

Balaenopterid Whale Specimens Preserved in Myanmar, and the First Record of *Balaenoptera omurai* Wada, Oishi, and Yamada 2003 from Myanmar Waters

Tadasu K. Yamada¹, Tint Tun², Nyo-Nyo Tun³, Yin Yin Toke⁴,
Deliver Htwe⁵, Mu Mu Aung⁶ and Yuko Tajima¹

¹Department of Zoology, National Museum of Nature and Science,
4–1–1 Amakubo, Tsukuba, Ibaraki 305–0005, Japan

E-mail: yamada@kahaku.go.jp

²Independent Marine Biologist, 3/69 Sanchaung Street, Sanchaung, Yangon, Myanmar

³Marine Science Department, Mawlamyine University,
Taungwaing Road, Mawlamyine, Mon State, Myanmar

⁴Zoology Department, Dawei University,
Kamyawgin Village, Loung Lone Township, Tanintharyi, Myanmar

⁵Tenasserim River & Indigenous People Networks, 16, Issatu Street, 23 Quarters, Taungoo, Myanmar

⁶Forest Research Institute, Forest Department, Ministry of Natural Resources and
Environmental Conservation, Yezin, Nay Pyi Taw, Myanmar

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Abstract Balaenopterid whale specimens preserved in several institutions totaling 19 were examined. Specimens identified to species level were 14, i.e. 3 *Balaenoptera musculus*, 6 *B. edeni*, and 5 *B. omurai*. The remaining 5 specimens were not identified. The existence of *B. omurai* from Myanmar waters was confirmed based on the morphological characters of the skull and the first rib. This article is the first confirmation of this species in Myanmar. Among the two already “confirmed” species, *B. musculus* was identified by Smith et al. (1997) based on the actual specimen in the Natural History Museum, however for *B. edeni*, the specimens we examined were not observed for species identification and no preceding work reported the existence of *B. edeni*, except for the type specimen collected in Mon state in 1871 and now preserved in the Indian Museum, Kolkata (Anderson, 1879).

Key words: Myanmar, Indian Ocean, Andaman Sea, baleen whale, balaenopterid, *Balaenoptera musculus*, *Balaenoptera edeni*, *Balaenoptera omurai*.

Introduction

Historically, all the current territory of Myanmar (or Burma) was part of the British India after the late 1890s until 1948. Among the regions of Burma, Arakan (Rakhine) and Tenasserim (Tanintharyi) were already under British control in the 1820s. Most of the natural history studies were made by British researchers based in India especially after the early 1830s. One of the oldest

mentions on the whales in current Myanmar waters was Lloyd (1838) who stated that he saw “numerous whales” in a bay (hence the Whale Bay) among the Mergui Archipelago, although it was not a scientific description on whales. Mason (1850) was exceptionally centered around Mawlamyine (Maulmain) and listed “Balæna?” and “Balænoptera?” as representing the possible whale species of the seas around Myanmar. This was the earliest mention that we found for the larger whales known from Myanmar waters, citing Lloyd (1838). His later publication (Mason,

1860) included information possibly transferred through Kolkata (then Calcutta) of the whales examined and collected by Blyth (Blyth, 1852, 1853). As was mentioned by Anderson (1879), Blyth was the first researcher who worked on stranded larger baleen whales. Blyth (1875) listed his *Balaenoptera indica* Blyth, 1859 as the only balaenopterid species known from Burmese waters. Anderson (1879) summarized there are at least “three species of *Balaenoptera* exist in the Bay of Bengal” including *Balaenoptera edeni* Anderson, 1879 (Sittang whale), which he described based on the specimen secured in Myanmar (Anderson, 1879). The other two were *Balaenoptera indica* and *Balaenoptera blythi* Anderson, 1879. This *B. blythi* will need more examinations on its systematic feature, but it would be impossible, for we could not locate the type specimen of *B. blythi*. A further search of the type specimen will be expected to confirm its systematic position. As for *B. indica*, many authors, such as Ilangakoon (2002), referred to the possibility that it is a subspecies of *Balaenoptera musculus* (Linnaeus, 1758).

Apart from these classic works, not many references on the skeletal specimens of larger baleen whales of this area were published. Among the recommendations postulated by Holmes *et al.* (2014), the following is what we have to do on the preserved larger whale skeletons: to “Conduct an inventory of whale skeletons in the country including confirming and updating descriptions, identifications and location data”.

