

WHALE STRANDINGS IN INDONESIA, INCLUDING THE FIRST RECORD OF A HUMPBACK WHALE (*MEGAPTERA NOVAEANGLIAE*) IN THE ARCHIPELAGO

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ABSTRACT. – The paper presents whale stranding records in Indonesia from 1987 to 2007. Most identified stranding species were sperm whales (*Physeter macrocephalus*), followed by short-finned pilot whales (*Globicephala macrorhynchus*). In total, almost half of all stranding events involved unidentified cetaceans, indicating the need of more training on proper procedures of managing stranded whales and dolphins. Yet, despite an insufficient stranding network in the country, there was a well-recorded stranding of a young humpback whale (*Megaptera novaeangliae*) on 2 and 9 October 2007 in Bali, Indonesia. Colouration of the upper side of the pectoral fin, calf length and time of stranding suggest that the calf belonged to a Southern Hemisphere population, possibly Australia's. The humpback whale stranding in Bali was the one of the first recorded incidences of the species' presence in the Archipelago, hence signifying the importance of a good stranding network in Indonesia.

KEYWORDS. – Whale stranding, Humpback whale, *Megaptera novaeangliae*, Bali, Indonesia.

INTRODUCTION TO WHALE STRANDINGS IN INDONESIA

Indonesian waters, with their deep trenches and narrow straits, support at least 12 species of dolphins and porpoises and 18 species of whales, including the blue whale (*Balaenoptera musculus*), sperm whale (*Physeter macrocephalus*) and humpback whale (*Megaptera novaeangliae*) (Rudolph et al., 1997; Kahn, 2002). Up to the early 20th century, information on cetacean diversity in the country was mostly obtained from stranding events recorded by Dutch scientists (Rudolph et al., 1997), until more regular research was conducted to update the species list (e.g. Barnes, 1996; Kahn, 2002, 2004, 2005; Krebs, 2007). Stranding events, however, still hold an important role in our understanding of cetacean populations in Indonesia, notably for species such as the humpback whale of which presence data was still obscure until the late 20th century (see Rudolph et al., 1997). Although this paper describes records of cetacean stranding events in the Archipelago, the focus is on whales and large delphinids, for there is no available information on the strandings of small delphinids.

The stranding data from 1987 to 2007 were compiled by Marine Mammals Indonesia, a mailing list group of several individuals that are interested in the conservation and research of marine mammals in the Archipelago. The sources of this information include: electronic news, TV news, printed media, and personal observations. Table 1 lists 35 stranding events from 1987 to 2007, but only three pieces of information were available from the 1980s and 1990s, i.e. the 1987 stranding in Jimbaran (Bali), the 1996 stranding in Manado (North Sulawesi) and the 1997 stranding in East Kalimantan. This trend demonstrates that tracing data from periods before the internet and electronic news archives were widely available is difficult. Data from 2000 onwards are more substantial, we feel this is part due to greater communication and access to records and part because of the greater attention given to cetacean stranding events in Indonesia, as opposed to strandings in the Archipelago having increased. There is a peak of recorded stranding events in 2007 (a total of 10 strandings), yet we are not able to ascertain whether it simply an artifact of improved news coverage.

Almost half of the stranding events in Indonesia involved unidentified cetaceans (15 cases or 42.86%). Three of these were unidentifiable due to decay. Ten unidentified strandings took place in remote places, but the remaining five happened in major towns or provinces (one in Surabaya in East Java and four in Bali). This trend signifies that, in addition to geographical obstacles, insufficient attention to stranding events may also contribute to the high number of unidentified species. There is no information whether or not the unidentified strandings involved small delphinids.

Most of the identified cetaceans were sperm whales (*Physeter macrocephalus*, 10 cases or 28.57%), followed by short-finned pilot whales (*Globicephala macrorhynchus*, 3 cases or 8.57%). Baleen whale strandings were only recorded three

times, including Bryde's whale (*Balaenoptera edeni*), an unidentified baleen whale and a humpback whale. Rescuers of half of the stranding event failed to measure the animal's length (Table 1), indicating that training on proper procedures to manage a marine mammal stranding event is needed.

