

Short Note

New Records of Fraser’s Dolphin (*Lagenodelphis hosei*) from the Whale Temples and Fishing Communities of Vietnam

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The initial description of Fraser’s dolphin (*Lagenodelphis hosei*) was based on a beach cast skull from Sarawak, Borneo, Malaysia, collected by C. Hose in 1895 but only identified as a new genus and species by Fraser in 1956. Fraser (1956) noted that the skull displayed some features akin to the genus *Delphinus*, such as a prominent groove on the palate and the dorsal fusion of the premaxillae at the midline of the rostrum, as well as traits similar to the dolphins then referred to as *Lagenorhynchus*, such as a short, wide rostrum. Based on similarity with these two distinct genera, he erected a new genus, *Lagenodelphis*, of which *hosei* is still the sole species. Only in 1973 did the distinctive external appearance of the species become known from bycaught individuals in the eastern tropical Pacific and elsewhere (Perrin et al., 1973). The characteristic appearance of *Lagenodelphis hosei* includes a short, broad beak with a well-defined melon, a robust body, proportionately small pectoral appendages, black coloration at the tip of the beak, a distinct dark band running laterally from the eye to the anus, and a small dark band running from the mouth to the pectoral fin (Perrin et al., 1973; Jefferson et al., 1997, 2015).

Since then, Fraser’s dolphin has been identified in other parts of the world and is known to have a distribution in pelagic tropical and subtropical waters roughly between 30° N and 30° S; however, only a few other countries in Southeast Asia have definitive records of Fraser’s dolphin, including Brunei, Malaysia, Indonesia, the Philippines, Thailand, and Vietnam (Kiszka & Braulik, 2018). Estimates of more than 13,000 individuals have been proposed for Fraser’s dolphins in the Sulu

Sea of the Philippines, indicating a potential significant presence in the region (Dolar et al., 2006). To our knowledge, there is only one record of Fraser’s dolphin from Vietnam, an individual caught within the Vietnam Exclusive Economic Zone (8° 52' N, 109° 27' E) in 1996 during a gillnet survey by the Ministry of Fisheries of Vietnam (Figure 1; Smith et al., 2003). Herein, we present four more definitive records of the pelagic Fraser’s dolphin from recent stranding and bycatch incidents in Vietnam, the first records in Vietnamese coastal waters.

These four records were discovered as a result of research into the traditional cultural practices of a Vietnamese folk religion (*Tục thờ Cá Ông*) of whale worship in fishing communities practiced primarily along the southern and central coasts of Vietnam. Since the 18th century, coastal fishing villages have constructed temples to the “Deity of the South Sea,” which is conceptualized as a great whale (Ruddle, 1998; Parnwell, 2013). Local fisher communes (*van chai*) have a long custom of traditional practices around these community whale temples (*Lăng Ông*), including numerous festivals during the spring and fall, the collection of marine mammal bones from stranded animals, and a prescribed ceremonial burial treatment of carcasses (Ruddle, 1998; Lantz, 2009; Vinh, 2009). The animal itself is revered as *Cá Ông*, meaning Mr. Lord or Sir Whale, a powerful god. Prior to fishing, community members pray and make offerings at the temple for safety and a profitable catch (Lantz, 2009).

In practice, local fishers often confuse different types of marine mammals, and all cetaceans and sometimes dugongs and even non-marine

