

Australian Marine Mammal Centre

Final Report

- **Project No.** – IPF 10/17
- **Title** - Establishing a long term data set for monitoring trends in humpback whale migration through Fijian waters.
- **Chief Investigator** – Aisake Batibasaga, Saras Sharma
- **Organisation** – Ministry of Fisheries

Activity Period – 2010-2012

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1. Activity Summary

A clear summary of approximately 500 words outlining the work undertaken and any significant findings (for publication on the Department's web site)

This paper reports on three years (2010-2012) of land-based surveys of humpback whales through a historic migration route of humpback whales through Fijian waters. These surveys were intended to build on the valuable work undertaken by Gibbs et al. (2006) as well as provide further comparison to the historical surveys undertaken by Dawbin (Dawbin 1959, Paton & Clapham 2002). Our observations reveal that recovery of humpback whales in Fijian waters is still very limited and that the impact and exploitation undertaken through commercial whaling operations appears to have caused a long-term decline in the number of humpback whales migrating through the Vatu-i-Ra passage. Although observations in 2010 at one of the field sites initially indicated a possible increase in numbers our other observations indicated very low numbers of migrating humpback whales within our survey area. Our surveys were able to confirm the presence of mother and calf pairs in Fijian waters as well as numerous other cetacean species within the Vatu-i-Ra passage. Mother and calf pairs were seen in shallower waters and displayed very active behaviour which included multiple breaches, pectoral slaps. In 2010 there were re-sights of a mother and calf pair on three consecutive days around Makogai waters, inside the inner reef with a depth range of 10-200m.

Three years of land-based observations were conducted from Ovalau and Makogai Islands in the Lomaiviti Island group, Fiji Islands. Makogai Island (17.26° S, 178.58° E) has an area of approximately 8.4km² with a maximum altitude of 267m. Land-based observations took place from Yaroi Point located on the south-eastern side of the island. Ovalau Island (17.70° S, 178.8° E) is approximately 102.3km² with a maximum altitude of 625m. Land-based observations took place close to the main town of Levuka located on the south-eastern side of the island.

Land-based cetacean surveys were made for 3 weeks within the months of August and

September of 2010 and 2011 (for both locations) and 2012 (for Ovalau only). Surveys were conducted from 0700 to 1700 each day, except during inclement weather. A minimum of four trained observers were on watch throughout the day to collaboratively cover the daily surveys. Systematic scanning using both binoculars (8 x 50) and the naked eye were used to make observations. When an individual or pod of humpback whales was sighted the following information was recorded: pod size, presence of calves, behaviour (following the definitions of Darling 2001), distance to animal, angle of animal/s from sighting platform, direction of travel, any distinctive or unusual observations, and weather conditions (including Beaufort Sea State). Distance to animal was estimated using a rangefinder although some distances proved to be out of range of this device. Angle of the sighting from the observation point was made using compass within binoculars. Notes on weather conditions, cloud cover and glare were made at one hour intervals throughout the day. In addition to humpback whale sightings, all additional cetacean species observed during the surveys were documented. The first documented sighting of a pygmy sperm whale was made at one of the field sites in 2010.

A wide range of volunteers had hands on training on cetaceans' research such as Fisheries staff, University students, local communities, dive operators and interested people. This survey results also contributed to the much needed support for the National Management Plan formulation.

2. The Outcomes/Objectives

List of the Project Objectives

- (1) Undertake systematic land-based surveys to assess trends in the number of humpback whales migrating in waters proximal to both Makogai and Ovalau. These counts will serve as a very valuable index of recovering humpback whale population migration into Fijian waters.
- (2) Collect song, fluke photo-ID images, and non-invasive skin samples of humpback whale during migration and contribute this data to both regional and national analysis for this species. These efforts will enhance the understanding of site-fidelity of individual whales to Fiji, contribute to an analysis of the connection between humpback whales seen in Fiji (in relation to the rest of Oceania), and support an ongoing regional examination of humpback whale song.
- (3) Document all cetacean species near Makogai and Ovalau. These sightings will aid in the overall understanding of cetacean biodiversity in the Fiji Islands.
- (4) Build capacity of Fiji Fisheries Department staff to undertake cetacean surveys. Strong and active engagement is an important step in establishing capacity for the Fijian government to be a well-informed participant and leader in regional cetacean conservation.
- (5) Raise the profile of cetacean conservation in Fiji. Awareness created by this project will have many positive spill-on effects for various stakeholders including the boating and diving community, environmental managers, tourism and the general public.

The degree to which the Activity has achieved each of the objectives

The project was quiet successful in achieving most of the objectives however there

was a setback on the success of the second objective. The survey work for the three years of systematic surveys was conducted from the two designated field sites at Levuka and Makogai. Survey efforts are inclusive of observations for additional cetacean species. In 2010 the surveys took place from **(28/08 – 16/09)**, Levuka recorded 160.25 hours of observation effort and documented a total of 15 humpbacks with one pod of a mother and calf. Makogai recorded 167.25 hours of observation effort, documenting a total number of 60 humpbacks with 9 pods of mother and calf pairs. In 2011, the surveys took place from **(15/08 – 03/09)**, Levuka recorded 180 hours of observation effort with a total number of 7 humpbacks. Makogai recorded 154.85 hours of observation effort with a total number of 12 humpbacks with 2 pods of mother and calf pairs. In 2012 the surveys took place from **(28/08 – 07/09)**, Levuka recorded a total of 141 hours of observation effort with a total number of 11 humpbacks with 2 pods of mother and calf pairs.