Most cetacean stranding events were recorded in Central and Eastern Indonesia, particularly in Bali, Maluku Islands and West Papua (Fig. 1, Table 1). Only one stranding was recorded in Sumatra (unidentified cetacean in Bengkulu). Four stranding events were recorded in Java (melon-headed whale (*Peponocephala electra*) in Jakarta, sperm whale (*Physeter macrocephalus*) in Yogyakarta, short-finned pilot whales (*Globicephala macrorhynchus*) in Banyuwangi and unidentified cetaceans in Surabaya). Since 1987, at least nine stranding events were reported for Bali, mostly on the southern shores of the island. The first well-recorded stranding of humpback whale also took place in Bali; however, this does not imply that there were no other humpback whale sightings in the Archipelago (see following subsections). This high number for Bali might be due to better communications and networks for stranding reports, and does not necessarily reflect a lack of stranding events in more remote areas of Indonesia. The number of strandings recorded in Bali emphasised the need for a good marine mammal stranding network on the island, and an effort was initiated by WWF Indonesia and APEX Environmental in mid-2002. Detailed educational materials for such training have been developed for Indonesia for on-going cetacean projects (Kahn, 2005). Because communication can be difficult at most of the stranding locations, local-level networks should be encouraged to minimise delays in rescue and data collection efforts. In spite of inadequate stranding data in Indonesia, it was fortunate that the humpback whale stranding in Bali (described later in this paper) received enough coverage to result in sufficient data for further analysis.

Pre-21st century sightings of humpback whales in Indonesia are illustrated in Fig. 2. The first historical record of a humpback whale in Indonesia was Gervais' record of a stranding in Pekalongan on the northern coast of Java Sea, on 12 Apr. 1863. Records of Dutch whaling ships in the Indian Ocean from 1953–1958 also revealed humpback whale sightings westward of Aceh in Sumatra (in February, March, July, and November) and in the Java Sea (in December). In the Pacific part of the Archipelago, humpback whales were seen in these same years around the Arafura Sea in March and the Flores Sea in September and December (Slijper et al., 1964). However, photographic confirmation of humpback whale's presence in Indonesia was not available until mid-2005. The first recorded sighting of humpback whales in Indonesia in the 21st century was in 'Batu Moncong', north of Komodo Island inside the Komodo National Park. The humpback whale was sighted by a local guide (CN Dive) in 1999 without photographic evidence. Afterwards, no other sighting was recorded in Komodo and adjacent waters despite a long-term cetacean program in this area (Kahn, 2002; Kahn, 2004), nor have humpbacks been sighted during other extensive cetacean survey work in East Indonesia that included the waters off Lesser Sundas, East Kalimantan, Sulawesi and West Papua (Kahn, pers. comm.).

Another humpback whale was found on 19 Jun.2005 near Lamalera, and was harpooned by the local hunters. The whale was approximately 8 m long and was heading west-east when it was sighted by the hunters of “jonson” (a local dinghy with outboard engine) Ronnie. Before the whale was caught, the fishers thought that the whale was a “seguni” (killer whale, *Orcinus orca*) due to its whitish ventral area. As “Lama fa” (harpooner) Matheus Ebang harpooned the whale, they learned that it was a “kelaru” (baleen whale) instead. The whale was hauled back to the village. At the beach, the villagers realised that the “kelaru” had distinctive features unlike they had seen before (“knobby snout as in crocodile’s”). A photograph taken during the event revealed that it was a humpback whale. Because interviews with the harpooner and villagers of Lamalera revealed no previous historical record of humpback whale sightings in Lamalera, the occurrence of this whale in the Savu Sea is particularly interesting. Photographic evidence of the harpooned humpback whale in Lamalera was provided by Benjamin Kahn, courtesy of Mrs. Udis Keraf. This photograph is the first physical evidence of humpback whale occurrence in Indonesia.

