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On the taxonomic status of *Delphinus tropicalis* van Bree, 1971 (Notes on Cetacea, Delphinoidea IX)

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ABSTRACT

Three recently found skulls of *Delphinus tropicalis* are discussed and compared with other skulls of the same taxon. The occurrence of *Delphinus delphis* in the same area as *Delphinus tropicalis* makes it plausible that *D. tropicalis* is a distinct species and not a subspecies of *D. delphis*. A dolphin collected in the South China Sea, probably near Pontianak, by W. L. Abbott in 1907 also belongs to *Delphinus tropicalis*. The species therefore has a wider distribution than was originally believed.

The second author made a collection of dolphin skulls on the Arabian coasts of the Arabian or Persian Gulf at Bahrain (1969-71) and United Arab Emirates, formerly the Trucial Coast (1971-73), and on the Batinah (Gulf of Oman) coast of northern Oman (March 1973). This collection of dolphin skulls (*Sousa plumbea, Tursiops aduncus, Stenella* spec.) will be reported on elsewhere. Here attention will be paid only to the material of *Delphinus tropicalis*.

Before discussing the skulls it may be useful to review briefly the history of the species. Originally the taxon was described by G. Cuvier in 1829 under the name *Delphinus longirostris*. As this name was preoccupied by *Delphinus longirostris* Gray, 1828, Blanford in 1891 proposed the name *Delphinus dussumieri* for it, not realizing that this name was also preoccupied by *Delphinus dussumieri* Fischer, 1829. Van Bree (1971b) therefore proposed the name *Delphinus tropicalis* for the taxon.

Until now the species has been known only from a limited number of specimens. Besides the skull of the holotype (MNHN-Paris, A-3065), collected by J. J. Dussumier near the Malabar coast (see also Arvy, 1972), there are the remains of two specimens in the collection of the British Museum (Natural History) in London (BMNH 1949.7.15.4 & BMNH 1954.9.9.2; see van Bree 1971a). Pilleri & Gihr (1972) described first one

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specimen and in the next year 5 specimens, all originating from the Sind coast of Pakistan. Until then *Delphinus tropicalis* was only known from the Arabian Sea, from the Malabar coast in the east to the Gulf of Aden in the west. Therefore Pilleri & Gihr (1972, 1973) regarded the species endemic. It appears, however, that the species has a wider distribution.

The data concerning the specimens of *Delphinus tropicalis* collected by the second author are:

BMNH 1973.108 — 7-IV-1972, Jazirat Hulaylah, near Khor Kuwayr, Ras al Khaimah (25°56′ N, 56°02′ E); on shore above HWL. (Gallagher ≠ 2.78) (skull).

BMNH 1973.1746 — 26-II-1973, Ajman Creek, near Sharjah (25°24′ N, 55°27′ E); on mud at low tide. Head only, as if discarded by fishermen (Gallagher ≠ 2.301) (skull).

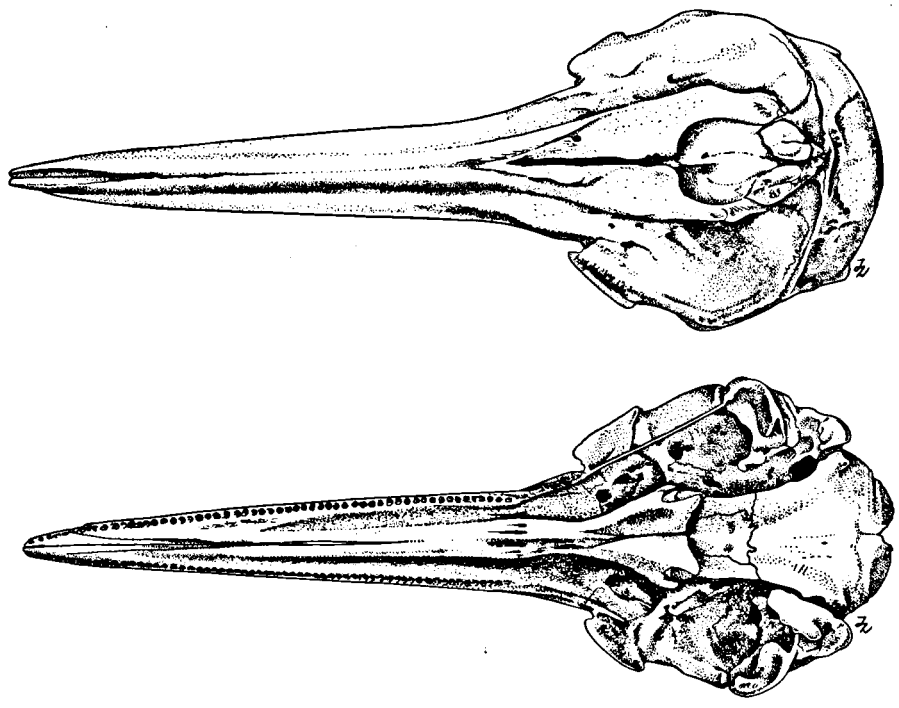

Fig. 1. Dorsal and ventral view of the calvarium of *Delphinus tropicalis* (ZMA 16.995). Skull drawings by J. Zaagman — ZMA.

