

Rafinesque's Sicilian whale, *Balena gastrytis*

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ABSTRACT: In 1815, the naturalist Constantine S. Rafinesque described a new species of cetacean, *Balena gastrytis*, from Sicily, based on a whale that stranded on Carini beach near Palermo. In comparing the characteristics of his new whale with known species, Rafinesque also took the opportunity to name a new genus, *Cetoptera*, to replace *Balaenoptera* Lacépède, 1804. Unfortunately, few of Rafinesque's contemporaries saw his article, which appeared in *Il Portafoglio*, a local journal that he published and distributed. The journal remains rare, and awareness of the whale remains minimal, despite its relevance to cetacean taxonomy and understanding of whale diversity and distribution in the Mediterranean. We describe the circumstances of the stranding of the Sicilian whale and provide Rafinesque's original description of the whale, as well as an evaluation of its reported characteristics and its current identity.

KEYWORDS: *Balaena* – *Balaenoptera physalus* – Cetacea – Italy – Mysticeti – taxonomy.

INTRODUCTION

On about 15 November 1814, following a heavy storm, a whale washed up on Carini beach near Palermo on the Italian island of Sicily (Figure 1), attracting a large, curious crowd. Mr D. Russo Baldassare of Palermo closely inspected the cetacean and transmitted a detailed description of it to the natural historian Constantine S. Rafinesque (1783–1840), who was then living in Palermo (Rafinesque 1836). Determining the animal to be new to science, Rafinesque (1815a) systematically described the characteristics of the whale and the circumstances of its demise, and he gave it the scientific name, *Balena gastrytis*.¹ Unfortunately, the published description of this species has remained unavailable to most biologists because the Sicilian journal in which it appeared, *Il Portafoglio*, enjoyed only limited circulation, readership and longevity, and it is now extremely rare.

None of Rafinesque's contemporaries appears to have seen the description of *Balena gastrytis*, and the name does not appear in early species lists or in synonymies of relevant cetaceans (Desmarest 1822; Griffith 1827; Allen 1882; Hershkovitz 1966). Subsequent generations of biologists and biographers know of the whale only from Rafinesque's later references to it in his lists of his publications, and some considered it an example of his perceived tendency to claim publications based on manuscripts that were sent to publishers, but never appeared in print (Cope and Kingsley 1894; Call 1895). For more than 90 years, it was treated by Rafinesque's biographers as part of his "fugitive" bibliography and excluded from his list of confirmed publications (Call 1895; Fitzpatrick 1911; Boewe 1982).

A copy of *Il Portafoglio* discovered in Palermo, Sicily, confirms Rafinesque's publication of the description of *Balena gastrytis*, as he indicated. Inspection of the



Figure 1. Map of Sicily showing the locations of Palermo and Carini. The type locality for *Balena gastritis* is Carini beach, on the coast north of Carini.

journal revealed that Rafinesque actually published two articles on this whale² and that additionally he named a new genus of cetacean in the second article. The descriptions of these whales are relevant for cetacean taxonomy, and they are also important because they enrich the unfortunately meagre historical record of whale strandings in the Mediterranean. Herein, we provide transcriptions of Rafinesque's original works in Italian and our English translations, and we evaluate the current identity of the Sicilian whale with the benefits of hindsight and the knowledge of cetacean diversity that has accrued since the early nineteenth century.

IL PORTAFOGLIO

Constantine S. Rafinesque was an industrious and prolific, if not always methodical, writer who produced hundreds of pamphlets, journal articles and books on natural history, archaeology, anthropology, religion, philosophy and other topics during his lifetime (Boewe 1982, 2001). Among his many accomplishments, Rafinesque is credited with naming approximately 2,700 genera and 6,700 species of plants (Merrill 1949), as well as uncounted vertebrate, invertebrate and fossil species. The entirety of Rafinesque's written output is commonly quantified as 1,000 publications, a number that is based on Fitzpatrick's (1911) enumeration of 939 known books, articles and pamphlets. Fitzpatrick's count was inflated, however, by his idiosyncratic numbering system and his inclusion of some works not authored by Rafinesque (Boewe 1982). It also does not include 85 additional manuscripts, pamphlets and articles, nor 39 early reprints and translations of previous works that were subsequently rediscovered and listed by Boewe (1982, 2001).

Rafinesque's sometimes incomplete or careless descriptions and his thoughtlessly antagonistic public attitude toward some of his colleagues resulted in many of his works being overlooked or ignored by his contemporaries and by subsequent generations of researchers (Gray 1841; Haldeman 1842; Call 1895; Boewe 2011). Perhaps equally important, Rafinesque often published in obscure journals with small print runs, limited

circulations and short lifespans, many of which he himself founded and managed. His *Specchio delle scienze*, published in Sicily, for example, consists of twelve numbers in two volumes that ran from January through December 1814. Similarly, his *Atlantic journal and friend of knowledge* lasted only eight numbers, from the spring of 1832 through the winter of 1833 (Woodman 2012). Until quite recently, many of Rafinesque's productions were difficult to locate, and those that are accessible in libraries are often incomplete (Boewe 2011). Fortunately, most of his periodicals are now available in electronic formats at Biodiversity Heritage Library³, the Gallica web site of the Bibliothèque nationale de France⁴, Googlebooks⁵ and similar internet resources. Despite the greater availability of these publications, some Rafinesque productions continue to remain scarce or to elude investigators entirely (Boewe 1982, 2001).

