

The following report was prepared collaboratively by the IUCN/SSC Cetacean and Veterinary Specialist Groups in response to widespread public interest in the recent live-capture and export of dolphins from the Solomon Islands. Because it has not been reviewed by other members of the two specialist groups, any opinions expressed in the report should be understood to be those of the authors themselves and not necessarily of the general membership. The report is intended for general distribution, without restriction.

Report of a Fact-finding Visit to the Solomon Islands, 9-12 September 2003

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Background

The IUCN/SSC Cetacean Specialist Group (CSG) became aware of and concerned about the large-scale live-capture-for-export of dolphins in the Solomon Islands from July 2003 when the news of this operation began to spread. The situation was (and remains) complex: the welfare of the dolphins, as well as their conservation, are issues that cannot be addressed without reliable first-hand information. From the outset, information from the Solomon Islands was generally fragmentary, contradictory, and confusing. Even in the absence of civil conflict in the area, groups with much different agendas could be managing information in different, and often conflicting, ways. There was a clear need for a small team of experts to visit the Solomon Islands on a fact-finding mission.

Following invitations from Nelson K. Kile, Minister for Fisheries and Marine Resources, and Moses Biliki, Director of Environment, Ministry of Environment, Ross and Gulland visited the Solomon Islands from 9-12 September 2003. Ross, an expert on the biology and systematics of small odontocete cetaceans, represented the CSG, while Gulland, a marine mammal veterinarian with broad experience in pathology, husbandry and rehabilitation, represented the IUCN/SSC Veterinary Specialist Group (VSG). Their visit to the Solomon Islands was facilitated greatly by the British High Commissioner, Brian Baldwin, and the Australian High Commissioner, Bob Davis. Over two days (10-11 September), the team visited dolphin holding-pens in two localities, Honiara and Gavutu, and met with staff of the Solomon Islands' Marine Mammal Education Centre (SIMMEC) and the NGO Environmental Concerns Action Network of

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Solomon Islands (ECANSI). All pertinent government ministers were unavailable at the time of the visit.

At the time of the CSG/VSG visit, “travel advisories” had been posted by the Australia, New Zealand and United States governments advising against all non-essential travel to the Solomon Islands. These travel advisories were due to political instability and ethnic violence in the country. Such conditions meant that there was little infrastructure within the Solomon Islands for laboratory testing, storage or shipping of biological samples. A decision was thus made to limit the length and purpose of the trip and to focus on the seven tasks specified below.

1. Determine numbers and species of dolphins currently held in captivity (e.g. sea pens) in the Solomon Islands.

The overall number of dolphins captured and/or released in the operations of SIMMEC in the Solomon Islands is difficult to determine. Available information, in chronological order below, indicates that from 10 June to 11 September 2003, a minimum of 94 animals were held in the Gavutu and/or Honiara facilities, of which at least 27 were released:

- ❖ Mike Schultz (SIMMEC) informed Ross and Gulland that 9 dolphins had been released on or about 10 June 2003;
- ❖ On 23 July 2003, 28 dolphins were flown from Honiara to Mexico;
- ❖ Nerida King (Office of the Australian High Commission) reported counting 39 bottlenose dolphins and two pantropical spotted dolphins at the Gavutu facility on 2 August 2003;
- ❖ Ted Hammond, a consulting veterinarian working for SIMMEC, reported that there were 35 dolphins at the Gavutu facility and 22 dolphins at Honiara on 17 August 2003;
- ❖ 5 dolphins were released on 18 August 2003 (reported by Mike Schultz over the telephone to Ross and Gulland);
- ❖ Mike Schultz reported that 13 dolphins had been released from Gavutu on 8 September 2003;
- ❖ On 11 September 2003, Mike Schultz reported moving 4 dolphins by boat from Honiara to Gavutu.

During the site visit by Ross and Gulland, 41 dolphins were observed (24 at Gavutu on 10 September 2003, 17 at Honiara on 11 September 2003). The timing and reasons for the releases are unknown. Mike Schultz stated that, in general, captured males were being released as they were considered unsuitable for long-term captivity and training. Two deaths during the period June – September 2003 were reported. One animal reportedly died from an intestinal infection, and Hammond suggested that it had been diseased prior to collection. The cause of death of the second dolphin was not determined.