HUMPBACK WHALE STRANDING IN BALI

The first recorded sighting of humpback whale in Bali (and the second in Indonesia) was made on 2 Oct.2007 ca. 1000 hrs, when a 6.1 m individual got entangled in a fishing net approximately 350 m off Tanah Lot Beach, District of Tabanan. It was found dead a week later on 9 Oct.2007, 7

km away from the original stranding spot. The chronologies of the stranding events are based on the accounts of the first two authors of this paper that witnessed both strandings and participated in the rescue of the first stranding event.

Upon learning of the stranding event, the Tanah Lot Authority immediately contacted the coast guard from several adjacent beaches and local villagers. Considering the whale’s resistance and the heavy surges in Tanah Lot, the rescue team decided to haul the whale with a boat to the neighbouring Kedungu Beach (approximately 1 km away westward) and cut the nets there. After a few hours of rescue efforts, the whale was finally set free and swam back out to sea around 1400 hrs.

There was another stranding a week later on 9 Oct.2007, this time at Kelating Beach in Tabanan, 7 km northwest of Kedungu Beach. Apparently, the whale had stranded the night before at approximately 0200 hrs and was already dead and decaying by the time it was found by the locals. To prevent the foul smell and to avoid bad luck (for the whale stranded when the locals were having a religious ceremony), the Regent of Tabanan had ordered that the whale be burned on the spot with a simple religious ceremony (Fig. 4d). However, some skin samples, measurements and pictures were taken before the carcass was all burned. Sex determination was impossible, for it was already decaying (the whale must have died offshore, perhaps 1–2 days after returning to the sea) and half-covered in tarpaulin, but the fluke and the morphological characteristics left little doubt that it was truly a humpback whale. The whale’s size and timing of the