Rafinesque's description of *Balena gastrytis* was published in one of the rarest of his scientific journals, *Il Portafoglio*. The existence of this periodical was suspected only because Rafinesque referenced his article describing a new species of cetacean, published in *Il Portafoglio*, at least four times. It was included in lists of his published titles advertised in *Analyse de la nature*⁶ (Rafinesque 1815c: 224) and in *Circular address on botany and zoology*⁷ (Rafinesque 1816: 14), and it appeared in similar lists associated with two letters seeking faculty appointments at the University of Pennsylvania in 1816 and at the University of Virginia in 1821 (Boewe 1982, 2001). Haldemann (1842) subsequently listed the article describing *Balena gastrytis* in a postmortem summary of Rafinesque's publications in zoology. Uncharacteristically, Haldemann did not comment on the work, suggesting that he had not seen a copy of it and was instead relying upon another source, possibly the advertisement in either *Analyse de la nature* or *Circular address*.

Il Portafoglio and its description of *Balena gastrytis* could not be located "in the United States or anywhere in Europe, including Sicily" (Boewe 1982: 10; 2001) until 1987, when Rosario Lentini, an historian in Palermo, discovered a possibly unique surviving copy tightly bound up with some other journals in the Biblioteca centrale della Regione Siciliana.⁸ He sent a photocopy of the two articles on Rafinesque's Sicilian whale to Rafinesque biographer Charles Boewe, who in turn forwarded a copy to JGM, "in the belief that it might interest you".²

Il Portafoglio began publication, apparently as a weekly, in Palermo in January 1815 and lasted for only six issues.² The description of *Balena gastrytis* appears in the first issue, dated 2 January 1815. A second article on the new cetacean appeared in the second issue on 9 January 1815. As with most of articles in *Il Portafoglio*, the two accounts of the Sicilian whale are in Italian. At the end of July of that same year, Rafinesque left Sicily permanently for the United States (Rafinesque 1836). It is likely that most original copies of the journal were lost along with most of Rafinesque's collections and manuscripts when the ship in which he was travelling to the United States foundered off the coast of New York on 2 November 1815 (Rafinesque 1836).

BALENA GASTRYTIS RAFINESQUE, 1815

Transcripts of Rafinesque's (1815a, 1815b) two articles on *Balena gastrytis* and our translations are presented in Appendixes 1 and 2 (pp 237 and 239 respectively).

In the first article, Rafinesque (1815a) noted the location and circumstances of the whale's stranding, and he provided a description communicated to him by Russo. Rafinesque

stated the “teeth” of the cetacean were those of a “true whale”, that is, a baleen or mysticete whale. His contact had provided him with one of the baleen plates from the whale, so Rafinesque (1815a: 3) (Appendix 1) was able to describe in detail the 3-inch-long “tawny, narrow, filamentous, corneous, perpendicular laminae” based on his own observations. The dorsum of the whale was described as smooth and lacking a hump or fin, although there was a flipper on each side of the body. The chest and belly were covered with longitudinal furrows about “two fingers” (“due dita”; *c.* 4–5 cm) apart.

The total length of the whale was “24 palmi” (24 palms). The palm was in use in nineteenth-century Europe, particularly the Mediterranean countries, as a measure for cloth and fabric, but it varied from approximately 217 mm to 290 mm, depending on the location. In Palermo, the cloth measure of one palm was about 242 mm (Palaiseau 1816).⁹ If this were the measure used by Russo to determine the size of the stranded whale, the animal was approximately 5.8 m long. Rafinesque (1815a: 3) (Appendix 1) further noted that the whale was a young animal, and its meat, which was stripped away by the local inhabitants for food, had a bland taste, somewhere “between the meat of horse and that of tuna”.

Rafinesque (1815a: 4) capped his account by naming his new whale *Balena gastrytis* and summarizing what he considered to be the defining characteristics of the species: “Corpo cilindrico, fosco dorso liscio, mascelle uguali rotondate, petto e ventre bianchiccio rugato longitudinalmente. [Body cylindrical; dark smooth dorsum; jaws equally rounded; chest and venter whitish, longitudinally wrinkled.]” Rafinesque finished by asserting that additional evidence for his claim that the beached whale represented a new species would appear in a subsequent paper.

