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THE CORRECT GENERIC NAMES FOR THE GRAMPUS OR KILLER WHALE, AND THE SO-CALLED GRAMPUS OR RISSO'S DOLPHIN.

By

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(The Australian Museum, Sydney.)

(Plate x).

Following upon the recent record of the stranding of a male and female "*Grampus*" *griseus* at Sydney,¹ joint consideration of the taxonomy of the genus *Grampus*, involving the correct name for the Killer Whale, has thrown considerable light on a complex synonymy which has left the respective names in doubt for over a century. In this regard, it may be noted that in the 1922 Guide to the British Museum collection of Cetacea alternative popular and scientific names are given thus, "Grampus or Killer (*Orcinus orca* or *Orca gladiator*)," for the Killer Whale, an uncertainty which this paper endeavours to remove.

An account of our conclusions derived from these investigations is now placed on record with a view to stabilising the generic name to be employed for the Killer Whale or Grampus, and providing a tenable name for the dolphin to which the name grampus has been popularly applied by authors since 1828, and which is sometimes known as Risso's Dolphin.

Genus **Grampus** Gray.

- 1787, "Grampus" Hunter, Phil. Trans., xvi, p. 306 (307, 308, 322, 329, 350), pl. v, figs. 1-2.
- 1828, *Grampus* Gray, Spicilegia Zoologica, pt. 1, p. 2. Type by tautonomy, and subsequent designation (Zool. Journ., iv, 1829, p. 497), *Delphinus grampus* "Linn" = Hunter.
- 1846, *Orca* Gray, Zool. "Erebus" and "Terror," i, p. 33 (not *Orca* Wagler 1830). Type by tautonomy *Delphinus orca* Linn.
- 1860, *Orcinus* Fitzinger, Wiss.—Populare Naturgesch. Säugethiere, vi, pp. 204-217 (not *Orcynus* Cuvier, a fish); Id., Palmer, Proc. Biol. Soc. Wash., xiii, 1899, p. 24 (name revived).
- 1868, *Ophysia* Gray, Synopsis Whales and Dolphins in B.M., p. 8. Type by monotypy *Orca capensis* Gray.
- 1870, *Gladiator* Gray, Proc. Zool. Soc., p. 71. Type by monotypy *Orca stenorhyncha* Gray.

References in literature from the early sixteenth century, quoted in Murray's New English Dictionary, make it clear that the name "Grampus" was commonly applied to various cetaceans. Murray further states that "In popular use, the name (Grampus) seems to be most frequently applied to the formidable 'Killer' (*Orca gladiator*)." It is clear that it was thus used by Hunter, and accepted by many later authorities, who recognized the good figure given by Hunter as applicable.

¹ Troughton.—Proc. Zool. Soc., 1931, pp. 565-569, pl. i, figs. 1-3.

Hunter used the name Grampus for a group of whales, which we would call a genus, thus (p. 308):—"the Grampus, which is an extensive genus, is probably from 20 to 50 feet long; under this denomination there is a number of species. From my want of knowledge of the different genera of this tribe of animals, an incorrectness in the application of the anatomical account to the proper genus may be the consequence; for when they are of a certain size, they are brought to us as porpoises; when larger, they are called grampus, or fin-fish."

Writing of the dentition and food of whales, Hunter definitely linked the name grampus with the Killer, and excluded Risso's Dolphin, when stating (p. 322) that "Some catch their food by means of teeth, which are in both jaws, as the porpoise and grampus; in others, they are only in one jaw, as in the spermaceti whale," and further (p. 329) that "In the stomach of the large bottlenose, I found the beaks of some hundreds of cuttle-fish. In the grampus I found the tail of a porpoise; so that they eat their own genus." It is hardly necessary to stress the fact that absence of teeth in the upper jaw, and a squid or cuttle-fish diet, are characteristic of Risso's Dolphin, not of Hunter's grampus and the Killer Whale.

In the text and explanation of plate Hunter indicated that his grampus were much larger than the Cuvier-Risso Dolphin when he wrote (p. 307) "Of the grampus I have had 2; one of them 24 feet long, the belly of a white colour, which terminated at once, the sides and back being black; the other about 18 feet long, the belly white, but less so than in the former, and shaded off into the dark colour of the back." The maximum length quoted for Risso's Dolphin is 13 feet, to which it doubtfully attains, while the colour shows none of the strong demarcation of black and white which is characteristic of the Killer.