A number of dolphin deaths reported in the popular press may have been associated with the live-capture operations rather than the traditional drive hunt (see below), but the CSG/VSG team was not able to confirm these.

On 10 September 2003, 24 animals were observed at the Gavutu facility. There are two species of bottlenose dolphins: the common bottlenose dolphin, *Tursiops truncatus*, and the Indo-Pacific

bottlenose dolphin, *T. aduncus*. Both species are known from the tropical western Pacific. Most of the captive dolphins were identified as Indo-Pacific bottlenose dolphins based upon the form of the beak, shape of the head and position of the lateral extension of the cape. There were 14 dolphins in Pen A, and 10 in Pen B. One of the animals in Pen A was a pantropical spotted dolphin, *Stenella attenuata*. The identity of the other 23 dolphins as *T. aduncus* was further confirmed using photographs to assess the ratio of length of rostrum/length of snout to eye, as described by Wang *et al.* (2000). This ratio ranges between 37.1 and 43.3% in *T. aduncus*. Ventral spots are typical of *T. aduncus* but it was difficult to observe the ventral regions of the dolphins at Gavutu, primarily because they did not invert readily at the surface. One older animal that did invert had a large number of spots across much of the ventral surface, as is typical of mature *T. aduncus*. The animals were of mixed lengths. Ted Hammond measured the dolphins on his visit in August 2003. Details of each animal's length were recorded by Grace Hilly of SIMMEC, and this information was provided to us on request (Table 1). From these data, the mean length and range of lengths for 25 adult males were 231 cm, range 190-270 cm; mean length and range of lengths for seven adult females were 214 cm, range 198-223 cm. One individual was a calf said to have been born in captivity on the Solomon Islands three months earlier.

The species identification of two dolphins is still uncertain. During the visit to the Gavutu pens, Ross observed two bottlenose dolphins that were distinctly longer, and somewhat darker overall, than the other dolphins in the pens. No obvious blaze intruded posteriorly into the dorsal cape beneath the dorsal fin, as is seen in *Tursiops truncatus* (Hale *et al.* 2000). The lengths of two of the dolphins included in Table 1 (nos. 23 and 24: 320 cm and 300 cm, respectively) exceed those of all other measured animals by a considerable margin. Mike Schultz (SIMMEC) assured us that the data are accurate. Additional information is required before these two large dolphins can be assigned to a particular taxon. It is likely, however, that they are common bottlenose dolphins, *T. truncatus*, in which males attain lengths of 294-300 cm in the South China Sea and off southeastern Africa and South Australia (Hale *et al.* 2000). This species would fit the appearance of a lactating female *Tursiops*, 248 cm TL, captured on 7 February 1976 at 01° 55'S, 148° 53'E, northeast of New Ireland (Bismarck Archipelago) and north of the northernmost of the Solomon Islands. The specimen resembled *T. truncatus* in its short, stubby rostrum; it also had a number of scattered, dark flecks posterior to the umbilicus, although these were generally smaller and finer than those typically seen on *T. aduncus* (Miyazaki and Wada 1978).

On 11 September 2003, 17 dolphins were observed at the Honiara facility. These animals were similar to the Gavutu dolphins in the form of the dorsal cape and the beak-to-head ratio.

Staff reported having moved four dolphins from Honiara to Gavutu prior to our arrival at Honiara on 11 September, during the morning calm weather. SIMMEC indicated their intention to move all of the remaining animals at Honiara to Gavutu, where more pens were expected to be constructed. The Honiara facility would then be closed down.

The single male pantropical spotted dolphin being held with the bottlenose dolphins at Gavutu was said to have been the only surviving animal of 417 that were taken at the Malaitian village of Fanelei in a traditional drive hunt in April 2003. SIMMEC chartered the M/V Lalae to retrieve this animal from the village, with the intention of returning it to the wild once the weather cleared and a pod of the same species could be located.

2. Obtain information about the circumstances surrounding captures (e.g. where, how, when) with a view to assessing, at least qualitatively, the potential impacts (e.g. hidden mortality and injury associated with the capture operations).

