whales and dolphins	**3. PRIORITY GAP**	.
	5. Minimize impacts of pollution on whales and dolphins		
	6. Support the development of sustainable eco-tourism practices in the region	6. yes 6. **PRIORITY GAP**	6. Ongoing research info supports sustainable development of WW eg Fr Poly, Tonga. **KEY ISSUE – New Caledonia.** **Consortium to act as scientific adviser to assessment of impacts of whale watching in Tonga**
	7. Ensure coastal developments take account of potential impacts on whale and dolphin populations	7. **PRIOIRTY GAP**	**.** **7. KEY ISSUE – National MPA network design – input cetacean needs/priorities**
	8. Improve information on ship strikes, acoustics, disease (Low but Unknown)	8. YES 8. **GAP**	**8.** Collecting acoustics information and on ship strikes**.** **8. Recommendation to monitor issues and provide input and advice to PICTs via SPREP.**
ECOSYSTEM/HABITAT PROTECTION	9. Support the designation and management of national whale/marine sanctuaries in the EEZs of SPREP members	9.YES **9.GAP**	9. Consortium work is underpinning the research component of management plans in some SPREP members. Fiji, CI, Niue, Vanuatu **9.Need for more base line research and species inventories to support PICTS developing national whale sanctuaries**. **10. Effort required to translate existing abundance and distribution information to conservation application in PIR**
	10. Identify key critical habitat, hotspots, and migratory pathways that are candidates for improved conservation.	**10 GAP**	

CAPACITY BUILDING	11. Increase in-country expertise, field capacity and regional cooperation	11. YES	11. eg Tuvalu Programme, plus core programs in CI, Tonga, NC, FP, Samoa
EDUCATION AND AWARENESS	12. Develop communication strategies, training programs and protocols for key issues within the Whale and Dolphin Action Plan	**12 GAP**	**12. SPWRC to make reports available on line**
	13. Increase awareness and understanding of whales and dolphins in the Pacific Islands Region	13.YES **13. GAP**	13.Jonah and the Whale campaign- **13.Consortium to provide scientific advice.**
	14. Promote awareness regarding the value of traditional knowledge and practices in the management of whales and dolphins	14.YES	14.Jonah and the Whale campaign
CULTURAL SIGNIFICANCE AND VALUE	15. To document the range of cultural practices, values and knowledge associated with whales and dolphins and encourage a more cohesive approach in policies and legislation	**15 GAP**	**15. Where SPWRC acquires cultural information on cetacean distribution or values through in-country work, info should be provided to SPREP**
	16. Preserve and protect the traditional knowledge and values associated with whales & dolphins 17. Ensure appropriate cultural knowledge, practices, and values inform and underpin management measures	**16. Gap**	**16. Where SPWRC is working in-country, cultural aspirations an values should be respected**
LEGISLATION AND POLICY	18. Develop country level legal, policy and institutional framework to support the effective implementation of the Whale and Dolphin Action Plan		
RESEARCH AND MONITORING	19. Improve information received on stranding events in the Pacific Islands Region	19. Yes	19. Archiving and analysing samples from SPREP members and providing information back to countries. 19. Assisting the delivery of CB workshops on strandings
	20. Identify key species and areas for baseline surveys	20. Yes	20. SPWRC core work in CI, FP, NC, Tonga plus additional surveys in Fiji, Samoa, Niue and annual assessment of priority PICT's
	21. Identify significance of and priority for toxicological research	**21. Gap**	**21. Investigate opportunistic, toxicology of stranded animals in the Pacific.**
WHALE AND DOLPHIN-BASED TOURISM	22. Foster sharing of lessons learnt and undertake regular assessment of the industry	22 YES	22 Tour of NZ whale watching operations – March 2008. 22. SPWRC partnered in supporting the regional economic assessment of economics of whale watching 2006
	23. Ensure the best practice management of the whale and dolphin		**23. Consortium members to provide technical expertise at workshop on Pacific & Regional Guidelines in April 2008**

	watching industry in the Pacific Islands Region 24. Maximize educational and economic values of whale and dolphin watching	**23.1 GAP** **23.2 GAP** **23.3 GAP**	**Provide research/information to Tonga to inform development of potential exclusion Zones** **Consortium provide Tonga Whale Watching Association with SPLASH protocols for tourist and operator photos**