Materials and Methods

The materials of the present work are Balaenopterid whale skeletons preserved in various institutions in Myanmar, totaling 19 (Table 1). We investigated the specimens preserved in the following institutions: the Natural History Museum in the Yangon Zoo (Yangon, visited in 2017/2018/2020), Hlawga Fishery Station (Yangon, 2017/2018), Mawlamyine University (Mawlamyine, 2018), Dawei University (Dawei,

2018), Patheingyi University (Patheingyi, 2018), Department of Fishery in Nay Pyi Taw (Nay Pyi Taw, 2018), and Myeik University (Myeik, 2020). Coastal administrative areas of Myanmar are; Rakhine State, Ayeyarwady Region, Yangon Region, Bago Region, Mon State, and Tanintharyi Region, from north to south (Fig. 1). Specimens we investigated were all derived from the animals stranded in either of the above-mentioned coastal areas of Myanmar. We examined the specimens by gross observations, leaving photos and/or sketches.

As was explained in Wada *et al.*, 2003; Yamada *et al.*, 2006; Yamada *et al.*, 2008, we examined characters of the vertex of the skull, frontals, pterygoid fossae, occipital condyles, and first ribs. The morphology of the alisphenoid was not included because of the difficulties of observation in some specimens.

Body size

Larger skeletons (L):

For the specimens whose body length was estimated as larger than 15 m, we determined the species by the shape of the lateral contour line(s) of the maxilla(e): *B. musculus* has a lateral convexity in the anterior part of the lateral edge. While in *Balaenoptera physalus* (Linnaeus, 1758) the line is far more straight, without noticeable convexity. When the contour line is laterally convex we put (C), and when straight without convexity we put (S).

Medium-sized skeletons (M):

For the comparative observations on the medium-sized species we paid attention to the following characters listed below (Wada *et al.*, 2003; Yamada *et al.*, 2006; Yamada *et al.*, 2008) to distinguish *B. edeni*, *Balaenoptera brydei* Olsen, 1913 and *Balaenoptera borealis* Lesson 1848:

1. Vertex morphology

1a. Shapes of posterior ends of both maxillae: The posterior ends were squarish (S) or round (R)

1b. Shapes of posterior ends of both premaxil-

Table 1. Specimens examined in the present study. Specimen ID were given tentatively by connecting the institution acronym and the number

Institution	ID	Specimens	Locality		Found date	Body length m (Ft)	Skull length cm
			State/Region	Township			
Yangon Zoo Natural History Museum	NHMY1	Articulated skeleton	Rakhine State	Thandwe	Jan. 19 1987	21.95 (72')	501 without premaxillae
Hlawga Fishery Station	FDH1	Skull and Postcranials	Rakhine State	Kyentali	Dug out in Apr. 2017	?	ca. 278
Hlawga Fishery Station	FDH2	Skull and Postcranials	Rakhine State	Gwa	2016	?	227 Right mandible
Hlawga Fishery Station	FDH3	Skull and Postcranials	Rakhine State	?	2007	?	ca. 285
Hlawga Fishery Station	FDH4	Right Mandible	Rakhine State	Minbya	?	?	274 Right mandible
Hlawga Fishery Station	FDH5	Humerus and Radius	Rakhine State	Minbya	?	?	NA
Hlawga Fishery Station	FDH6	Skull and Postcranials	Ayeyarwady Region	Bogale	?	?	ca. 307.5
Mawlamyine University	MMU1	Skull and Postcranials	Mon State	Paung	1997	?	299
Mawlamyine University	MMU2	Skull and Postcranials	Mon State	Paung	Jan. 2006	19.2 (63')	495 (L) and 496 (R) mandibles
Dawei University	DWU1	Skull and Postcranials	Tanintharyi Region	Bogalay	Jun. 27 2005	11.1 (36'6")	275.5 +
Dawei University	DWU2	Left Mandible	?	?	?	?	269 Left mandible
Patheingyi University	PTU1	Skull and Postcranials	Ayeyarwady Region	Patheingyi	Jun. 2015	?	?
Patheingyi University	PTU2	A vertebra	Ayeyarwady Region	Patheingyi	1993?	?	NA
Patheingyi University	PTU3	A rib	?	?	?	?	NA
Ministry of Fishery and Aquaculture Development	FDNPT1	Articulated skeleton	Tanintharyi Region	Bokepyin	2000	9.45 (31')	ca. 228
Myeik University	MYU1	Skull and Postcranials	Tanintharyi Region	Kawthaung	Mar. 2004	7.77	ca. 174
Myeik University	MYU2	Skull and Postcranials	Tanintharyi Region	Launglon	Aug. 2007	?	ca. 265
Myeik University	MYU3	Skull only	Tanintharyi Region	Kyunsu	? Secured in 2008	?	ca. 245
Myeik University	MYU4	Skull and Postcranials?	Tanintharyi Region	Bokpyin	Jan. 1 2014	?	?