There is no information on the first capture date for the SIMMEC project. The dolphins captured in Honiara were taken in seine nets set from a small boat, from which individual dolphins were removed by hand and placed on wet mattresses in a motorboat. Robert Satu and Mike Schultz of SIMMEC managed the capture and selection of the dolphins, based in part on sex and/or age. After animals were captured along the Honiara coast (approximately a 50 km stretch of coastline), they were held in pens at Honiara. According to Robert Satu, the limited geographic extent of the capture area was related to the goal of minimizing transport times for dolphins. Based on the numbers of animals observed and reported (see section 1 above), it is likely that about 100 dolphins have been caught thus far. Neither Satu nor Schultz reported any mortality associated with the capture operations when asked. Schultz attributed this to the fact that the animals had been captured in water less than 4 m deep and with nets of small mesh size.

3. Obtain information on any population assessment(s) conducted prior to the initiation of live-capture operations.

No written report of an assessment was obtained. We know of no abundance estimates for cetaceans in the Solomon Islands. We consider it important to note that the Indo-Pacific bottlenose dolphin is a coastal species in most of its range and that large-scale removals such as the captures conducted to date in the Solomon Islands could have serious impacts on local island populations.

4. Obtain information on the current status of dolphin drive hunts in the Solomon Islands.

The traditional drive fishery was described by Dawbin (1966). Robert Satu (SIMMEC) stated that hunts now occur about three times a year, mostly in the Malaita area, when 100-200 animals may be taken per hunt. The dolphins are killed for food, and to provide teeth for necklaces used in dowries for brides. The teeth of as many as four dolphins may be used for a single necklace. The spotted dolphin in the Gavutu facility was a survivor of such a drive hunt.

Takekawa (1996a, 1996b, 1996c) spent several months over a period of years studying the traditional drive hunting of small cetaceans in the village of Fanelei, on Malaita in the Solomon Islands. The value of the various delphinid species in Fanelei is determined by their teeth. The most valuable teeth are those of the melon-headed whale, *Peponocephala electra*, which apparently has become very rare. Traditional information also suggests that Fraser's dolphin, *Lagenodelphis hosei*, is or may have been an important species in the fishery, as its teeth are also highly valued (Takekawa 1996a, 1996b).

The most important species in the drive fishery are the spinner dolphin, *Stenella longirostris*, and the pantropical spotted dolphin (Takekawa 1996a, 1996b). School sizes for these species range from 20-600 dolphins, and the average number caught is about 80 animals. False killer whales, *Pseudorca crassidens*, may swim with pantropical spotted dolphins. Other species taken include the striped dolphin, *S. coeruleoalba*, and one of the common dolphins, *Delphinus sp.*

The teeth of bottlenose dolphins, *Tursiops spp.*, and Risso's dolphins, *Grampus griseus*, are not valued by Fanalei villagers (Takekawa 1996a, 1996b), indicating that these dolphins are unlikely victims of the drive fishery. Bottlenose dolphins are described as swimming together in groups of two to five animals near the coral reef, a feature that suggests that these dolphins are more likely to be *T. aduncus* than *T. truncatus*, which appear to prefer deep water offshore, at least in the Australian region (Hale *et al.* 2000).

Accurate information on the species and numbers taken, and on the locations of the hunts, is essential for appropriate management of small cetaceans in the Solomon Islands region. Populations of the major species involved should be assessed so that catch limits can be established for species taken in the drive fishing to avoid the possibility of overexploitation.

5. Ascertain plans for further exports -- how many dolphins, to what countries and institutions.

Gulland and Ross were told by Robert Satu that there are currently no plans for additional exports. The export permit held by Chris Porter is valid until May 2004 and is for 100 dolphins. Following the shipment of 28 dolphins to Mexico, 72 animals remained available on this permit for export. The developers (Mike Schultz and Chris Porter – SIMMEC) indicated that they intended to build bungalows on Gavutu and to use the penned dolphins and a “swim-with-the-dolphin” program to attract visitors.