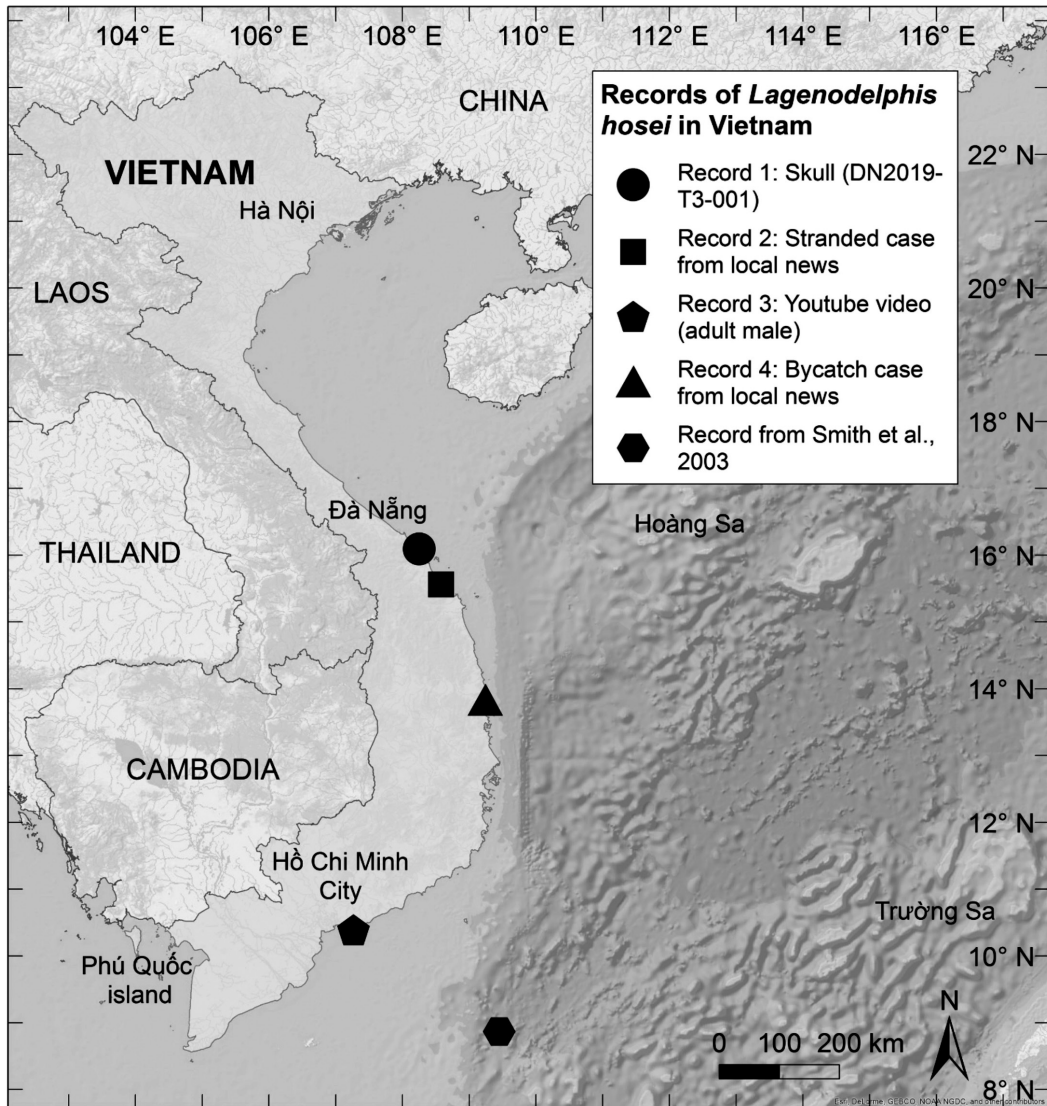


Figure 1. Map of Vietnam with locales of Records 1 through 4 and location of the record from Smith et al. (2003)

mammals may be revered (Smith et al., 1995, 1997). As a result, various small and medium-sized cetaceans receive the same respectful treatment as large whales. When a marine mammal strands, local fishing communities will move the stranded animal to a nearby temple or build a new one and typically bury it until decomposition of the flesh has occurred (Smith et al., 1995). They then exhumate the skeleton and/or skull and inter the bones in small caskets or boxes and place these on, in, or behind an altar within the temple. They also may directly place skulls or osteological elements on or within the altar. Due to these

whale-worshipping practices, there is a large quantity of accumulated osteological material in Vietnamese whale temples. Previous investigations of whale temples have yielded vital data on the species composition of marine mammals in Vietnam (Smith et al., 1995, 1997).

The reverence for marine mammals also affects the general behavior of Vietnamese people toward marine mammals in the age of Internet and social media. Whenever Vietnamese encounter marine mammals (usually stranded animals), they usually take photographs and share them on social media (commonly Facebook). Local news is also

dedicated to reporting cases of cetacean encounters along the Vietnamese coast. The public interest in cetaceans and other marine mammals in the Internet age has created a prominent source of potentially useful information on the occurrence

and distribution of marine mammals in Vietnamese waters. (All new records are listed in Table 1 with measurements of Record 1 in Table 2.)