lae: The posterior ends were squarish (S) or round (R)

1c. Width of both premaxillae: The posterior ends of premaxillae were wider (W) or narrower (N)

1d. Area between the anterior end of supraoccipital and maxillae-premaxillae complex, a vestibular flat plain existed (P) or not (A)

2. Posterior wall of the temporal fossa: Two foramina along the parieto-squamosal suture were found (P) or not (A)

3. Head of the first rib: Bifurcated (B) or not (S)

Results

The results of our examinations will be described as we proceeded. Conditions of the specimens are summarized in Table 2. The representative specimens of *B. musculus*, *B. edeni*, and *Balaenoptera omurai* Wada *et al.*, 2003 are shown in Fig. 2.

August 2017

Hlawga Fishery Station

We found at least five individuals of balaenop-

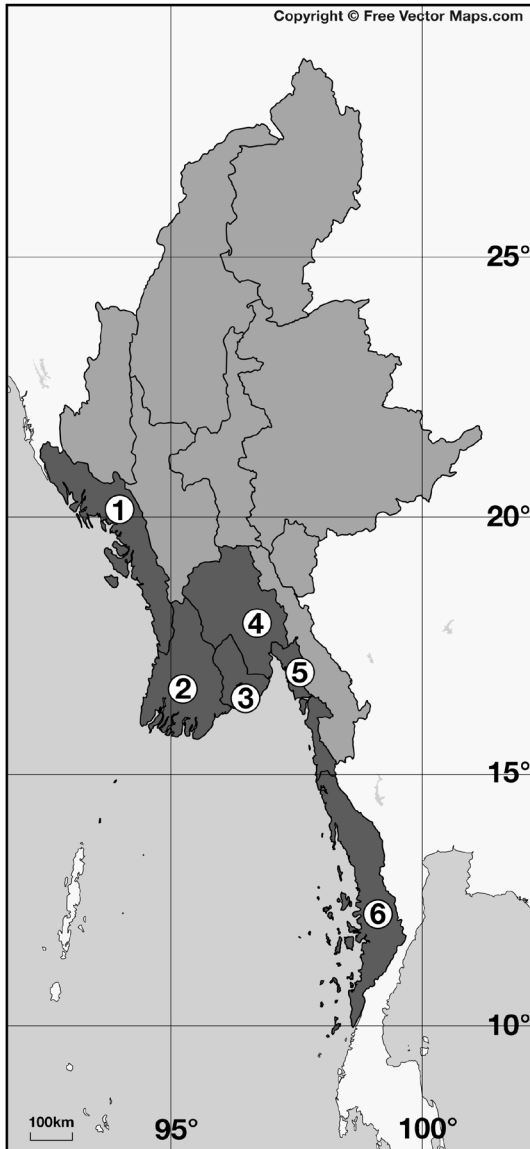


Fig. 1. Six coastal administrative areas of Myanmar. Shaded area indicates the territory of Myanmar. Darker areas are six coastal administrative areas; ①: Rakhine State; ②: Ayeyarwady Region; ③: Yangon Division; ④: Bago Region; ⑤: Mon State; ⑥: Tanintharyi Region.

terid whale skeletons. The specimens confirmed were;

FDH1: *B. edeni*, a broken skull and most of postcranial elements

FDH2: *B. omurai*, a severely broken skull remnant without the rostrum and accompany-

ing some postcranial elements

FDH3: *B. edeni*, a broken skull and most of postcranial elements

FDH4: *B. sp.*, a right mandible

FDH5: *B. sp.*, a humerus and a radius

January 2018

Hlawga Fishery Station

An incomplete skeleton was brought in just prior to our second visit of 2018;

FDH6: *B. edeni*, a broken skull and most of the postcranial elements

Mawlamyine University

Two skeletons were preserved in Department of Zoology and Department of Marine Science; Dept. of Zoology

MMU1: *B. edeni*, an almost complete skull and most of postcranial elements, neatly prepared (Fig. 2B).

Dept. of Marine Science

MMU2: *B. musculus*, a severely broken whole skeleton. Some were crashed.

