# THE MANDIBLE OF BOWHEAD IN KATHMANDU

MASAHARU NISHIWAKI
*National Science Museum, Tokyo*

ABSTRACT

The huge mandibular bones which I unexpectedly found at National Museum of Nepal, Kathmandu, was compared with a mandibular specimen of the bowhead whale in Taiji Whale Museum and those of the Pacific right whales in Tokyo University of Fisheries and National Science Museum, Tokyo. It was cleared that the owner of the huge bones was a *Balaena mysticetus*, and from their size, the whale must have been about 16 m in body length. It is still a matter of investigation that when and how they came up to Kathmandu.

## INTRODUCTION

It was quite unexpeced encounter of myself with huge mandibular bones of whale at a dark corridor of the National Museum of Nepal, Kathmandu, in my second visit to the city in July 1974 on the wayback from USSR. As I had been to Kathmandu in the investigation on the Ganges river dolphin in Pakistan (now Bangradesh) in times between 1970 and 1974, trying to know if distribution of the dolphin was extended to the upper Ganges in Himalayan out-skirts, but had least imagined that such a thing was in the museum.

Instantly after I saw the bones, I tried to inquire about them and asked to take photographs, but there was only an attendant of the museum who did not speak English, and he only shook his head. Unfortunately it was Sunday and I had no time to stay for another inquiry.

Since then, I tried to make contact with the museum to get permission for investigation and photograph on them. My asking had been in vain for a few years, but through introduction of many kind people, permission came from Dr. R. J. Thapa, Director General of the Department of Archaeology, Kathmandu, Nepal, in 1979. With great expectation, I visited Kathmandu again on my way to west Africa in Jan. 1980. As shown in Fig. 1, photographs of the bones were taken by having them taken out to the hall from the dark corridor. Measurements were also taken.

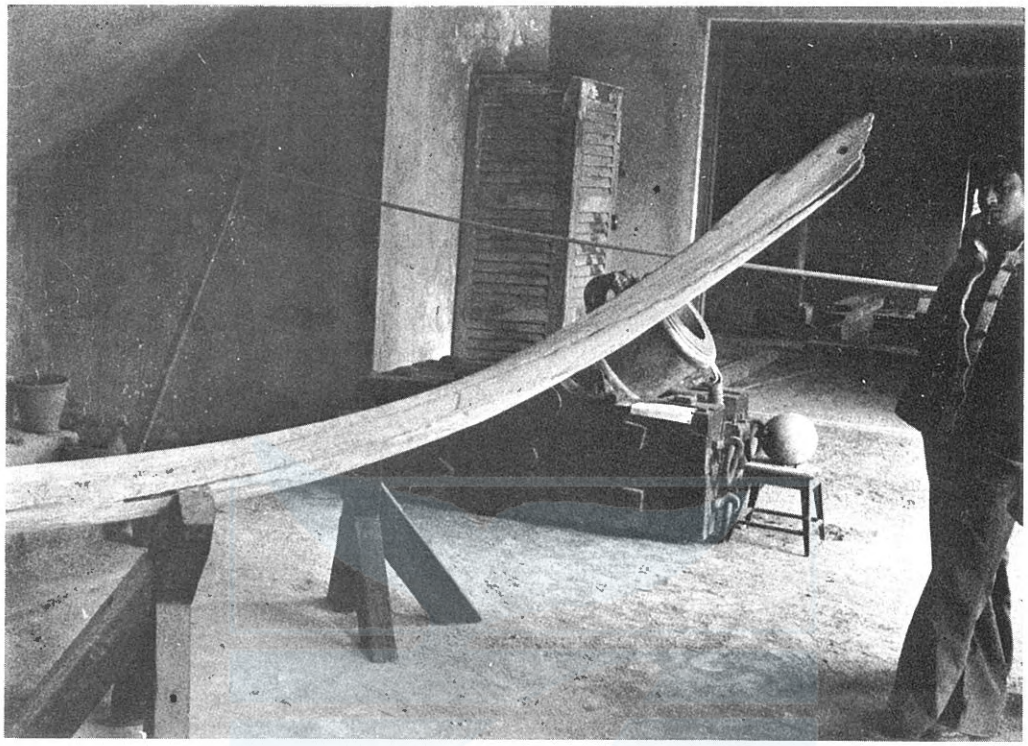
## INVESTIGATION AND DISCUSSION

The mandible was a pair of bulky bones of about five meter in length. Species of whales who have such a big mandible, are the blue whale (*Balaenoptera musculus*), the fin whale (*Balaenoptera physalus*), the right whale (*Eubalaena glacialis*) and the bowhead whale (*Balaena mysticetus*). As I saw the indistinct coronid processes of