These are the first four records of *L. hosei* from the mainland of Vietnam. In review, Thomas

Table 1. List of four new records of Fraser's dolphin (*Lagenodelphis hosei*) from Vietnam with record number, figure showing photos of this animal, date of original media post, location, geographical coordinates, sex, indication of stranding or bycatch, and notes on identification

Record	Figure	Date of media (d/mo/y)	Location	Coordinates	Sex	Stranding or bycatch	Notes
1	2	N/A	Lăng thờ Ngư Ông làng Nam Thọ, Sơn Trà, Đà Nẵng	16° 05' 35" N 108° 15' 02" E	?	Unknown	Skull; identified by broad rostrum, prominent groove just medial to upper tooth row on palate, and tooth count; observed 30 August 2019; Field ID: DN2019-T3-001
2	3	15/3/2014 (news article)	Lập Đông, Tam Tiến, Núi Thành, Quảng Nam	15° 33' 38" N 108° 34' 39" E	M (juv) or F	Stranding	Reported by Người Lao Động News on 15 March 2014 (http://tiny.cc/bjukmz); identified by stocky body, distinctive short beak with black coloration at its tip, small pectoral appendages, and distinctive dark eye-to-anal band
3	4	6/4/2018 (video posted)	Dinh Ông Nam Hải, Đất Đỏ, Bà Rịa-Vũng Tàu	10° 23' 29" N 107° 15' 53" E	M (adult)	Unknown	Video posted on YouTube by "TR ần Hạ TRINH TT" (https://www.youtube.com/watch?v=MZ-P5iMZGBs); identified by dark eye-to-anal band, erect triangular dorsal fin, short beak, and proportionately small pectoral fins
4	5	19/11/2019 (news article)	Vinh Quang 2 hamlet, Phước Sơn, Tuy Phước, Bình Định	13° 50' 3" N 109° 14' 29" E	?	Bycatch	Reported by Người Lao Động News (https://tinyurl.com/rkyenbx); caught in gillnet in Thị Nai Lagoon; juvenile; identified by broad beak, robust body, and proportionately small pectoral appendages

Table 2. Measurements of the skull of Record 1 (DN2019-T3-001); all numbers in the rightmost column refer to standard small cetacean measurements in Figure 2 and Table 2 of Perrin (1975).

Variable	Value	Perrin (1975) number
Condylbasal length (CBL)	430.0 mm	1
Rostral length	235.6 mm	2
Rostral width at antorbital notch	120.3 mm	3
Rostral length/width ratio	1.958	NA
Rostral width at mid-length	70.3 mm	5
Zygomatic width	224.6 mm	14
Internal nares width	62.9 mm	27
Pterygoid length	92.3 mm	28
Upper tooth row length (right)	212.2 mm	32
Upper tooth row count (left)	NA	33
Upper tooth row count (right)	43	34
Lower tooth row count (left)	39-40	35
Lower tooth row count (right)	NA	36