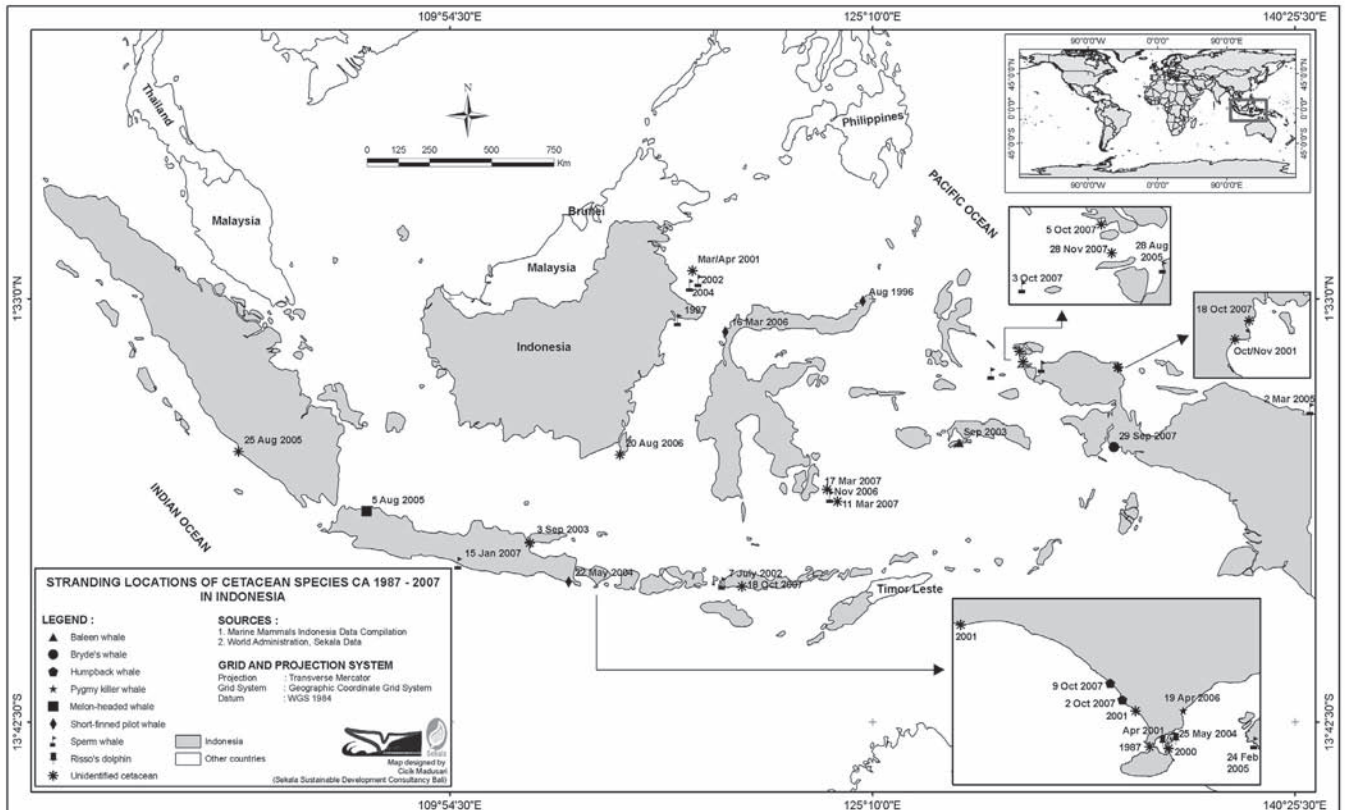


Fig. 1. Map of cetacean stranding events in Indonesia 1997–2007.

Table 1. Data on cetacean stranding events in Indonesia.

No.	Date	Location	Species	English name	Length (m)	Condition	Source
1	1987	Jimbaran, Bali	—	—	—	—	—
2	Aug.1996	Tasik Ria, Manado	<i>Globicephala macrorhynchus</i>	Short-finned pilot whale	—	—	n.a
3	1997	Sangkulirang, East Kalimantan	<i>Physeter macrocephalus</i>	Sperm whale	24	Dead	RASI Foundation
4	2000	Tanjung Benoa, Bali	—	—	—	—	—
5	Mar./Apr.2001	P. Maratua, Kaltim	—	—	—	—	—
6	2001	Perancak, Bali	—	—	—	—	—
7	2001	Canggu, Bali	—	—	—	—	—
8	Apr.2001	Benoa Harbour, Bali	<i>Grampus griseus</i>	Risso's dolphin	—	—	WWF Indonesia
9	Oct./Nov.2001	Papua, Manokwari	—	—	—	—	—
10	7 Jul.2002	Kampung Kerora - P. Rinca, TN Komodo	<i>Physeter macrocephalus</i>	Sperm whale	8	Alive when stranded, later died	Andreas H Muiljadi (The Nature Conservancy)
11	2002	Maratua, Berau, East Kalimantan	<i>Physeter macrocephalus</i>	Sperm whale	—	Dead	Budiono, RASI Foundation
12	Sep.2003	Dsn Ngongurung, Central Maluku	<i>Balaenoptera</i> sp.	Baleen whale	19	1	Tifa Siwalima Magazine, 5 Sep.2003
13	3 Sep.2003	Larangan Beach, Kenjeran, Surabaya	—	—	10	Alive	Liputan 6 SCTV
14	22 May 2004	Banyuwangi, East Java, Indonesia	<i>Globicephala macrorhynchus</i>	Short-finned pilot whale	various	49 alive back to sea, 1 dead, burried	Putu Liza (WWF Indonesia)
15	25 May 2004	Serangan, Bali	<i>Grampus griseus</i>	—	—	Dead, then cut up by villagers	Putu Liza (WWF Indonesia)
16	2004	Maratua, Berau, East Kalimantan	<i>Physeter macrocephalus</i>	Sperm whale	—	—	Budiono, RASI Foundation
17	24 Feb 2005	Nusa Penida, Bali	<i>Physeter macrocephalus</i>	Sperm whale	—	1 animal, dead	Bali Post
18	2 Mar.2005	Skow Mabo Beach, Jayapura	<i>Physeter macrocephalus</i>	Sperm whale	11	1 dead animal, 2 ton	Liputan 6 SCTV
19	5 Aug.2005	Tanjung Priuk, DKI Jakarta	<i>Peponocephala electra</i>	Melon-headed whale	2.28	1, alive. Kept in Gelanggang samudra Ancol, died after 1 day.	Jodie Raditya
20	25 Aug.2005	Pulau Baai, Bengkulu	—	—	8	1 dead whale, then cut up by villagers	Media Indonesia
21	28 Aug.2005	Sorong, Papua	<i>Physeter macrocephalus</i>	Sperm whale	—	—	Seputar Indonesia, Ria Fauziah (Ministry of Marine Affairs and Fisheries/MMAF)

Table 1. Continued.