*Sci. Rep. Whales Res. Inst.*,
*No. 34, 1982, 49–57*

Fig. 1. A huge whale mandible found in

the mandible of Kathmandu, the owner of it must have been a species of *Balaenidae*, never of a *Balaenopteridae*, (Fig. 2). Trying to clear the species of whale, mandibular bones of Kathmandu were compared with other specimens of *Balaenidae*. Data value were collected from the mandible of the skeletons of bowhead in Taiji Whale Museum (*TWM*) and those of the two Pacific right whales in Tokyo University of Fisheries (*TUF*) and National Science Museum (*NSM*), Tokyo. In measurement of Kathmandu specimen, (Table 1) girth and height (depth) of the bones were measured at Point 1 (one meter from the front tip along the dorsal surface of curved line), Point 2 (two meters from the tip), Point 3 (three meters from the tip), and at the center of the coronoid process. However, the coronoid process was so indistinct that I managed to reach the highest point at a susceptible center. Other specimens were also marked at three points fit to those in Kathmandu specimen in equal percentage against the mandibular length. The length of right bone of Kathmandu speimen was made to be a standard, because there were rat bites in the specimen and damage in the left condyle was serious, and length of right and left bones became varied. Compared Kathmandu specimen with the mandible of *E. glacialis* of *TUF* in Table 1, together with their lateral view in Fig. 3, it is understood that length of the two are similar, shape is more monotonus in Kathmandu specimen, but in *TUF* specimen the posterior part is apparently thicker than the anterior part of it. Naturally, girth and height of



the National Museum of Nepal, Kathmandu.

Fig. 2. Showing coronoid process of mandibles:
distant: North Pacific blue whale,
near: East China Sea fin whale. (National Science Museum, Tokyo)

Fig. 3. Mandible specimen in Kathmandu compared with other known specimens. From (young *E. glacialis*) and *TUF* specimen (*E. glacialis*).

upper to lower: Kathmandu specimen, *TWM* specimen (young *B. mysticetus*), *NSM* specimen

TABLE 1. MANDIBLE MEASUREMENT OF THE KATHMANDU SPECIMEN COMPARED WITH OTHER KNOWN SPECIMENS. (in cm)

| Name of specimen<br>Species of whale | Nationmal Museum of Nepal, Kathmandu | | | Taiji Whale Museum | | TokyoUniversity of Fisheries | | National Science Museum, Tokyo | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *Balaena mysticetus* | | *Eubalaena glacialis* | | *Eubalaena glacialis* | |
| Body length of whale | | | | 640 | | 1710 | | 1165 | |
| Straight length of mandible | left | right | | right | | right | | right | |
| between tip and condyle | 480+ | 491 | | 184 | | 510 | | 296 | |
| Curved length of mandible | | | % | | % | | % | | % |
| along mid-dorsal surface | 509+ | 514 | 100.0 | 189 | 100.0 | 526 | 100.0 | 318 | 100.0 |
| Height of mandible | | | | | | | | | |
| at point1 1(19.5% of curved length from the tip) | 23 | 23 | 4.5 | 9.4 | 5.0 | 32 | 6.1 | 15 | 4.7 |
| at point 2 (39.0% of curved length from the tip) | 21 | 22 | 4.3 | 9.5 | 5.0 | 34 | 6.5 | 16 | 5.0 |
| at point 3 (58.5% of curved length from the tip) | 31 | 30 | 5.8 | 9.8 | 5.2 | 37 | 7.0 | 19 | 6.0 |
| at coronoid process (highest) | 39 | 39 | 7.6 | 19.6 | 10.4 | 68 | 12.9 | 39 | 12.3 |
| at condyle (biggest) | 40+ | 45 | 8.7 | 25.4 | 13.4 | 57 | 10.8 | 39 | 12.3 |
| Length of condyle | — | 28 | 5.5 | 18 | 9.5 | 50 | 9.5 | 28 | 8.8 |
| Breadth of condyle | 53 | 30+ | 10.3(L) | 22.5 | 11.9 | 55 | 10.5 | 38 | 11.9 |
| Girth at point 1 | 68 | 67 | 13.0 | 25 | 13.2 | 77 | 14.6 | 41 | 12.9 |
| at point 2 | 81 | 81 | 15.8 | 27 | 14.3 | 96 | 18.3 | 50 | 15.7 |
| at point 3 | 86 | 87 | 16.9 | 31 | 16.4 | 108 | 20.5 | 62 | 19.5 |
| at coronoid process | 96 | 97 | 18.9 | 36 | 19.0 | 145 | 27.6 | 78 | 24.5 |
| Length between coronoid process and rear end of condyle | 87 | 88 | 17.1 | 33 | 17.5 | 58 | 11.0 | 34 | 10.7 |

