

Giant tortoises collected from Charles Island (Isla Floreana), Galápagos, during the voyage of USS *Potomac*, 1831–1834

ROBERT H. ROTHMAN 

Thomas H. Gosnell School of Life Sciences, Rochester Institute of Technology, Rochester, NY 14623, USA
(e-mail: rhrsbi@rit.edu)

ABSTRACT: In 1834 Commodore John Downes (1784–1854) donated two live tortoises, a male and a female, to the Boston Society of Natural History that he had collected on Charles Island (Isla Floreana), Galápagos, during the circumnavigation of the USS *Potomac*. Both died shortly after arriving in Boston and were dissected. Their remains currently reside in the Harvard Museum of Comparative Zoology. By the beginning of the twentieth century it had become clear that each island had its own unique tortoise species, but most of the species' names were based on specimens of unknown provenance. The two *Potomac* tortoises were almost the only specimens whose island of origin was actually known. The male was considered to be the holotype of the Floreana tortoise, with the suggested name *Testudo galapagoensis* (the currently accepted name is *Chelonoidis niger*). Genetic analysis, however, has revealed that the male actually came from Duncan Island (Isla Pinzón). Although the *Potomac* apparently remained at Floreana during its stay in the Galápagos, records of the trip indicate that a boat was sent to collect tortoises from Indefatigable Island (Isla Santa Cruz) and, possibly, Pinzón. The disposition of the female was reported as unknown, but there is a specimen in the Harvard collection that documentation identifies as the female. However, the specimen is a male, and is not the tortoise that Commodore Downes had donated to the Boston Society of Natural History. Although genetic analysis determined that this tortoise did indeed come from Floreana, its provenance is unclear.

KEYWORDS: Boston Society of Natural History – *Chelonoidis niger* – Commodore John Downes – Harvard Museum of Comparative Zoology – John Barnard Swett Jackson – Jeremiah N. Reynolds – *Testudo galapagoensis* – Francis Warriner.

The giant tortoise is the most familiar member of the herpetofauna of the Galápagos Islands. They were first described by the Bishop of Panama, Fray Tomás de Berlanga (1487–1551), in a letter to Charles V, King of Spain, dated 26 April 1535, as “galápagos tan grandes, que llevaba cada uno un ombre encima [tortoises so big that each one could carry a man on its back]”. Berlanga's mission to Peru to mediate between rival conquistador factions following the conquest of the Incas had been interrupted when his ship was becalmed near the equator and strong currents carried him out to the Galápagos. He and his crew were thus the first to see these islands (Latorre 1996: 204). Over the next three centuries the tortoises were hunted extensively to supplement the larders of ships that frequently visited the islands. In the nineteenth century, Ecuadorian colonists harvested tortoises for food and oil, and tortoises were collected and sent to California to help feed the burgeoning influx of prospectors during the gold rush of 1848–1855 (Conrad and Pastron 2014). Although the accounts of many voyages included detailed descriptions of tortoises, the giant tortoise only entered scientific literature in 1824. In that year, French zoologists Jean René Constant Quoy (1790–1869) and Joseph Paul Gaimard (1796–1858), naturalists on a French scientific voyage around the world in 1817–1820 aboard the corvette SM *Uranie*, described a young tortoise that had been

presented to Captain Louis-Claude de Freycinet (1779–1841) by the captain of the American ship *Boston Eagle* when the two met up in Hawai'i. Initially describing the tortoise under the binomial *Testudo californiana*, Quoy and Gaimard (1824a, 1824b) quickly renamed it *Testudo nigra* in the official account of the zoology of the voyage because of its black shell. Since that time, the nomenclature and taxonomy of giant tortoises have been tortuous; today, the accepted generic name for the Galápagos species is *Chelonoidis* Fitzinger 1835, and the tortoises of each island are considered to be separate species (Rhodin *et al.* 2017).

As early as 1815, David Porter (1780–1843), who, as captain of the USS *Essex*, was operating in Galápagos waters during the war of 1812 between the United States and the United Kingdom, concluded that the Galápagos tortoises represented two distinct species, the dome-shaped tortoises of James Island (Isla Santiago) and the saddle-backed tortoises of Hood and Charles Islands (Islas Española and Floreana, respectively). For Charles Darwin (1809–1882), this was a critically important point. In an entry in the zoology notebook that he kept during the voyage of HMS *Beagle* between 1831 and 1836, Darwin commented (Keynes 2000: 291):

It is said that slight variations in the form of the shell are constant according to the Island which they inhabit – also the average largest size appears equally to vary according to the locality. – Mr. Lawson¹ states he can on seeing a Tortoise pronounce with certainty from which island it has been brought.