No.	Date	Location	Species	English name	Length (m)	Condition	Source
22	16 Mar.2006	Donggala, Central Sulawesi	<i>Globicephala macrorhynchus</i>	Short-finned pilot whale	various	93 stranded, 30 dead	SCTV, Media Indonesia, Kompas, TNC report
23	19 Apr.2006	Padanggalak, Bali	<i>Feresa attenuata</i>	Pygmy killer whale	various, 1.92, 2.1	8 stranded, all released back	WWF Indonesia, Reef Check, Kompas, etc
24	20 Aug.2006	Teluk Tamiang, South Kalimantan	-	-	8	1 animal, dead, already decaying	Antara, 23 Aug.2006
25	Nov.2006	Wakatobi	<i>Physeter macrocephalus</i>	Sperm whale	-	1 dead, already decaying	Anton Wijonarno (The Nature Conservancy)
26	15 Jan.2007	Trisik, Kulon Progo, Yogyakarta	<i>Physeter macrocephalus</i>	Sperm whale	6.5	Dead, already decaying	The Jakarta Post (16 Jan.2007), Walea Edho Prabowo
27	11 Mar.2007	Tomia, Wakatobi	-	-	2-3	Dead, decayed and mostly skeleton	Conservation International
28	17 Mar.2007	Wandoka Beach, Wangi-wangi, Wakatobi	-	-	10.4	Dead	Anton Wijonarno
29	29 Sep.2007	Namatota Island, Bitsyari Bay, Kaimana, Papua	<i>Balaenoptera edeni</i>	Bryde's whale	12	1 species dead, already decayed for one month	Adityo Setiawan (Conservation International Indonesia-Kaimana Program)
30	2 Oct.2007	Tanah Lot, Bali	<i>Megaptera novaeangliae</i>	Humpback whale	6	1 alive. Found dead 7 days later.	Reef Check Indonesia
31	3 Oct.2007	Boo Kecil Island	<i>Physeter macrocephalus</i>	Sperm whale	-	Dead	Andreas H Muljadi (The Nature Conservancy)
32	5 Oct.2007	Napier Beach, waiwo, Raja Ampat	-	-	-	already decayed, estimated 1 months	M. Erdi Lazuardi (Conservation International Indonesia-Raja Ampat Program)
33	18 Oct.2007	Doreri Bay, Manokwari, Papua	-	-	-	Dead	Ichwan Susanto, Kompas
34	18 Oct.2007	Pangga Jarang Beach, East Nusa Tenggara	-	-	20	Dead	Kupang Post, 21 Oct.2007
35	28 Nov.2007	Batanta Island	-	-	-	Dead	Andreas H Muljadi (The Nature Conservancy)



Fig. 2. Historical records of humpback whales in Indonesian Archipelago and adjacent waters ca. 1953–1958. Estimated coordinates compiled from Slijper et al. (1964)