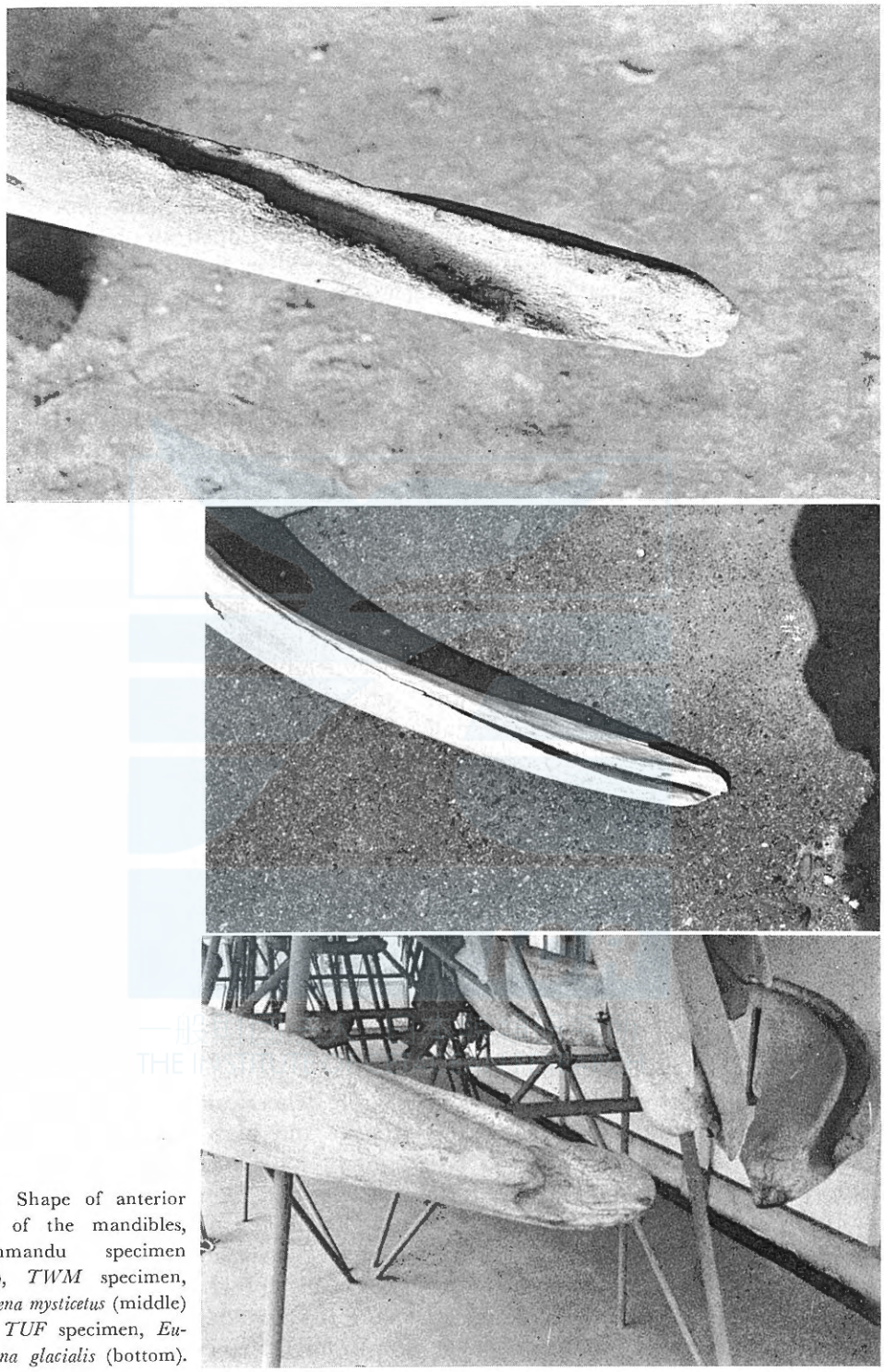


Fig. 4. Shape of anterior part of the mandibles, Kathmandu specimen (top), *TWM* specimen, *Balaena mysticetus* (middle) and *TUF* specimen, *Eubalaena glacialis* (bottom).