When Darwin returned home, French zoologist Gabriel Bibron (1805–1848) told him that he believed there were two species of tortoises in the Galápagos (Barrett *et al.* 1987: 482). Unfortunately, Darwin had not seen enough tortoises nor did he have the specimens at hand to make the case for himself.

Over the course of the of the nineteenth century, a number of island-specific species of Galápagos tortoises were identified and named. In his landmark 1914 monograph, John Van Denburgh (1872–1924) presented a list of 18 names that had been proposed by that time for the various species of tortoises (Table 1). He then evaluated each name and provided systematic accounts of those he considered valid. The problem, however, was that until the fact of island-specific species was generally recognized, the provenance of tortoises brought back to Europe was recorded simply as “Galapagos”. Thus, new species were named based on detailed measurements and ratios of characters such as the carapace, skull, vertebrae and limb bones, followed by an attempt to determine the island of origin based on the accounts of past visitors, such as Porter (1815). Albert Günther (1830–1914) lamented that many of the specimens were not only too young to reveal island-specific characteristics, but were also fragmentary in nature, and lacked any indication of island of origin (Günther 1875).

It was not until 1905, when the California Academy of Sciences sent out a year-long expedition to the Galápagos with a key goal of collecting tortoises from every island in the archipelago that the various species could be connected unambiguously to their islands of origin (James 2017). Van Denburgh's list is included here to emphasize the historical significance of the *Potomac* tortoises. As Table 1 makes clear, up until 1901, all of the names, with only two exceptions, *Testudo abingdonii* from Abingdon Island (Isla Pinta) and *T. galapagoensis* from Charles Island (Isla Floreana), were based on specimens of unknown locality. However, despite the seeming clarity of these two species, there are issues with both.

THE ABINGDON ISLAND (ISLA PINTA) TORTOISE

Testudo abingdonii was the subject of a disagreement between Günther and Georg Baur (1859–1898). Günther (1875) had based his description of *T. ephippium* on a specimen of

Table 1. Van Denburgh’s (1914) list of names that had been proposed for Galápagos tortoises at the time of his monograph.*

Name	Island of Origin
<i>Testudo nigra</i> Quoy & Gaimard 1824	“California”
<i>Testudo californiana</i> Quoy & Gaimard 1824	“California”
<i>Testudo elephantopus</i> Harlan 1827	Galapagos
<i>Testudo nigrita</i> Duméril & Bibron 1835	unknown
<i>Testudo planiceps</i> Gray 1855	unknown
<i>Testudo ephippium</i> Günther 1875	unknown
<i>Testudo microphyes</i> Günther 1875	unknown
<i>Testudo vicina</i> Günther 1875	unknown
<i>Testudo abingdonii</i> Günther 1877	Abingdon (Pinta)
<i>Testudo galapagoensis</i> Baur 1889	Charles (Floreana)
<i>Testudo guntheri</i> Baur 1889	unknown
<i>Testudo becki</i> Rothschild 1901	northern end of Albemarle (Isabela)
<i>Testudo wallacei</i> Rothschild 1902	unknown
<i>Testudo porteri</i> Rothschild 1903	Indefatigable (Santa Cruz)
<i>Testudo hoodensis</i> Van Denburgh 1907	Hood (Española)
<i>Testudo darwini</i> Van Denburgh 1907	James (Santiago)
<i>Testudo chathamensis</i> Van Denburgh 1907	Chatham (San Cristóbal)
<i>Testudo phantasticus</i> Van Denburgh 1907	Narborough (Fernandina)

Source: Van Denburgh, J., 1914. The gigantic land tortoises of the Galapagos archipelago. *Proceedings of the California Academy of Science* 2: 203–374.