APPENDIX 4

The following is a list of Publications that the SPWRC has been in involved in since 2006

Peer reviewed publications

1. Clapham, P., Childerhouse, S., Gales, N., Rojas, L., Tillman, M. & Brownell, B. 2006. The whaling issue: Conservation, confusion and casuistry. ***Marine Policy.***
2. Constantine R., Russell K., Gibbs, N., Childerhouse S., Baker, C.S. 2007. Photo- identification of Humpback whales in New Zealand waters and their migratory connection to breeding grounds of Oceania. ***Marine Mammal Science.***
3. Gales, N.J., Clapham P.J. and Baker, C.S. A Case For Killing Humpback Whales? ***Nature Proceedings*** (Online access – non-reviewed)
4. Garrigue, C. 2006 – Marine Mammals of New Caledonia and the Loyalty Islands: Checklist of the species. In Compendium of marine species from New Caledonia; eds. C. Payri and B. Richer de Forges. ***IRD Documents Scientifiques and techniques*** 117: 385-391.
5. Garrigue, C., Patenaude, N., Marsh, H. 2008. Distribution and abundance of the dugong in New Caledonia, South West Pacific ***Marine Mammal Science*** 24(1): 81-90.
6. Olavarría, C., Baker, C.S., Garrigue, C., Poole, M., Hauser, N., Caballero, S., Flórez-González, L., Brassuer, M., Capella, J., Clapham, P., Dodemont, R., Donoghue, M., Jenner, M. N., Moro, D., Oremus, M., Paton, D. & Russell, K. 2007. Population structure of humpback whales throughout the South Pacific, and the origin of the eastern Polynesian breeding grounds. ***Marine Ecology Progress Series*** 330: 257-268.
7. Oremus, M., M.M. Poole, D. Steel and C.S. Baker. 2007. Isolation and interchange among insular spinner dolphin communities in the South Pacific revealed by individual identification and genetic diversity. Marine Ecology Progress Series 336:275-289:275-289.
8. MacLeod, C.D., Hauser N. and Peckham (2004), Diversity, relative density and structure of the cetacean community in summer months east of Great Abaco, Bahamas ***Mar. Biol. Ass. U.K.*** 84, 469-474
9. Mehta A.V., Allen J., Constantine R., Garrigue C., Gill P., Jann B., Jenner C., Marx M., Matkin C., Mattila D., Minton G., Mizroch S., Olavarria C., Robbins J., Russell K., Seton R., Steiger G. Víkingsson G., Wade P., Witteveen B., Clapham P.J. (2007). Baleen whales as are not important as prey for killer whales (***Orcinus orca***) in high latitudes. ***Marine Ecology Progress Series***, 348:297-307.

International meeting of Marine Mammal Science

10. Garrigue, C.; Baker, C.S.; Burns, D.; Childerhouse, S.; Clapham, P.; Constantine, R.; Donoghue, M.; Franklin, T.; Franklin, W.; Gibbs, N.; Hauser, N.; Russell, K.; Mattila, D.; Oremus, M.; Poole, M.; Paton, D.; Robbins, J. 2007. Isolation and interchange among humpback whales on breeding grounds and migratory corridors of the South Pacific. 17th Biennial Conference on Marine Mammals, November 2007, Cape Town, South Africa.
11. Jackson, J.A., Garrigue, C., Hauser, N., Poole, M., Constantine, R., Clapham, P., Madon, B., Zerbini, A., Baker, C.S. 2007. Reconstructing the history of exploitation and recovery for humpback whales in the South Pacific. 17th Biennial Conference on Marine Mammals, November 2007, Cape Town, South Africa.
12. Schaffar, A., Garrigue, C., O'Connor, S.; Dodemont, R. 2007. Status of commercial humpback whale watching activities in the South Pacific Region. 17th Biennial Conference on Marine Mammals, November 2007, Cape Town, South Africa.
13. Madon, B.; McArdle, B.; Baker, C.S.; Garrigue, C. 2007. Joint modeling of two sources of live-recapture data applied to South Pacific Humpback whale (***Megaptera novaeangliae***) population. 17th Biennial Conference on Marine Mammals, November 2007, Cape Town, South Africa.
14. Paton, D.A., Gibbs, N., Childerhouse, S and Clapham, P. 2007. Assessment of the current abundance of humpback whales in the Lomaiviti Island Group of Fiji and a comparison with historical data. Poster at the 17th Biennial Conference on Marine Mammals, November 2007, Cape Town, South Africa.
15. Garland, Ellen C.; Baker, C. Scott; Cato, Douglas; Constantine, Rochelle; Donoghue, Michael; Garrigue, Claire; Goldizen, Anne; Hauser, Nan; Mattila, David; Poole, Michael; Robbins, Jooke and Noad, Michael J. Dynamic shifts in humpback whale song in the South Pacific Ocean. 17th Biennial Conference on Marine Mammals, November 2007, Cape Town, South Africa.

