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NOMENCLATURAL AND SURVIVAL STATUS

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The Galápagos Tortoises: Nomenclatural and Survival Status

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there are no specimens in museum collections.

v) The name *T. abingdoni* Günther, 1877, is customarily used for the tortoises of Abingdon Island, and indeed this name is based upon an adequate series of specimens (BMNH 76.6.21.38–40, 76.6.21.44) of definite Abingdon Island origin (collected by J. Cookson in 1875) (Fig. 31, see also frontispiece painting). However, as I have previously argued (Pritchard, 1984), the holotype of *T. ephippium* Günther, 1875, customarily allocated to Duncan Island by Van Denburgh (1914) and subsequent authors, agrees in both morphology and circumstantial details of its collection with the tortoises of Abingdon (Baur, 1889), and is the older name. The holotype of *ephippium* (Figs. 21–22), although a relatively young animal, has a carapace length of 83.8 cm — about 9 cm longer than the largest of 86 Duncan tortoises collected by the *Academy* expedition (Van Denburgh, 1914), and about 7 cm longer than the largest of 26 specimens in the Rothschild collection (Rothschild, 1915a), but absolutely typical of male Abingdon tortoises (Rothschild, 1915a). Moreover, in lateral profile, the specimen, still in good shape in Edinburgh, shows the Abingdon tortoise characteristic (contrasting with the Duncan tortoise morphology) of the highest point of the carapace reached at vertebral 2 rather than at the very front of the carapace.

The circumstances of the collection of the specimen are also persuasive. Baur (1889), referring to the diary of Cap-

tain Basil Hall (1840), a mariner who visited the Galápagos in 1822, determined that Abingdon was the only island that Hall had actually visited in the archipelago, and that he had taken some tortoises on board, although all perished in the cold weather off Cape Horn. One of these was preserved, and “it may now be seen in the Museum of the College at Edinburgh.” This collection (now the Edinburgh Museum of Science and Arts) did not give catalog numbers to specimens in the early nineteenth century, but the acquisition log does include an entry indicating “Large turtle from South Sea — Captain Basil Hall,” and it only has a single Galápagos tortoise — the type of *T. ephippium*.

Thus, *T. abingdoni* Günther, 1877, is a junior synonym of *T. ephippium* Günther, 1875, and the Duncan Island tortoise will require an alternative name; the discovery that a type specimen has been misidentified is a more serious problem than the mere discovery of an obscure senior synonym, which can often be disposed of by petition to the ICZN. It is appropriate to revive Garman’s *Testudo duncanensis* for this purpose. This name appears only once, on p. 269, of Garman (1917), where it is offered in binomial form, although described as only a “variety” of *Testudo elephantopus*. Later in this paper (pp. 290–296), Garman offers a detailed description of his composite taxon *T. elephantopus*, and on pp. 292–293, there appears a detailed description of a 25 inch male specimen, MCZ 11068, with



Figure 31. Mounted specimen of an Abingdon Island tortoise, a very old adult male collected by J. Cookson in 1875; it died off Cape Horn on the journey to England. Specimen in the British Museum (Natural History). See also the frontispiece painting which appears to be based on this specimen.

accurate collection data — it was collected on Duncan Island by G. Baur. The account also describes adult female specimens from the same island. Thus, MCZ 11068 should be considered the lectotype of the Duncan Island tortoise, *Geochelone nigra duncanensis* (Garman, 1917), and is so designated.

On the other hand, substitution of the name *ephippium* for *abingdoni* would cause extensive confusion, the former having a substantial recent literature in all of which it is considered to refer to the Duncan tortoise, and it is appropriate to petition the ICZN to establish the validity of *abingdoni* by Plenary Decree despite the existence of a senior subjective synonym.

vi) While this point becomes moot if the tortoises of the four southern volcanoes of Albemarle are synonymized, Garman observed that the name *T. microphyes* Günther, 1875, customarily used to this day for the tortoises of Tagus Cove and Volcan Darwin, was based upon a single, probably abnormal female (but ventrally concave) specimen, 57 cm in length, of unknown provenance. It had been purchased by the British Museum from the Museum Committee of the Royal Institution of Liverpool. Günther's subsequent allocation to *T. microphyes* of a series of specimens of known Volcan Darwin origin (from "a small elevated plateau covered with stunted bush and high, very coarse grass" about four miles inland from Tagus Cove, where tortoises may still be found during moist times of the year) did not exempt the holotype from challenge, and in view of this, Garman (1917) proposed the alternative name *T. macrophyes* for the Tagus Cove tortoises, although for mysterious reasons he continued to use *T. microphyes* for other Albemarle populations.