ZMA 16.995 — 12-VIII-1973, Umm al Qawain (25°34′ N, 55°36′ E); on inlet to lagoon (Gallagher ≠ 2.498). Formerly registered BMNH 1973.1745; skull received in exchange. See figs. 1 & 2.

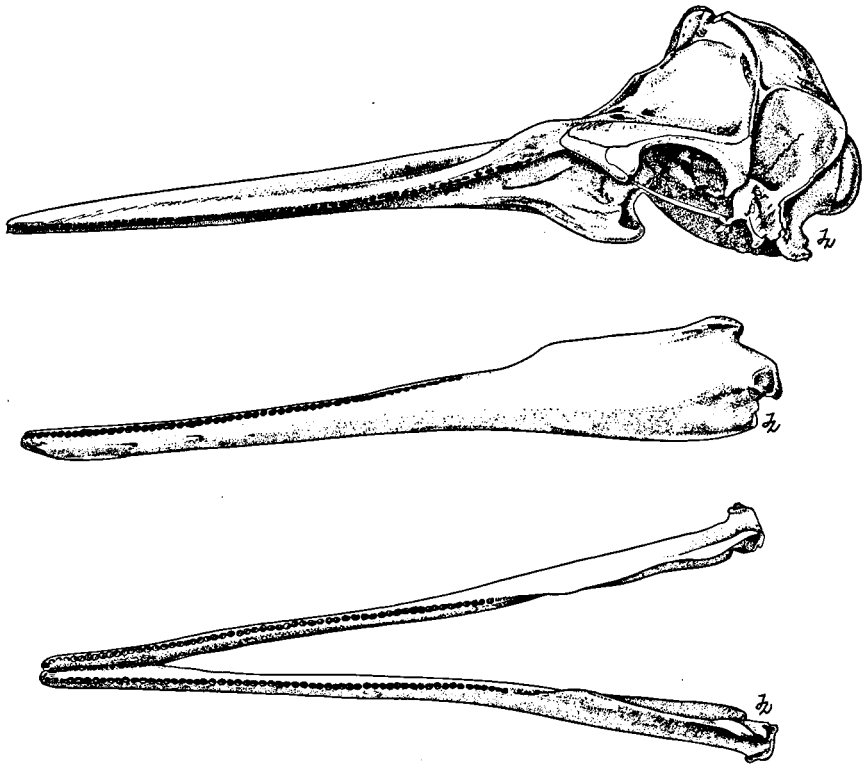

Fig. 2. Lateral view of the skull of Delphinus tropicalis (ZMA 16.995) and a dorsal view of its lower jaw.

Apart from these three skulls we also could study the skulls of some other dolphins belonging to the genus *Delphinus* Linnaeus, 1758, viz.:

USNM 49977 — 23-VIII-1907, South China Sea (exact locality unknown yet. The collector was on 21-VIII-1907 on Penembagan Island (1°13′ S, 109°15′ E) and on 23-VIII-1907 he was on route from there to an unknown destination. It is very probable that the specimen was taken near the coast of Borneo (Kalimantan), not far from Pontianak). Legit W. L. Abbott (≠ 5563) (complete, unmounted skeleton).

BMNH 1965.12.17.1 — 1965, Kuria Muria Islands (approximately 17°30′ N, 56°00′ E), Sultanate of Oman. Legit Petty Officer P. J. Wright (calvarium only).

When measurements and dimensions of the skulls collected recently (table I) are compared with those of *Delphinus tropicalis* published previously (van Bree, 1972a; Pilleri & Gihr, 1972, 1973), one notes that almost no differences exist and that the total sample is fairly homogeneous.

In a study of subspecies in *Delphinus delphis* Linnaeus, 1758, Banks & Brownell (1969) published the dimensions of a rather aberrant specimen (USNM 49977) from the South China Sea. In his paper on *Delphinus tropicalis*, van Bree (1972a) suggested that it could be another specimen of *D. tropicalis* instead of *D. delphis*. In the meantime we had the opportunity to study and measure the remains of this dolphin (see also table I) and it turned out that it indeed was another specimen of *Delphinus tropicalis* (see fig. 3). This implies that the species has a much wider distribution than originally accepted. In relation to this wider distribution it would be useful if the remains of *Delphinus* present in collections in the Indian sub-continent could be studied more closely. (For the occurrence of *Delphinus* along the coasts of India and Ceylon (Sri Lanka) see Prater (1965)).