**Testudo nigra* and *T. californiana* refer to a single specimen that Quoy and Gaimard described and named in two different publications (Quoy and Gaimard 1824a, 1824b). Van Denburgh noted the island of origin in quotation marks because the captain of the *Boston Eagle* said that the tortoise had come from California, but it has always been identified as a Galápagos tortoise. Rothschild (1902) examined the specimen and noted that it was too small to reveal any island-specific characteristics, and it was poorly preserved as well.

unclear provenance in the Edinburgh Museum of Science and Art (now the National Museum of Scotland), and assigned it to Charles Island (Isla Floreana). Later, in 1877, Commander William E. de C. Cookson RN (1836–1898) sent Günther the shells of three tortoises that had been collected when HMS *Peterel* visited Pinta in 1875 (Cookson 1876a, 1876b). Accordingly, Günther (1877a, 1877b) named this species *T. abingdonii*. Baur (1889), however, claimed that the Edinburgh specimen had actually been collected on Pinta by Captain Basil Hall (1768–1844) during his 1820–1823 cruise on HMS *Conway* (Hall 1824, 1840). Thus, *T. ephippium* and *T. abingdonii* were the same. Günther (1896) later determined that the Edinburgh specimen matched a tortoise that Baur himself had collected on Duncan Island (Isla Pinzón) and assigned *T. ephippium* to that island and retained *T. abingdonii* for Pinta. Currently, *Chelonoidis abingdonii* Günther 1877 and *C. duncanensis* Pritchard 1996 are the accepted names for the Pinta and Pinzón tortoises, respectively (Rhodin *et al.* 2017). Both Pritchard (1996) and Olson (2017) have provided detailed accounts of this controversy.

THE CHARLES ISLAND (ISLA FLOREANA) TORTOISE

Testudo galapagoensis (now *Chelonoidis niger* Quoy and Gaimard, 1824) was based on two tortoises from Floreana that had been donated to the Boston Society of Natural History by

Commodore John Downes (1784–1854), who had just returned from his 1831–1834 circumnavigation aboard the USS *Potomac*. Downes had been ordered to deliver Martin van Buren to Britain where he would assume duties as American ambassador to the Court of St James, and then to sail the *Potomac* to Valparaíso where, as commodore of the American Pacific squadron, he would relieve Commodore Charles C. B. Thompson of the USS *Guerriere*. Just prior to setting sail, however, the *Potomac* was redirected to Sumatra and van Buren was left to make his own way to Britain. This change in plans was prompted by an event earlier in the year when Malay pirates in Quallah Battoo, Sumatra, attacked and plundered the American merchantman *Friendship*, killing the first officer and two seamen. The *Friendship* managed to limp back to Salem, Massachusetts, where public outrage caused President Andrew Jackson to redirect the *Potomac* to exact revenge. The revenge was swift, bloody and, in the United States, controversial. The *Potomac* then sailed to Valparaíso, arriving on 23 October 1832. Enroute to Valparaíso Downes's private secretary, Nathaniel Oliver, died. Upon reaching Valparaíso, the Commodore met up with Jeremiah N. Reynolds (1799–1858) whom he hired to replace Oliver.

Reynolds was a newspaper editor and explorer, who delivered popular lectures on his theory that the earth was hollow and that the interior was inhabited. In 1829, he raised funds to launch a private expedition to the South Pole but on the return voyage north, his crew mutinied and stranded him in Valparaíso. While in Chile, Reynolds heard about Mocha Dick, an albino sperm whale that had been plaguing whalers along the coast of Chile, and he later wrote an article about the whale for *The Knickerbocker Magazine* (Reynolds 1839). Mocha Dick, in turn, became the model for Herman Melville's white whale, Moby Dick (Melville 1851). Reynolds himself is thought to have been the inspiration for Edgar Allan Poe's fictional explorer, Arthur Gordon Pym (Poe 1838; Howe 1907: 431–433). In his capacity as Downes's secretary, Reynolds wrote the principal account of the *Potomac*'s circumnavigation (Reynolds 1835).

As part of his mission to protect United States's commercial interests in the Pacific, Downes sailed the *Potomac* to the Galápagos, where he remained at Floreana from 31 August to 10 September 1833. Downes had served as First Lieutenant aboard the *Essex* under Porter in 1812, so was well familiar with the Galápagos. While Reynolds extolled the dietary value of giant tortoises, he said little about the daily “turpinig” activities. In the appendix to Reynolds's narrative, however, Assistant Surgeon Jonathan M. Foltz (1810–1877) provided an account of medical statistics for the voyage, and noted that a “large number of the crew were daily on shore after terapin [*sic*], and frequently exposed throughout the day to a hot sun, with those immense animals on their backs, travelling over the broken lava” (Foltz 1835: 547). Baur (1889) speculated that Darwin (1839: 457) was referring to the *Potomac* when he mentioned that “the ship's company of a frigate some years since brought down in one day two hundred tortoises to the beach.”

