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A preliminary survey of humpback whales and other cetaceans in Vanuatu, South-West Pacific. A contribution from the South Pacific Whale Research Consortium.

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ABSTRACT

Here we present the results of the first survey on marine mammals in the waters of Vanuatu the South Pacific. Six cetacean species and one sirenian have been identified including the first record of pan-tropical spotted dolphin. Humpback whales were observed in the southern islands of Vanuatu: Futuna and Tanna, Aneityum. The sighting of mother/calf pairs and detection of singing suggest reproductive activity similar to other humpback whale wintering grounds. A photographic-identification catalogue was initiated for this region and compared to other South Pacific humpback whale fluke catalogues maintained by the South Pacific Whale Research Consortium. Matches indicate movement between Vanuatu and two other island nations, New Caledonia and Tonga. A large gap in the information on marine mammals was identified, with no information available on habitat use or population abundance of species known to Vanuatu waters.

INTRODUCTION

Little is known of the status, distribution and abundance of cetaceans in numerous islands groups of the South Pacific (i.e. Solomon and Vanuatu), and no information is available from other islands group (i.e. Wallis and Futuna, and Tokelau). Until recently most of the available information came from whaling data (Townsend, 1935 ; Dawbin, 1959 & 1964). Between about 1800' and 1830' few whaling ships were reported in Vanuatu. More than a century later Dawbin reported the presence of whales between the Loyalty Islands (New Caledonia) and Vanuatu (Dawbin, 1959) as part of the "Discovery tag" scientific program that was carried on in the 1950's. Rare opportunistic sightings have been reported. No further data appear to have been collected until 1989 when Chambers et al. (1989) undertook a study on the dugongs of the Vanuatu archipelago. Reeves et al., (1999) in a later compilation of all available data on marine mammals in the area of the SPREP (South Pacific Regional Environmental Programme) area, reported 27 species of whales and dolphins in Oceania waters, emphasizing the importance of the area for conservation of marine mammals. More recently Paton and Gibbs (2002) added information concerning the Solomons, Samoa, Vanuatu and Fiji but until the present study no information was available regarding the spatial and temporal distribution of cetaceans in Vanuatu (formerly the territory of the New Hebrides).

MATERIALS AND METHODS

A preliminary boat-based survey was undertaken from the 14th to the 28th of August 2003 aboard a 16.5 m catamaran sailing boat in the Southern Islands of Vanuatu (Figure 1). Every day, weather permitting, cruises were undertaken around the islands and/or between the islands. Visual and acoustic methods were used to survey for marine mammals. Periodically the boat stopped and a hydrophone linked to an amplification system was deployed in order to listen for marine mammal vocalizations, in particular the songs of humpback whales. Songs were recorded when intensity was of a sufficient quality for later analysis.

Each time marine mammals were encountered, photographs of the appropriate parts of the body were taken (dorsal fin, flank, fluke, blow, pattern). The shape, color and distinctiveness assisted to identify the species. The photographs also allowed for a permanent record of the observation. In the case of humpback whales, photographs of the underside of the flukes are used to individually identify animals.

When possible skin sample of encountered marine mammals was collected for genetic analysis using a veterinary capture rifle (Paxarms biopsy rifle .745 cal) with small biopsy dart.

When humpback whales exhibited surface activities, such as breaching or tail slapping, pieces of skin are often shed. The small pieces of skin are collected sieving the surface water in the vicinity of the surface activity.

Each time a group of animals was encountered, the time and position of the encounter in latitude and longitude are recorded. The composition of pod as number of animals, size (adult, calf or juvenile) and social status (mother and calf, reproductive group) was noted. The behavior information was noted as resting, traveling, or socializing.

RESULTS

Species diversity

A review of the existing literature and of the historical information was undertaken in order to compile a checklist of marine mammals observed in the area (Table 1). Opportunistic sightings and photographs were collected, and confirmed most of the species listed in the table. In course of the present survey a new species was identified as occurring in Vanuatu; it is *Stenella attenuata*. A group of pan tropical spotted dolphins was encountered in the north of Tanna.

Other species that are potentially present in Vanuatu waters (resident or migrant), include Bryde's whale, minke whale, common dolphin and bottlenose dolphin. Although anecdotal evidence and some scientific data suggest that these species might be present they do not provide accurate locations or positive identification (e.g. photographs) that allow us to confirm the presence of these animals in Vanuatu waters. Hence these species have not been added to the list.

Field observation of humpback whales

A total of 51h45m were spent at sea observation. Eleven pods of humpback whales totalling 16 individuals were encountered. Six individual humpback whales were photographically identified by the ventral surface of their fluke, when possible photographs of the left and right dorsal fin completed these identifications. Another five animals were photographed by dorsal fin or flank only.