As the years progressed there was a general increase in the number of people involved including a lot of outer station Fisheries staff and an increase in the engagement of different organisation representative in terms of cetacean knowledge and awareness. Awareness on cetaceans through news coverage and information requests to partner organizations has increased over the years. The number of sightings of cetaceans being reported to the national cetacean sightings and stranding network has also increased that we tentatively assume is due to higher awareness rather than large increases in animal numbers. In addition the number of students involved in post-graduate cetacean research at the University of the South Pacific has steadily grown over the last three years. A Draft Whale and Dolphin Management is in circulation. However, there were difficulties in collecting some of the additional data that was originally proposed (i.e., song, skin samples and fluke images) yet this is primarily due to the behaviour of the animals themselves as well as weather conditions rather than a lack of attempts to collect such information.

3. Appropriateness

The appropriateness of the approaches used in the development and implementation of the Activity

The project team worked especially hard to engage members of the Fiji Fisheries Department, local villagers in which research studies took place, young Fijian researchers and students, as well as the wider community. Below is a summary of some of the key measures that were employed:

- This project was spearheaded by the Fiji Fisheries Department (FFD) who are the lead government agency for cetaceans in Fijian waters therefore it was important that they were integrated and engaged in all aspects of this project.
- FFD engaged with and sought permissions from the Tui Levuka and the Lomaiviti provincial council – as well as broadly engaged their own officers to participate in this project.
- During the field research periods there was strong engagement with the local communities in which surveys took place. In 2010 and 2011 the Makogai team stayed in the Makogai extension office building and engaged villagers for cooking and supply of local fish and root crops. Officers stationed upon Makogai Island on a permanent basis formed the main contingent of the Makogai team. The Levuka based team stayed within Levuka vaka viti village

and so resources were again going directly to the local community for supply of accommodation and meals. From both sites local boat drivers and resource people who had excellent experience and background knowledge for the marine area in which activities were being conducted.

- This project was designed with the awareness that the sustainability of funding for research activities on cetaceans in Fiji must (i) fit within the ongoing resources available within country, (ii) be conducted in locations where Fisheries Officers are already stationed (to both minimize costs for the current project yet also increase the likelihood of the project continuing after the three year study has been completed, and (iii) be systematic and easy to replicate throughout the survey and in the future.

4. Effectiveness

The degree to which the Activity has effectively met its stated objectives

The project was able to deliver positive conservation and scientific outcomes against all of the listed objectives. Some additional details regarding the effectiveness of these objectives is listed below:

- Three years of systematic surveys were undertaken from Ovalau Island (Levuka) and two years of systematic land-based surveys were undertaken from Makogai Island. Surveys were of 3 weeks duration in all cases with 2010 and 2011 surveys being conducted on the same dates from both field sites. A simple yet easily repeatable survey design ensures that the observations made in this study represent a scientifically valid indication of the low numbers of humpback whales moving through the Lomaiviti passage.
- As discussed in the response to question 2, the numbers of animals seen during the three years of survey effort was low. This was not unexpected as the Oceania subpopulation was listed as Endangered on the IUCN redlist in 2008 – this listing in part being due to the low number of individuals seen in Fijian waters. However, the limited number of sighting meant that opportunities for collecting data via small boats was only possible on a handful of occasions. Song was collected in all three years although only a full song was recorded in 2012. A total of 25 fluke images were collected during the period of the surveys. No sloughed skin samples were collected.
- Documentation of all other cetacean species seen throughout the survey period was undertaken consistently. In total, five additional species were observed: minke whale, spinner dolphin, short-finned pilot whale, sperm whale and pygmy sperm whale. The last species reported, pygmy sperm whale, represents the first positive identification of this species in Fijian waters.
- A majority of the research staff undertaking surveys during this project were Fiji Fisheries officers. The FFD was the key target for capacity building and are the government department responsible for cetacean conservation and management in Fijian waters. These government officers are now well-placed to be able to continue this project in the coming years given their training, background and departmental remit. Such an initiative by the FFD would mark one of the first Pacific Islands governments to be leading and running their own national research program on cetaceans. Such an achievement is

obviously a very progressive output of this project by the Fiji government.

- Throughout the span of the project more than 150 researchers, volunteers and community members were engaged in the project. Such a total clearly indicates a wide range of opportunities for awareness and education. Besides the main contingent of researchers from the FFD the remainder of the research team included members of the following organizations: Wildlife Conservation Society, WWF South Pacific, IUCN, Dau ni Vonu, University of the South Pacific, Fiji Islands Voyaging Society, South Pacific Projects, and Fiji National Trust. Talks were given at the Levuka library (to schoolchildren), the high school in Levuka, and on numerous different occasions to the Levuka village. Furthermore, public presentations were given at the University of the South Pacific after the completion of each year of surveys.

5. Communication

How results will be communicated to management

A lot of awareness was carried out during the whole 3 years and intense coverage during the survey period. More sightings reports from other areas of Fiji made up for the inclusion of different issues on the Management Plan supported with data. A current Draft Management Plan is in circulation which will be taken up to the senior management and a Cabinet paper to be written for gazetting. After which it will be nationally implemented.

Media coverage was strong throughout the period of the surveys. More than 15 stories appeared in the national newspaper, the Fiji Times, including a front cover picture and story during the first year of surveys. Five radio interviews were given to national and international stations, and TV coverage was also made of research survey presentations given after the completion of the surveys by Fiji One.

On a regional basis the Fiji surveys have been reported to the SPREP marine species program meeting, CMS Secretariat for the Pacific Cetacean MoU, the South Pacific Whale Research Consortium, and to staff and students within the School of Marine Science at the University of the South Pacific, Fiji.