Dawei University

A skull and partial postcranials were preserved in the Department of Zoology.

Dept. of Zoology

DWU1: *B. omurai*, a broken skull and postcranial elements (Fig. 2C)

December 2018

Patheingyi University

Severely broken, probably a whole skeleton, was preserved at Department of Marine Science and separate two bone elements were kept in the Department of Zoology;

Dept. of Marine Science

PTU1: *B. edeni*, a severely broken skull and most of postcranial elements

Dept. of Zoology

PTU2: *B. sp.*, a lumbar vertebra

PTU3: *B. sp.*, a rib

Department of Fishery in Nay Pyi Taw

An articulated whole skeleton severely weath-



Fig. 2. A: A whole skeleton of *Balaenoptera musculus* articulated for exhibit in the Natural History Museum in Yangon Zoological Garden (NHMY1). B: An almost complete skeleton of *B. edeni* preserved at the Department of Zoology in Mawlamyine University (MMU1). C: A broken skull of *B. omurai* stored at the Department of Zoology of Dawei University (DWU1). Some postcranial elements including several vertebrae and ribs are also preserved.

ered is exhibited in the yard in front of the office;

FDNPT1: *B. omurai*, a mounted skeleton with severe weathering.

March 2020

Myeik University, Marine Biology Museum housed 4 skeletons. 2 almost complete whole skeletons, one skull and severely crashed whole skeleton;

Marine Biology Museum

MYU1: *B. edeni*, an almost complete skull and most of postcranial elements

MYU2: *B. omurai*, an almost complete skull and most of postcranial elements

MYU3: *B. omurai*, a skull only, premaxillae missing

MYU4: *B. musculus*, mostly crashed pieces of possibly a whole skeleton

2017–2020

Natural History Museum in Yangon Zoo, in 2017, 2018, and 2020

A well prepared articulated whole skeleton was on exhibit; Smith *et al.* (1997) already identified this skeleton as *B. musculus*;

NHMY1: *B. musculus*, an articulated and almost complete whole skeleton. Both nasals, some vertebrae, hyoid bones are missing. Some of the phalanges and the pelvis are artificial (Fig. 2A).

Altogether, we examined 19 skeletal specimens preserved in 7 institutions in Myanmar. As a result, we identified 3 *B. musculus*, 6 *B. edeni*, 5 *B. omurai*, and 5 specimens of *B. sp.* Table 3 summarizes the result of our examination.

Discussions

History

The Republic of the Union of Myanmar faces the Indian Ocean, or specifically, the Bay of Bengal and the Andaman Sea (Fig. 1). If we are to deal with terrestrial mammals, we can consider the zoogeographic regions of the Sclater-Wallace system, and Myanmar occupies the central area of the Indian Region in the system (Greer, 2013; Sclater, 1858; Wallace, 1876a, b). A similar zoogeographical framework was proposed also for marine mammals by Sclater (1897) and Ortmann (1896) and the Indian Ocean was assigned as the Indopelagia or “die indo-pacifische Litoralregion”. As the marine environment is less strictly bordered and, especially, pelagic species are free to travel around crossing the imaginary border between the assumed areas. However, these regions tend to have their characteristic species, and we could think about the specific distribution

Table 3. The result of the species identification mainly based on the skull characters