The *Potomac* returned to Boston on 23 May 1834 and, one month later, an entry in the register of donations to the Boston Society of Natural History noted receipt of “Two gigantic Gallipagos [*sic*] Turtles (living) weighing about 320lbs [pounds] each” from John Downes USN (Figure S1) (see also Anonymous 1837: 521). One of these tortoises, a male, died soon after, and the second, a female, died during the following winter. After their deaths, the tortoises were dissected by Dr. John Barnard Swett Jackson (1806–1879), a surgeon, and later Dean of the Harvard Medical School, who published a detailed description of their anatomy and sex (Jackson 1837). Jackson referred to the two tortoises as *Testudo elephantopus*, a name that had been applied to Galápagos tortoises by Dr. Richard Harlan (1796–1843) in 1827. The



J.Green del. et lith.

TESTUDO GALAPAGOENSIS.

Modern Bron. 1897



Figure 1. *Chelonoidis niger* (syn. *Testudo galapagoensis*), male: skull of MCZ R 11070: (top) as illustrated in Günther (1902: Plate XIX); (bottom) photograph by the author (1 November 2008). Used by permission, Museum of Comparative Zoology and Harvard University.

remains of the two tortoises were transferred to Harvard's Museum of Comparative Zoology (MCZ) in November 1914 where the male and female are catalogued as MCZ R 11070 and MCZ R 11069, respectively (Figures S2 and S3). There is a clear record tracing the route of these two tortoises from their collection on Floreana to their donation to the Boston Society of Natural History, and to their accession by the MCZ.

THE MALE TORTOISE, MCZ R 11070

Baur (1889) compared the skull of MCZ R 11070 (Figure 1) to Günther's *Testudo ephippium* and to what he mistakenly thought was Harlan's specimen of *T. elephantopus* in the Philadelphia Academy of Sciences (Harlan's specimen is, in fact, lost) (Van Denburgh 1914), and concluded that the *Potomac* specimen represented a new species, which he named *T. galapagoensis*. However, Baur did not explain how MCZ R 11070 was different, and therefore, save for the fact that he specifically referred to the *Potomac*

