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On skulls of *Stenella longirostris* (Gray, 1828) from the eastern Atlantic (Notes on Cetacea, Delphinoidea IV)

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ABSTRACT

Measurements of skulls of *Stenella longirostris* (Gray, 1828) from South Africa, the Ivory Coast, Liberia and Sénégal are published along with some other particulars. According to the author the dolphins from near the Gotō Islands, Japan, described by Mizue *et al.* (1964) probably do not belong to some undescribed species but to *Stenella longirostris*.

In their study of four dolphins caught near the Gotō Islands, Japan, which are called locally "Hashinaga Iruka", Mizue, Yoshida & Sonoda (1964) came to the conclusion that the animals belonged to a species close to, but different from *Stenella longirostris* (Gray, 1828). Comparing the measurements of their animals with the measurements published by True (1889: 76—77) of the type skull of *S. longirostris*, they find that the Hashinaga Dolphins have shorter and broader rostrums and a greater distance between the orbits. Mizue *et al.* refer to a publication in Japanese by Ogawa (1936), and consider their own dolphin skulls different from Ogawa's as well.

Though not excluding the possibility that the Japanese scientists really did study specimens of an undescribed species of dolphin, I find the reasons on which they claim to separate their animals from *Stenella longirostris* not very convincing. They did not take into account the normal range of variability found in skull measurements, they ignored the dimensions of skulls which True (1889) attributed to *S. longirostris*, and they overlooked the data published by Cadenat & Doutre (1959).

It is true that, apart from the publications referred to, very few exact data have been published on this animal and that *Stenella longirostris* is still an

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imperfectly known species. Although the complete synonymy proposed by Hershkovitz (1966: 37—40) is probably correct, much more must be known before definite conclusions can be drawn about the taxonomic status and nomenclature of *Stenella longirostris*.

To furnish some data which may be used by cetologists in their studies of the species, in this article the dimensions of skulls of *Stenella longirostris* are published, all taken from specimens stranded or caught in coastal waters on the eastern side of the Atlantic Ocean, At the same time I have listed some measurements, in addition to those published by True (1889), of the skull of the holotype of the species.

The author is grateful to the authorities of the Rijksmuseum van Natuurlijke Historie (RMNH), Leiden, and to those of the Institut Fondamental d'Afrique Noire (IFAN), Dakar, and the United States National Museum (USNM), Washington, D.C., for their permission to study material from their collections. I also wish to thank most sincerely Mr Pierre L. H. Opic, staff artist of the ORSTOM, at present at Pointe Noire, for his excellent drawings of a skull of *Stenella longirostris*, and Dr W. L. van Utrecht for the X-ray photographs of the pectoral fins, reproduced herewith. Again I thank my colleague and friend Dr P. E. Purves for reading a draft of this paper and for correcting the translation.

SKULLS MEASURED:

1. RMNH 8676 (formerly cat. a: see Jentink, 1887: 173). Skull, sex unknown. Holotype of *Stenella longirostris* (Gray, 1828). For details of the transfer of this skull from the Brooke's collection to the Leiden museum, see Schlegel, 1841. Origin unknown (the locality "Cape of Good Hope", given by True (1889: 76), is based on a confusion with the skull mentioned next).
2. RMNH 21.723 (formerly cat. b: see Jentink, 1887: 173). Skull, sex unknown. Cape [Colony], leg. H. B. van Horstok, sent to the Leiden museum between 1825 and 1838.
3. RMNH 21.720 (formerly identified as *Delphinus delphis)*. Skull, sex unknown. Liberia, 10-XI-1889, leg. J. Demery.
4. IFAN ≠ 1. Skull & postcranial skeleton (73 vertebrae) male. Off Dakar, 15-XI-1958, leg. Lebouille (see Cadenat & Doutre, 1959). Total length of the dolphin 204 cm.
5. IFAN ≠ 2. Skull, female. Off Dakar, 15-XI-1958, leg. Lebouille (see Cadenat & Doutre, 1959). Total length 180 cm.
6. IFAN ≠ 3. Skull, female. Off Dakar, 15-XI-1968, leg. Lebouille (see Cadenat & Doutre, 1959). Total length 179 cm.
7. IFAN ≠ 4. Skull, male. Off Dakar, 15-XI-1958, leg. Lebouille (see Cadenat & Doutre, 1959). Total length 194 cm. For drawings of this skull, see fig. 1.
8. USNM 470.557. Skull & postcranial skeleton (71 vertebrae), sex unknown. Off Vridi, Ivory Coast, between 1960—1965, leg. A. Lassarat & P. Rancurel. For photograph of the intact head of this specimen, see fig. 2; for X-ray photographs of the pectoral fins, see fig 3.