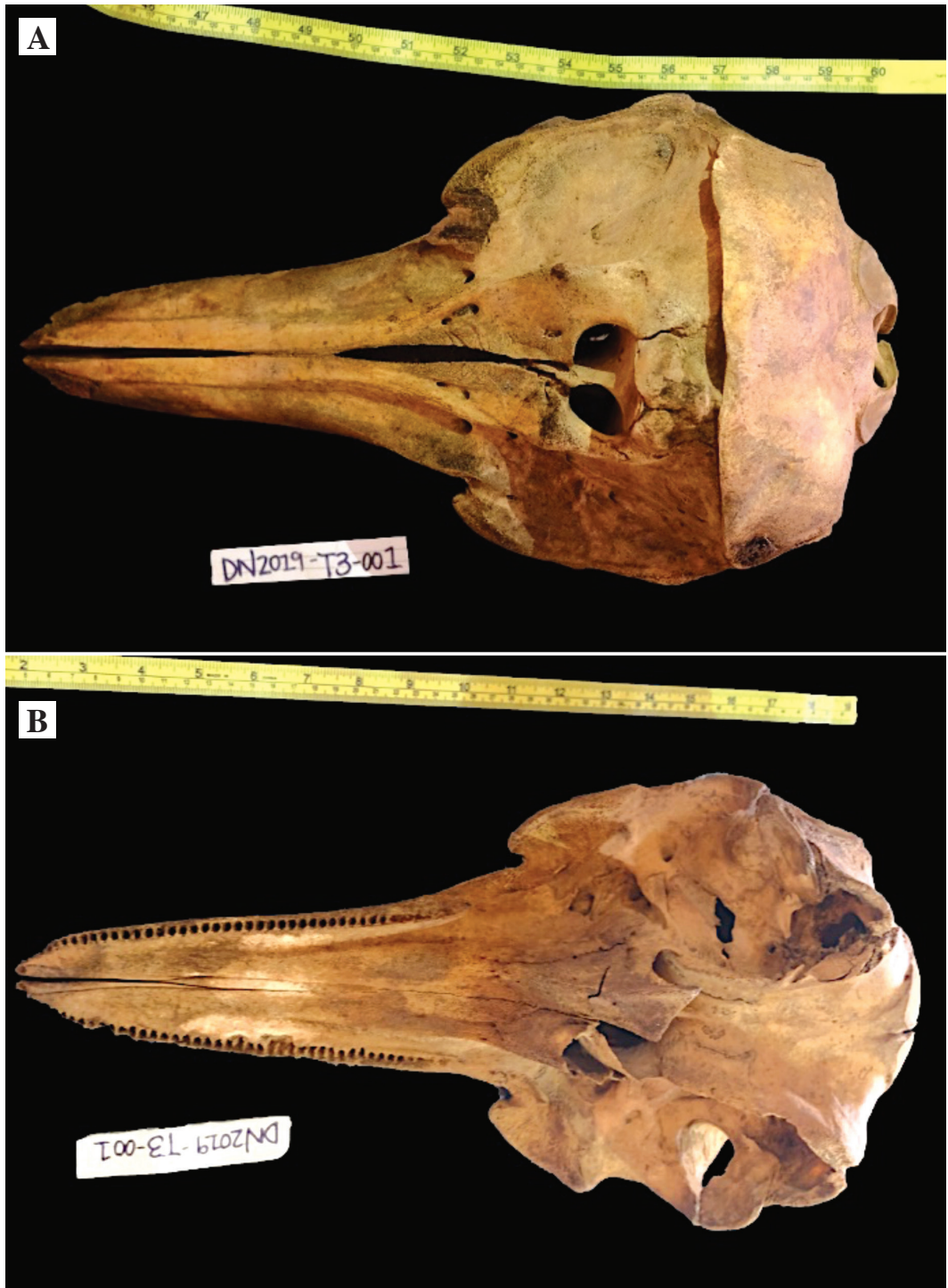


Figure 2. Record 1: Skull of *Lagenodelphis hosei* (Field ID: DN2019-T3-001), Đà Nẵng, Việt Nam ($16^{\circ} 05' 35''$ N, $108^{\circ} 15' 02''$ E). (A) Dorsal surface, and (B) ventral surface. (Photo taken by L. Vu on 30 August 2019)