Rafinesque’s summarization of the whale’s defining characters is better understood in the context of the second article that came out the following week. He first established the authority for his understanding of the diversity and characteristics of cetaceans by citing an 1805 book on the natural history of the Cetacea by Lacépède and Sonnini. In fact, Rafinesque conflated two separate works, one by Lacépède (1804), the other by Sonnini (1804), both published in “An XII”¹⁰ of the French Republican calendar, which may explain Rafinesque’s confusion of the equivalent Gregorian year. The two authors recognized the same eight species of mysticetes using the same scientific and common names and organized taxonomically in the same manner.

In order to show how his *Balena gastrytis* was distinct, Rafinesque sequentially worked his way through the eight species using the characters noted by Sonnini (1804) and Lacépède (1804). Rafinesque first noted that the baleen whales were separated into two genera, “*Balena*”, which lacked a dorsal fin, and “*Balenopectera*”¹¹, which had a dorsal fin. It was at this point that Rafinesque (1815b: 6) proposed his new genus name, explaining that *Balaenopectera* was a “nome pessimo che ho cambiato in *Cetoptera* [a very poor name that I have changed to *Cetoptera*”].¹² His proposed replacement of *Balaenopectera* with *Cetoptera* was taxonomically unjustifiable, but Rafinesque (1814) advocated the need to “improve” existing names to conform to his standards of simplicity, euphony and appropriateness, and he engaged in the practice quite often (Merrill 1949; Boewe 2003). His meddling with the established nomenclature was one reason that Rafinesque eventually gained notoriety among some of his colleagues in natural history.

Because Russo had reported no dorsal fin on the Sicilian whale, Rafinesque determined that the animal belonged to the genus “*Balena*”, which itself was divided into two subgenera (Rafinesque termed these “sections”) based on the presence or absence of humps¹³ on the dorsum. The smooth back reported for *Balena gastrytis* convinced Rafinesque that it should

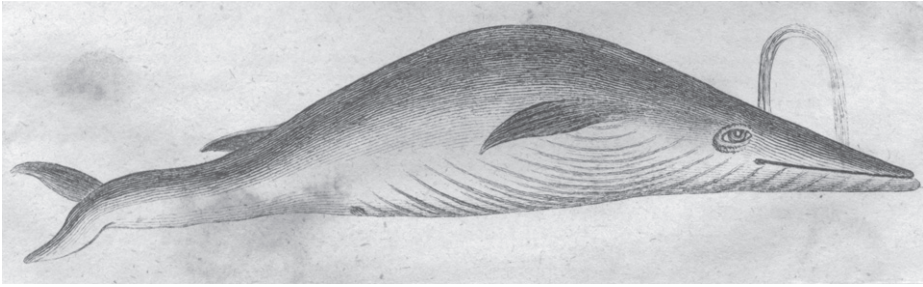


Figure 2. “Baleinoptère rorqual, Prise dans la Méditerranée” from Lacépède (1804: plate 5, figure 1) (actual size: the original image is 122 mm from rostrum to tip of tail). Lacépède’s illustration of the fin whale, *Balaenoptera rorqual* (= *Balaenoptera physalus*), clearly shows the dorsal fin, the ventral longitudinal folds, and the general proportions of the animal, some of the characteristics that Rafinesque (1815a, 1815b) discussed in his descriptions of *Balena gastrytis*.

be in the section with *Balaena mysticetus*¹⁴ and *B. nordcaper*¹⁵, which also lacked dorsal humps (Lacépède 1804; Sonnini 1804). Because it possessed a mix of contrasting characters present in one species or the other, but not both, he decided that *Balena gastrytis* could not be either *B. mysticetus* or *B. nordcaper* and therefore must be new. Moreover, the Sicilian whale had longitudinal furrows along its venter (Figure 2), which were not present in either species, although they did occur in three of the four species of *Balaenoptera* (*B. jubartes*¹⁶, *B. rorqual*¹⁷, *B. acutorostrata*¹⁸, but not *B. gibbar*¹⁹) according to Lacépède (1804) and Sonnini (1804). Rafinesque (1815b) mistakenly wrote that the furrows were not present in three species of *Balaenoptera*, but it is clear from the rest of his account that he was aware that they were, because he addressed the concern that Russo may have failed to notice a dorsal fin on the Sicilian whale and that it might, in fact, be one of those three species of *Balaenoptera* with ventral furrows (Appendix 2). He then proceeded to explain how *Balena gastrytis* differed from each of the three *Balaenoptera* in the shape of its jaws.

Notwithstanding that he had never actually seen the specimen in question himself, Rafinesque did a creditable job of demonstrating how he keyed out the whale using the characters specified by Lacépède (1804) and Sonnini (1804) and thereby distinguished it from all then-known species of mysticetes. His process was logically defensible, even if in practice it was less tangible.

