

BEAUFORTIA

SERIES OF MISCELLANEOUS PUBLICATIONS

INSTITUTE OF TAXONOMIC ZOOLOGY (ZOOLOGICAL MUSEUM)
UNIVERSITY OF AMSTERDAM

No. 249

Volume 19

September 17, 1971

On *Globicephala sieboldii* Gray, 1846, and other species of Pilot Whales

(Notes on Cetacea, Delphinoidea III)

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ABSTRACT

Within the genus *Globicephala* Lesson, 1828, only two species can be recognized, namely: *Globicephala melaena* (Traill, 1809) and *Globicephala macrorhynchus* Gray, 1846. *Globicephala sieboldii* Gray, 1846, is a synonym of *G. macrorhynchus*. Synonymies of the two species as well as a key to both species are given. Whether *Globicephala melaena* has an antitropical distribution in the Pacific as in the Atlantic is not yet known.

In 1844, Temminck & Schlegel (for the exact date of publication see Mazák, 1967, and Holthuis & Sakai, 1970) described and figured a young Pilot Whale caught near Nagasaki, Japan, in October 1827 (the same animal being already noted by Schlegel in 1841: 33). The authors regarded it identical with the Pilot Whale from European waters [*Delphinus globiceps* G. Cuvier, 1812 = *Globicephala melaena* (Traill, 1809)] but conceded that there were some differences between the Nagasaki animal and the adult specimens stranded on European shores. The forehead was less swollen and the pectoral fins were somewhat larger than in the *G. melaena* from European waters (see figure by Villeneuve on pl. 27 in Temminck & Schlegel, 1844).

Having at our disposal the results of the detailed studies by Sergeant (1962 a & b) on the biology, growth and external characters of Pilot Whales and knowing that the total length of the Nagasaki specimen was 5' 6" (equalling 178.7 cm, if the authors used French measurements of the value current on the European continent during the first half of the 19th century), it is not surprising that the forehead was less swollen and the pectoral fins relatively larger, as these features are normal for young Pilot Whales.

Although Temminck & Schlegel did not regard the Nagasaki Pilot Whale

Received: June 2, 1971

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distinct from *Globicephala melaena*, the differences were considered so important by Gray (1846: 32—33) that he decided to create a new species for it, namely *Globiocephalus sieboldii*. Later Gray (1871: 83—85), in a rather obscure way, made *G. sieboldii* a synonym of *Globicephala macrorhynchus* Gray, 1846, and the name *sieboldii* went out of use, although it was discussed by True (1889: 142) and was mentioned (for the sake of completeness) in faunal checklists. Fraser (1951: 741) indicates that in the drawing of the skull of *G. sieboldii* (on plate 27 of Temminck & Schlegel, 1844), the premaxillae are more like *G. macrorhynchus* or *G. scammonii* than *G. melaena* but he retains the species as *incertae sedis*.

This situation changed, when Hershkovitz (1966: 97) resuscitated the name and used it for a subspecies of Pilot Whale occurring in the northern Pacific from Alaska to Guatemala on the East, Japan and the Yangtze Estuary, China, on the West. As his arguments for the recognition of *Globicephala melaena sieboldii* are probably based more on theoretical considerations than on taxonomic research, the present author thought it might be useful to study the type material of *Globicephala sieboldii*, a complete, mounted skeleton present in the collections of the Rijksmuseum van Natuurlijke Historie, Leiden, the Netherlands, (formerly cat. d., see Jentink, 1887: 175; new reg. no. 21648), and thereby try to determine the exact taxonomic status of the form.