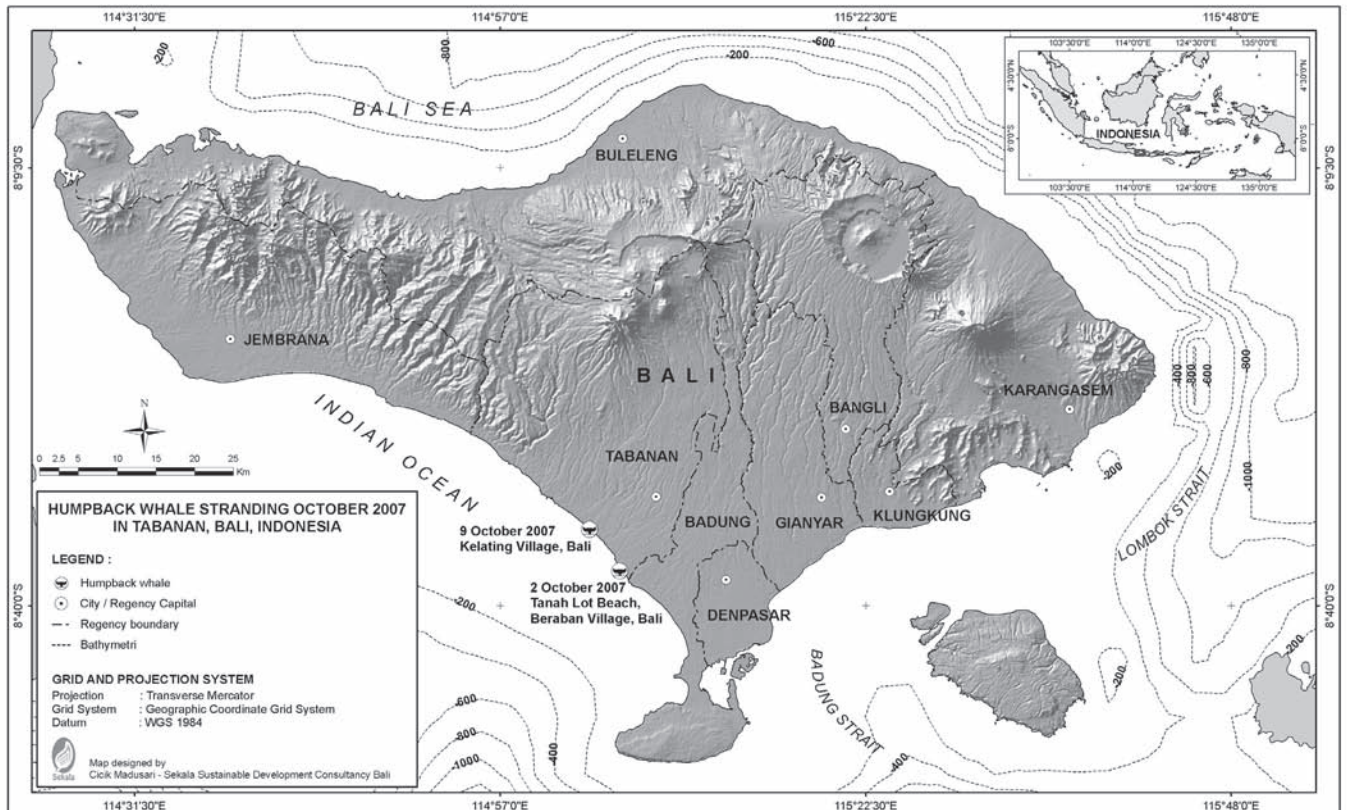


Fig. 3. Locations of humpback whale strandings in Bali

stranding lead to the strong suggestion that it was the same whale that became entangled the previous week.

Humpback whales are renowned for the distinctive long pectoral fins and the photographs taken during the stranding event on 2 Oct.2007 in Tabanan Bali indicate that the stranded whale was indeed a humpback (*Megaptera novaeangliae*). Fig. 4a, which was taken on 2 Oct.2007, shows knobs on the snout of the whale, another characteristic of humpback whales. The upper side of the pectoral fins were black, indicating that the whale might originate from an Australian population. There is no accurate photograph that describes the ventral colouration, but Fig. 4b partially shows the black and white pigmentation on the abdomen. Fig. 4c, which was taken on the same day, shows clear colouration of the fluke underside that is potentially very useful for individual identification. Fig. 4c was sent to several humpback whale researchers in the region, including Western Australia, Hawaii and the Philippines to see whether the fluke matched any in their catalogues.