IDENTIFICATION OF *BALENA GASTRYTIS*

Six species of mysticetes – a balaenid (North Atlantic Right Whale) and five species of balaenopterids (rorquals) – are known to occur in the Mediterranean Sea (Table 1). Based on the supposed lack of a dorsal fin or a dorsal hump, Rafinesque thought the Sicilian whale must be a balaenid, however, the prominent ventral furrows indicate that his whale was certainly a balaenopterid (hence, it was not *Eubalaena glacialis*; see Table 1). Rafinesque acknowledged the possibility that Russo was mistaken in reporting the absence of a dorsal fin. If the animal had been in an advanced state of decomposition, the dorsal fin could be missing. The specimen, however, was fresh enough for the hungry crowd at Carini beach to strip the whale to its bones. Alternatively, the dorsal fin might have been removed before

Table 1. Mysticetes in the Mediterranean based on 48,870 records (reports of strandings and captures, including 552 voucher specimens) from the years 1620–2011 in the Cetacean Distribution Database, National Museum of Natural History, Washington, DC. Sample size (n) refers to the minimum number of confirmed reports for each taxon. The only whales previously reported from Sicily are *B. physalus* ($n = 2$) and an Odontocete, the Sperm Whale (*Physeter catodon*; $n = 4$) (Redman 2014).

Family	Taxon	Common name	n
Balaenidae	<i>Eubalaena glacialis</i> (Müller, 1776)	North Atlantic Right Whale	6
Balaenopteridae	<i>Balaenoptera acutorostrata</i> Lacepede, 1804	Northern Minke Whale	6
Balaenopteridae	<i>Balaenoptera borealis</i> Lacepede, 1804	Sei Whale	0
Balaenopteridae	<i>Balaenoptera musculus</i> (Linnaeus, 1758)	Blue Whale	2
Balaenopteridae	<i>Balaenoptera physalus</i> (Linnaeus, 1758)	Fin Whale	40
Balaenopteridae	<i>Megaptera novaeangliae</i> (Borowski, 1781)	Humpback Whale	3

Russo finished inspecting the whale. Rafinesque stated, however, that the whale was a young animal, and he noted that the flesh tasted bland. The meat of nursing balaenopterids has only a fraction of the myoglobin (oxygen-bearing muscle pigment) present in adults, resulting in a bland taste.²⁰ If the animal were an aborted foetus or a neonate (newborn), the dorsal fin would flop over when the whale was out of the water, and it would lie on the animal's back rather than being erect, thereby making it easier to miss.

The smooth dorsum lacking humps indicates that the stranded whale was not a humpback whale (*Megaptera novaeangliae*). That species also has a knobby tail and extremely long, knobby lateral fins that can reach about a third of its total length. Rafinesque reported none of these peculiar and obvious characteristics. Removing the northern right whale and humpback whale from consideration leaves only the four species of *Balaenoptera* as likely possibilities (Table 1).

Adult balaenopterids are generally 7 m or more in length. The total length of 5.8 m for the holotype of *Balena gastrytis* confirms that it was a young animal, and based on the reportedly bland meat of the animal and the extremely short baleen (“tre pollici circa”, about 3 inches, or *c.* 7.6 cm), it was probably a neonate. Neonates of whale species occurring in the Mediterranean range from 2.5 m to 7.9 m in length (Reeves *et al.* 2002) (Table 2). The size of Rafinesque's Sicilian whale most closely matches the perinatal length (length at birth) of 6.0–6.5 m for the fin whale, *Balaenoptera physalus* (Figure 2; Table 2). This identification makes sense because the fin whale historically is the most commonly encountered species in the Mediterranean Sea (Table 1). Our tentative identification of Rafinesque's *Balena gastrytis* is, therefore, a species of *Balaenoptera* comparable with *Bp. physalus*. The lack of definitive characteristics ultimately renders the whale of uncertain identity, however, and taxonomically, the name *Balena gastrytis* must be treated as a *nomen dubium*.

Rafinesque (1815b) suggested that whale strandings on Sicilian beaches were not uncommon phenomena, and he cited accounts of at least three other unidentified cetaceans in Mongitore (1742–1743). Despite this, the overall historical record of whale strandings in Sicily is poor (Table 1). The re-discovery of Rafinesque's account of *Balena gastrytis* in *Il Portafoglio* and our identification of the whale as *Balaenoptera* sp. enhance this record, if only slightly.

Rafinesque's (1815b: 6) new genus *Cetoptera*, designated in his second paper on *Balena gastrytis*, is an unnecessary and unwarranted replacement name for *Balaenoptera*

Table 2. Lengths of neonate and adult cetaceans in the Mediterranean Sea; data from Reeves *et al.* (2002).