IWC reports

It was noted that Consortium members were involved in 17 (30%) of the 57 papers submitted to the IWC's Comprehensive Assessment of Southern Hemisphere humpback whales in Hobart 2006.

16. Garrigue, C., Franklin, T., Russell, K., Burns, D., Poole, M., Paton, D., Hauser, N., Oremus, M., Constantine, R., Childerhouse, S., Mattila, D., Gibbs, N. Franklin, W. Robbins, J., Clapham, P. & Baker, C.S. 2007 First assessment of interchange of humpback whales between Oceania and the east coast of Australia. South Pacific Whale Research Consortium SC/59/SH15. Report to the IWC Scientific Committee.
17. Baker, C.S., Garrigue, C., Constantine, R., Madon, B., Poole, M., Hauser, N., Clapham, P., Donoghue, M., Russell, K., Paton, D., Mattila, D. Abundance of humpback whales in Oceania (South Pacific), 1999 to 2004. SC/A06/HW51
18. Constantine, R., Russell, K., Gibbs, N., Childerhouse, S., Baker, C.S. Photo-identification of humpback whales in New Zealand waters and their migratory connections to breeding grounds of Oceania SC/A06/HW50
19. Franklin, T., Smith, F., Gibbs, N., Childerhouse, S., Burns, D., Paton D., Franklin, W., Baker, C.S. and Clapham, P. 2007. Migratory movements of humpback whales (*Megaptera novaeangliae*) between eastern Australia and the Balleny Islands, Antarctica, confirmed by photo-identification. SC/59/SH18 Report to the IWC Scientific Committee
20. Garrigue, C., Olavarria, C., Baker, C.S., Steel, D., Dodemont, R., Constantine, R., Russell, K. Demographic and genetic isolation of New Caledonia (E2) and Tonga (E3) breeding stocks SC/A06/HW19
21. Garrigue, C. Baker, C.S., Constantine, R., Poole, M., Hauser, N., Clapham, P. Donoghue, M., Russell, K., Paton, D., Mattila, D. and Robbins, J. Interchange of humpback whales in Oceania (South Pacific), 1999 to 2004 (revised SC/A06/HW55 march 2007) SC/59/HW14.
22. Garrigue, C, Baker, C.S., Constantine, R., Poole, M., Hauser, N., Clapham, P., Donoghue, M., Russell, K., Paton, D., Mattila, D. Interchange of humpback whales in Oceania (South Pacific), 1999 to 2004. SC/A06/HW55
23. Garrigue, C., Franklin, T., Russell, K., Burns, D., Poole, M., Paton, D., Hauser, N., Oremus, M., Constantine, R., Childerhouse, S., Mattila, D., Gibbs, N., Franklin, W., Robbins, J., Clapham, P., Baker, C.S. 2007. First assessment of interchange of humpback whales between Oceania and the east coast of Australia. SC/59/HW15.
24. Garrigue, C. Baker, C.S., Constantine, R., Poole, M., Hauser, N., Clapham, P., Donoghue, M., Russell, K., Paton, D., Mattila, D.K., Robbins, J. 2007.Interchange of humpback whales in Oceania (South Pacific), 1999 to 2004 (revised SC/A06/HW55, March 2007). SC/59/HW14.
25. Gibbs, N., Paton, D., Childerhouse, S. Clapham, P. Assessment of the current abundance of humpback whales in the Lomaiviti Island Group of Fiji and a comparison with historical data. SC/A06/HW34
26. Hauser, N., Clapham, P. Occurrence and habitat use of humpback whales in the Cook Islands SC/A06/HW49
27. Hauser, N., Zerbini, A., Geyer, Y., Heide-Jorgensen, M-P., Clapham, P. 2007. Migratory destination of a humpback whale satellite-tagged in the Cook Islands SC/59/SH12
28. Ivashchenko, Y.V., Clapham, P., Doroshenko N.V. Paton, D.A., Brownell R.L. 2007. Possible Soviet catches of humpback whales in Fiji and Tonga. Report to the IWC Scientific Committee.
29. Jackson, J., Zerbini, A., Clapham, P., Garrigue, C., Hauser, N., Poole, M., Baker, C.S. A bayesian assessment of humpback whales on breeding grounds of eastern Australia and Oceania (IWC Stocks, E1, E2, E3 and F) SC/A06/HW52
30. Noad, M., Paton, D. and Cato, D.H. Absolute and relative abundance estimates of Australian east coast humpback whales. SC/A06/HW27
31. Noad, M., Paton, D.A., Gibbs, N.J., Childerhouse, S.J. A combined visual and acoustic survey of the cetaceans of Independent Samoa SC/A06/HW28
32. Olavarria, C., Childerhouse, S., Gibbs, N., Baker, C.S. Contemporary genetic diversity of New Zealand humpback whales and their genetic relationship with Breeding Stocks D, E, F and G. SC/A06/HW31
33. Olavarria, C., Aguayo, A., Acevedo, J., Medrano, L., Thiele, D., Baker, C.S. Genetic differentiation between two feeding areas of the Eastern South Pacific humpback whale population: (Update on SC/57/SH3). SC/A06/HW29
34. Olavarria, C., Anderson, M., Paton, D.A. Burns, D., Brasseur, M. Garrigue, C., Hauser, N., Poole, M., Caballero, S., Florez-Gonzalez, L. and Baker, C.S. 2006 Eastern Australia humpback whale genetic diversity and their relationship with Breeding Stocks D, E, F and G. SC/58/SH25
35. Paton D.A, and Clapham P. Humpback whale population structure and migratory interchange based on Discovery mark data. SC/A06/HW33
36. Paton, D., Oosterman, A., Whicker, M., Kenny, I. Preliminary assessment of sighting survey data of humpback whales, Norfolk Island, Australia SC/A06/HW36