Another detail concerning the nomenclature of one of the southern Albemarle tortoises pertains to the form described by Baur (1889) as *T. güntheri*, written thus, i.e., with an *umlaut*. Many authors from then to now have rendered this name in identical fashion — these include Van Denburgh (1914), Rothschild (1915a), Garman (1917), Beebe (1925), Eibl-Eibesfeldt (1960), Wermuth and Mertens (1961), Hendrickson (1964), Pritchard (1967), IUCN (1968), Black (1973), MacFarland et al. (1974a, 1974b), and de Vries (1984). Crumly (1984) both utilized and quoted the epithet without the *umlaut*; however, a corrigendum inserted into this paper indicated that *güntheri* should be substituted for *guntheri* throughout.

Despite the abundance of authors who used the *güntheri* form, the 1961, 1964, and 1985 editions of the Rules of Nomenclature (as well as the draft version of the forthcoming edition) are quite explicit; in Chapter VII, Article 32 (d) (i) (2), they specify that a name derived from the German and including a "ü" should be emended so that "ue" is substituted for "ü." On the other hand, the 1977 Rules included additional wording, specifically: "...except when the name was first corrected by deletion of the mark concerned, in which case it cannot be corrected further."

Authors who used *guentheri* include Honegger (1972, 1980), IUCN (1975, 1979), Corley Smith (1977), Groombridge (1982), Fritts (1983, 1984), Obst (1985), and

Wermuth and Mertens (1977). These last authors considered this taxon invalid, listing it in the synonymy of *T. e. elephantopus*, misquoting the original author (Baur, 1889) by using the emended form (items in synonymy should be cited exactly as originally written). However, the earliest use of this emended form appears to have been by me (Pritchard, 1971a, 1971b) in two papers in which, to my embarrassment, I used first the unaccented (*guntheri*) form and then the emended form (*guentheri*). I found to my further chagrin that in my 1967 book, the accented form (*güntheri*) had been used in the text, while in the appendix to the same volume it had appeared in unaccented form (*guntheri*). To date, Bailey (1970), Iverson (1985) and Cayot and Louis (1995) are among the few who have followed me in the usage of the unaccented form.

Further problems are encountered with the name of the adjacent population, *T. vandenburghi* De Sola, 1930. This name, a *nomen nudum*, can only be validated if a type specimen is declared and if the features by which the form differs from other Galápagos tortoises are clarified. Moreover, the name can only be legally applied to the Volcan Alcedo tortoise if it can be shown not only that the population from which De Sola's specimens were obtained (a lowland population near Cartago Bay) was identical to the Alcedo population, but also that it differed from other Albemarle populations with older names. This demonstration will be difficult, in that the Cartago Bay population appears to have been eliminated from the wild by volcanic activity, but perhaps it would be possible to trace some of the specimens De Sola sent to zoological parks, if they happened to end up in museums upon their demise. However, if they survived for any length of time in captivity, they are likely to have developed some minor abnormalities of captive growth that could mask any subtle shell features unique to this population. Interestingly, even though the Volcan Alcedo tortoise population is the most abundant in the archipelago today, it has never been morphologically characterized in the years since De Sola's 1930 publication, and Van Denburgh's (1914) original designation of the term *Testudo* sp. for this population relied entirely upon a single specimen (CAS 8141) that was not only too small (carapace length 26.75 inches) to demonstrate potential subspecific characters, but was also atypically high domed. The "seventy old skeletons" observed by Rollo Beck on Volcan Alcedo when the live juvenile was found would have been useful, but unfortunately were not collected.