The measurements were taken in the manner recommended by Dr F. C. Fraser of the British Museum (Natural History), London. For the actual dimensions, see table I; the same dimensions expressed as percentages of the total length of the skull are given in table II.

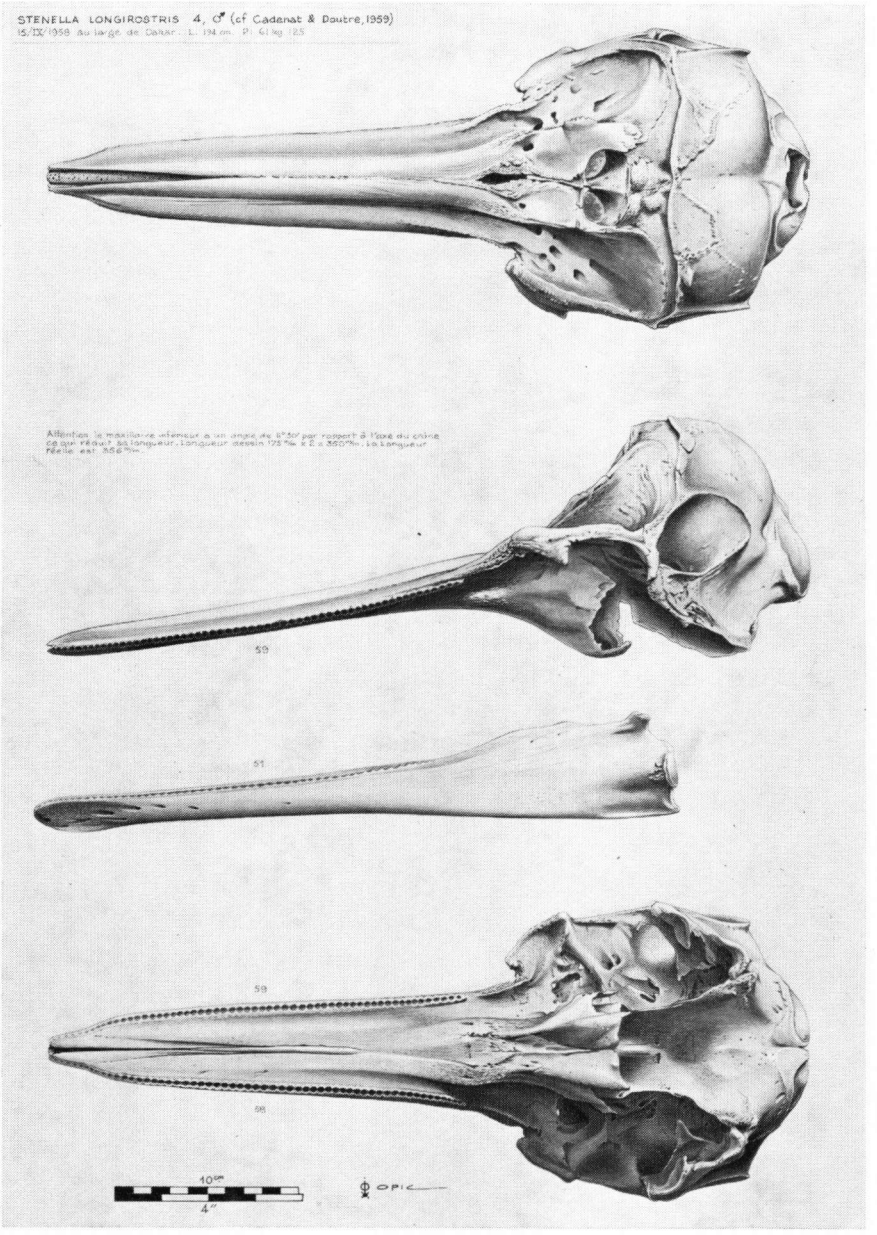

FIG. 1. Skull of *Stenella longirostris* (Gray, 1828). Specimen caught on 15-XI-1958, off Dakar. IFAN ≠ 4. Pierre L.H. Opic fecit.