Of Hunter's two "grampus," the large animal of Figure 1 is undoubtedly the Killer. The smaller "grampus" of Figure 2 was included by Gray² in 1866 as doubtfully synonymous with *Grampus cuvieri* = *griseus*. However, he had previously indicated in 1846 (*loc. cit.*) that he had examined the skull of the small grampus of Hunter, which he named *Globiocephalus affinis* and stated was probably a young specimen of *G. Svineval* = *G. melas*, the Pilot Whale or Blackfish. Actually, years prior to this, Lacépède in 1804 ("Histoire Naturelle des Cétacés", p. xliii) had given the name *Delphinus ventricosus* to the figure of Hunter's smaller grampus, so that if the figure were applicable to the Cuvier-Risso Dolphin, Lacépède's name would supersede *griseus*, which of course it does not do. It is clear, therefore, that of Hunter's two figures of grampus one represents the Killer Whale and the other a Blackfish, and that neither is applicable in any sense whatever to the dolphins of Cuvier or Risso.

In 1817 Desmarest ("Nouveau Dictionnaire d'Histoire Naturelle," nouv. ed., ix, p. 168) called Hunter's large species *Dauphin grampus*, *Delphinus grampus* of Hunter, which he closely compared with the "dauphin gladiateur," especially in coloration, but noted differences, derived from the figures of Hunter and Lacépède, which prompted him to regard them as separate species.

The name *Grampus* was introduced as a subgenus by Gray in 1828 in his *Spicilegia Zoologica* when he first subdivided the whales. It is essential to note that in a review of the "Spicilegia" in the following year (*Zoological Journal*, iv, p. 496-7) the typical species was stated to be "*Delph. Grampus* Linn.," which had been listed by Gray under the subgenus.

Apparently there is no species so named of Linné, and as Gray was notorious for careless writing and not reading proofs carefully, it is most probable that the

² Gray.—British Museum, Cat. Seals and Whales, 1866, p. 296.

familiar "Linn." was merely a simple error for the less usual abbreviation of "Hun." for Hunter, from whom Desmarest had acquired the specific name *Delphinus grampus*.

It is quite evident that the word grampus was associated by French and English authors alike with the Killer many years before the dolphin was discovered and described by Cuvier in 1812. Consideration of all authorities, including Gray himself, shows that Hunter's grampus was recognised as the Killer, and therefore the basis of *Grampus* Gray must be that of the tautonymic type.

In 1846 Gray³ gave a sketch of the British cetacea based upon his researches, later published in full in the Zoology of the "Erebus" and "Terror." Absolutely ignoring his article of the Spicilegia Zoologica, he introduced the generic name *Orca* for the *Delphinus orca* of Linné, and noted Hunter's figure in this connection. He then introduced the name *Grampus cuvieri* for the *Delphinus griseus* of Cuvier, the specific name being changed because the animal was not grey but black.

The transference of generic names, however, was due to Gray meanwhile having noted that Rondelet a hundred years previously had used *Orca* as a group name for the Killer. He therefore concluded that the name was appropriate for the genus, having been used specifically by Linnaeus, and that his name *Grampus* was superfluous in this connection. In an endeavour to preserve the latter name he transferred it to the Cuvier-Risso dolphin, and thereby caused the confusion which persists to the present day.

From the foregoing account it is clear that in correctly allocating the generic name *Grampus*, the "*D. grampus* Linn." must be reckoned with as the tautonymic type. Even if the authority be not immediately accepted as a misprint for Hunter, the tautonymic status is readily established by means of the later work. Consequently, the generic name to be used for *Delphinus orca* Linné must be *Grampus*, and therefore the "*Grampus*" of recent authors requires a new generic name.