Further questions arise in connection with the selection of the appropriate trinomial for the single subspecies of tortoise that, I have argued, inhabits the four southern volcanoes of Albemarle. Of the available names (*T. vicina*, *T. elephantopus*, *T. microphyes*, *T. macrophyes*, *T. guentheri*, and *T. vandenburghi*), it should be noted that the origin of the type specimens of the first three forms and of *T. guentheri* are unknown; *T. macrophyes* has never been used since its original proposal; and *T. vandenburghi* remains a *nomen nudum*. However, the holotype of *T. vicina* Günther, 1875 (an adult male skeleton, BMNH 74.7.15.1, obtained from

exist among these populations (e.g., *guentheri* shows a tendency for large adult males to be somewhat flat-shelled), the proportion of specimens in which distinctive characteristics are present is too low to justify nomenclatural recognition of different subspecies. A few individuals of all of these populations may show a tendency towards markedly saddlebacked shells (e.g., a large male I saw alive on Volcan Alcedo [Fig. 32]; or the southeastern Albemarle specimen figured by Garman [1917] in his Plate 16), but these are too rare to affect the overall designation of these populations as basically dome-shelled. They do, however, serve to indicate that the genes for the saddlebacked shell may be present in all populations in a certain frequency, and that when such phenotypes are favored by appropriate environmental conditions they may be manifested throughout the population relatively rapidly. But apart from selection for a saddleback shell morphology on the drier, more barren islands, most of the other features that have been utilized to differentiate subspecies or populations — overall size, shell smoothness or sculpturing and degree of erosion, degree of bossing of the carapace scutes, and details of shell proportions — are surely responses of the individual to environmental circumstances rather than genetic differences. Moreover, under primordial conditions, Galápagos tortoises were subject to no predation once they had passed the very early growth stages, and as the only large herbivores in their environment, there is no reason to believe that fitness would be less in tortoises demonstrating minor divergences from the typical shell form, as long as the architectural, supportive, and thermoregulatory functions of the shell and shell openings were not compromised, and mating success was not reduced.

The large size and greater tendency towards shell saddling of the adult males of most or all Galápagos races may thus be manifestations of sexual selection, and the requirements of enhanced mating success. Had adult males not been available to taxonomists, it is probable that 80% of the names proposed for “new” Galápagos tortoise species would never have seen the light of day.

Summary of Proposed Nomenclature

The Galápagos tortoises are included in the genus *Geochelone* and the subgenus *Chelonoidis*. Technically, the specific epithet should be *californiana* Quoy and Gaimard, 1824a, but until this name can be petitioned to be suppressed by the ICZN, in the interim, as a convenience and to avoid giving credence to a name that I trust has no future, I shall utilize the epithet *nigra*, a name originally proposed as *Testudo nigra* Quoy and Gaimard, 1824b, as the combination *Geochelone (Chelonoidis) nigra*.

Synonymy of

Geochelone (Chelonoidis) nigra

1824a *Testudo californiana* Quoy and Gaimard
Bull. Sci. Nat. Paris 1:90. Type locality: “Californie.”

(An unused name to be suppressed by petition to ICZN).

1824b *Testudo nigra* Quoy and Gaimard
Voy. Uran. Phys. Zool., 174. Type locality: “Californie.”

1827 *Testudo elephantopus* Harlan
J. Acad. Nat. Sci. Philadelphia 5(2):284. Type locality: “Galapagos Islands.” *Nomen dubium* (at subspecific level).

1835 *Testudo nigrita* Duméril and Bibron
Erpétol. Gen. 2:80. Type locality: unknown. *Nomen dubium* (at subspecific level).

1854 *Testudo planiceps* Gray
Proc. Zool. Soc. London 1853:12. Type locality: “Galapagos Islands.” *Nomen dubium* (at subspecific level).

1875 *Testudo microphyes* Günther
Phil. Trans. Roy. Soc. London 165:275. Type locality: “Hood’s Island” (by supposition). *Nomen dubium* (at subspecific level).

1902 *Testudo wallacei* Rothschild
Novit. Zool. London 9:619. Type locality: “Chatham Island?” *Nomen dubium* (at subspecific level).

1917 *Testudo clivosa* Garman
Mem. Mus. Comp. Zool. 30:283. Type locality: “Mascarenes?” *Nomen dubium* (at subspecific level).