Taxon	length range of neonates (m)	maximum length of adults (m)
<i>Eubalaena glacialis</i>	4.0–4.6	17.0
<i>Balaenoptera acutorostrata</i>	2.5–2.8	10.7
<i>Balaenoptera borealis</i>	4.5	19.5
<i>Balaenoptera musculus</i>	7.0–7.9	29.8
<i>Balaenoptera physalus</i>	6.0–6.5	24.0
<i>Megaptera novaengliae</i>	4.0–4.5	17.0

Lacépède, 1804, and is therefore to be treated as a junior synonym of that name. Rafinesque's (1815c: 61) genus *Catoptera* is either a misspelling or, more likely, a subsequent attempt to "improve" *Cetoptera* Rafinesque, 1815b. Both *Cetoptera* and *Catoptera* are junior synonyms of *Balaenoptera* (Hershkovitz 1966).

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NOTES

¹ *Balena* is Rafinesque's misspelling or, more likely, his attempt to "improve" the genus name *Balaena* Linnaeus, 1758, by removing "unnecessary" letters. We use his spelling whenever referring to his Sicilian whale. The species name *gastritis* comes from Greek *γαστήρ* (belly or stomach) + *ρῆτις* (wrinkle).

² Charles Boewe to James G. Mead, 1 February 1989; a copy of the letter is deposited in the Joseph F. Culman 3rd Library of Natural History, Smithsonian Institution, Washington, D.C.

³ URL (accessed 1 March 2016): <https://www.biodiversitylibrary.org/>.

⁴ URL (accessed 1 March 2016): <https://gallica.bnf.fr/>.

⁵ URL (accessed 1 March 2016): <https://books.google.com/>.

⁶ In *Analyse de la nature* (Rafinesque 1815c: 224), the notice reads, "Description d' une nouvelle espèce de Cétacé *Balena gastritis* [*sic*] échouée en Sicile en 1814. – Insérée dans le *Portafoglio* de Janvier 1815".

⁷ In *Circular address on botany and zoology*, the advertisement reads, "Description of the *Balena gastritis*, a New Species of Whale found in the Mediterranean. In the Port Folio of Palermo for January, 1815" (Rafinesque 1816: 14).

⁸ The library in Palermo is now Biblioteca centrale della Regione siciliana "Alberto Bombace" (www.regione.sicilia.it/beniculturali/bibliotecacentrale/).

⁹ Palaiseau (1816: 168) actually listed the metric equivalent of one palm in Palermo as 24.17346 cm.

¹⁰ "An XII" (year 12) of the calendar of the French Republic extended from about 24 September 1803 to 19 August 1804 of the Gregorian calendar. The foreword or introduction to Lacépède's (1804: xxxiii) *Histoire naturelle des cétacés* is dated "le 24 nivose an 12", which translates to approximately 15 January 1804. Because the work would have been published on or after that date, the year of publication is 1804. Agassiz *et al.* (1854) and

Woodward (1915) give 1804 as the year of publication for Sonnini's *Histoire naturelle, générale et particulière, des cétacés*.

¹¹ *Balenoptera* is Rafinesque's misspelling or attempt to "improve" the genus name *Balaenoptera Lacépède, 1804*.

¹² *Cetoptera* is from Greek κητος (any large sea-animal) + πτερον (feather, wing; fin).

¹³ The "humps" referred to are the lumps, bumps, and knobs on the surface of the skin that give the humpback whale its name. They are particularly noticeable around the anterior mouth and along the edges of the lateral fins and tail.

¹⁴ *Balaena mysticetus* Linnaeus, 1758. Modern taxonomy follows Mead and Brownell (2005).

¹⁵ *Balaena nordcaper* Lacépède, 1804 = *Eubalaena glacialis* (Müller, 1776).

¹⁶ *Balaenoptera jubartes* Lacépède, 1804 = *Balaenoptera musculus* (Linnaeus, 1758).

¹⁷ *Balaenoptera rorqual* Lacépède, 1804 = *Balaenoptera physalus* (Linnaeus, 1758).

¹⁸ *Balaenoptera acutorostrata* Lacépède, 1804.

¹⁹ *Balaenoptera gibbar* Lacépède, 1804. This species has been equated with *Balaenoptera physalus* (Hershkovitz 1966; Mead and Brownell 2005), but Lacépède (1804: xxxvi) was clear that *B. gibbar* lacks ventral furrows ["Point de plis sous la gorge ni sous le ventre"]. *Balaenoptera physalus* is the type species for the genus (Hershkovitz 1961; Mead and Brownell 2005), and ventral furrows are considered typical of *Balaenoptera* as that genus is currently understood.

²⁰ This statement is based on personal experience; JGM has tasted nearly all species of young balaenopterids.

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Appendix 1. Transcription and translation of Rafinesque's (1815a) first article on *Balena gastritis* in *Il Portafoglio*.

storia natural

Descrizione della Balena naufragatasi nella Spiaggia di Carini in Novembre 1814, scritta dal Sig. C. S. Rafinesque.

Alli [All'incirca] 15. di Novembre del decorso anno 1814. dietro una forte tempesta del N[ord]. E[st]. fu scorto dalla Spiaggia di Carini distante circa 15 miglia da Palermo, un enorme pesce in balia dell[e] onde, e poco dopo fu dalle medesime sballato sopra la Spiaggia ed arenato, dove mort[o] poche ore appresso.