TABLE I. Dimensions (in cm and in percentages of the total length of the skull) of the type skull of *Globicephala sieboldii* Gray, 1846 (RMNH 21648).

	cm	%
Total length of skull	37.6	100.0
Rostrum length	17.4	46.3
Rostrum basal width	12.0	31.9
Rostrum, width 60 mm anterior to base	10.6	28.2
Rostrum, width at its middle	9.6	25.5
Rostrum, width at $\frac{3}{4}$ of its length	6.8	18.1
Breadth across pre-orbital angles of supra-orbital processes	21.5	57.2
Breadth across post-orbital angles of supra-orbital processes	23.9	63.6
Zygomatic width	24.0	63.8
Width of braincase across parietals	19.6	52.1
Maximum width of premaxillae (posteriorly)	10.6	28.2
Length temporal fossa	9.1	24.2
Height temporal fossa	7.2	19.1
Tip rostrum — nares	21.9	58.2
Length of upper tooththrow (right side)	7.2	19.1
Length of upper tooththrow (left side)	7.8	20.7
Tip rostrum — pterygoid	cf. 22.3	59.3
Number of alveoli (upper)	(2) ⁵ —5(2)	= 7—7
Length mandible	cf. 29.6	78.7
Height mandible at coronoid	—	—
Symphysis mandibles (length)	—	—
Length of lower tooththrow (right side)	7.2	19.1
Length of lower tooththrow (left side)	7.5	19.9
Number of alveoli (lower)		7—7

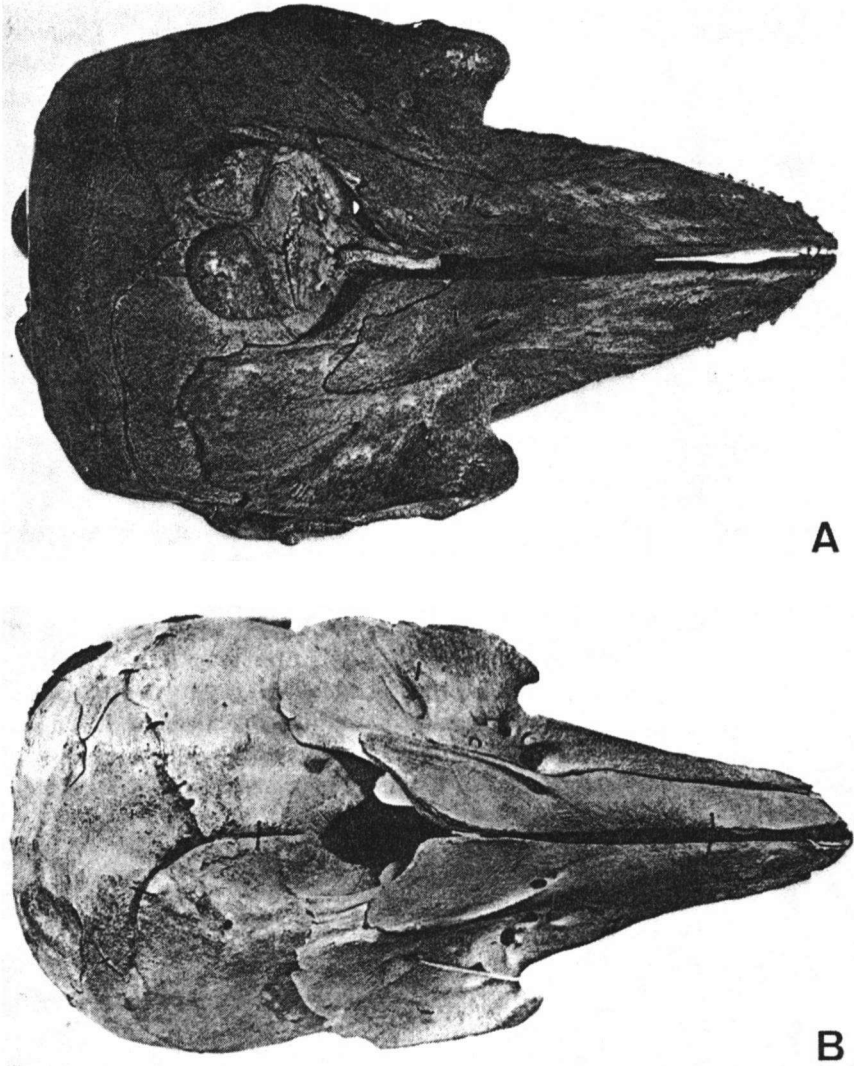


FIG. 1. A. Dorsal view of the type skull of *Globicephala sieboldii* Gray, 1846 (RMNH 21648), photograph by A. L. van der Laan; B. Dorsal view of a skull of a juvenile *Globicephala melaena* (Traill, 1809) — after Fraser, 1950, pl. II, 2; published by kind permission.