1917 *Testudo typica* Garman
Mem. Mus. Comp. Zool. 30:285. Type locality: unknown. *Nomen dubium* (at subspecific level).

1952 *Testudo (Chelonoidis) elephantopus*, Williams
Bull. Amer. Mus. Nat. Hist. 99:555.

1967 *Geochelone (Chelonoidis) elephantopus*, Pritchard
Liv. Turt. World, 156.

1980 *Chelonoidis elephantopus*, Bour
Bull. Mus. Nat. Hist. Nat. Paris (4)2: 546.

I recognize ten subspecies of *Geochelone nigra*, with their referenced maps, photographs, type localities, synonymized names, and islands or areas of origin, listed as follows:

Geochelone nigra nigra (Quoy and Gaimard, 1824b)

(Maps 1, 8; Figs. 6–8, 44–45)

Type locality: “Californie.” Restricted to Charles Island (Santa María or Floreana) (extinct).

Testudo nigra Quoy and Gaimard, 1824b.

Testudo galapagoensis Baur, 1889.

Type locality: Charles Island.

Testudo elephantopus galapagoensis, Mertens and Wermuth, 1955.

Chelonoidis galapagoensis, Bour, 1980.

Geochelone nigra abingdoni (Günther, 1877)

(Maps 1, 2; Figs. 21–22, 31, 34–35, *frontispiece*)

Type locality: “Abingdon Island” (Pinta) (extinct in the wild; one captive survivor). Name requires validation by the ICZN by suppression of the senior synonym *Testudo ephippium* Günther, 1875.

Testudo ephippium Günther, 1875.

Type locality: Charles Island (in error). Name previously used erroneously for the Duncan Island subspecies.

Testudo abingdoni Günther, 1877.

Type locality: Abingdon Island.

Testudo elephantopus ephippium, Mertens and Wermuth, 1955.

Chelonoidis abingdoni, Bour, 1980.

Chelonoidis ephippium, Bour, 1980.

Geochelone abingdoni, Fritts, 1983.

Geochelone ephippium, Fritts, 1983.

***Geochelone nigra becki* (Rothschild, 1901)**

(Maps 1, 10; Fig. 19)

Type locality: "Cape Berkeley, northern point of Albemarle Island." Northern and western slopes of Volcan Wolf, Albemarle Island (Isabela).

Testudo becki Rothschild, 1901.

Geochelone elephantopus becki, Pritchard, 1967.

Chelonoidis becki, Bour, 1980.

Geochelone becki, Fritts, 1983.

***Geochelone nigra chathamensis* (Van Denburgh, 1907)**

(Maps 1, 5; Fig. 17)

Type locality: "Chatham Island." Southwestern and central Chatham Island (San Cristóbal) (extinct).

Testudo chathamensis Van Denburgh, 1907.

Testudo elephantopus chathamensis, Mertens and Wermuth, 1955.

Geochelone elephantopus chathamensis, Pritchard, 1967.

Chelonoidis chathamensis, Bour, 1980.

Geochelone chathamensis, Crumly, 1984.

***Geochelone nigra darwini* (Van Denburgh, 1907)**

(Maps 1, 9; Figs. 14, 15, 26)

Type locality: "James Island" (San Salvador or Santiago).

Testudo darwini Van Denburgh, 1907.

Testudo elephantopus darwini, Mertens and Wermuth, 1955.

Geochelone elephantopus darwini, Pritchard, 1967.

Chelonoidis darwini, Bour, 1980.

Geochelone darwini, Fritts, 1983.

***Geochelone nigra duncanensis* (Garman, 1917)**

(Maps 1, 3; Figs. 1, 2, 10, 25, 36–41, front cover)

Type locality: "Duncan Island" (Pinzón). This subspecies previously erroneously designated *Testudo ephippium* Günther, 1875.

Testudo duncanensis Garman, 1917. *Nomen nudum*.

Geochelone nigra duncanensis, Pritchard, 1996.

***Geochelone nigra hoodensis* (Van Denburgh, 1907)**

(Maps 1, 4; Figs. 3, 11, 24)

Type locality: "Hood Island" (Española).

Testudo hoodensis Van Denburgh, 1907.