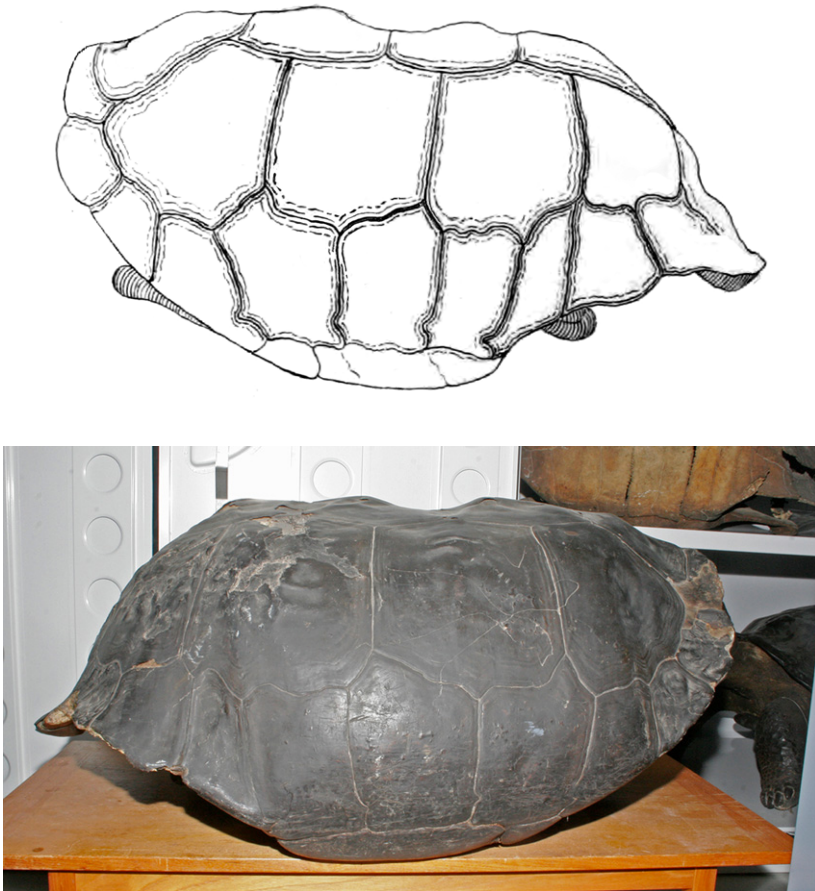


Figure 2. *Chelonoidis niger* (syn. *Testudo galapagoensis*), male: MCZ R 11070: (top) as illustrated in Jackson (1837: plate XI); (bottom) photograph by the author (1 November 2008). Photograph is from the right side. Used by permission, Museum of Comparative Zoology and Harvard University.

specimen, Van Denburgh (1914) thought that the name might otherwise be considered a *nomen nudum*. It was left to Günther (1902) to provide an actual diagnosis of *T. galapagoensis*.

Jackson (1837) published a line drawing of the male (Figure 2), and the specimen has been described and illustrated on several occasions since Jackson's dissection (Figure S4). Günther borrowed the specimen for his study of *Testudo galapagoensis* and included an illustration in his paper (1902). Samuel Garman (1843–1927), a herpetologist at the MCZ included a line drawing and a photograph of MCZ R 11070 in his monograph on tortoises in the Harvard collection (Garman 1917: plates 28 and 29) (Figure 2 and Figure 3 include current photographs of the specimen). Other photographs of MCZ R 11070 can be found on the MCZ database.² In all studies of MCZ R 11070, the curved carapace length matches Jackson's reported 45 inches (114 cm) (Günther 1902;



Figure 3. *Chelonoidis niger* (syn. *Testudo galapagoensis*), male; MCZ R 11070. Photograph by the author (1 November 2008). Used by permission, Museum of Comparative Zoology and Harvard University.

Garman 1917) (Table 2). MCZ R 11070 is clearly the same specimen originally donated by Downes and described by Jackson.

Van Denburgh (1914) considered Floreana to be the most likely source of Harlan’s *Testudo elephantopus*, making *T. galapagoensis* a junior synonym (see also Olson and Humphrey 2017). Thus, *T. elephantopus* became the formal name of the Floreana tortoise. Most recently, however, *T. elephantopus* has been considered to be a junior synonym of Quoy and Gaimard’s original name, *T. nigra*. Today, the Floreana tortoise is recognized as *Chelonoidis niger* (Rhodin *et al.* 2017).³

Nearly a century after Van Denburgh apparently settled the status of MCZ R 11070, genetic analysis of the specimen revealed an unexpected twist to the story. Poulakakis *et al.* (2008) extracted DNA from a number of museum specimens, including MCZ R 11070, in an attempt to find haplotypes specific to Floreana that they could use in their studies of tortoise evolution and conservation. Surprisingly, MCZ R 11070 did not come from Floreana at all. Rather, it bore the genetic stamp of Duncan Island (Isla Pinzón), and is rightly *Chelonoidis duncanensis*. Reynolds (1835) implied that the *Potomac* remained at Floreana for the entire length of its short

Table 2. Comparison of curved length measurements of tortoises MCZ R 11069 and MCZ R 11070 held in the Harvard Museum of Comparative Zoology.

Source	MCZ R 11070 Male tortoise	MCZ R 11069 Female tortoise
Jackson (1837)	45 ins (114 cm)	42 ins (107 cm)
Günther (1902)	45 ins (114 cm)	—
Garmen (1917)	45 ins (114 cm)	52.5 ins (133.3 cm)
Rothman 2018	45 ins (114 cm)	52.95 ins (134.5 cm)

stay, so how could Downes have acquired a Pinzón tortoise? One possibility, of course, is that this tortoise had been brought to Floreana by colonists to sell to passing ships. Reynolds did not note such a transaction. Moreover, at the time of the *Potomac*'s visit, the colony was just over a year old, and tortoises were still quite plentiful on the island. While Reynolds (1835) wrote the principal account of the voyage and his is the one that is usually cited regarding the *Potomac*'s stay in the Galápagos, there is a second less well-known account by Francis Warriner (1835) that offers another possible explanation for the presence of a Pinzón tortoise on the *Potomac*.