37. Paton, D., Brooks, L., Burns, D., Franklin, T., Franklin, W., Harrison, P., Baverstock, P. First abundance estimate of East Coast Australian humpback whales (*Megaptera novaeangliae*) utilizing multi-point sampling and likelihood analysis SC/A06/HW32
38. Paton, D., Kniest, E. Analysis of data collected during humpback whale land based sightings surveys at Cape Byron, Eastern Australia, 1998 to 2004. SC/A06/HW35
39. Poole, M. An Update on the Occurrence of Humpback Whales in French Polynesia SC/A06/HW60
40. Rosenbaum, H.C., Pomilla, C., Olavarria, C., Baker, C.S, Leslie, M. C, Mendez, M. C, Caballero, S. Brassuer, M., Bannister, J. Best, P.B. Bonatto, S. Collins, T., Engel, M.H., Ersts, P.J. , Findlay, K.P., Florez-Gonzalez, L., Garrigue, C., Hauser, N., Jenner, C., Meyer, M., Minton, G. Poole, M., Razafindrakoto, Y.2006 A First and Preliminary Analysis of MTDNA sequences from humpback whales for breeding stocks A-G and X SC/A06/HW59
41. Stevick, P.T., Aguayo-Lobo, A., Allen, J.M., Chater, K., Dalla Rosa, L., Olavarria, C., Secchi, E. 2006. Mark-recapture abundance estimates for humpback whales in the Antarctic Peninsula SC/A06/HW54