Specimen information		Examined results							Our identification
Institution	ID	Body Size	Vertex morphology*				Temporal Fossa* 2	First Rib* 3	Species name
			1a	1b	1c	1d			
Yangon Zoo Natural History Museum	NHMY1	L	NA	NA	NA	NA	NA	NA	<i>Balaenoptera musculus</i>
Hlawga Fishery Station	FDH1	M	R	R	W	P	A	B	<i>Balaenoptera edeni</i>
Hlawga Fishery Station	FDH2	M	S	S	N	A	P	NA	<i>Balaenoptera omurai</i>
Hlawga Fishery Station	FDH3	M	R	R	W	P	A	B	<i>Balaenoptera edeni</i>
Hlawga Fishery Station	FDH4	M	NA	NA	NA	NA	A	NA	<i>Balaenoptera sp.</i>
Hlawga Fishery Station	FDH5	M	NA	NA	NA	NA	A	NA	<i>Balaenoptera sp.</i>
Hlawga Fishery Station	FDH6	M	R	R	W	P	A	B	<i>Balaenoptera edeni</i>
Mawlamyine University	MMU1	M	R	R	W	P	A	B	<i>Balaenoptera edeni</i>
Mawlamyine University	MMU2	NA	NA	NA	NA	NA	NA	NA	<i>Balaenoptera musculus</i>
Dawei University	DWU1	M	S	S	N	A	P	S	<i>Balaenoptera omurai</i>
Dawei University	DWU2	NA	NA	NA	NA	NA	NA	NA	<i>Balaenoptera sp.</i>
Patheingyi University	PTU1	M	R	R	W	P	A	B	<i>Balaenoptera edeni</i>
Patheingyi University	PTU2	NA	NA	NA	NA	NA	NA	NA	<i>Balaenoptera sp.</i>
Patheingyi University	PTU3	NA	NA	NA	NA	NA	NA	NA	<i>Balaenoptera sp.</i>
Ministry of Fishery Nay Pyi Taw	FDNPT1	M	S	S	N	A	P	S	<i>Balaenoptera omurai</i>
Myeik University	MYU1	M	R	R	W	P	A	B	<i>Balaenoptera edeni</i>
Myeik University	MYU2	M	S	S	N	A	P	S	<i>Balaenoptera omurai</i>
Myeik University	MYU3	M	S	S	N	A	P	NA	<i>Balaenoptera omurai</i>
Myeik University	MYU4	NA	NA	NA	W	NA	NA	NA	<i>Balaenoptera musculus</i>

For the examined characters see text. NA: not applicable

of various species.

After the Second World War, little were reported from the area, there were some review works such as Chasen (1940) and Ellerman and Morison-Scott (1951), but not with actual specimen examinations. The latest of this kind could be Corbet and Hill (1992), where Myanmar is put in their division C1, Indochinese division. They listed five species in the Balaenopterid species of the Indomalayan Region. Among the publications of this kind, Rudolph *et al.* (1997) is the best in the reference perusal, although their main interest was toward Indonesian Archipelago.

As for the sighting survey of the whales and dolphins at high sea, several works were done such as Smith *et al.* (1997), where sightings of Bryde's whales were recorded and they mentioned that they sighted "pygmy form of Bryde's whale" about 12m in body length. Balaenopterid species of this size could be either *B. edeni* or *B. omurai*, but because they confirmed "three prominent ridges", the "pygmy form Bryde's whale" they sighted must have been *B. edeni*. They also observed the feeding behavior of these whales on shoaling fish off Thandwe District, Rakhine State, which indicates the area is a significant

feeding ground for these whales.

Interests toward the conservation of nature have become prominent. General education for the general citizen, especially of coastal areas, is extremely important to promote the conservation activities of marine environment (Parr and Than, 2005) and to enlighten influential decision makers is still more significant (Holmes *et al.*, 2014). In order to make these efforts more concrete we have to compile our knowledge toward the ecological constituent species, especially large cetaceans.

Species observed

Holmes *et al.* (2014) listed two species of baleen whales, *Balaenoptera edeni* and *B. musculus* as "Confirmed" from the Myanmar waters, while *Balaenoptera acutorostrata* Lacépède, 1804 as "Probable" and *B. physalus* as "Possible". In the present survey, we found specimens of two "confirmed" species of the genus *Balaenoptera*, namely *B. musculus* and *B. edeni*. But neither of "Probable" nor "Possible" species were found, whereas *B. omurai*, which was not known from Myanmar was recorded. The existences of these species were confirmed by the specimens pre-