The author is grateful to Dr A. M. Husson, curator of the Department of Mammals of the Leiden Museum, for the permission to study the skeleton. Thanks are also due to Dr F. C. Fraser of the British Museum (Natural History), London, for permission to republish one of his photographs (Fraser, 1950, pl. II, fig. 2).

When one compares the skull of the Nagasaki specimen (for measurements,

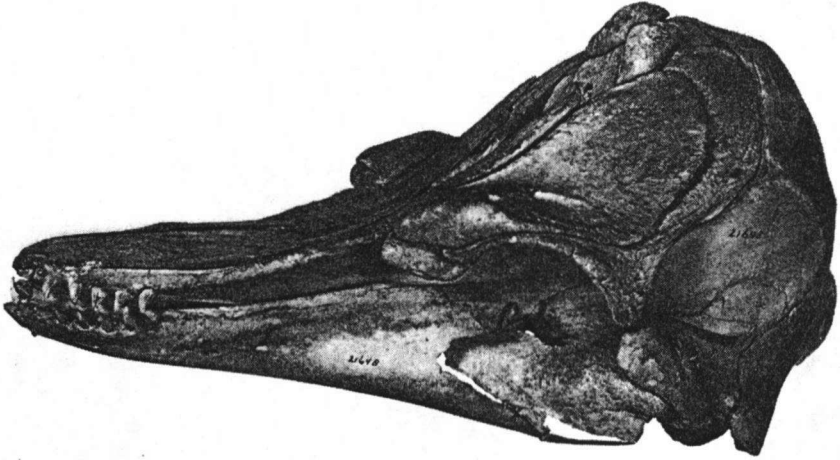


FIG. 2. Lateral view of the type skull of *Globicephala sieboldii* Gray, 1846 (RMNH 21648). Photograph by A. L. van der Laan.

see table I) with its figures in the book by Temminck & Schlegel (loc. cit., pl. 27), some distinct differences can be noted. The premaxillae, covering more than two fifth of the lateral borders of the anterior part of the rostrum (see fig. 1, A), are broader actually than those depicted. On the drawing of the lateral view of the skull 10 teeth can be counted above and below. In reality there are only 7 teeth in each row (see fig. 2). One gains the impression that, since the authors regarded the young Pilot Whale from Japan conspecific with European specimens of *Globicephala*, composite drawings have been made, showing intermediate characters of both forms. This idea is reinforced by the drawings of a Pilot Whale skull, that Schlegel (1862, pl. 16) published in his book on the mammals of the Netherlands. These figures look like the ones of the Nagasaki skull.

The skull of *Globicephala sieboldii* very much resembles the skull of a near term foetus *Globicephala indica* Blyth, 1852 (a junior synonym of *G. macrorhynchus* Gray, 1846), figured by Dammerman (1924, pl. VII). The same can be said of the skull of the type of *Phocoena globiceps* A. Smith, 1834 (see Fraser, 1950, pl. 3, fig. 1). When one compares, however, the *sieboldii* skull with the skull of a young *melaena* (see fig. 1, B) distinct differences can be seen. |

Considering the shape of the premaxillae, the number of teeth, and the dimensions of the rostrum, it becomes clear that *Globicephala sieboldii* and *Globicephala macrorhynchus* are synonyms. Both names were published in the same publication by Gray (1846), but in 1871 that author, as stated before, chose *macrorhynchus* as the name for the species.

