Re-identification of a Skeleton of the Bryde’s Whale (Balaenoptera edeni) from the Northern Coast of Borneo

The smaller rorquals of the Southeast Asian seas have been referred to under three different species headings: minke whale (Balaenoptera acutorostrata; ELLERMAN & MORRISON SCOTT, 1951), sei whale (Balaenoptera borealis; CHASEN, 1940), and Bryde’s whale (Balaenoptera edeni; PILLERI, 1974) and therefore confusingly sometimes all three species are listed (CORBET & HILL, 1992). However, when reviewing the balaenopterid whale records from Thai waters we (ANDERSEN & KINZE, 1999) had to delete all records of ‘minke whales’ and ‘sei whales’ and reassign them to the Sittang whale, a small type of Bryde’s whale (Balaenoptera edeni). We believe that the findings from Thailand are applicable to the whole region, i.e. that there is only one common species of the baleen whale, Balaenoptera edeni.

Because of the somewhat turbulent taxonomic history of B. edeni, proper species assignments within the region have suffered from erroneous assumptions. Described by ANDERSEN (1879) from the mouth of the Sittang River in Myanmar, B. edeni was for a long time doubted to be a genuine species. ANDREWS (1916, 1918) considered it conspecific with or closely allied with the sei whale (Balaenoptera borealis). Then FRASER (1937) and after him ELLERMAN & MORRISON SCOTT (1951) considered it to be a local form of the minke whale. The reason for this erroneous judgement may have been the incompleteness of the skeleton of the type specimen of B. edeni (which lacks the first ribs that would have been bifurcated and therefore diagnostic for B. borealis and B. edeni but not for B. acutorostrata), the unavailability of further specimens, and the relatively small ‘minke whale’ size of the specimen.

JUNGE (1950) eventually brought the nomenclature up to its present stage by lumping B. edeni with B. brydei described by OLSSEN in 1912 (OLSEN, 1913). Hence, there are confusing reports on the occurrence of the minke whale in Malaysian waters. CHASEN (1940) and after him HERSHKOVITZ (1966) reported only the sei whale (Balaenoptera borealis) from Borneo, based apparently on a specimen kept in the Kuching Museum, but not the minke whale. Neither did GIBSON-Hill (1950) mention the minke whale from Bornean waters. PAYNE & FAIRLEY (1985) included the species in their field guide, but stated that it had yet to be confirmed from the island. CORBET & HILL (1992) included the Straits of Malacca in the distributional range of the minke whale without specific references.

Most recently, BEASLEY & JEFFERSON (1997) reiterated the occurrence of the minke whale, referring to a specimen in the Natural History Museum in London and a compilation provided by LEATHERWOOD (1986), apparently overlooking the work of RUDOLPH ET AL. (1997) who doubted that the north Borneo specimen was a minke whale.

ELLERMAN & MORRISON-SCOTT (1951), and HARRISON (1974), most likely based their accounts on the specimen of the “lesser rorqual” that was collected from the northern shore of Borneo. The skeleton of the specimen now placed in the Natural History Museum in London (NMH 1908.7.9.5) was indeed labelled as ‘minke whale’ (Balaenoptera acutorostrata).

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The specimen was donated to the museum by the British North Borneo Company, which inferred that it originated from the shores of present day Sabah, and it was entered in the Museum's Mammal Register for 1908 under the name 'Balaenoptera rostratus'. The original identification of the specimen most likely was made by the staff member in charge of the osteology collection, William P. Pycraft, under the guidance of the then Keeper of Zoology and founder of the British Stranded Whale Programme, Sir Sidney F. Harmer (Richard Sabin, pers. comm. 2000)

Since this sole evidence for the occurrence of the minke whale in Malaysian waters potentially rests on an erroneous taxonomic assumption, in January 2000 we re-examined the London specimen. Here we provide evidence that it is indeed a Bryde's whale and not a minke whale.

Based on the features published by Omura et al. (1981) and Andersen (1994), and on a combined character state analysis, we hereby re-identify it as a Sittang whale which is a small eco-type of the Bryde's whale (Balaenoptera edeni), being conspecific with the type specimen of Balaenoptera edeni Andersen, 1879.