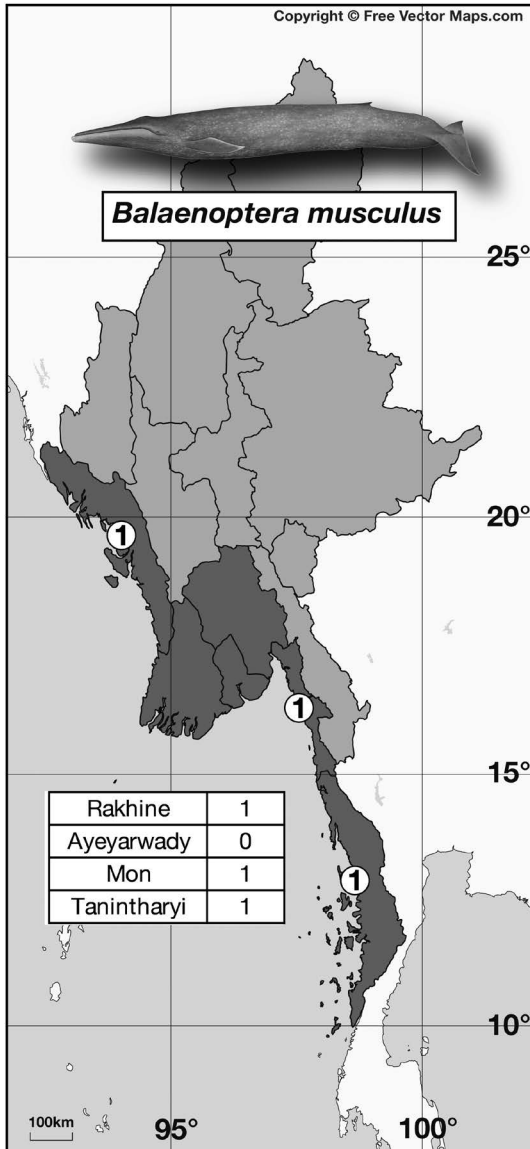


Fig. 3. Number of *Balaenoptera musculus* strandings in 6 administrative regions. One each specimen was secured in Rakhine, Mon, and Tanintharyi.

served in seven institutions in Myanmar. Each species will be discussed below.

Balaenoptera musculus (Figs. 2A, 3)

As was mentioned earlier, Blyth (1852) described *Balaenoptera indica*. Researchers such as Ilangakoon and Sathasivam (2012) discussed the significance of defining subspecies status of

the blue whales of Indian Ocean. We have to make further considerations on the blue whale specimens collected from the Indian Ocean. Researches including behavioral, genetic and acoustic aspects have been made (LeDuc *et al.*, 2017; Leroy *et al.*, 2018; Miksis-Olds *et al.*, 2018; Russell *et al.*, 2020). Careful morphological investigations, both somatic and osteological are necessary to depict the Indian Ocean blue whales if they have any specific character. In the present study, we found three *B. musculus*; one each from Rakhine State, Mon State and Tanintharyi Region. Rudolph *et al.* (1997), described several blue whale occurrences around Indonesian Islands. In the seas around Indian subcontinent Vivekanandan and Jeyabaskaran (2012) listed fairly many blue whale strandings. For *B. musculus* of the Indian Ocean, we need more efforts to get more concrete understanding.

Balaenoptera edeni (Figs. 2B, 4)

Anderson (1879) described *B. edeni* based on the skeleton collected in “the Thaybyoo Choung, which runs into the Gulf of Martaban between the Sittang and Beeling rivers, and about equidistant from each, and now known as the Sittang Whale. The Whale ran up this creek for more than twenty miles and was stranded in a heavy squall on the 18th June 1871.” The river or creek named “Thaybyoo Choung” is now spelled as “Thea Hpyu Chaung” which means “White Sand Rivulet” or “Thabyuchaung” in Paung Township in Thaton District of Mon State. Perhaps the locality was somewhere around 17°N, 97°E. “Martaban”, “Sittang” and “Beeling” are now spelled Mottama, Sittaung, and Bilin, respectively. The type locality of *B. edeni*, is in Paung Township, Thaton District of Mon State, the vicinity of where one each of *B. edeni* and *B. musculus* we examined this time were found stranded. Strandings of *B. edeni* were slightly more in the northern area.

Anderson (1879) described the species with a type specimen, which is now exhibited in the Indian Museum in Kolkata, India. Description of the species were made briefly and almost prop-