Since the rediscovery of *D. tropicalis* (before 1971 it was generally considered a junior synonym of *Delphinus delphis*), the main problem has been whether this taxon represented a subspecies of *D. delphis* or a closely related but distinct species, a problem that never can be solved satisfactorily by studying museum material only. Crossbreeding experiments in cetaceans are very difficult indeed and if they succeed (accidentally), they may not furnish the information looked for. It also appears that chromosome studies in cetaceans are no great aid in the taxonomy of this order (Kulu, 1972). And to make the problem even more complex, it is known that *Delphinus delphis* is a species, which shows great variability (van Bree & Purves, 1973).

We nevertheless believe that there are two arguments for considering, at least provisionally, *Delphinus tropicalis* to be a distinct species. Regarding the first one, if we limit ourselves to the two main differences between the skulls of the two taxa, viz. the relative length of the rostrum and the index length rostrum divided by zygomatic width, we have no skulls with indermediate values (see table II). We realize that this argument is contestable as the number of *Delphinus* skulls from the Indian Ocean and adjacent waters available for study is very limited. In table II we therefore compared our *Delphinus tropicalis* skulls with skulls of *D. delphis* from all over the world, including some from the Indian Ocean.

The second argument is that we found a skull of a dolphin which is clearly *Delphinus delphis* (Kuria Muria Islands, BMNH 1965.12.17.1 — see point 7 in fig. 3) from within the distribution area of *Delphinus tropicalis*. A second skull from the coast of Oman (BMNH 72.807) was too much damaged to be identified with certainty, but probably also belonged to *D. delphis*. The

Table I. Dimensions (in mm and in percentages of the condylobasal length) of four skulls of *Delphinus tropicalis*. For the data pertaining to these skulls, see text.

	in mm				in %			
	BMNH 1973.108	BMNH 1973.1746	ZMA 16.995	USNM 49977	BMNH 1973.108	BMNH 1973.1746	ZMA 16.995	USNM 49977
Total length of skull	503	499	517	491	100.0	100.0	100.0	100.0
Rostrum length	338	338	353	333	67.1	67.7	68.3	67.8
Rostrum basal width	84	84	86	81	16.7	16.8	16.6	16.5
Rostrum, width 60 mm anterior to base	55	57	57	52	10.9	11.4	11.0	10.6
Rostrum, width at its middle	42	44	46	36	8.3	8.8	8.9	7.3
Rostrum, width at ¾ of its length	33	33	30	26	6.7	6.6	5.8	5.3
Breadth across pre-orbital angles of supra-orbital processes	158	158	137	158	31.4	31.7	26.5	32.2
Breadth across post-orbital angles of supra-orbital processes	178	175	155	171	35.4	35.1	30.0	34.8
Zygomatic width	177	174	159	171	35.2	34.9	30.8	34.8
Width of braincase across parietals	136	138	135	136	27.0	27.6	26.1	27.7
Maximum width of premaxillae	66	66	69	67	13.1	13.2	13.4	13.6
Length temporal fossa	75	71	68	64	14.9	14.2	13.2	13.0
Height temporal fossa	56	57	57	48	11.1	11.4	11.0	9.8
Tip rostrum - nares	387	380	401	374	76.9	76.1	77.6	76.2
Length of upper toothrow (right side)	294	293	310	285	58.4	58.7	60.0	58.0
Length of upper toothrow (left side)	—	295	307	284	—	59.1	59.4	57.8
Tip rostrum - pterygoid	388	373	397	368	77.1	74.7	76.8	74.9
Number of alveoli (upper)	55(+2?)—58	58—58	61—59	55(+1)—55(+1)				
Length mandible	441	cf 424	457	428	87.7	cf 85.0	88.4	87.2
Height mandible at coronoid	66	63	66	63	13.1	12.6	12.8	12.8
Symphysis mandibles (length)	?	—	78	86(?)	?	—	15.1	17.5(?)
Length of lower toothrow (right side)	285	—	300	278	56.7	—	58.0	56.6
Length of lower toothrow (left side)	286	—	299	281	56.9	—	57.8	57.2
Number of alveoli (lower)	52(?)—55	— —	59—60	54(+2)—53(+2)				