Pacific, viz. *Globicephala scammonii* Cope, 1869, in relation to the foregoing

It may be useful to discuss briefly another Pilot Whale described from the

notes on *G. sieboldii*. According to Cope (: 21) in his introductory notes to Scammon's article (1869: 32—63) on the cetaceans of the western coast of North America, *G. scammonii* is distinguished from *G. melaena* by the absence of a white band or other mark on the abdomen, and from *G. macrorhynchus* (and *G. indica*) by its more numerous teeth (above 10—12, below 8—10). For further details Cope refers to the description of the animal by Scammon on pages 58—59 (republished in Scammon's book in 1874: 85—87).

According to True (1889: 139), a skull presented by Scammon is in the collections of the United States National Museum, which *presumably* (emphasis added) is the type of the species. For a dorsal view of this skull, see True, 1889, pl. 42, fig. 2, and for a ventral view of the same skull Hall & Kelson, 1959: 829. Measurements of this skull are given by True, 1889: 142. Attention must be drawn to the contradictory data on the number of upper teeth in the type skull (USNM 9074); according to True (1889: 142) 8—8, and according to figure 456a published by Hall & Kelson (1959) 10—10.

True (1889: 138—142, 184—186) separates *G. scammonii* from *G. macrorhynchus* and *G. brachypterus* (now considered to be a junior synonym of *G. macrorhynchus*) by a number of small differences, e.g., the shape and dimensions of the temporal fossae and the height of the ossified nasal septum.

If these differences, however, are studied in a large sample of skulls of *Globicephala macrorhynchus*, one sees that gradations exist and that it is impossible to recognize distinct groups. The shape and dimensions of the temporal fossae are related to the age of the specimens and great individual variation can be found in the height of the nasal septum. A certain degree of variation also exists in the way the intermaxillae cover the anterior parts of the maxillae. On one or both sides a very small margin of the maxillae can be left uncovered or the intermaxillae may project over the maxillae, but never, is a band of the lateral sides of the maxillae one centimetre broad left uncovered, as in *Globicephala melaena*. With these facts in mind, there is no reason to consider *G. scammonii* a separate species; the name is only a junior synonym of *G. macrorhynchus*.

Gray (1871: 83—85) recognizes within the genus *Globiocephalus* (now *Globicephala*) three species, namely: *G. svineval* (= *melaena*), *G. grayi* (= *Pseudorca crassidens*) and *G. macrorhynchus*. The last species with the junior synonyms: *G. scammonii*, *G. australis* (a nomen nudum), *G. indicus*, *G. sieboldii*, *G. chinensis*, and *G. sibo*. Besides the genus *Globicephala*, he also retains the genus *Sphaerocephalus* with the species *incrassatus*. It is now known that the latter genus and species are based on one somewhat aberrant skull of a *Globicephala melaena*. Summarizing we can come to the following lists of synonymies:

Globicephala Lesson, 1828

I. *Globicephala melaena* (Traill, 1809)

Synonyms:

Delphinus melas Traill, 1809

Delphinus globiceps G. Cuvier, 1812

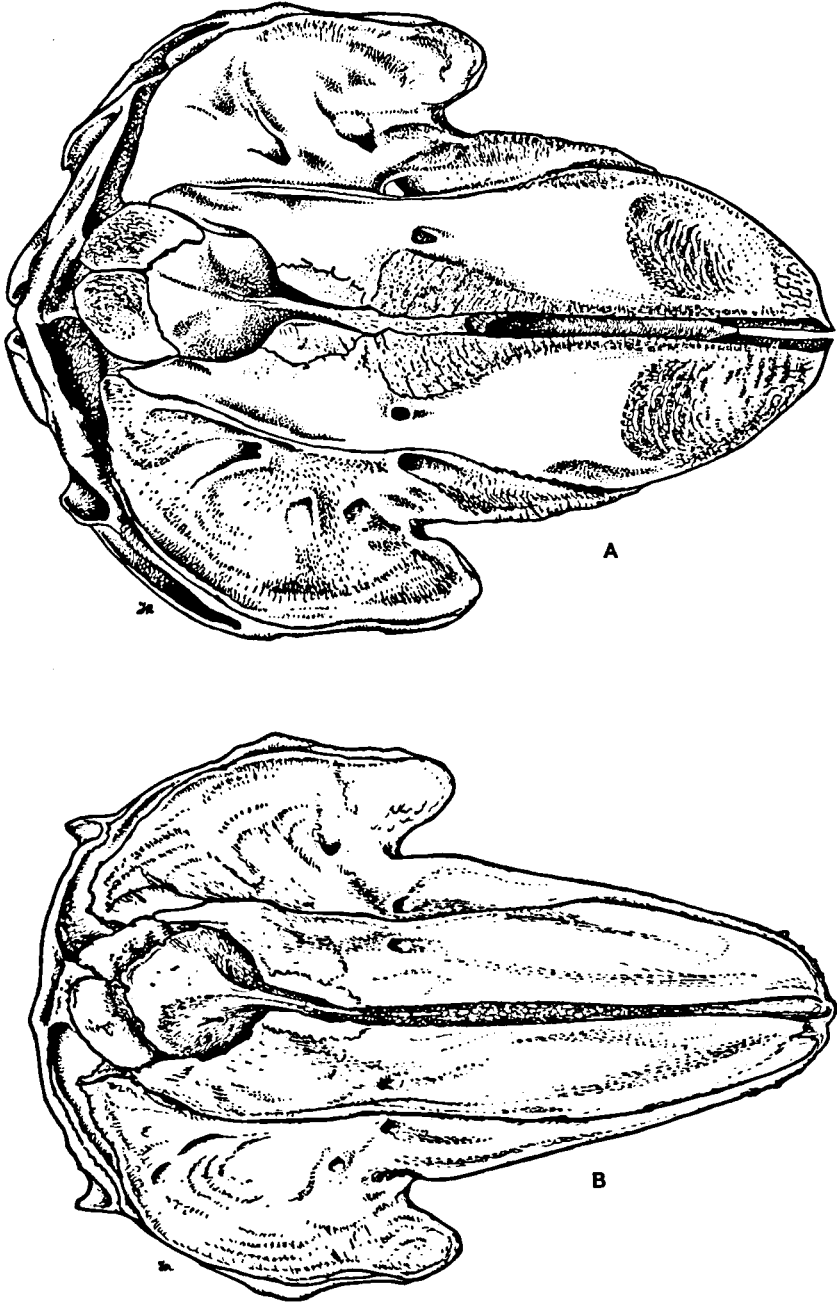


FIG. 3. A. Dorsal view of a skull of *Globicephala macrorhynchus* Gray, 1846 (ZMA 5056, Cbl 685 mm); B. Dorsal view of a skull of *Globicephala melaena* (Traill, 1809) (ZMA 8055, Cbl 624 mm). Drawings by Jos Ruting.

- Delphinus deductor* Scoresby, 1820
- Delphinus grinda* Lyngby, 1824
- Phocoena edwardii* A. Smith, 1834
- Globicephalus conductor* Rapp, 1837
- Globiocephalus affinus* Gray, 1846
- Globiocephalus svineval* Gray, 1846
- Delphinus grampus* Gray, 1846
- Globiocephalus incrassatus* Gray, 1846
- Globiocephalus chilensis* Philippi, 1896
- Globicephala leucosagmaphora* Rayner, 1939

II. *Globicephala macrorhynchus* Gray, 1846

Synonyms:

- Phocoena globiceps* A. Smith, 1834 (non G. Cuvier, 1812)
- (?) *Phocoena* spec. Bennett, 1840
- Delphinus globiceps* Schlegel, 1841 (part.)
- Globiocephalus macrorhynchus* Gray, 1846
- Globiocephalus sieboldii* Gray, 1846
- (?) *Delphinus carbonarius* Wagner, 1846
- (?) *Delphinus fuscus* Reichenbach, 1846
- Globicephala indica* Blyth, 1852
- Globiocephalus chinensis* Gray, 1866
- Globicephalus scammonii* Cope, 1869
- Globiocephalus intermedius* van Beneden & Gervais, 1868-79
- (?) *Globicephalus propinquus* Malm, 1871
- Globiocephalus guadeloupensis* Gray, 1871
- Globiocephalus sibo* Gray, 1871
- Globicephalus brachypterus* Cope, 1876