The second humpback whale stranding in Bali (9 Oct.2007) provided opportunity to take some measurements, including

the total length from snout to the end of the fluke (6.1 m) and fluke width (1.67 m). As humpback whale newborns are 4–5m length (Carwardine, 2002), we suggest that the whale was a calf. As mentioned, we initially hoped that the ventral fluke photograph would help in individual identification. However, young humpback whales are known to dramatically change ventral fluke colouration over time, hence dorsal fin and caudal peduncle are considered the more appropriate identification method for younger animals (Blackmer et al., 2000). Unfortunately, these details were not recorded. In addition, as the calf was possibly on its first journey with the mother, it is unlikely that any researchers had photographed it elsewhere along its migration route before it stranded.

An interview with Wayan Sujana, Head of Tanah Lot Authority revealed that the calf had been sighted for two weeks before it was entangled in fishing net on 2 Oct.2007. Approximately two hours before the rescue, the locals saw another ‘big fish’ roaming the waters next to the entangled calf. Even though the locals were unsure whether the other ‘fish’ was a whale or a shark, the fact that it did not disturb the entangled calf lead to the assumption that the ‘big fish’ might be the calf’s mother. There is also anecdotal



Fig. 4. A humpback whale (*Megaptera novaeangliae*) stranding in Bali, Indonesia: a, knobs and black upper flipper of the humpback whale (Photo by Pariama Hutasoit, Reef Check Indonesia); b, black and white colouration of the ventral (Photo courtesy of I Wayan Sujana, Tanah Lot Authority Bali); c, the white underside of humpback whale’s fluke (Photo courtesy of I. Wayan Sujana, Tanah Lot Authority Bali); d, Cremation process of the dead humpback whale in Tabanan, Bali (Photo by Putu Liza Mustika, James Cook University, Australia).

information of regular sightings of whales with similar morphological characteristics off Tanah Lot (Sujana, pers. comm.). The 'Jro Gde' (or whales in Balinese) occasionally displayed flukes and sang during the night time. The whales were always seen annually, around September and October, roaming the southern waters heading eastward. Their sightings usually lasted for more than a week before they disappeared towards the direction of Uluwatu cliffs, in southern Bali. Residents of the Bukit Peninsula in southern Badung Regency also witnessed whales breaching close to the shore in late Aug.2007; the whales might be several humpbacks travelling the southern waters of Bali (Kahn, unpublished data).

July is usually the mating season for Southern Hemisphere humpback whales, with births occurring in June of the subsequent year. A calf is generally strong enough to migrate with its mother at three months old (Gill & Gibson, 1997), i.e. around September of the year it was born. Hence, the time of Bali stranding and the blackish upper side of the flippers (Fig. 4a) (Gill & Gibson, 1997; Shirihai & Jarret, 2006) suggest that the stranded calf originated from a Southern Hemisphere population. However, since 2006, fishers have observed humpback whales off Bontang, northeast of the Mahakam Delta in East Kalimantan, Indonesia (Kreb, pers. comm.). Acknowledging previous sighting and stranding records of humpback whales in the country, it is also possible that the Bali calf belonged to a population unique to the Archipelago.

CONCLUSION

With regard to the cetacean check list for Indonesia, Rudolph et al. (1997: 8) once stated that "Pending irrefutable evidence, we regard the occurrence of three species as still unconfirmed: *Stenella coeruleoalba*, *Balaenoptera acutorostrata* and *Megaptera novaeangliae*". *Stenella coeruleoalba* was sighted in the waters off Berau District in East Kalimantan in 2007 (Kreb, 2007), while *Balaenoptera acutorostrata* in Indonesia was confirmed by Kahn (2002). Irrefutable evidence of the humpback whale as the last species unconfirmed by Rudolph et al. (1997) is now available through the data presented in this paper.

Increased interest and coverage of cetacean stranding events in Indonesia resulted in the recording of the stranded humpback calf in Bali. It is important to strengthen the country's stranding network by conducting meetings that include training on the proper methods of handling stranded cetaceans and procedures to collect data during the rescue. Stranding events also provide excellent opportunities to further study rare species such as humpback whales in

Indonesia. Interviews with local inhabitants of southern Bali, Lamalera, Komodo and other islands should also be conducted to retrieve more information on cetacean sightings in the Archipelago.

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