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“Small delphinids” identification: from scientific confusion to conservation issues

#270

WMMC'19 World Marine Mammal Conference Barcelona 2019 Together for Science and Conservation

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INTRODUCTION

Small delphinids have been confused since ancient times; unfortunately it is still the case for other reasons.

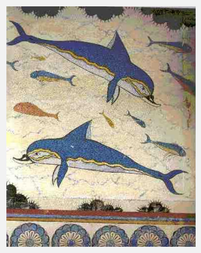
Ancient scientists as Aristotle distinguished cetaceans from other marine animals like fishes.

According to Aristotle : « **Δελφὶς** δὲ καὶ φάλαινα καὶ **τὰ ἄλλα κήτη**, ὅσα μὴ ἔχει βράγχια ἀλλὰ φυσητῆρα, ζῳοτοκοῦσιν », ***The History of Animals***, VI, 11. (The dolphin, the whale, and all the rest of the Cetacea, all that are provided with a blow-hole instead of gills, are viviparous.)

« Μαστοὺς δ΄ ἔχει ὅσα ζῳοτοκεῖ καὶ ἐν αὐτοῖς καὶ ἔξω, οἷον ὅσα τε τρίχας ἔχει, ὥσπερ ἄνθρωπος καὶ ἵππος, καὶ τὰ κήτη, οἷον **δελφὶς καὶ φώκαινα καὶ φάλαινα**· καὶ γὰρ ταῦτα μαστοὺς ἔχει καὶ γάλα. ».***The History of Animals***, III, 16. (All viviparous animals have udders, either because they produce their young in themselves or because they produce them outside, and also all viviparous animals have hair, such as humans and horses, or **among cetaceans, dolphins, porpoises and whales**; for the latter animals also have udders and milk.)

“The dolphin” can be the generic name of one family (different from seals and whales). However, δελφὶς and φώκαινα must be also distinguished:

« **Ὁμοίως δὲ τῷ δελφῖνι καὶ ἡ φώκαινα**· καὶ γάρ ἐστιν ὅμοιον δελφῖνι μικρῷ, γίνεται δ΄ ἐν τῷ Πόντῳ. Διαφέρει δὲ φώκαινα δελφῖνος· ἔστι γὰρ τὸ μέγεθος ἔλαττον, εὐρύτερον δ΄ ἐκ τοῦ νώτου· τὸ χρῶμα ἔχει κυανοῦν. Πολλοὶ δὲ δελφίνων τι γένος εἶναί φασι τὴν φώκαιναν » *The History of Animals*, III, 16 (**The porpoise is like the dolphin**, to which it looks like a small one. He lives on the Bridge [Black Sea]. The porpoise differs from the dolphin: first it is smaller; it also has a wider back; and its colour is dark blue. Many people say that the porpoise is only one variety of the dolphin.)



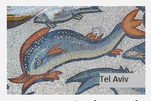
The famous Cnossos palace…

Natural history’s criteria are first anatomical characteristics (dolphins are marine mammals); secondly, appearance and size (dolphins and porpoises are neither seals nor whales); thirdly (ecology: place and way of life).

In fact, dolphins in the Mediterranean Sea weremaybe too frequently observed (alive or stranded) to generate real attention to them. The qualification of a common small delphinid as “common dolphin” discouraged observers from questioning the accuracy of this taxonomy.

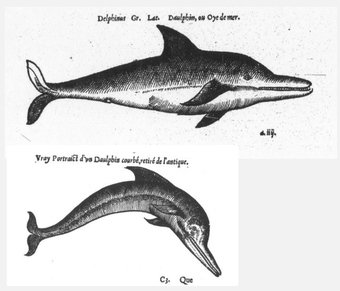
But striped dolphins were certainly quite frequent in reality.



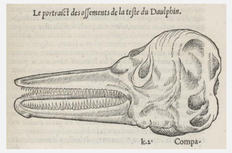


Tel Aviv roman mosaic shows the diagnostic eye’s stripe of a *Stenella coeruleoalba*

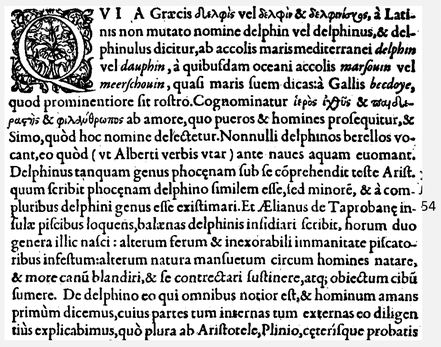
During the Renaissance, scientists (as Belon, Rondelet, Gessner…) took over these categories inherited from Greek and Roman science… and *Delphinus delphis* was still considered as the most common dolphin in the area.



P. Belon, *Histoire naturelle des étranges poissons marins*, 1551



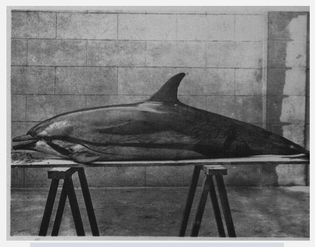
However, Rondelet (1554) already explains onomastic difficulties and potential identification errors.