Some time after this account had been written, a small book in the Museum library, "Mammalia, Recent and Extinct; an elementary treatise for the use of the Public Schools of New South Wales," by A. W. Scott, M.A., 1873, was found to belie the sub-title in providing a remarkably complete account of the seals, dugongs, and whales. Publication in Sydney under the misleading title has resulted in the book being overlooked by all workers in the group, and we were astonished to find (pp. 103-4) the following statement which accords so well with the conclusions already reached by us:—

"The term *Grampus* (*great fish*) is, and has been, in scientific works, and in general conversation, very universally applied to denote among the odontocete the formidably dentated animal, the Killer; and that of *Blackfish* to distinguish the cetaceans of milder propensities and of greater usefulness to man, such as the sperm, the caa'ing, and some other whales. Dr. Gray's present arrangement of the grampidae abruptly ignores this common understanding among people of many nations, and brings together under the old familiar names a group of beings, whose every trait of character is of exactly a contrary nature to that of the savage gladiator, and to whom the word Blackfish would have been much more suitable. In looking over the Catalogue of Seals and Whales, I find therein the following generic names: *Hunterius*, *Macleayus*, *Eschrichtius*, *Cuvierius*, and *Sibbaldius*; why not, in order to restore the *Grampus* to its original standing,

³ Gray.—Ann. Mag. Nat. Hist., xvii, Feb., 1846, pp. 82-85.

and also as being appropriate, substitute the generic name now employed for that of *Grayius*, in honour of one distinguished in every branch of zoology, but more particularly so in this, the marine mammalia?"

It is indeed interesting to note how clearly Scott understood the confusion and its cause, though when it is considered that the quotation is from a work intended as an elementary treatise for schools, one wonders what standard was expected of the scholars.

Grampidelphis gen. nov.

1846, *Grampus* Gray, Ann. Mag. Nat. Hist., xvii, Feb., 1846, p. 85, and Zool. "Erebus" and "Terror," i, p. 30. Not *Grampus* Gray, Spicilegia Zoologica, 1828, p. 2.

1873, *Grayius* Scott, Mammalia, Recent and Extinct, p. 104, new name for *Grampus* Gray 1846 and later, not of Gray 1828. Preoccupied by Bonaparte 1856, Günther 1858, Bate 1862.

The characters of the genus are too well known to require description, and it has been clearly demonstrated above that in regard to size and dentition alone the dolphins described by Cuvier and Risso cannot be reconciled in any way with the two kinds of grampus figured by Hunter. Such confusion as to identity was increased by some authors wrongly identifying the smaller animal of Hunter's figure 2 with the Cuvier-Risso dolphin.

Gray in the "Zoology of the 'Erebus' and 'Terror'" bases his new *Globiocephalus affinis* upon the skull of the small Hunterian grampus. Most authors have overlooked the fact that Lacépède's *Delphinus ventricosus* was in 1804 applied to this small Hunterian grampus, so that if the figure of the latter were applicable to the Cuvier-Risso Dolphin, *ventricosus* should have superseded Cuvier's *griseus*. Gray, however, in his description suggested that his *G. affinis* was "probably a young specimen of *Globiocephalus Svineval*," which has since been commonly accepted. The good figure 2 of Hunter clearly represents the Blackfish rather than the Cuvier-Risso dolphin, while the cranial and dental characters determine the specific identity with *melas*. The name *svineval* has been rejected altogether in favour of *melas* Traill which is years later than Lacépède's name, which must be revived for the common Blackfish, now to be known as *Globiocephalus ventricosus*. The generic name must be *Globiocephalus* Hamilton 1836⁴, ex *Globiocephala* Lesson vernacular, not *Globiocephala* as used in the 1922 British Museum Guide to the exhibited cetacea, probably following Palmer.

Instancing Gray's casual methods we find in the 1866 Catalogue the description of a new species *Grampus affinis*, which upon investigation proves to be based upon the description of the same author's previously named *Globiocephalus affinis*, which is also listed in the same Catalogue under the latter name. Apparently Gray picked up the description written out under the heading *G. affinis* and concluding that the *G.* stood for *Grampus*, inserted it under that genus as well. He had previously drawn up the description in full under *Globiocephalus* and this was entered in its correct sequence. These facts are evident not only from the description, but also from the identical measurements.

While abroad during 1930 Troughton examined various specimens and concluded that none of the crania were in complete agreement with the Australian ones. In view of the extraordinary confusion and doubt enveloping the forms of this genus, and in order, therefore, definitely to establish the generic name, *Grampidelphis* is founded upon the local form as described hereunder.

⁴ Hamilton.—Nat. Libr. (Jardine), Whales, 1836, p. 212.

Grampidelphis exilis sp. nov.

(Plate x, figs. 1-5.)