Accorsero sopra la Spiaggia molti Carinesi per vedere un tale meraviglioso [meraviglioso] pesce, che i pescatori non conoscevano, dandogli soltanto i titoli di *Urganazza* (nome di alcune specie del genere *Physeter* di Linneo) e di *Ferone* (nome della grande specie del genere *Delfinus*); trà gli spettatori vi fu il Sig. D. Baldassare Russo de Carini, il quale l'osservò con molto attenzione ed ebbe la compiacenza di comunicarmi un esatta descrizione di quest[o] animale, che dietro la sua relazione non può essere un pesce; ma pare una vera Balena.

Il giorno dopo, tutta la popolazione di Carini venne a vedere quest[o] animale, e non ostante le rimostranze

natural history

Description of the Whale wrecked¹ on Carini beach in November 1814, written by Mr C. S. Rafinesque.

About 15 November during the course of the year 1814 after a heavy storm from the N[orth]. E[ast]. there was spotted from the beach of Carini about 15 miles distant from Palermo, a huge fish at the mercy of the waves, and soon after it was battered onto the beach by the same and grounded, where it died a few hours later.

Many Carinians rushed over to the beach to see such a wonderful fish, that the fishermen did not know, just giving it the title of *Urganazza* (a name of some species of the genus *Physeter* of Linnaeus) and *Ferone* (name of the largest species of the genus *Delfinus*²); among the spectators was Mr. D. Russo Baldassare of Carini, who observed it with great attention and had the courtesy to communicate to me an exact description of this animal that, based on his report, cannot be a fish; but it appears to be a true whale.

The next day, the entire population of Carini came to see this animal, and despite the

del Guardiano de[] Sanità che diceva essere preveanta [prevenuta] S[indrome]. M[aligna].³ dell'avvenimento e doversi aspettare la sua risoluzione, principiarono [iniziarono] a tagliarne [tagliare] pezzi di carne, cosicché tra poco tempo ne rimasero soltanto gli ossamenti, e benché la sua carne fosse insipida e non molto buona la divorarono tutta, e non la trovarono dispiacevole acconciata a *stuffato*, avendo un sapore medio tra la carne di Cavallo e quella del Tonno.

Dalla descrizione favorita mi dal Sig. Russo, questa Balena era lunga 24. palmi, e la sua forma era cilindrica un poco conica ed il suo colore era fosco nero colla [con la] pancia bianchina [biancastro]. Il capo era grande e largo, l'apertura della bocca semi-circolare e grandissima—la mascelle uguali e rotondate [rotonde]: I denti erano di vera Balena, posti alla sola mascella superiore ma tutti intorno della medesima in forma di lamine perpendicolare strette cornee filamentose fulve, dritte [e] lisce nel lato esterno, archeggiate [arcuato] e lanose nell' augolo intero [interno] (uno di questi denti mi fu regalato dal detto Sig. Russo, il quale ne avea parecchi) la loro lunghezza era di tre pollici circa: la lingua era rotondata [rotonda] o carnosa agli occhi piccoli rotondi e—appunto sopra il labbro agli angoli delle mascelle. Aveva sopra la parte anteriore del capo un buco o spiracolo (ma non seppe rammentarsi il Sig. Russo la sua forma). Il suo dorso era liscio senza gobba e senza ala, ma ne aveva due bislunghe laterali, una da ogni lato del petto. Tutto il sotto del petto e della pancia era coperto di numerose rughe longitudinali distante due dita l' una dall' altra ed in forma di solchi strettissimi; la sua coda era come nelle Balene piana ed orizzontale composta di due profondi lobi allungati. La sua carne era bianchiccia filamentosa molle e gelatinosa, ma induriva al fuoco cuocendosi, senza dare olio, essendovi soltanto un leggiero [leggero] strato di lardo fermo tra la carne e la pelle, da queste particolarità si rileva [rivela] essere questa Balena benché fosse giovane una specie sinora sconosciuta, la quale linesi potrà chiamare *Balena gastritis* e definirsi così. *Corpo cilindrico, fosco dorso liscio, mascelle uguali rotondate, petto e ventre bianchiccio rugato longitudinalmente*. Si daranno in un altro foglio le prove di questa asserzione.

remonstrance of the Health Guard to prevent a disease event and having to wait for its resolution, they began to cut off pieces of meat, so in little time there remained only the bones, and although the meat was bland and not very good, they ate it all, and they did not find it unpleasant cooked as a *stew*, having a flavor midway between the meat of Horse and that of Tuna.