6. Assess the health and living conditions of the dolphins currently in captivity in the Solomon Islands.

Gulland and Ross visited two facilities for holding dolphins on the Solomon Islands. The first is on the island of Gavutu, 25 miles north of Guadalcanal Island across Iron Bottom Strait, off the south coast of the Ngella islands. The two pens at Gavutu are adjacent to a sandy beach and an old (World War II) concrete pier. These pens are constructed from bamboo, mangrove and netting, with net on the outside of horizontal poles to reduce debris build-up in the pens. One pen (A) is subdivided by bamboo walkways and barriers into seven interconnecting pools arranged in three rows (Figs. 1a,b,c). Pen A is approx. 60 m x 60 m, with the deep outer row being 7 m deep at low tide and the inner row having a sloping bottom onto the beach. This inner pool is used for beaching dolphins for medical examinations. The second pen (B) is approx. 50 m x 40 m, and 2.5 m deep at the outer edge, sloping onto a sandy beach (Fig. 2). The tidal change in water height in this area is approx. 30 cm. The water flow through the pens was high due to wave and wind action, the water appeared clear and no faecal material was observed in the pens (Fig. 3). There are no significant human settlements or sewage outlets in the vicinity of the Gavutu facility.

The second dolphin facility is on the beach in central Honiara, Guadalcanal Island, behind the government offices. This site was selected for security reasons, and was built to hold recently captured animals prior to their transport to the Gavutu facility, as well as those from Gavutu awaiting transport for export. It is unsuitable for long-term holding as it is on an exposed coast that experiences high winds and surf during the cyclone season from October to March. There are three pens at Honiara constructed between two old concrete piers. Barriers are made from mangrove poles and netting. The longest pool (pen 1) is 70 m x 10 m and extends from the beach between the two piers to a barrier separating it from the third pen (pen 3) (Fig. 4a and b). At this junction, the pools are all approx. 3 m deep (Fig. 4b). The second pen (pen 2) separates pen 3 from the end of the shorter pier (Fig. 4c), and is approx. 16m x 12 m. The third pool is 30 m x 22 m (Fig. 4d). Pens 2 and 3 are both about 3 m deep throughout. The tidal change in water height in this area is also approx. 30 cm. The water flow through the pens was high due to wave and wind action, the water appeared clear and no faecal material was observed in the pens. The Honiara facility is, however, in an area likely to receive sewage and freshwater run-off from the hills around Honiara. The Public Health Department is not currently monitoring coliforms due to lack of funds and equipment, but such monitoring has been conducted in the past. The area is not generally considered suitable for bathing.

There are 22 staff at the Gavutu facility, and 18 at Honiara. Animal care at Gavutu is under the direction of Mike Schultz (SIMMEC), former Director of Training for Dolphin Experience, Bahamas. At Gavutu, the visiting team was shown the facility by Basil, and at Honiara was shown around by Robert Satu, Grace Hilly and George Satu. All were extremely forthcoming and answered all of the team's questions.

All of the animals observed appeared to be in good body condition within normal weight ranges for this species (Figs. 5a and b). No skin lesions were observed (Figs. 5a and b). At Gavutu, most of the dolphins rested at the surface like floating logs, a behaviour termed logging, until they were fed, when they became extremely active. At Honiara, most dolphins were smaller animals. They were more active than those at Gavutu and were observed porpoising, tail-lobbing and lifting their heads out of the water (Figs. 5c and d). The dolphins' eyes were open, no abnormal discharges were observed and respiratory rates were regular. It was not possible to capture and restrain the animals for blood sampling and further clinical assessment during the site visit, nor was this the purpose of the trip.

7. Determine how the captive dolphins are being provisioned, and specifically find out the extent to which destructive fishing practices (e.g. reef dynamiting) are being employed.

Animals are fed up to 8 kg fish each per day (approximately the amount required to meet daily calorific needs), in a number of feeds, depending upon the training schedule. Animals are individually identified by implanted electronic tags, body size, and dorsal fin shape. No food intake records were available for individual animals, nor were there records of social behaviour of individuals. Medical problems are addressed by the chief trainer, Mike Schultz, in consultation with the local veterinarian in Honiara, Baddely Anita, and the consulting veterinarian, Ted Hammond. No medical problems were reported to the visiting team, nor were any apparent by visual inspection of the animals while they were swimming in the pens. Dolphins are fed a combination of locally caught fish and frozen fish brought into the Solomon

Islands by container. Fish are stored in a cold storage box and freezers, for which there are generators. Local fish are caught in Honiara by fishermen at the local fishing village or directly by the staff. Up to 140 different fishermen a day sell fish to the company. The team was informed that SIMMEC intends to utilise frozen pilchards, from Australia. The fish storage containers were clean and well maintained.