1931 *Grampus griseus* Troughton (nec Cuvier), Proc. Zool. Soc., pp. 565-569, pl. i, figs. 1-3 (animal).

Diagnosis.—Lighter areas of ventral surface in male and female so restricted as to warrant the general description of being almost entirely black. A marked subtriangular groove or concavity in the anterior surface of the head. The pterygoids are differently shaped, and the teeth apparently much heavier than in other forms.

Skull and dentition.—The pterygoids of both the male and female are very similar and are consistent in being considerably more elongate, and differently shaped to those of *G. griseus* figured in the "Atlas"⁵ (pl. liv, fig. 7a); the apices posteriorly are more acutely pointed, with the result that the lateral emarginations appear to be far more extensive, while anteriorly the bases are also narrower. The pterygoids differ from those of the young Concarneau specimen figured as *griseus* in the "Atlas" (pl. lxiv, fig. 4a) in lacking the even convexity of the inner margins as shown in the figure, in which the apex of the angle is almost at the centre of the inner margin, instead of being opposite the posterior fourth.

Teeth, 3-4 in the female holotype and 4-4 in the allotype male, apparently larger than in any other form of the genus, and much larger than in the Table Bay specimen. The antero-posterior diameter of the smallest tooth, the 4th in the right ramus, is 10.6 mm., and that of the largest, 2nd in the left ramus, is 14 mm.; the transverse diameter of these teeth is 9.7 and 14.5 mm. respectively, the transverse diameter usually being larger than the antero-posterior. True listed the "diameter of the mandibular teeth" of the Table Bay specimen as 7.6 mm., and stated in his description that they were as large as in the American series; he unfortunately did not list any teeth dimensions of the American series, but if his statements are correct, the teeth of the Australian specimens are very much stouter than those of the South African specimen, and apparently the American ones as well.

External features.—There is a marked subtriangular groove or concavity on the front of the head which is not shown in figures of *griseus* and, apparently, has previously been noted only by Flower, who described the anterior surface of the head as "somewhat hollowed in the middle line." In the specimens of *exilis* the head is distinctly hollowed, the rostral depression extending from about 3 inches from the snout-tip to the dorsal plane of the head, the length being about $7\frac{1}{2}$ inches, the depth about one-half inch, and the greatest width about $2\frac{1}{2}$ inches, from the centre of the ridges on each side. The dorsal fin is placed much further back than in Flower's well-known figure of *griseus*,⁶ in which the origin of the dorsal is situated much nearer the snout than the tail-base, whereas it is almost exactly midway between the snout-tip and tail-base in *exilis*; the predorsal profile, therefore, appears much longer in the Australian form. The difference is further indicated in that in the *griseus* figure the pectoral fin almost reaches back to the vertical of the origin of the dorsal, whereas in *exilis* it falls far short of it.

Colour.—The female holotype soon after capture: Pectorals, dorsal, and tail black. Back and sides uniform black to a level with the anterior bases of pectorals, which are not mottled; anteriorly there is a greyish tinge which tends to form a faint triangular mark on each side of the head, and is continued around

⁵ Beneden and Gervais.—Ostéographie Cétacés. Atlas, 1866-79.

⁶ Flower.—Trans. Zool. Soc., viii, 1872, pl. i, fig. 1.

behind the blowhole in a narrow line. The apex of the snout above and below shows the dark coloration, but the sides of the mouth to the top of the head, and the undersurface of the jaws, are so closely striated with white lines as to suggest large whitish areas, though obviously the lines are due to injuries inflicted by the living prey. From chin to front of pectorals the undersurface is mottled with dirty white, thence being black to a level with the anterior origin of the dorsal fin, the remainder of the undersurface posteriorly being of a dirty white tinged with the black of the upper surface. The lighter areas of the ventral surface are so restricted, however, that both male and female may be generally described as almost entirely black.

External dimensions.—Female holotype: Total length in straight line from snout to caudal notch, 9 feet 10 inches; to eye, $13\frac{1}{2}$ inches; to blowhole, $18\frac{1}{2}$ inches; to anterior base of pectoral fin, 26 inches; to anterior base of dorsal fin, 4 feet 4 inches, in straight line; 4 feet $6\frac{1}{2}$ inches along curve; length of pectoral along centre, $20\frac{1}{2}$ inches; greatest width, $8\frac{1}{2}$ inches; vertical height of dorsal fin, 14 inches, along curve 24 inches; width of tail, 2 feet 6 inches.