From the description favored to me by Mr Russo, this whale was 24 palms long, and its shape was cylindrical, slightly conical, and its color was dusky black with a whitish belly. The head was large and wide, the opening of the mouth semi-circular and huge—the jaws equal and rounded: the teeth were those of a true Whale, positioned only in the upper jaw but all around it in the form of tawny, narrow, filamentous, corneous, perpendicular laminae, straight [and] smooth on the external side, arched and woolly on the internal corner (one of these teeth was given to me by the said Mr. Russo, who had several) their length was approximately three inches: the tongue was round and fleshy, eyes small, round, and [positioned] just above the lip on the corners of the jaws. It had over the front of the head a hole or spiracle (but Mr. Russo could not recall its shape). Its back was smooth with no hump and without wings⁴ [fins], but had two lateral oblong [fins], one on each side of the chest. Everything below the chest and belly was covered with numerous longitudinal wrinkles two fingers apart in the form of narrow furrows; its tail was like that of the Whales, flat and horizontal, consisting of two deep, elongated lobes. Its meat was whitish, stringy, soft, and gelatinous, but it hardens on the fire when well cooked, without releasing oil, there being only a thin layer of firm lard between the flesh and the skin, from these characteristics it turns out that this whale, although young, is a hitherto unknown species, which can be called *Balena gastritis* and defined as follows. *Body cylindrical, dark smooth back, jaws equally rounded, chest and venter whitish, longitudinally wrinkled*. Evidence for this assertion will be given in another paper.

NOTES (for Appendix 1)

¹ Literally “wrecked,” but “stranded” would be a more modern interpretation

² *Delphinus* Linnaeus, 1758

³ “S. M.” presumably referred to some disease event that the Sanitary Guard was attempting to prevent. One of our reviewers helpfully suggested that the abbreviation might stand for the generic term, “sindrome maligna”.

⁴ “Ala” is literally “wing”, but Rafinesque uses the word to refer to the flipper (pinna).

Appendix 2. Transcription and translation of Rafinesque's (1815b) second article on *Balena gastrytis* in *Il Portafoglio*.

STORIA NATURALE

Prove che la Balena gastrytis naufragata a Carini è una specie nuova del Sig. C. S. Rafinesque.

La migliore e più recente opera che sia si pubblicata sopra i Cetacei e la Balene, è la *Storia naturale generale e particolare dei Cetacei* di Lacepede e Sonnini stampata in francese in Parigi nel 1805. In questa opera classica si rinvencono descritte 8 specie di Balene o Cetacei provvisti di denti laminosi comprese in due generi cioè 1mo *Balena* senza ala dorsale e 2do *Balenoptera* (nome pessimo che ho cambiato in *Cetoptera*) con una ala dorsale. La *Balena gastrytis* non avendo ala dorsale appartiene dunque al vero genere *Balena*: questo viene divise in due sezioni, la prima racchiude 2. specie col dorso liscio e la seconda 2. con delle gobbe sul dorso, la nostra specie non avendo veruna gobba sul dorso dov[rebbe] ragguagliare alla prima sezione.

Ecco i caratteri specifici essenziali delle due specie racchiuse in questa sezione.

1. *Balena mysticetus*. Il corpo grosso e corto, la coda corta;
2. *Balvena* [*sic*] *norcaper*. La mascella inferiore molta tonda, larghissima ed alta; ed il corpo e la coda [all]ungati

La mia *Balena gastrytis*, avendo dunque il corpo cilindrico ed allungato, e le mascelle uguali non può essere identica con veruna di queste specie, le quali sono inoltre sprovviste di rughe longitudinali sotto il ventre. Questo carattere singolarissimo il quali non si ritrova che in tre specie del genere *Balenoptera* di Lacepede; mi aveva fatto nascere il dubbio che il Cav[aliere]. D. Baldassare Russo avesse potuto per una svista non accorgersi dell' ala dorsale nella *Balena naufragata* benchè per altro avendo osservato con attenzione la coda, le ali pettorali, il suo sesso, il spiraglio, etc. pare che l' ala dorsale non avrebbe potuto sfuggire alle sue ricerche e che potesse [potrebbe] esse indentica con una di queste Balene rugose; ma poi avendo paragonato i loro caratteri all' esclusione del generico, li ritrovai assai diversi, giacché la *Balenoptera jubartes* di Lacepede ha il muso sporgente, il collo gib[b]oso, ed il contorno dei spiragli tabercolare [tuberculare], mentre la *Balenoptera roqual* di Lacepede, ha la mascella inferiore molto più lunga e più larga della superiore, e la *Balenoptera acutorostra* del medesimo, ha le

NATURAL HISTORY

Evidence that the Balena gastrytis wrecked at Carini is a new species by Mr. C. S. Rafinesque.