TABLE I. Dimensions (in mm) of the skull of the holotype and other skulls of *Stenella longirostris* (Gray, 1828).

	RMNH 8676	RMNH 21.723	RMNH 21.720	IFAN ≠ 1	IFAN ≠ 2	IFAN ≠ 3	IFAN ≠ 4	USNM 470.557
Total length of skull	426	419	423	414	402	411	414	415
Rostrum length	277	272	274	255	262	262	260	269
Rostrum basal width	76	77	77	76	83	80	78	80
Rostrum, width 60 mm anterior to base	56	56	57	61	60	58	55	55
Rostrum, width at its middle	48	50	47	51	48	49	50	46
Rostrum, width at ¾ of its length	36	36	34	39	?	34	37	32
Breadth across pre-orbital angles of supra-orbital processes	142	145	144	146	146	152	147	152
Breadth across post-orbital angles of supra-orbital processes	159	—	163	166	162	162	167	—
Zygomatic width	156	155	163	164	156	161	165	162
Width of braincase across parietals	125	119	125	137	128	131	142	136
Maximum width of premaxillae	58	69	65	64	69	66	61	63
Length temporal fossa	50	43	43	51	45	46	52	43
Height temporal fossa	43	40	32	45	36	42	43	41
Tip rostrum — nares	310	310	310	290	?	299	295	311
Length of upper toothrow (right side)	238	240	242	220	233	236	229	238
Length of upper toothrow (left side)	241	230	240	223	damaged	233	231	238
Tip rostrum — pterygoids	323	312	320	299	?	298	306	311
Number of alveoli (upper)	54—53	55—54	53—49(+x)	51—51	?—52	54—53	58—59	49(+x)—53
Length mandible	368	360	365	371	351	357	357	368
Height mandible at coronoid	57	59	54	59	57	59	60	61
Symphysis mandibles (length)	76	65	51	52	?	42	46	60
Length of lower toothrow (right side)	241	236	229	241	232	236	217	230
Length of lower toothrow (left side)	242	238	235	240	232	238	219	236
Number of alveoli (lower)	52—54	50—53	46(+x)—47(+x)	54—55	51—51	51—51	53—51	48(+x)—49

TABLE II. Dimensions of skulls of *Stenella longirostris* expressed in percentages of the total length of the skulls.

	RMNH 8676	RMNH 21.723	RMNH 21.720	IFAN ≠ 1	IFAN ≠ 2	IFAN ≠ 3	IFAN ≠ 4	USNM 470.557	Range
Total length of skull	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0—100.0
Rostrum length	65.0	64.9	64.8	61.6	65.2	63.7	62.8	64.8	61.6— 65.2
Rostrum basal width	17.8	18.4	18.2	18.4	20.6	19.5	18.8	19.3	17.8— 20.6
Rostrum width 60 mm anterior to base	13.1	13.4	13.5	14.7	14.9	14.1	13.3	13.3	13.1— 14.9
Rostrum, width at its middle	11.3	11.9	11.1	12.3	11.9	11.9	12.1	11.1	11.1— 12.3
Rostrum, width at ¾ of its length	8.5	8.6	8.0	9.4	?	8.3	8.9	7.7	7.7— 9.4
Breadth across pre-orbital angles of supra-orbital processes	33.3	34.6	34.0	35.3	36.3	37.0	35.5	36.6	33.3— 37.0
Breadth across post-orbital angles of supra-orbital processes	37.3	—	38.5	40.1	40.3	39.4	40.3	—	37.3— 40.3
Zygomatic width	36.6	37.0	38.5	39.6	38.8	39.2	39.9	39.0	36.6— 39.9
Width of braincase across parietals	29.3	28.4	29.5	33.1	31.8	31.9	34.3	32.7	28.4— 34.3
Maximum width of premaxillae	13.6	16.5	15.4	15.5	17.2	16.1	14.7	15.2	13.6— 17.2
Length temporal fossa	11.7	10.3	10.2	12.3	11.2	11.2	12.6	10.4	10.2— 12.6
Height temporal fossa	10.1	9.5	7.6	10.9	9.0	10.2	10.4	9.9	7.6— 10.9
Tip rostrum — nares	74.0	74.0	73.3	70.0	?	72.7	71.3	74.9	70.0— 74.9
Length of upper toothrow (right side)	55.9	57.3	57.2	53.1	58.0	57.4	55.3	57.3	53.1— 58.0
Length of upper toothrow (left side)	56.6	54.9	56.7	53.9	damaged	56.7	55.8	57.3	53.9— 57.3
Tip rostrum — pterygoids	75.8	74.4	75.6	72.2	?	72.5	73.9	74.9	72.2— 75.8
Number of alveoli (upper)									
Length mandible	86.4	85.9	86.3	89.6	87.3	86.9	86.2	88.7	85.9— 89.6
Height mandible at coronoid	13.4	14.1	12.8	14.3	14.2	14.4	14.5	14.7	12.8— 14.7
Symphysis mandibles (length)	17.8	15.5	12.0	12.6	?	10.2	11.1	14.5	11.1— 17.8
Length of lower toothrow (right side)	56.6	56.3	54.1	58.2	57.7	57.4	52.4	55.4	52.4— 58.2
Length of lower toothrow (left side)	56.8	56.8	55.5	58.0	57.7	57.9	52.9	56.9	52.9— 58.0
Number of alveoli (lower)									