Typical specimens.—Holotype female represented by a coloured cast and complete skeleton, registered S. 1776; allotype male skull No. S. 1832, both in the collection of the Australian Museum.

Localities.—Holotype female stranded on the Ocean Beach at Manly, Sydney, N.S.W., on the 28th February, 1927. Allotype male stranded on Dee Why Beach, a few miles north of Manly, on the 18th February, 1929.

The first Western Australian record is provided by a complete skull washed up on a beach to the north of the River Vasse estuary, Geographe Bay, south Western Australia. The South Australian record of a specimen near Adelaide, by Zietz in 1889, cannot now be verified as no characters were given and the specimen cannot be traced.

Remarks.—The circumstances of their stranding would suggest that both Sydney animals were weakened by sickness or prolonged attack during a regular migration southward around Australia. In any event, the occurrence of a second specimen, of opposite sex, two years later in the last fortnight of February, would seem to imply an annual migratory movement. There is, indeed, a distinct possibility that the migrations of forms are more restricted than True's conception of the genus would admit, and that, notwithstanding his remarks on the striking variability of his Cape Cod series, diagnostic differences may yet be found to separate specimens from distant regions, when similar series are available. In regard to migrations within a restricted range, it may be noted that Beneden and Gervais stated that "Les Grampus dits de Risso, c'est-à-dire ceux de la Méditerranée, viennent régulièrement au printemps et en automne dans le golfe de Nice et dans la baie de Villefranche."

We are indebted to Mr. L. Glauert, B.A., Curator of the Perth Museum, for the opportunity to provide the first record of a grampus-dolphin from Western Australia. The complete skull was washed ashore to the north of the Vasse estuary in Geographe Bay, and was found and presented to the Museum in 1928. It was exhibited before the Royal Society of Western Australia by Mr. Glauert,[†] but is unfortunately only entered in the Proceedings as "a rare dolphin." Not only is the identification confirmed by photographs kindly sent by Mr. Glauert, but the general contour and proportions of the skull are shown to accord with the

[†] Glauert.—Proc. Journ. Roy. Soc. West Austr., xiv, 1928, p. xxiii.

New South Wales specimens; the pterygoids are destroyed, but the alveoli of the mandible are very large and leave no doubt that the teeth, four right and five left, were of the large size characteristic of the Australian form. The above specimen with the two Sydney ones provide the three verifiable records of occurrence of grampus-dolphin, hitherto known as Risso's Dolphin or Grampus, on the Australian coast.

Grampidelphis kuzira sp. nov.

Grampus sakamata Beneden and Gervais, *Osteographie*, 1880, p. 568, pl. lxiv, fig. 5. Not of Gray, *Zool. "Erebus" and "Terror,"* i, 1846, p. 31.

General account.—According to the dimensions and figures, the Japanese skull differs considerably from the other known forms. The name *sakamata* was first formally used by Gray in 1846 for a whale described by Schlegel from Japanese drawings and natural histories. He had not seen any specimens, and as Gray did not even examine the original accounts from which Schlegel drew his description, the name *sakamata* has no standing. In view of this, True's statement that "I consider the skull figured by Gervais in the *Osteographie* . . . as a type of the so-called *Grampus sakamata*" cannot be sustained, and the above name is therefore provided for the figure which we consider to represent the skull of a distinct form.

Of their specimen Van Beneden and Gervais wrote "Le Grampus du Japon, que nous appellerons *Grampus Sakamata* pour nous conformer à la nomenclature de M. Gray, devra peut-être être considéré comme formant une espèce à part, ou tout au moins une variété bien distincte, et cette interprétation trouve en argument en sa faveur dans la forme de la partie faciale des os intermaxillaires étudiés dans leurs rapports avec la partie correspondante des maxillaires (Pl. lxiv, fig. 5); c'est, comme on le voit, une différence de l'ordre de celles que nous avons signalées chez les Globicéphales."