Francis Warriner (1804–1866) (Figure S5) was listed in the roster of officers on the *Potomac* as “Schoolmaster” (Reynolds 1835: 553). It was common at that time for young boys to serve as midshipmen in the US navy, and a teacher was brought along to continue the boys’ education. Although shorter than Reynolds’s Galápagos chapter, Warriner’s account provides significant detail about the daily “turpining” parties that brought some six hundred tortoises to the ship. In addition to hunting on Floreana, Warriner (1835: 324) noted that “Another party, under the charge of the first lieutenant, the purser, and midshipman Sinclair, took a boat load of enormous size at Porter’s Island [Isla Santa Cruz].” Warriner did not record where on Santa Cruz the tortoises were collected, and it is possible that the men also collected on nearby Pinzón as well as Santa Cruz.⁴ Alternatively, they might have collected at Cerro Montura, a site on the western coast of Santa Cruz opposite Pinzón where today there exists a tiny colony of saddleback *Chelonoidis duncanensis* tortoises (Pritchard 1996; Caccone *et al.* 2002). Considering that Warriner’s detailed account of “turpining” makes no mention of any tortoises purchased from the colonists on Floreana, this seems to be the most likely explanation for the presence of a Pinzón tortoise among a group otherwise collected from Floreana.

THE FEMALE TORTOISE, MCZ R 11069

While there is a reasonable explanation for the status of MCZ R 11070, the female poses a more difficult problem. Baur (1889), Günther (1902), and Van Denburgh (1914) all declared that the disposition of the female was unknown, but Garman (1917) claimed that it, along with the male, was in the Harvard collection, labelled MCZ R 11069 (Figure 4, Figure 5 and Figure S6). The transfer of MCZ R 11069 from Downes to the Boston Society of Natural History to the Museum of Comparative Zoology is well documented (Figure S1, Figure S2 and Figure S3). The specimen has clearly been dissected and wired back together. However, according to the Museum database MCZ R 11069 is a male.⁵

Jackson (1837) could not have been mistaken in his identification of the sex of the tortoise that he had dissected. The sex of adult giant tortoises can readily be determined by the shape of the plastron, which is strongly concave in males, providing stability when mounting the female during copulation. Jackson (1837: 446) compared the “remarkable concavity” of the male to the female, whose plastron was “much less hollowed, showing one of the peculiarities of the sex”. The concave plastron of MCZ R 11069 clearly intrudes into the body cavity and does not match Jackson’s description (see Figure 5). Furthermore, Jackson described the various internal organs, including the reproductive organs. He noted (Jackson 1837: 456) that in “each of the oviducts, ten inches from their termination, there was an egg, two and a half inches in diameter and perfectly round; shell not fully formed”. The ovaries were situated on either side of the vertebrae and each contained up to fifty ova. The assumption that MCZ R 11069 was indeed the specimen that Jackson had dissected may be the reason why Garman (1917: 288) stated that in “both sexes the plastron has become deeply concave”.



Figure 4. *Chelonoidis niger* (syn. *Testudo galapagoensis*), female: MCZ R 11069: (top) as illustrated in Jackson (1837: 446) who noted that the illustration was “a drawing made from a very correct colored view which was taken after death, but before the dissection”; (bottom) photograph by the author (26 February 2018). Photograph is from the right side. Used by permission, Museum of Comparative Zoology and Harvard University.

Jackson (1837) reported that the female was smaller than the male, close to 240 lbs (109 kg) compared to 302 lbs (145 kg). When I visited the MCZ to examine MCZ R 11069, we did not see it at first even though it was lying in plain sight next to MCZ R 11070 and it had a large label with the specimen number suspended within the cavity, because it is much bigger than MCZ R 11070 (Figure 6). Measurement of the carapace curved length (Table 2) matches Garman’s length and exceeds that recorded by Jackson (1837). Thus, MCZ R 11069 is clearly not the tortoise dissected by Jackson in 1837. Nevertheless, genetic analysis confirms that it did, indeed, come from Floreana (Poulakakis *et al.* 2008).

So, the original *Potomac* female is lost and the provenance of MCZ R 11069 is unclear. Poulakakis *et al.* (2008) attributed the specimen to the 1871–1872 *Hassler* expedition led by



Figure 5. *Chelonoidis niger* (syn. *Testudo galapagoensis*), female: MCZ R 11069. Photograph by the author (26 February 2018). Photograph is from the right side. Used by permission, Museum of Comparative Zoology and Harvard University.