In Gavutu, some local fishermen catch fish by using dynamite. Mike Schultz (SIMMEC) stated categorically that he does not buy fish from fishermen who say they have used dynamite to collect fish. Ronnie Butala, from the NGO ECANSI (which is interested in environment and conservation), introduced the team on 10 September to a local fisherman in Tulaghi who accompanied it to three sites that he had dynamited to collect fish. These sites were coral reefs with patches of broken and discoloured coral. The fisherman said that he had not sold these fish to the Gavutu facility. Dynamite is “home-made” from unexploded World War II ordnance and from material acquired from local mines. Dynamiting appears to be an ongoing local custom. One fisherman was killed by exploding dynamite a month prior to the team’s visit. Sites were examined using snorkel and mask. Several of the areas examined at the three sites were virtually barren of corals, suggesting that the blasting had crumbled the coral structure. In some areas adjacent to the blast sites, corals were present but fish were few in number and low in diversity.

Concluding remarks

The draft Solomon Islands Wildlife Act is an essential piece of legislation pertinent to the conservation of small cetaceans in the region. Management officials must consider the conservation of local marine resources as a high priority because such resources have great social, economic and ecological value. Thus, there is a need for guidelines for the capture and use of small cetaceans in Solomon Islands waters, and such guidelines should be based on a firm understanding of cetacean biology and ecology. Legislation should also be considered for the conservation of other marine resources in addition to cetaceans. The continued use of dynamite to collect fish off coral reefs will create an on-going and long-term problem in the Solomon Islands through the destruction of reef habitat, depletion of food resources for local human populations, and potentially the loss of opportunities to obtain income from tourism.

No scientific assessment of the population-level effects of the removals of bottlenose dolphins in the Solomon Islands was undertaken in advance of the recent live-capture operations. Without any reliable data on numbers and population structure of bottlenose dolphins in this region, it is impossible to make a credible judgment about the impacts of this level of exploitation. Until such data are available, a non-detriment finding necessary under CITES Article IV is not possible. Therefore CITES Parties should not issue permits to import dolphins from the Solomon Islands. Unfortunately, this episode of live-capture was undertaken with little or no serious investment in assessing the conservation implications for the affected dolphin population(s).

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Butala, of the NGO ECANSI, arranged for boats and crew to take the team to the dolphin facility at Gavutu and made contact with fishermen in the area who knew areas where dynamite had been used for catching fish. Bob Davis and Nerida King provided support leading up to and during the stay in Honiara. Special thanks to Mike Schultz, Robert Satu and Grace Hilly (SIMMEC), both for opening the facilities at Honiara and Gavutu for ready inspection and appraisal, and for providing data on the dolphins.

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See also description of the drive fishery on the Internet, at <http://www.spc.int/coastfish/News/Trad/12/Traditional12.htm>

Table 1. Sex, estimated age, and body length of bottlenose dolphins held captive in the Solomon Islands. Length measurements are assumed to be accurate. The age estimates were made by Ted Hammond based upon body length, and the extent to which teeth were chipped, worn or fused, and the degree of rostral scarring. These data do not reflect SIMMEC's current inventory. They are from SIMMEC in-house records.

Dolphin ID #	Sex	Estimated age (years)	Length (cm)
1	F	10	217
2	F	12	223
3	M	15	220
4	M	4	191
5	F	12	220
6	M	4	174
7	F	12	223
8	F	11	198
9	F	13	210
10	M	4	190
11	M	2	154
12	M	2	162
13	M	2	178
14	F	2	170
15	F	10	210
16	M	2	160
17	F	1.5	144
18	F	2	163
19	M	3	173
20	M	6	193
21	M	12	200
22	M	12	212
23	F	17	320
24	F	17	300
25	M	17	240
26	M	18	260
27	M	20	213
28	M	20	235
29	M	9	216
30	M	9	211
31	M	10	216
32	M	19	270
33	M	17	223
34	M	10	213
35	M	20	260
36	M	18	270
37	M	17	225
38	M	17	226
39	M	15	228
40	M	10	220
41	M	15	250
42	M	20	245
43	M	12	244
44	M	13	245
45	M	13	246
46	F	Captive born calf	
47	M	8	220



Fig. 4c Honiara Pen 2 beyond Pen 1



Fig. 5b Dolphins pen A Gavutu



Fig. 5d Dolphins Honiara Pen 3