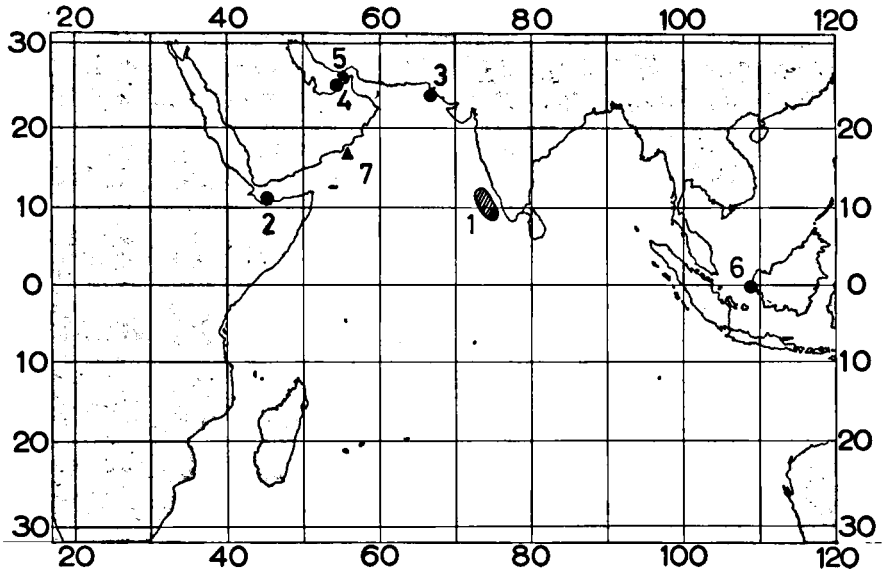

Fig. 3. Localities where specimens of *Delphinus tropicalis* were found or caught. 1, off the Malabar Coast (holotype); 2, two specimens caught off Berbera — Somali Republic (van Bree, 1971a); 3, six specimens from the Sind Coast — Pakistan (Pilleri & Gihr, 1972 & 1973); 4 & 5, three specimens from the Trucial Coast (this paper) and 6, one specimen from the South China Sea (this paper). Locality 7 (triangle) indicates the Kuria Muria Islands, from where a specimen of *Delphinus delphis* is known.

sympatric occurrence of the two taxa is suggestive of two species and not of two subspecies.

During the course of this study we learned of some long-snouted specimens of the genus *Delphinus* that had been caught in the western North Pacific. As, after the re-identification of the Pontianak specimen (USNM 49944), the possibility of a further occurrence of *Delphinus tropicalis* in these waters, especially in the tropical part, could not be excluded, we were very interested in the data concerning these dolphins. Dr. T. Kasuya of the Ocean Research Institute (Tokyo) kindly sent us the measurements of the skulls, together with the tooth counts. Four specimens from off the eastern coast of Japan and from the area between Kyushu (Japan) and Korea were clearly *Delphinus delphis*. A fifth animal caught near Formosa (Taiwan) (≠ TK—255) showed a rather high number of teeth (55—55 above, 54—55 below), but its other characteristics (total length of skull 495 mm, rostrum length 320 mm, zygomatic width 183 mm) nevertheless were completely within the range of *Delphinus delphis* (see table II).

We are grateful to the authorities of the British Museum (Natural History) in London and to the authorities of the National Museum of Natural History in Washington (D.C.) for permission to study dolphin remains in their

Collection	L rostrum in % Cbl	L rostrum/ Zyg. width	Teeth
MNHN A-3065	67.9	2.06	65—65/57—58
BMNH 1949.7.15.4	67.6	2.00	60—59/55—54
BMNH 1954.9.9.2	68.7	1.94	59—60/55— ?
Pilleri/Gihr 489, ♂	67.2	2.01	64—63/63—61
Pilleri/Gihr 490 ♀	67.7	1.91	— / —
Pilleri/Gihr 492, ♂	66.5	1.91	66—67/63—62
Pilleri/Gihr 475	70.4	1.98	57—59/ —
ZMA 16.995	68.3	2.22	61—59/59—60
BMNH 1973.1746	67.7	1.94	58—58/ —
BMNH 1973.108	67.1	1.91	55(+2)—58/52(?)—55
USNM 49977,♂	67.8	1.95	55(+1)—55(+1)/54(+2)—53(+2)
BMNH 1965.12.17.1	64.1	1.72	57—56/ —
Delphinus delphis, ♂♂ + ♀♀	58.7—65.5	1.37—1.79	40—40/40—40 55—55/55—55

Table II. Two relative dimensions and tooth counts in ten skulls of *Delphinus tropicalis*, in two skulls of *Delphinus* species, and in 95 skulls of *Delphinus delphis* (upper and lower limits). The skulls of two juvenile specimens of *D. tropicalis* (Pilleri & Gihr, 1973) have not been taken into account.

collections. In particular we want to thank sincerely Dr. Peter E. Purves, Dr. James G. Mead and Dr. Toshio Kasuya for their co-operation.

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