VIA Græcis δελφὶς vel δελφὼν & δελφοβόρος, à Latinis non mutato nomine delphin vel delphinus, & delphinulus dicitur, ab accolis marismediterranei *delphin* vel *dauphin*, à quibusdam oceani accolis *marsouin* vel *meerschouin*, quasi maris suem dicas: à Gallis *becdoye*, quod prominentiore sit rostro. Cognominatur ἱερὸς ἰχθὺς & παιδιᾶρας & φιλάνθρωπος ab amore, quo pueros & homines prosequitur, & Simo, quòd hoc nomine delectetur. Nonnulli delphinos berellos vocant, eo quòd (vt Alberti verbis vtar) ante naues aquam euomant. Delphinus tanquam genus phocænam sub se cõprehendit teste Arist. : quum scribit phocænam delphino similem esse, sed minorẽ, & à com- pluribus delphini genus esse existimari. Et Ælianus de Taprobanę in- 54 sulæ piscibus loquens, balænas delphinis insidiari scribit, horum duo genera illic nasci : alterum ferum & inexorabili immanitate piscatoribus infestum: alterum natura mansuetum circum homines natare, & more canũ blandiri, & se contrectari sustinere, atq; obiectum cibũ sumere. De delphino eo qui omnibus notior est, & hominum amans primùm dicemus, cuius partes tum internas tum externas eo diligentiùs explicabimus, quòd plura ab Aristotele, Plinio, cęterisque probatis



Rondelet, *Libri de piscibus marinis*, 1554

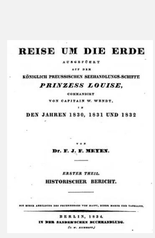


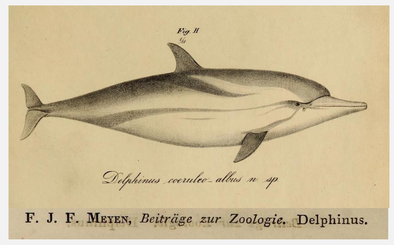
Monaco, 1909: a inaccurate identification as « *Delphinus delphis* »

« Discovery » and first discriminating description of *Delphinus coeruleo-albus*: Rio de la Plata, **MEYEN, 1833**

Between 1830 and 1832 Franz Meyen, whose name had been given by Humboldt, took part in an Prussian expedition to South America on board the commercial and scientific *Prinzess Luise*: in the journal of his travel he describes a wide range of animals and plants never identified before, among which a dolphin he calls “***Delphinus coeruleo-albus***”, differing from the “common dolphin” sketched by Lacépède.

For the first time, the description of the blue and white pigmentation very clearly establishes the difference between the two species of dolphins, "*common*" and “*coeruleo-albus*”. Number of teeth and shape of head are also noted.





Delphinus coeruleo-albus n. sp. Tab. XLIII. Fig 2 1/11 der natürlichen Grösse, des weiblichen Thieres 5 ½ Fuss. Der Kopf rund und sehr gewölbt, dagegen die Schnauze sehr platt und mit etwas hervorstehendem Unterkiefer. In jeder Seite der Kiefern 48 bis 50 Zähne, die kegelförmig, sehr spitz und etwas nach Innen gebogen sind. **Er ähnelt dem *Delphinus Delphis***, dessen schnabelförmige Schnauze viel kürzer, und besonders unten mehr zusammengedrückt ist. Die Brust- und Rückenflosse sind bei unserer Art mehr zugespitzt und nicht so bedeutend ausgeschweift**). Die Färbung unterscheidet unsere Art sehr auffallend; der ganze Rücken mit der Stirn bis zum Schnabel ist dunkelblau. Von der Rückenfinne an verläuft ein schmaler sehr dunkelblau gefärbter Streifen nach vorn, wo er sich plötzlich verliert. Vom Auge aus läuft ein sehr schmaler, blauer Streifen über die Seite nach dem Schwanze, wo er sich in der Gegend des Afters breit endet. Auch die Brustflosse ist blaugrau gefärbt, und steht mit dem gefärbten Augenringe durch einen Streifen in Verbindung. Der Bauch, der Schnabel und das Uebrige des Körpers sind blendend weiss.

Es lebt **dieser schöngezeichnete Delphin** an der östlichen Küste von Südamerika; wir harpunirten ihn in der Gegend des Rio de la Plata. Das ganze Skelett des Thieres, das wir mitgebracht haben, befindet sich im Königl. anatomischen Museum zu Berlin.