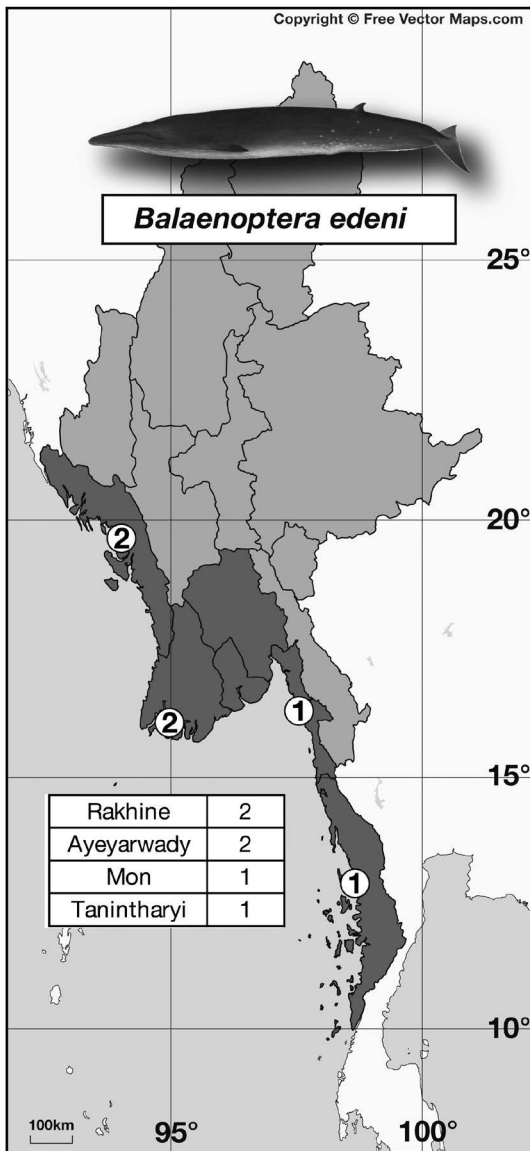


Fig. 4. Skeletons of *Balaenoptera edeni* were collected 2 from Rakhine, 2 from Ayeyarwady, 1 from Mon, and 1 from Tanintharyi.

erly. The present chaotic confusion on the systematics of so-called Bryde's whale was partly created by an incomplete species description of *B. brydei* (Olsen, 1913), which did not assign any type specimen. Lönnberg (1931) made a detailed description on *B. brydei* collected in the type locality of Saldanha Bay of South Africa and made the situation a little better. However,

Junge (1950) in his description of a whale from Singapore, erroneously concluded that *B. brydei* is conspecific with *B. edeni* and made the confusion almost complete. This conclusion was quickly and widely accepted by most of the cetology researchers, although there was a skepticism against the validity raised by Soot-Ryen (1961). As a result, based on the principle of priority in the zoological nomenclature, *B. edeni* remained as a valid species name but the English vernacular name "Bryde's whale", which was originally defined for *B. brydei*, survived for *B. edeni*. This is another and the final problematic choice. If "Sittang whale", which was stated in Anderson's original description of *B. edeni*, was chosen for the vernacular name, the confusion must have been a little less serious. The preference for "Sittang whale" for *B. edeni* was already claimed by Andersen and Kinze (1999). Wada *et al.* (2003) pointed out the morphological differences between *B. edeni* and *B. brydei*, to recognize these two species as distinct different species, otherwise the distinctiveness of *B. omurai* was not clearly indicated.

In the present study, we confirmed six specimens of *B. edeni*, preserved in Myanmar, among which two from Rakhine State, two from Ayeyarwady Region, and one each from Mon State and Thanintharyi Region (Table 4). There could be a faint tendency that there are more *B. edeni* in the northern area.

Balaenoptera omurai (Fig. 2C, 5)

Lastly, we refer to *B. omurai* of Myanmar. Wada *et al.* (2003) described *B. omurai* based on a dead individual secured in western Japan. As mentioned above, Wada *et al.* (2003), while indicating the significant differences between *B. edeni* and *B. brydei*, stated the distinctiveness of *B. omurai*. We had to wait until a thorough molecular work was published (Sasaki *et al.*, 2006), and *B. omurai* was unanimously recognized as a valid species. Morphology, once a major discipline of the species description, lost its significance in systematics. Because *B. omurai* has little morphological similarity with *B.*

Table 4. Summary of the species identification of three species of *Balaenoptera* preserved in Myanmar. Species identification was made 14 out of 19 specimens examined in the present study

Species ID	Total	Rakhiine	Ayeyarwady	Mon	Tanintharyi
<i>Balaenoptera musculus</i>	3	1	0	1	1
<i>Balaenoptera edeni</i>	6	2	2	1	1
<i>Balaenoptera omurai</i>	5	1	0	0	4
	14	4	2	2	6

edeni and *B. brydei*, it is far easier to distinguish *B. omurai* from these two species.

We found five specimens of *B. omurai* for the first time in Myanmar, one collected in Rakhine State and four in Thanintharyi Region. An opposing tendency, compared with that of *B. edeni*, that is, more specimens from southern Myanmar are collected.

For a certain period of time after Wada *et al.* (2003) described *B. omurai*, there were very few data on the species other than the areas around Japan, Java, and Solomon Islands. We thought the distribution of the species was very limited. However, reports of the species gradually increased especially after 2015, when Cerchio *et al.* (2015) pointed out that the species is constantly observed around Madagascar Island, in certain season. As was summarized by Cerchio *et al.* (2019), Omura's whales were known from almost world-wide, in the lower latitude of both East and West hemispheres.