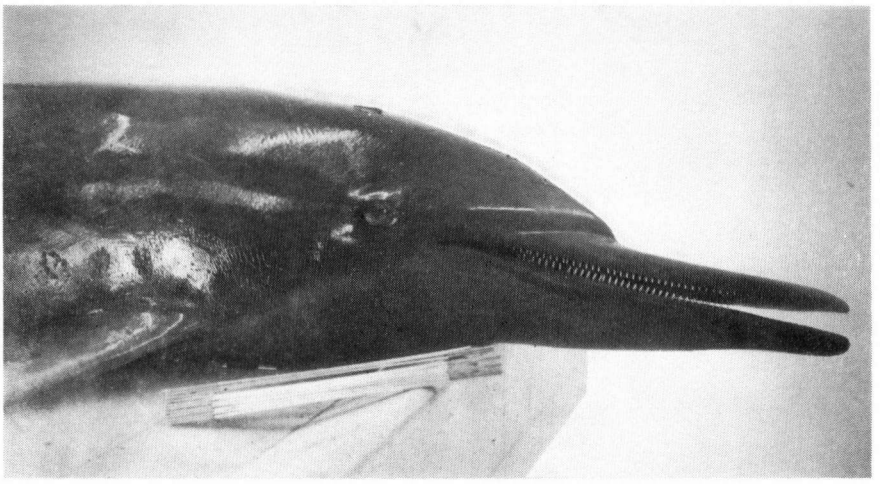

FIG. 2. Head of a *Stenella longirostris* caught off Vridi, Ivory Coast. USNM 470.557 Photo ORSTOM.