According to True, upon examining their figure "we are at once made aware of the inadvisability of basing species in this genus on the proportions of the skull alone, on account of the great amount of individual variation in cranial characters." He then attempts to discount the differences shown in the figure by listing two skulls of his Cape Cod series, the proportions of which are said to be common to the Japanese and Concarneau specimens, and which "might almost have served for the basis of these two figures." In making these comparisons, however, True was on uncertain ground when emphasising that "both our skulls and those figured in the *Ostéographie* are from young individuals."

In the cetacea particularly, it is between adults one should seek fair comparison, and it is clear that the two Cape Cod specimens were juveniles, of which True unfortunately did not list dimensions. The Concarneau specimen also was not adult, and as the Massachusetts series is apparently reconcilable with the European *griseus* similarities are to be expected. The Japanese skull, however, is definitely adult, and it is not reasonable to discredit its characteristics because they are reproduced to some extent in the young of an allied form when the crania of the young are admittedly most prone to variation.

A calculation of the dimensions of the quarter size figure in the "Atlas" shows the Japanese skull to have a total length of at least 488 mm. = 19¼ inches, and it is notable that only an additional 52 mm. = 2 inches is needed for the Japanese skull to equal the maximum length of the Cape Cod series, and actually to exceed the total length of the *souverbianus* skull, on the size of which that

species was based. It is therefore clear that True was wrong in regarding the Japanese skull as that of a young animal. In any event, he was comparing actual specimens with figures of others which he had not seen, and it is very probable that the length of the Japanese skull would be increased were the condyles shown in the figure.

There is either something misleading in the angles of the figure, or the supraoccipital region of the Japanese skull is very different. This is shown by comparison with the figures of *griseus* and *rissoanus* on plate liv of the Atlas, and by the tilting of actual skulls; if the condyles appear in a dorsal view the supraoccipital area naturally gains its fullest extent, whereas if the condyles are excluded the area is reduced to a narrow band. The figure of the Japanese skull reverses this in showing a wide supraoccipital area, though the condyles are excluded from view. Whether this is mere distortion or a further proof of distinction, the fact remains that inclusion of the condyles would normally increase the total length and, therefore, far from being that of a young individual, the Japanese skull was probably as large as the maxima of True or Fischer, thus further emphasising the unusual narrowness of the skull.

True stated that he did not examine the skull when in Paris and could not affirm that it may not exhibit characters not represented in the figure, but that until such were found he did not see why *sakamata* should be separated from *griseus*. On the contrary, the above account appears to nullify True's comparisons, and in view of the markedly narrower cranium and rostrum, and Van Beneden and Gervais' remarks when comparing the skull with many others, it seems impossible definitely to relegate the Japanese form to the synonymy of *griseus*. Therefore, as we have shown that the "Atlas" skull is not the type of Gray's *sakamata* which is thus without status, and because of the comparatively much narrower dimensions and the fact that were a series available, the pterygoids, teeth, and other characters might further support distinction, it seems advisable to distinguish the Japanese form for the present under the name provided.

SUMMARY.

From a close review of the literature and complicated synonymy it is shown that the popular and generic term "grampus" must be restricted to the Killer Whale. It is evident that the name was associated with the Killer many years before the dolphins of Cuvier, 1812, and Risso, 1822, were discovered, and actually until Gray in 1846 transferred his generic use of *Grampus* from the Killer to the dolphin, in an effort to preserve the name which he wrongly supposed to have become superfluous for the Killer. While Gray's technical misusage of *Grampus* for "Risso's Dolphin" has since been followed, the common name grampus has still been used for the Killer. The technical name *Grampus* is now correctly applied to the Killer, and the new name *Grampidelphis* is introduced for the grampus-dolphin.