**) Man vergleiche die Abbildung von *Delphinus Delphis* bei La Cépède *Hist. natur. des dauphins*. 2. Pl. 5. Fig. 1.

(*Beiträge zur Zoologie: gesammelt auf einer Reise um die Erde*, III, 609-610)

Am 28sten November wurde ein Delphin harpuniert, den wir als **neu unter *Delphinus coeruleo-albus* beschrieben und abgebildet haben**. **Dieses schöne Thier** war auf dem Bauche und an den Seiten blendend weiss, der Rücken war stahlblau, von wo aus einige Streifen dieser Farbe zur Seite des Thieres verliefen. **Sein Magen war stark gefüllt mit Saepien, kleinen Fischen und Flusskrebsen**; wahrscheinlich hatte er, nur noch vor einigen Stunden, die Mündung des Rio de la Plata verlassen, von der wir uns in einer sehr bedeutenden Entfernung befanden. (*Reise um die Erde*, I, 119)

Delphinus coeruleo-albus is described and sketched as a new species, similar to *Delphinus delphis*, and beautiful animal.
The stomach was full of squid, fish, river crab: *Delphinus coeruleo-albus* is opportunist.
He forages at river mouth, but can be seen at maybe25 nautical miles off the coast during the day.

19th and 20th century: early exact identification and persistent confusion

If **Meyen** succeeded in recognising the *Delphinus coeruleoalbus* off the South-American coast, the reason was that he had a very keen eye for details indicating the statement of a new species. That why he really *saw* the evidence of difference.

Gervais (1864) makes the difference between *D. delphis* and *D. Tethyos* on an anatomic basis – but at sea the distinction is still uncertain.

« **DAUPHIN ORDINAIRE (*Delphinus delphis*).** – C’est le Dauphin sédentaire sur tout notre littoral. Un de ses principaux traits distinctifs réside dans la double rainure élargie qui se remarque à sa face palatine. Cette rainure est visible après l’enlèvement de la membrane du palais ; elle n’existe pas dans l’espèce du même genre que j’ai décrite sous le nom de *Téthys*.

« **DAUPHIN DE TETHYS (*Delphinus Tethyos*).** Celui-ci paraît beaucoup plus rare, et il ne m’est encore connu que par deux individus: l’un pris à l’embouchure de l’Orb (Hérault) en 1852, l’autre des environs de Port-Vendres (Pyrénées Orientales) dont j’ai dernièrement vu le crâne dans le cabinet du Dr Pinchinat. »

Giglioli (1874) compares a supposed new species he calls “*Delphinus caerulescens* (Giglioli, sp. nov.?)” observed in the Van-Diemen Strait with Meyen’s *Delphinus coeruleo-albus*. His statement shows that Meyen’s species is henceforth accepted as accurate.

However, further misidentifications can occur: for example, near Monaco, a young *Stenella coeruleoalba* happened to strand: in the logbook it is documented as a *Delphinus delphis* specimen in spite of the photography.



CONCLUSIONS

“all these incomplete indications are only used to torture naturalists.”
(Georges CUVIER, *Recherches sur les ossements fossiles de quadrupèdes*..., 1823, p.278)

Taxonomic confusion can lead to misestimation of the exact population of small delphinids: erroneous name or generic term (as “porpoise”, or “dolphin”), negligent observation of frequently seen dolphins led to confusion between at least two species.

The “*common* dolphin” was considered as being the most … common in the northern shores of the Mediterranean Sea, whereas it may have not be the case since centuries.

As *common* and *striped* dolphins were not distinguished as being different species, perhaps to the late fifties, and due to lack of accurate data as well as lack of universally adopted name for the *Stenella coeruleoalba*, their real conservation status was certainly biased.

"The idea put forward by some authors that the species was once abundant in the Mediterranean and that it was replaced, in the last quarter of the 20th century, by *Stenella coeruleoalba*, has no serious basis. The simplest explanation is that these species were confused until the early 1970s, and that the previously observed *S. coeruleoalba* were mistaken for *D. delphis*.” (Robineau, 2005, p.399)



DISCUSSIONS ABOUT A « *DELPHINUS DUBIUS* »

G. Cuvier described in 1812 a group of stranded dolphins, which Desmarets in 1820 records after him as ***Delphinus dubius***. This dolphin is known only by skulls kept in the Museum of Natural History in Paris.

This « *Delphinus dubius* » according to Desmarets 1820 seems very similar to *Delphinus delphis* (number and shape of teeth, shape of maxillary bones, …) and is likely to be an **early identification of a *Stenella coeruleoalba***.

But for Cuvier in 1829 the « *Delphinus dubius* » seen off the African coast becomes the species now known as the “*Stenella frontalis*”.

The word “*Stenella*” is a “looking like Latin” onomastic invention due to Gray (1866); but the name *Stenella coeruleoalba* was definitively adopted after long trial and error: *Delphinus euphrosyne* (Gray, 1846), *Delphinus styx* (Gray, 1846), *Delphinus lateralis* (Peale, 1848), *Delphinus tethyos* (Gervais, 1853), *Clymenia dorides* (Gray, 1866), *Clymenia similis* (Gray, 1868), *Clymenia euphrosynoides* (Gray, 1868)...

In the same time the discussion about the « dubious dolphin » came to an end with Paul Gervais in 1853: he clearly distinguished three species: *Delphinus delphis*, which is the dolphin Ancient Greeks called « *delphis* »; *Delphinus dubius*, smaller than *Delphinus delphis*, mainly on Atlantic coasts; and « ***Delphinus tethyos*** (P. Gerv.) », a little larger than *D. delphis*, with almost the same number of teeth, but without palatal groove.

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