Figure 6. *Chelonoidis niger* (syn. *Testudo galapagoensis*), MCZ R 11069 and MCZ R 11070 side by side on their shelf at the Museum of Comparative Zoology. Photograph by the author (26 February 2018). Used by permission, Museum of Comparative Zoology and Harvard University.

Louis Agassiz (1807–1873), but this is obviously an error because the Museum’s documentation clearly links it to Commodore Downes and the *Potomac*. Did Downes bring back other tortoises? Jackson (1837: 443) commented that the two tortoises “were the largest and finest specimens out of a number brought by [Downes] from the Galapagos Islands”. Warriner (1835) stated that he himself brought back three live tortoises, one of which was still alive at the time of his writing. Could the two dead tortoises be the ones that Jackson dissected? It is impossible to know.

Günther (1902) based his formal description of *Testudo galapagoensis* (*Chelonoidis niger*) on three specimens, the first being MCZ R 11070. The second specimen was one of two tortoises that had been donated to the Peabody Academy of Science in Salem, Massachusetts. According to Günther (1902: 185), the Salem specimens were “said to have been brought to the

United States at the same time when the two living ones were given to the Boston Natural History Society, and that all of them came from Charles Island". One of these tortoises was eventually transferred to England, to Walter Rothschild's museum in Tring, Hertfordshire, where Günther studied it, while the other remained in Salem.⁶ The third, and most important to Günther, was a female in the Harvard collection that was purchased on Floreana by Agassiz in 1871 during the *Hassler* expedition. In Günther's (1902: 186) estimation, this was "the only representative of the female sex of the Charles Island race". By 1871, the Floreana tortoise had been extinct for about twenty years, so the specimen must have been an old shell (Günther (1902: 186) noted that it was "not in good condition"), or one from another island. Günther did not identify the specimen by a catalogue number.⁷

Apart from Downes's two tortoises, other donations to the Boston Society of Natural History explicitly related to the *Potomac* were donations by Reynolds of some plants from the Galápagos and Chile, and a set of coloured drawings of fish taken at Floreana. The only remaining possibility is the entry in the register immediately before Downes's: "Lieut. Babbitt U. S. N[avy]. Two small Galipagos [*sic*] Turtles" (Figure S1) (see also Anonymous 1837: 521).

Given the juxtaposition of the two entries, the obvious possibility is that Babbitt was an officer on the *Potomac*, but according to the crew roster (Reynolds 1835: 553), he was not on the ship. Lieutenant Babbitt was most likely Edward Babson Babbitt, sometimes spelled Babbitt (1792–1840) (Figure S7), who served on the USS *Guerriere*, the ship that was relieved by the *Potomac* (Anonymous 1831, 1848). The logbook of the *Guerriere* is preserved in the Phillips Library of the Peabody Essex Museum, Rowley, Massachusetts,⁸ and covers the voyage from 1829 to 1831. Babbitt's name first appears in the log on 12 February 1831 as Acting Commander at the head of the page describing the passage from Callao to Pisco, Peru, and the remainder of the entries appear to be in his hand. No entry in the log mentions the Galápagos or the two tortoises. There are numerous reports of various ships met along the way, including a number of whalers. Possibly the tortoises were purchased or traded, and such encounters may have been so commonplace that they did not merit mention in the log. Interestingly, there is a five-month gap between consecutive entries in the log from 13 February to 14 July. The coordinates for both dates are near Pisco, and the *Guerriere* may well have remained there for that time. Alternatively, she may have visited the Galápagos during that gap. Either way, the provenance and disposition of the two tortoises is unknown, and they do not appear to have contributed to any research on Galápagos tortoises.

Apart from serving on the ship that had been relieved by the *Potomac*, Babbitt had another, more troublesome connection to the frigate. Upon the *Guerriere*'s return to Boston, Babbitt was stationed at the Charleston Navy Yard where he came into conflict with the commander Commodore Jesse Elliott (1782–1845) (Anonymous 1833; Bearss 1984). The two had an uneasy relationship related to the death of Babbitt's brother seven years earlier while under Elliot's command, culminating when Elliot accused Babbitt of disobeying orders and of conduct unbecoming an officer. According to the charges, Babbitt's disobedience delayed the *Potomac*'s scheduled docking at the Navy Yard when she returned home. Babbitt asked for a court martial to resolve the dispute, and was acquitted of all charges.