Testudo elephantopus hoodensis, Mertens and Wermuth, 1955.

Geochelone elephantopus hoodensis, Pritchard, 1967.

Chelonoidis hoodensis, Bour, 1980.

Geochelone hoodensis, Crumly, 1984.

***Geochelone nigra phantastica* (Van Denburgh, 1907)**

(Maps 1, 7; Fig. 20)

Type locality: "Narborough Island" (Fernandina) (probably extinct).

Testudo phantasticus Van Denburgh, 1907.

Testudo phantastica, Van Denburgh, 1914.

Testudo elephantopus phantastica, Mertens and Wermuth, 1955.

Geochelone elephantopus phantastica, Pritchard, 1967.

Chelonoidis phantastica, Bour, 1980.

Geochelone phantastica, Crumly, 1984.

***Geochelone nigra porteri* (Rothschild, 1903)**

(Maps 1, 6; Figs. 4, 16, 23, 27, 42–43, prologue, back cover)

Type locality: "Indefatigable Island." Southern Indefatigable Island (Santa Cruz). Name requires validation by the ICZN by suppression of the possible senior synonym *Testudo nigrata* Duméril and Bibron, 1835, whose holotype is of uncertain provenance.

Testudo porteri Rothschild, 1903.

Geochelone elephantopus porteri, Pritchard, 1967.

Geochelone porteri, Fritts, 1983.

***Geochelone nigra vicina* (Günther, 1875)**

(Maps 1, 10, 11; Figs. 5, 9, 24, 32, 48–58, prologue)

Type locality: unstated; given as "Iguana Cove, Süden der Insel Albemarle" by Wermuth and Mertens (1977). Southern and middle Albemarle Island (Isabela), from Iguana Cove, Cerro Azul, to Sierra Negra, Volcan Alcedo, and to Tagus Cove, Volcan Darwin.

Testudo vicina Günther, 1875.

Testudo guntheri Baur, 1889.

Type locality: unstated, given as "Villamiel, Südwesten der Insel Albemarle" by Wermuth and Mertens, 1977.

Testudo macrophyes Garman, 1917.

Type locality: "Santa Isabela Island (Albemarle) near Tagus Cove."

Testudo vandenburghi De Sola, 1930. *Nomen nudum*.

Type locality: "Forty miles from Villamil...at the coast on the southern border of Perry Isthmus [Albemarle Island]." (This population now extinct).

Geochelone elephantopus guntheri, Pritchard, 1971a.

Geochelone elephantopus guentheri, Pritchard, 1971b.

Chelonoidis elephantopus, Bour, 1980.

Chelonoidis guentheri, Bour, 1980.

Geochelone vicina, Crumly, 1984.

Geochelone vandenburghi, Crumly, 1984.

There are four possibly distinct subspecies for which no names are yet available:

***Geochelone nigra* ssp.**

(Maps 1, 5; Fig. 18)

Northeastern Chatham Island (San Cristóbal). Distinct from extinct southwestern and central Chatham Island populations.

***Geochelone nigra* ssp.**

(Maps 1, 6; Figs. 28–29)

Northwestern Indefatigable Island (Santa Cruz). Distinct from other Indefatigable populations, but may be an imported population, possibly from Duncan.

***Geochelone nigra* ssp.**

(Map 1)

Barrington Island (Santa Fé). Extinct, possibly introduced.

***Geochelone nigra* ssp.**

(Map 1)

Jervis Island (Rábida). Extinct, possibly introduced.

Efforts should be made to secure type material for the first two of these forms, at least. Eibl-Eibesfeldt (1959) reported that he had found skeletal material in northeastern Chatham in 1957, and that this has been deposited in the Senckenburg Museum (Frankfurt-am-Main). Perhaps this material would be adequate. Taking living tortoises from the Galápagos is now prohibited, yet voucher material — at least a holotype, such as a salvaged shell from a natural mortality — is essential if a description of a new form is to have legitimacy. Moreover, the need is not purely academic. Conservation investment tends to concentrate on named taxa, and the northwestern Indefatigable tortoises, although among the most distinctive in the archipelago, have received no conservation attention, despite their rarity, presumably in part because the population has not been nomenclaturally recognized as a subspecies.