The London specimen (Fig. 1) was subadult (vertebral epiphyses not fused with the vertebral bodies) and exhibited bifurcated first ribs (Fig. 2) and an vertebral count of 52+ which immediately excludes the minke whale, B. acutorostrata (no bifurcated first ribs, max. 48 vertebrae). Bifurcated ribs are only found in B. borealis and B. edeni. The specimen further exhibits the following diagnostic features of Bryde's whales:

1) In dorsal view the shape of the outer margin of the rostrum of the Borneo is convex, not straight as in sei whales.
2) The front margin of the nasals is straight in the Borneo specimen not convex as in sei whales (Fig. 3).
3) The front margin of the nasals of the Borneo specimen is situated clearly posterior to the anterior border of the post-maxillary cavity being diagnostic for B. edeni (Fig. 3).
4) The basi-cranial part of the skull is much longer than broad, being diagnostic for B. edeni (Fig. 4).
5) The groove between the angular and articular parts of the mandible is shallow, being diagnostic for B. edeni (Fig. 5).
6) The posterior extension of the angular portion of the mandible of the Borneo specimen is at the level of the articular portion (being diagnostic for B. edeni).

It should be noted that single features may fail to identify the species, but a combined character analysis will provide a safe species identification.

The minke whale has yet to be confirmed from Indonesian and Thai waters (Andersen & Kinze, 1999; Rudolph et al., 1997). A rorqual record from the Philippines (Herre, 1925) was assigned to minke whale by Stewards & Leatherwood (1985) based solely on its small size, but it cannot be ruled out that it was a Bryde's whale instead. Wang (1984) reported both minke and Bryde's whales from adjacent Chinese waters. Smith et al. (1995) also reported both minke and Bryde's whales for Vietnamese waters but the basis for their identification has been criticized (Andersen & Kinze, 2000). The only safe record of a minke whale henceforth, however, originates from Vietnam (Ho & Ngh, 1999).

Minke whale, Bryde's whale and sei whale all occur in Southeast Asian waters, but given the confusing taxonomic history, species determinations of stranded specimens must
Figure 1. The Borneo specimen in the London collection. To the right a true minke whale for comparison.

Figure 2. Bifurcated or double headed first ribs of the Borneo specimen (arrows).
Figure 3. The nasal portion of the Borneo specimen exhibiting a slightly concave (arrow) front margin of the nasals and a front margin of the nasals (lower line) clearly posterior to the anterior border of the post-maxillary cavity (upper line).

Figure 4. The basicranial part of the skull of the Borneo specimen which is much longer than broad.

Figure 5. The shallow groove between the angular and articular parts (arrow) of the mandible. The posterior extension of the angular portion of the mandible is at the same level as the articular portion.
Table 1. External and osteological features to distinguish between the three smallerrorqual species of the southeast Asian seas.

<table>
<thead>
<tr>
<th>External features</th>
<th>B. acutorostrata</th>
<th>B. edeni</th>
<th>B. borealis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL (birth)</td>
<td>2.8 m</td>
<td>3.0 m</td>
<td>4.0 m</td>
</tr>
<tr>
<td>TL (adult)</td>
<td>7–10 m</td>
<td>8–14 m</td>
<td>15–20 m</td>
</tr>
<tr>
<td>pleats reach navel</td>
<td>never</td>
<td>yes</td>
<td>never</td>
</tr>
<tr>
<td>number of rostrum ridges</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>flipper spot</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>baleen colour</td>
<td>white/grayish</td>
<td>gray/yellowish</td>
<td>coarse</td>
</tr>
<tr>
<td>baleen fringes</td>
<td>coarse</td>
<td>coarse</td>
<td>very fine</td>
</tr>
</tbody>
</table>

| Osteological features                  |                  |          |             |
| Rostrum                                | pointed           | rounded  | rounded     |
| basicranial exposure                   | long/narrow       | long/narrow | short/broad |
| bifurcated rib                         | Never             | Yes      | Yes         |
| number of vertebrae                    | 46–48             | 54–55    | 56–57       |

be based on either osteological material and external features, or DNA-probes or ideally a combination of both.

We suggest a re-examination of all small balaenopterid specimens within the whole Sunda region. The three small species known from the area can be identified using Table 1.

REFERENCES


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