III. Incertae sedis

- Delphinus intermedius* Harlan, 1827
- Delphinus harlani* Fischer, 1829

Taking into account the publications by Weber (1923), Dammerman (1924), Fraser (1950), and Sergeant (1962 b), the two Pilot Whale species can be recognized as follows:

SKULL

A more elongated rostrum with rather narrow premaxillae leaving uncovered a one centimetre lateral margin of the maxillae (see fig. 3, B). Normally 9-12 teeth in each toothrow *Globicephala melaena*.

A rather short and broad rostrum with broad premaxillae completely covering the maxillae anteriorly or leaving uncovered a very small margin of the maxillae on one or both sides (see True, 1889, pl. 42, fig. 2; Dammerman, 1924, pl. 7; this article, fig. 3, A). Normally 7-9 teeth in each toothrow *Globicephala macrorhynchus*.

EXTERNALLY

Long pectoral fins (18-27% of the total length of the animal). Ventrally with a clear white blaze *Globicephala melaena*.

Short pectoral fins (14-19% of the total length of the dolphin). Ventral blaze either absent or rather indistinct *Globicephala macrorhynchus*.

It is now known that *Globicephala melaena* has an antitropical distribution in the Atlantic Ocean (Fraser, 1950; Davies, 1960, 1963). *Globicephala macrorhynchus* can be found in tropical and warm subtropical waters of the Atlantic Ocean and of the Indo-Pacific Ocean. But whether *G. melaena* also has an antitropical distribution *) in the Pacific Ocean is not yet known. According to Hall & Kelson (1959: 830), Pilot Whales live in coastal waters of the Pacific Ocean from Alaska (Kantak, western shore of the Alaskan Peninsula) southwards to Guatemala. Yet in the publications by Scammon (1869, 1874) and by Norris & Prescott (1961) only, some exact data occur concerning the skull and the external features of the animals, and these data refer to specimens from Californian and Mexican waters only.

On the western side of the northern Pacific almost no taxonomic work has been done on Pilot Whales; see Nishiwaki, 1967: 36. His map (: 37), showing the distribution of *Globicephala scammonii* and *Globicephala melaena*, cannot be based on the results of detailed studies and probably the names of the two species should be interchanged on the map. Specimens of *Globicephala macrorhynchus* are now known from California on one side and from Nagasaki on the other side of the northern Pacific, but whether this species occurs also north of the line connecting the two localities and if so, during which seasons, is unknown. It therefore would be most useful if Pilot Whales from temperate northern Pacific waters could be studied from a taxonomic point of view.

REFERENCES

- COPE, E. D.
1869 Introductory note [to the Cetaceans of the Western Coast of North America by C. M. Scammon]. — Proc. Acad. nat. Sc. Philadelphia, 21: 13—32.
- DAMMERMAN, K. W.
1924 On *Globicephala* and some other Delphinidae from the Indo-Australian Archipelago. — Treubia, 5 (4): 340—352, 4 pls.
- DAVIES, J. L.
1960 The southern form of the Pilot Whale. — J. Mammalogy, 41 (1): 29—34.
1963 The antitropical factor in cetacean speciation. — Evolution, 17 (1): 107—116.
- FRASER, F. C.
1950 Two skulls of *Globicephala macrorhyncha* (Gray) from Dakar. — Atlantide Rep., 1: 49—60, 5 pls.
1951 In: J. R. Ellerman & T. C. S. Morrison Scott: Checklist of Palaearctic and Indian Mammals, 1758 tot 1946: 1—810 (Trustees Brit. Mus., London).
- GRAY, J. E.
1846 On the cetaceous animals. In: J. Richardson & J. E. Gray, Eds. — The Zoology of the Voyage of H. M. S. Erebus and Terror ... 1839 to 1843, 1: 13—53, 37 pls.
1871 Supplement to the catalogue of Seals and Whales in the British Museum: i-vi, 1—103 (Trustees Brit. Mus., London).
- HALL, E. R. & K. R. KELSON
1959 The mammals of North America, 2 vol.: i-xxx, 1-1083, 1—79 (Ronald Press Comp., New York).