Among the nineteen specimens we examined, there are three *B. musculus*, six *B. edeni* and five *B. omurai*. The remaining five individuals were not identified to species.

Geographical summary

As was stated already, our findings according to the localities can be summarized in Table 4. In short, *B. musculus* were collected evenly from the entire coastline, *B. edeni* were most frequent and a little more examples were collected from the northern half, and finally the species confirmed for the first time in Myanmar, *B. omurai*, were mostly from Tanintharyi. Yamada *et al.* (2006) described three *B. edeni* and three *B. omurai* among six specimens from the Andaman Sea preserved in Phuket Marine Biological Cen-

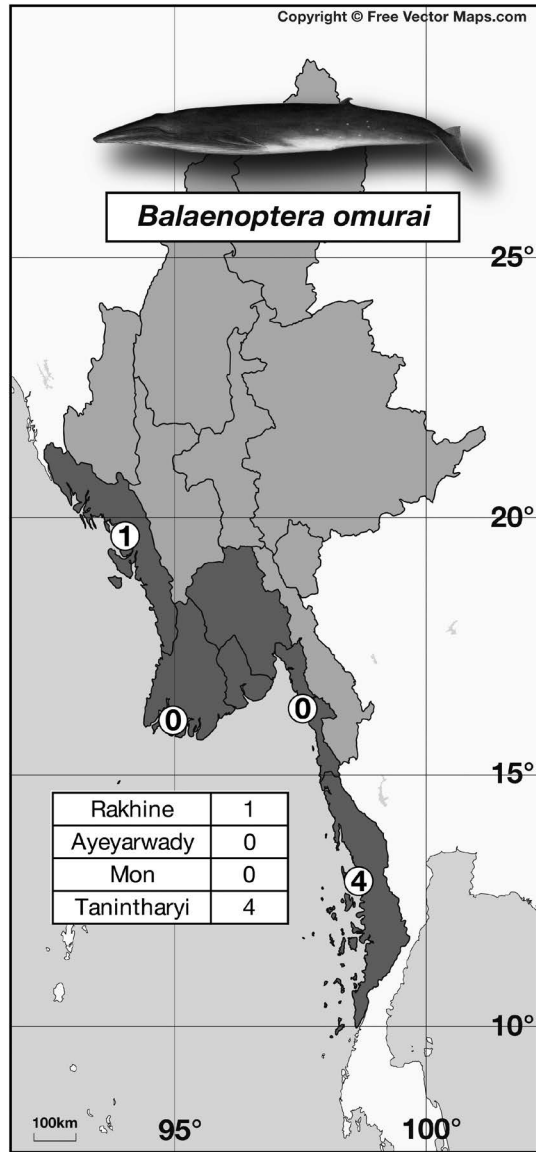


Fig. 5. Strandings of *Balaenoptera omurai* were unexpectedly numerous totaling 5. Skeletons were collected 1 from Rakhine, and 4 from Tanintharyi.

ter. *B. edeni* and *B. omurai* could be representative balaenopterid whales of the Andaman Sea.

Recommendations

For the conservation of the cetacean diversity in the Northeastern Indian Ocean, we need to establish a good information database. A certain amount of effort was already paid to collect specimens of stranded larger whales.

Specimen Collection

When considering future efforts to obtain more precise understanding on these animals, it is necessary to assign fixed specimen ID to each specimen so that further discussions will be made accurately. It would also be necessary to fix acronyms to the institutions that preserve these specimens. In the present article, we create a tentative specimen ID for each specimen consisting of "Institution acronym" plus "number". We have to provide the opportunity where interested researchers gather and formulate the basic framework for biological studies.

As far as we know, in Myanmar there is no natural history museum other than the one in Yangon Zoological Garden. The Zoo was established in 1901. The natural history museum was opened at the Union Club Building on the 1st of May 1966. In 1978, the museum was moved to the present building in the zoo. Significant specimens such as the type specimen of *B. edeni*, collected in a creek near Mottama, Myanmar in 1871, was transferred to the Indian Museum in Kolkata and studied by John Anderson. In those days, Myanmar was a part of the British Raji and natural history studies especially of larger whales were carried out by an authoritative research institution. Now that Myanmar is an independent country, a well-designed museum should be built with substantial number of qualified researchers. Facilities such as Biodiversity Research Center now being built would be a first step in promoting good natural history studies. Most of the whale specimens are not complete and some are in miserable condition. We need trained skillful

researchers of large whales to build a substantial marine biodiversity database.

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