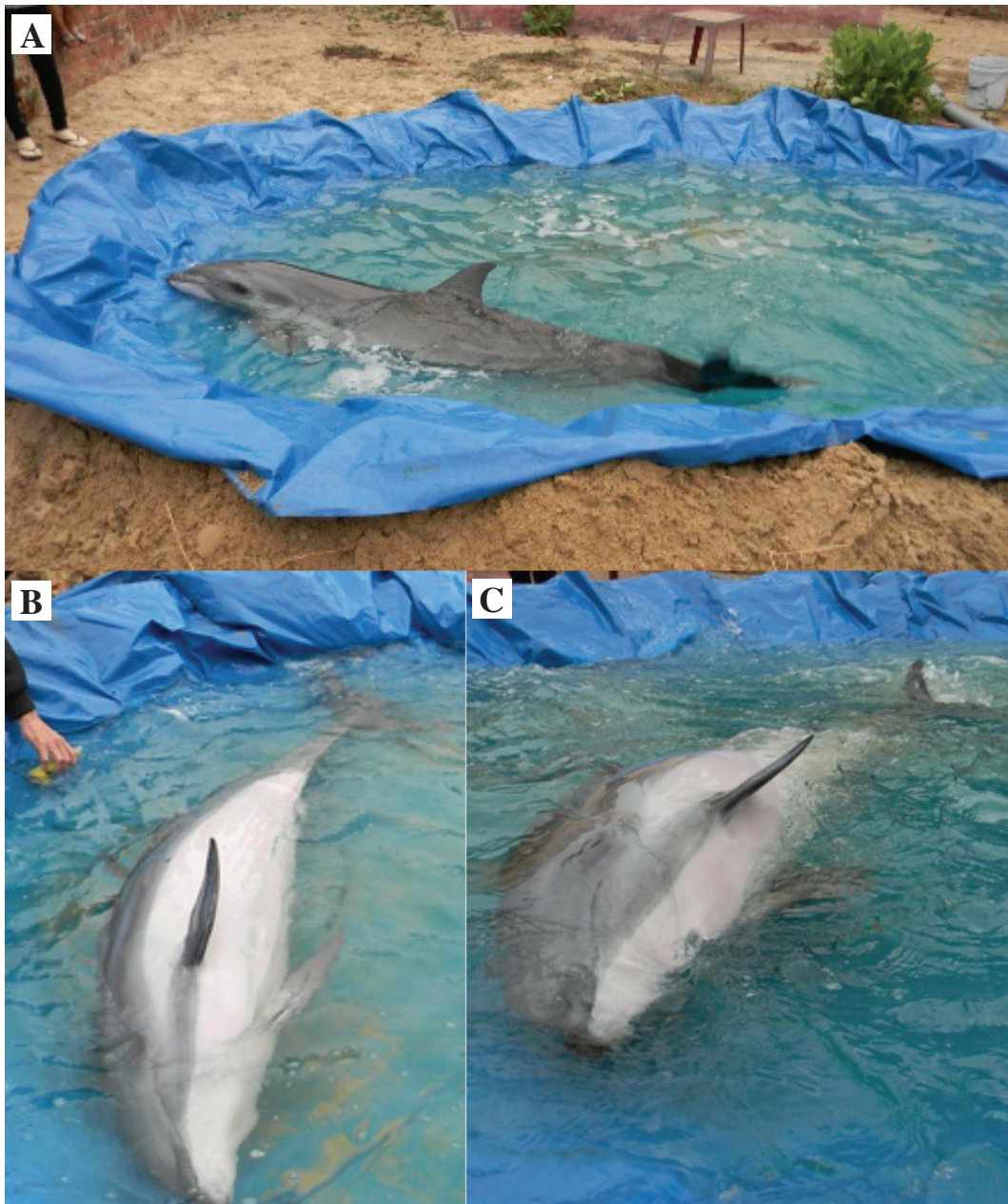


Figure 3. Record 2: Fraser's dolphin from Quảng Nam Province that stranded live. (A) Dorsolateral view showing falcate dorsal fin and short beak; (B) lateroventral view showing the small pectoral fins, robust body, the distinctive gray eye-to-anus band, and gray mouth-to-flipper bands; and (C) anterolateral view showing the black coloration at the tip of the beak. (Photos provided and approved for use by Người Lao Động News)

Jefferson added a fifth record of seven to ten individuals of *L. hosei* that appeared in Cam Ranh Bay on 25 to 27 April 1999 (Dao Tan Ho and Thomas A. Jefferson, unpub. data). Two of these individuals stranded and later died. Fraser's dolphin is

a tropical oceanic species and is only known to come close to shore in areas with deep water. For example, Dolar et al. (2006) reported peak sighting rates of Fraser's dolphin in the Philippines in areas with a depth of 700 to 800 m. More than



Figure 4. Record 3: Screen grab of video from YouTube (<https://www.youtube.com/watch?v=MZ-P5iMZGBs>) of a live male *L. hosei* (Đất Đỏ District, Bà Rịa-Vũng Tàu Province); video posted on 6 April 2018.



Figure 5. Record 4: Photos from a local news report of a bycaught dolphin in Binh Dinh Province. Features including short beak, proportionately small pectoral flippers, and dark lateral band indicate this is a Fraser's dolphin. (A) Lateral view, and (B) dorsal view. (Photos provided and approved for use by Người Lao Động News)

likely, all individuals reported here originated farther offshore in deeper waters to the east; depths can reach over 1,000 m as close as 50 km from shore in some parts of the south-central coast of Vietnam. As shown in previous studies (Smith et al., 1995, 1997), in addition to serving as spiritual centers of a fishing community, whale temples are mini-natural history museums that continue to provide critical information on the marine mammal fauna of Vietnam.

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