anterior and posterior parts show less differences in Kathmandu specimen, but some variety in *TUF* specimen. In Kathmandu specimen there is a little unusual value, height at Point 2 is lesser than that in Point 1, which can be seen in Fig. 3 in shape. In all the four specimens, the coronoid process is indistinctly developed. In *TWM* specimen, the whale is presumed as the youngest of the four, (1+1/3 years old), the process is recognized, but in Kathmandu speimen (presumably very old), the process is hardly recognized. The coronoid process in the Kathmandu specimen must be relatively under-developed in accordance with growth. The coronoid processes in both *Eubalaena* specimen of *TUF* and *NSM* are, however, located 6% more posterior against the length than in Kathmandu and *TWM* specimens. In the photograph of Fig. 3, both *TUF* and *NSM* specimens have a swell at the ventral side just under the coronoid process. The feature can not be perceived in the Table 1. While, the swell is less distinct in Kathmandu and *TWM* specimens. The shapes of the anterior-most of the three specimens are compared in Fig. 4. The anterior tip of Kathmandu specimen might have worn a little, but the shape resembles well *TWM* specimen. After those comparison in shape and mesaurement values, it may be safe to say that the Kathmandu specimen is a pair of mandibles of a bowhead whale (*Balaena mysticetus*).

Estimation of body length from a mandible is not so difficult. The young individual of *TWM* specimen was 640 cm in body length, and the mandibular bones are 184 cm (right) and 185 cm (left) respectively, and the head portion of this species of whale becomes bigger proportionally and reach 1/3 of the body length in adult animals. This is not a presumption at this moment, but this phenomenal tendency is generally known among whalers and scientists. Then, if 30–33% is the adult head length rate against the total length, the whale, owner of Kathmandu mandible (419 cm), must have been more or less 16 m in body length. Although Eskimo people might have some huge specimens, this Kathmandu mandibular bones is one of the biggest specimens of *B. mysticetus* known among museums at present.

## PROCESS TO KATHMANDU

As I have studied and discussed the huge mandibular bones in the National Museum of Nepal, Kathmandu, and presumed the species of it as the bowhead whale (*Balaena mysticetus*) and the body length as about 16 m, though sex can not be identified. It may be natural to wonder, from where and how the bulky heavy bones were transported to such a long distant and high place of Kathmandu. If it was in an old time, transportation might have been without machinary. Inquiry was made to many people in the museum and those who kindly opened a road to this investigation, but nobody knew the process of delivery or history of the specimen. Only Dr. Badri Prasad Shrestha, Ambassador of Napel to Japan, presumed that the mandible bones were thought to be there since about 100 years before. Many royal people of Nepal Kingdom have studied in England since old times. Presumably, one of those royal people might have seen the bones at the

British Museum (Natural History) or somewhere else, and wanted to have it and was transported to Kathmandu as a present. His story is one of the presumptions, and I asked the National Museum of Nepal to investigate the process.

## ACKNOWLEDGMENT

I should like to extend my sincere gratitude to Mrs. Sushuma Omata, Nepal princess in Japan, and Dr. Badri Prasad Shrestha, Ambassador of Nepal to Japan, who helped me in contact to the National Museum of Nepal, and Dr. R. J. Thapa, Director General of the Department of Archaeology who gave me permission to study on the mandibular bones through Mr. J. L. Sharma of the same Department, and Mr. J. K. Shrestha of National Msueum of Nepal who helped my investigation in the museum. My gratitudes are also to Mr. M. Kumazawa of the Museum of Tokyo University of Fisheries, Mr. Masami Shoji of Taiji Whale Museum and Mrs. Haruka Ito, postgraduate student of the Department of Fisheries, University of Tokyo, for their good assistance in taking measurements and photographs of the comparable specimens at home. At the end, I cannot omit Dr. Hiroo Kanai of the National Science Museum, Tokyo, who made effort to have me contact with the National Museum of Nepal.

## REFERENCES

OMURA, H., 1958. North Pacific right whale. *Sci. Rep. Whales Res. Inst.*, 13: 1–52.

OMURA, H., S. OHSUMI, T. NEMOTO, K. NASU and T. KASUYA., 1969. Black right whales in the North Pacific. *Sci. Rep. Whales Res. Inst.*, 21: 1–78.

OMURA, H., M. NISHIWAKI and T. KASUYA., 1971. Further studies on the two skeletons of the black right whale in the North Pacific. *Sci. Rep. Whales Res. Inst.*, 23: 71–81.

NISHIWAKI, M. and T. KASUYA., 1970. A Greenland right whale caught at Osaka Bay. *Sci. Rep. Whales Res. Inst.*, 22: 45–62.