The best and most recent work that is published on the Cetaceans and the Whales, is the *Natural history, general and particular, of the Cetacea* by Lacepede and Sonnini printed in French in Paris in 1805. In this classic work one finds described 8 species of Whales or Cetacea that are provided with laminate teeth, comprising two genera, i.e., 1st *Balena*, without the dorsal wing [fin], and 2nd *Balenoptera* (a terrible name that I changed to *Cetoptera*) with a dorsal wing [fin]. The *Balena gastrytis*, having no dorsal wing, thus belongs to the true genus *Balena*: This is divided into two sections, the first contains two species with smooth backs, and the second [contains] 2 [species] with humps on their backs; our species, not having a true hump on its back, should compare to the first section.¹

Here are the essential specific characters of the two species included in this section.

1. *Balena mysticetus*. The body large and short, the tail short;
2. *Balena nordcaper*. The lower jaw very round, very large and high; and the body and tail elongated.

My *Balena gastrytis*, having thus a cylindrical and elongated body, and equal jaws cannot be identical with either of these species, which are also destitute of longitudinal wrinkles under the belly. This [is a] very singular character which is not found in the three species of the genus *Balenoptera* of Lacépède; this raises the question whether Mr D. Baldassare Russo, through an oversight, failed to notice the dorsal wing of the wrecked whale, although having carefully observed the tail, the pectoral wings [fins], the sex, blowhole, etc., it seems that the dorsal wing would not escape his researches and that it could be identical with these furrowed Whales; but then having compared their characters to the exclusion of the generic [characters], I found them very different, as *Balenoptera jubartes* of Lacépède has the protruding snout, the humped neck, and the outline of tuberculous openings; while the *Balenoptera roqual* of Lacépède, has the lower jaw much longer and wider than the upper [jaw], and *Balenoptera acutorostra* of the same [author], has acute jaws and the lower [jaw] larger; all characters that are not found in my species.

mascelle acute e l'inferiore più grande; caratteri tutti che non si rinvencono nella mia specie.

[Essere]' da osservarsi che la Balena naufragata era una Balena femina e che il suo nome specifico di *Gastrytis* deriva da due voci greche che significano ventre rugato.

Non deve comparire strano che siasi [sia] in Sicilia naufragata una *Nuova specie* de Cetaceo giacché nelle SICILIA RICERCATA del MONGITORE sono figurati tre nuovi Cetacei parimenti naufragati in Sicilia, e spesso ciò a [che] cade nelle remote spiagge [spiagge] Siciliane; ma non trovandosi in tali luoghi nessuno abile a descriverli, le ne perde la cognizione.

La maggiore singolarità del presente fatto, consiste nell' essere stata naufragata una vera Balena, qual[e] genere de Animali è affatto straniero al mediterraneo ed abitante soltanto del vasto Oceano: ma come ben darsi il caso che ingolfatasi [ingolfata] dallo stretto di Gibilterra, sia venuto direttamente a visitare e perire nei lidi siciliani; giacché essendo i Cetacei, animali che non profondansi nel mare, si dirigono spesso in preda alle Correnti al venti, e alle onde.

It is to be observed that the wrecked Whale was a female Whale, and that its specific name of *Gastrytis* is derived from two Greek words that mean *wrinkled belly*.

It must not appear strange that it is in Sicily that a *New Species* of Cetacean was wrecked as in the SICILIA RICERCATA of MONGITORE are figured three new Cetaceans also stranded in Sicily, and often this occurs on remote Sicilian beaches; but not finding oneself in such places, no one is able to describe them, any knowledge of them is lost.

The major peculiarity of this fact, is that a true Whale has been wrecked, a type of animal that is quite foreign to the Mediterranean and an inhabitant only of the vast ocean: but it well may be the case that, trapped by the Strait of Gibraltar, it came directly to visit and perish on the Sicilian shores; as they are cetaceans, animals that do not swim deeply in the sea, they often fall prey to the currents, to the winds, and to the waves.

NOTES (for Appendix 2)

¹ Rafinesque's account of Lacépède's (1804) taxonomy can be confusing. In discussing *Balena gastrytis*, Rafinesque focused on Lacépède's "Premier Ordre", which comprises the whales "without teeth", the baleen whales (Mysticeti). Within this group, Lacépède (1804) recognized two genera, each containing four species. Within each genus, species were divided between two unnamed subgenera, that Rafinesque referred to as "sections". Rafinesque thought that *Balaena gastrytis* belonged with *B. mysticetus* and *B. nordcaper* in the first subgenus of *Balaena*. In discussing the *Balaenoptera*, he mistakenly stated that all of the species lacked longitudinal folds on the venter. He also skipped any discussion of *Bp. gibbar*.

Genus *Balaena* – no dorsal fin

Subgenus #1 – no humps on the back

Balaena mysticetus

Balaena nordcaper

Subgenus #2 – one or more humps on the back

Balaena nodosa

Balaena gibbosa

Genus *Balaenoptera* – one dorsal fin

Subgenus #1 – no folds on the throat or belly

Balaenoptera gibbar

Subgenus #2 – longitudinal folds on the throat or belly

Balaenoptera jubartes

Balaenoptera rorqual

Balaenoptera acutorostrata

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