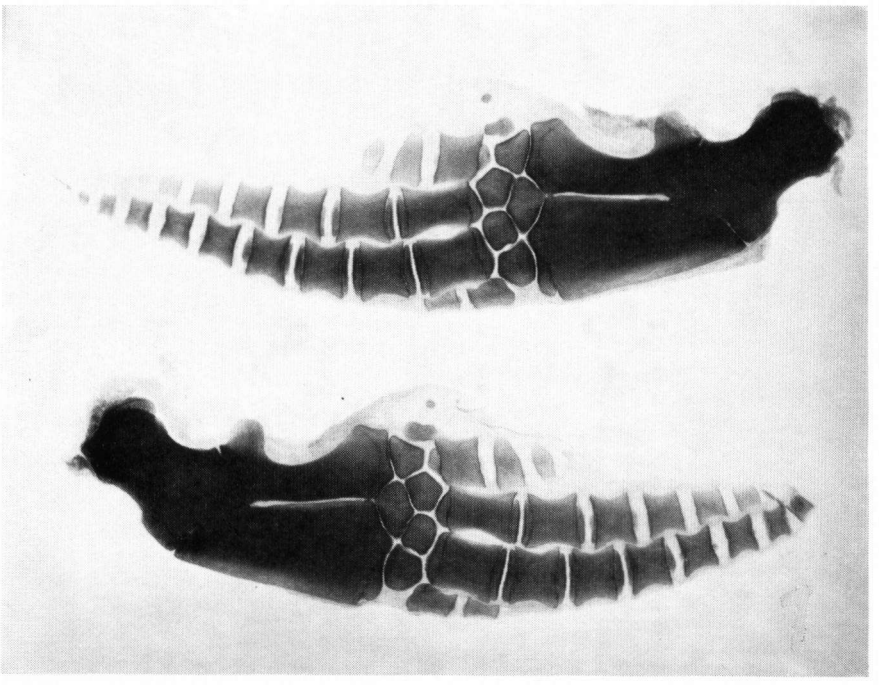

FIG. 3. Positive of an X-ray photograph of the pectoral fins of a *Stenella longirostris*, caught off Vridi, Ivory Coast. USNM 470.557. Reduction to about 40 percent.

Specimens belonging to the genus *Stenella* Gray, 1866 are separated from those of the genus *Delphinus* Linnaeus, 1758, by the absence of deep lateral palatine grooves. Skulls of *Stenella longirostris*, however, may show very shallow palatine grooves (see Layne, 1965: 164). In the skulls reported on here, these grooves are only very faintly visible.

A characteristic of skulls in the genus *Delphinus* is that the premaxillae are fused dorsally over a certain distance anterior to the bony nares, thereby rendering firmer the long and slender rostrum. This fusion is also found in most specimens of *S. longirostris*; 7 out of the 8 skulls studied have partially fused premaxillae, the exception being skull number IFAN ≠ 3. The skull figured by Mizue *et al.* (1964, pl. 2, fig. 9) does not show fused premaxillae, but the fusion is visible in the skull of *Stenella longirostris*, pictured by Layne (1965). Whether this character is related to age or absent in a certain percentage of the dolphins is not yet known.

When one compares the dimensions of the Hashinaga Dolphin skulls with those published here, it will be noted that both ranges of dimensions overlap, so there is little reason to conclude that the dolphins described by Mizue *et al.* (1964) belong to an undescribed species. I would tentatively identify them as *Stenella longirostris* (Gray, 1828).

I agree, however, with Takemura, Yoshida & Mizue (1967) that the dolphin from Nagasaki mentioned by Schlegel (1841: 20) and described and pictured by Temminck & Schlegel (1844: 13—14, pl. 24), is most probably not a *Stenella longirostris* but an animal belonging to the genus *Delphinus*. Although this dolphin is figured with 57 or 58 upper teeth, which would point to *Delphinus tropicalis*, in view of the fact that nothing of it has been preserved, I believe it better to list the specimen only as *Delphinus* species.

References

Cadenat, J. & M. Doutre

1959 Notes sur les Delphinidés ouest-africains, V: Sur un Prodelphinus à long bec capturé au large des côtes du Sénégal, Prodelphinus longirostris (Gray, 1828)? — Bull. I.F.A.N., **21** (A): 787—792, 6 pls.

Gray, J. E.

1828 Spicilegia Zoologica I: 1—8, 7 pls (Treüttel, Würtz & Wood, London).

Hershkovitz, Ph.

1966 Catalog of living whales. — Bull. U. S. nation. Mus., **246**: I-VIII, 1—259.

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).

Layne, J. N.

1965 Observations on marine mammals in Florida waters. — Bull. Florida State Mus., **9** (4): 131—181.

Mizue, K., K. Yoshida & S. Sonoda

1964 Studies on the little toothed whales in the West Sea area of Kyûsyû, X: About Prodelphinus sp., so-called Hashinaga Iruka in Japan, caught in the sea area around Gotō Isl., Nagasaki Pref. — Bull. Fac. Fish. Nagasaki Univ., **17**: 10—20, 4 pls.

Schlegel, H.

1841 Beiträge zur Charakteristik der Cetaceen. — Abh. Gebiete Zool. verg. Anat., **1**: 1—44, 6 pls.

TAKEMURA, A., K. YOSHIDA & K. MIZUE
1967 Studies on the little toothed whales in the West Sea area of Kyûshû, XIV: Hase Iruka (Hase dolphin) caught in the South Sea area of Saishû Isl. in the East China Sea. — Bull. Fac. Fish. Nagasaki Univ., **24**: 39—49, 4 pls.
TEMMINCK, C. J. & H. SCHLEGEL
1844 Les mammifères marins. In: C. J. Temminck — Aperçu général et specifique 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.

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