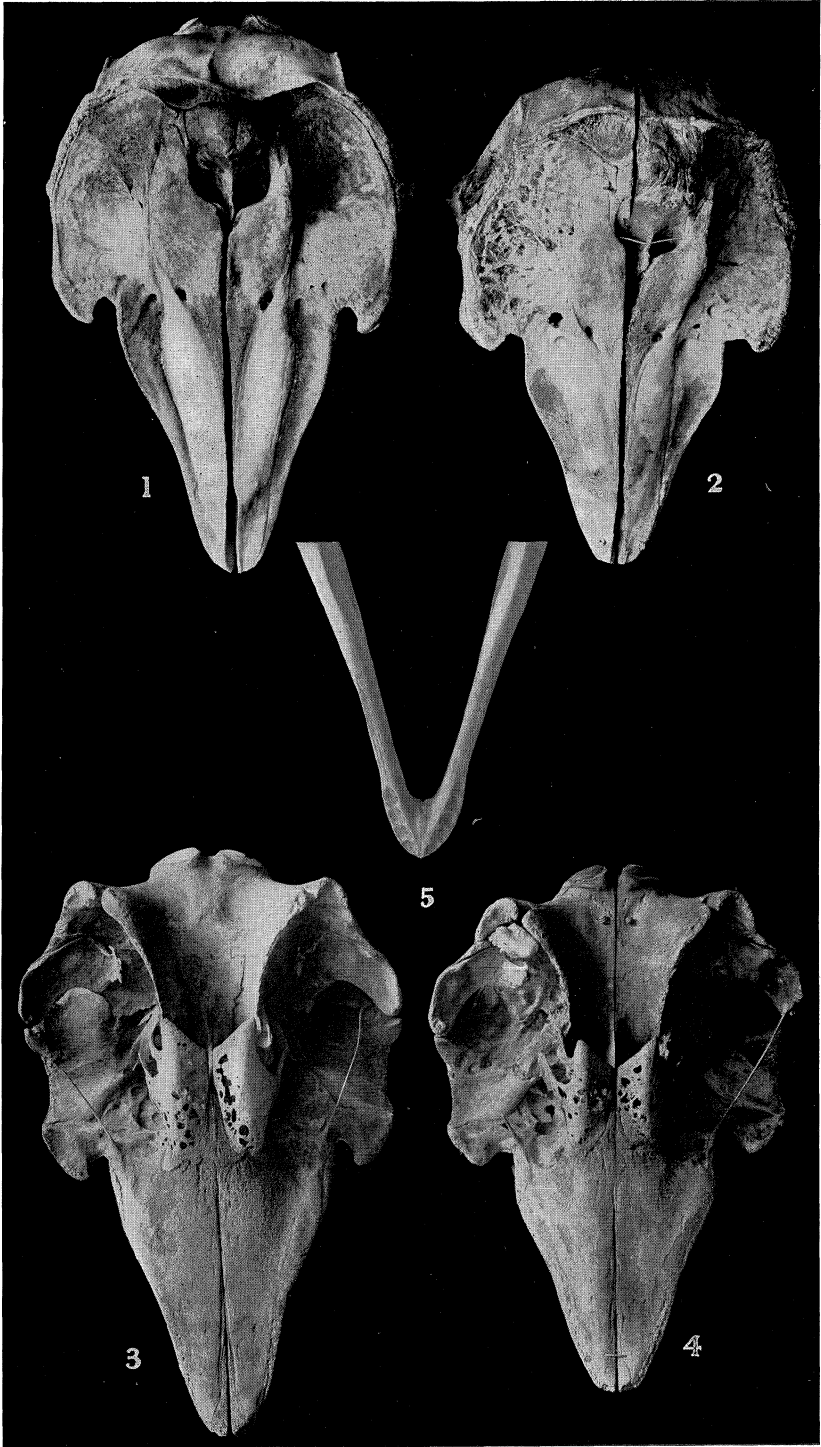
The Australian specimens are shown to differ from the northern "Risso's Dolphin" and are distinguished as a new species, *Grampidelphis exilis*, and the Japanese form is named *Grampidelphis kuzira*.

The correct name of the Killer, wrongly called *Orca gladiator* or *Orcinus orca*, is *Grampus orca* Linné. During this investigation it was found that *Delphinus ventricosus* Lacépède was based on the Pilot Whale or Blackfish, which must now be called *Globicephalus ventricosus*.

EXPLANATION OF PLATE X.

Grampidelphis exilis sp. nov.

- Fig. 1.—Holotype female skull, dorsal view, Manly, near Sydney, N.S.W.
Fig. 2.—Allotype male skull, dorsal view, Dee Why, near Sydney, N.S.W.
Fig. 3.—Holotype female skull, ventral view, Manly, near Sydney, N.S.W.
Fig. 4.—Allotype male skull, ventral view, Dee Why, near Sydney, N.S.W.
Fig. 5.—Mandible showing the large tooth sockets; specimen from Geographe Bay, south Western Australia.
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G. C. CLUTTON, photo.