*) Antitropical distribution = distribution in non-tropical waters of both hemispheres, see Hubbs, 1952.

- HERSHKOVITZ, Ph.
1966 Catalog of living whales. — Bull. U.S. nation. Mus., 246: I-VIII, 1-259.
- HOLTHUIS, L. B. & T. SAKAI
1970 Ph. F. von Siebold and Fauna Japonica, a history of early Japanese zoology: I-XX, 1—323, 32 pls (Acad. Press Japan, Tokyo).
- HUBBS, C. L.
1952 Antitropical distribution of fishes and other marine organisms. — 11th Pac. Sc. Congr. 3: 324—329.
- JENTINK, F. A.
1887 Catalogue ostéologique des mammifères — Muséum d'Histoire Naturelle des Pays-Bas: 1, 1—359, 1, 12, 12 pls (E. J. Brill, Leiden).
- MAZÁK, V.
1967 Notes on Siberian Long-haired Tiger, *Panthera tigris altaica* (Temminck, 1844), with a remark on Temminck's mammal volume of the "Fauna Japonica". — Mammalia, 31 (4): 537—573, 4 pls.
- NISHIWAKI, M.
1967 Distribution and migration of marine mammals in the North Pacific area. — Bull. Ocean res. Inst., 1: 1—64 (also published in: Symposium 4, 11th Pacific Sc. Congr., 1966).
- NORRIS, K. S. & J. H. PRESCOTT
1961 Observations on Pacific Cetaceans in Californian and Mexican waters. — Univ. Calif. Publ. Zool., 63: 291—370, 41 pls.
- SCAMMON, C. M.
1869 On the Cetaceans of the Western Coast of North America [edited by Edward D. Cope]. — Proc. Acad. nat. Sc. Philadelphia, 21: 32—80 (+1), 1 pl.
1874 The marine mammals of the north-western coast of North America, etc.: 1—319, i-v, 27 (+1) pls (J. H. Carmany & Comp., San Francisco; G. P. Putnam's Sons, New York) (republished in 1968 with new introduction by V.B. Scheffer by Dover Publ. Inc., New York).
- SCHLEGEL, H.
1841 Beiträge zur Charakteristik der Cetaceen. — Abh. Gebiete Zool. vergl. Anat., 1: 1—44, 1, 6 pls.
1862 Natuurlijke historie van Nederland — Zoogdieren: I-II, I-VIII, 1—133, 20 pls (Kruseman, Haarlem).
- SERGEANT, D. E.
1962a The biology of the Pilot or Pothead Whale, *Globicephala melaena* (Traill), in Newfoundland waters. — Bull. Fish. res. Bd. Canada, 132: i-vii, 1—84.
1962b On the external characters of the Blackfish or Pilot Whales (genus *Globicephala*). — J. Mammalogy, 43 (3): 395—413.
- TEMMINCK, C. J. & H. SCHLEGEL
1844 Les mammifères marins. In: C. J. Temminck — Aperçu général et spécifique sur les Mammifères qui habitent le Japon et les Iles qui en dependent (= Fauna Japonica — Mammifères): 1—26, 10 pls (A. Arnz & Comp., Leiden).
- TRUE, F. W.
1889 Contributions to the natural history of the cetaceans: A review of the family Delphinidae. — Bull. U.S. nation. Mus., 36: 1—192, 47 pls.
- WEBER, M.
1923 Die Cetaceen der Siboga-Expedition. — Siboga Exp. Monogr., 58: 1—38, 3 pls.