Skin samples were collected from three different individuals, one biopsy and two sloughed skin. Two samples were obtained from whales that were also photo-identified. The other was obtained from an unidentified individual.

The majority of encounters (91 %) were around Tanna, mainly on the east coast. Only one encounter took place near Aneityum, of a mother and calf pair. One singleton, juvenile whale was observed in the east of Tanna (n = 1). All the others were adults, either pods of two (n = 4) or singleton (n = 4). A singer was also heard and sighted at the surface (n = 1).

The hydrophone was deployed on 30 occasions, half of which resulted in a positive finding (i.e., humpback whale singing was heard). Four long-session songs were recorded, each of these lasting for 45 minutes. Eight five-minute song recordings were also made.

Movement in between regional area

The humpback whales identified in Vanuatu were compared to the different catalogues of humpback whale flukes in Oceania (New Caledonia, Fiji, Tonga, Samoa, Niue, Cook Island and French Polynesia) during the last meeting of the South Pacific Whale Research Consortium held in Byron Bay (Australia) from the 2nd to 6th of April 2004. Three of the six individuals identified in Vanuatu were previously observed in other regions of Oceania in which members of the SPWRC are currently working (Table 2).

One individual was previously sighted in New Caledonia in 1996, 1998 and 2001. This individual has been identified as a female and on three occasions it was accompanied by a calf. The sex was confirmed using molecular methods. In Vanuatu, this whale was in a pod of two adults. The second adult of this pod was previously observed in Tonga in 2002. VT004 was also seen in Tongan waters in 2000.

DISCUSSION

This study confirms the presence of six cetacean species and one Sirenian in Vanuatu. Some other species are considered reasonably common and widespread throughout the western and central tropical South Pacific and could also be present. Further surveys may confirm the presence or absence of these species.

The present scientific survey confirms the presence of humpback whales in the southern part of Vanuatu (Tanna and Aneityum) where it was known historically and was the basis for the establishment of a whaling station. The observation of cow/calf pairs, and recording of singing confirm the status of the two Islands surveyed as a

reproductive ground similar to other winter breeding grounds of humpback whales. This observation is possibly true for the entire Southern Island group as humpback whales have also been reliably reported from Futuna Island. It is also possible, from opportunistic sightings, that humpback whales travel to the central Island group of Vanuatu. The territorial waters of Vanuatu are large and only a very small portion of the islands have been visited in the present study,

One humpback whale has been resighted in both Vanuatu and New Caledonia, and two others have been seen in both Vanuatu and Tonga, confirming the movement of some individuals between these adjacent Pacific Island nations. This interchange highlights the need for further research to determine the extent of movement and how it might effect regional estimates of abundance in the South Pacific (e.g., Garrigue et al. In press).

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Table 1 – Marine mammals from Vanuatu waters

Order	Family	Scientific name	Common name	References	Confirmed
Cetacea	Balaenopteridae	<i>Megaptera novaeangliae</i>	Humpback whale	Dawbin, 1966	Scientific survey 2003
Cetacea	Physeteridae	<i>Physeter macrocephalus</i>	Sperm whale	Berzin, 1972	Opportunistic sightings 2003
Cetacea	Delphinidae	<i>Stenella longirostris</i>	Spinner dolphin	Decloitre, 1995	Opportunistic sightings 2003
Cetacea	Delphinidae	<i>Stenella attenuata</i>	Pan tropical spotted dolphin	Present survey	Scientific survey 2003 and opportunistic sightings
Cetacea	Delphinidae	<i>Globicephala macrorhynchus</i>	Tropical pilot whale	Rancurel, 1973	Video
Cetacea	Delphinidae	<i>Peponocephala electra</i>	Melon headed	Rancurel, 1973	
Sirenian	Dugongidae	<i>Dugong dugon</i>	Sea cow	Chambers, 1989	Opportunistic sightings 2003

Table 2 - Resighting information of humpback whales identified in Vanuatu and previously observed by SPWRC in other regions of Oceania.

	VT001	VT002	VT004
Observed:	Lenakel, 18 August 2003 in a pod of two with VT002	Lenakel, 18 August 2003 in a pod of two with VT001	Port Resolution, in a pod of two with VT003
Previously identified:	New Caledonia as HNC102 in 1996, 1998 and 2001 each time with a calf	Tonga as Tg0208 with another adult in 2002	Tonga as Tg0003 in 2000

Figure 1 – Location of Vanuatu in the South Pacific