CONCLUSION

The two tortoises brought to the United States by Commodore Downes are historically important because they were apparently the only tortoises in the scientific record of the

nineteenth century of certain provenance. By 1889, the island of origin of *Testudo ephippium* / *Testudo abingdonii* had been questioned, leaving only Floreana unchallenged. However, genetic analysis has revealed that MCZ R 11070 is from Pinzón and was most likely caught when Downes sent a boat to Santa Cruz to collect tortoises there (and possibly Pinzón). At one time it was listed as the type for *T. galapagoensis* in the Harvard collection.

MCZ R 11069, according to genetic analysis, does, indeed, come from Floreana, but it is not the female that Downes had collected. Apparently, the Boston Society of Natural History had a number of Galápagos tortoises in its collection. Jackson (1837: 446) mentioned “two or three specimens in the Cabinet”, and the MCZ’s acquisition register lists seven other tortoises from various sources that were transferred from the Boston Society to MCZ at the same time as the *Potomac* specimens (Figure S2).

When Jackson dissected the two tortoises, they were still part of the Boston Society’s collection and Baur (1889), Günther (1902), and Van Denburgh (1914) each declared the female to be lost. They were all writing prior to the transfer of the Society’s specimens to Harvard in November 1914. It was shortly after the transfer that Garman (1917) identified MCZ R 11069 as the female. Thus, it is most likely that the specimen that became MCZ R 11069 was mistaken for Jackson’s female at the time of transfer. While the Boston Society’s register listed the donations from Downes, there does not appear to be a record of their deaccession and transfer to Harvard. However, the archives from that period of the Boston Society’s history are largely unprocessed.⁹ MCZ R 11069 may well have been one of the other tortoises brought back from Floreana by Downes, or possibly by someone else. Until such a time as additional information is discovered in the archives, the origin of MCZ R 11069 remains a mystery. The Floreana giant tortoise, *Chelonoidis niger*, is extinct and is best known from specimens that had fallen into collapsed lava tunnels and died (Broom 1929; Shurcliff 1930; Steadman 1986).

ORCID

Robert H. Rothman  <https://orcid.org/0000-0002-9733-2321>

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NOTES

¹ Nicholas Oliver Lawson was serving as vice-governor of the colony on Floreana at the time of the *Beagle*’s visit, and his remark about tortoises played an important role in Darwin’s understanding of the Galápagos. Traditionally considered an expatriate Englishman of obscure background, recent research by Marcel Eugène Nordlohne and Anders Kvernberg has identified Lawson as Nicolai Olaus Lossius (1790–1851), a native of Norway. See Marcel Eugène

Nordlohne [no date], 'A seven-year search for Nicholas Oliver Lawson' *Nordlohne*. Available at: <https://marcel.nordlohne.nl/wp-content/uploads/2018/09/Nordlohne-Marcel-Lawson25okt2012.pdf> (accessed 21 October 2021); and Ingrid P. Nuse, 2015, 'The Norwegian who inspired Darwin: A Norwegian who spent time on the Galápagos Islands may have changed the history of biology', *sciencenorway.no*. Available at: <https://sciencenorway.no/evolution-forskningno-history/the-norwegian-who-inspired-darwin/1418288> (accessed 21 October 2021). Lossius had a colourful career as a sailor and trader, serving in the US Navy during the 1812 war with the United Kingdom, and later joining the Chilean navy where he participated in the war of independence from Spain. In 1832 he was on Floreana, helping José Villamil (1789–1866) found and manage the first colony in the Galápagos.

² Record for MCZ R 11070 in the MCZ database is under 'Herpetology R-11070, *Chelonoidis nigra*', *MCZBASE: The Database of the Zoological Collections*. Available at: <https://mczbase.mcz.harvard.edu/guid/MCZ:Herp:R-11070> (accessed 5 March 2018).

³ Olson and David (2014) noted that the *International code of zoological nomenclature* requires that when names are based on Greek or Latin roots the genders of genus and species names must match. Because *Chelonoidis* is not based on either language, it is therefore considered to be masculine, but the species name, *nigra*, is feminine. Accordingly, they suggested that *C. nigra* be changed to the masculine *C. niger*.

⁴ Based on extant log books, Townsend (1925) tabulated the numbers of tortoises harvested by American whalers between 1831 and 1868 and found that tortoises were indeed collected on both Pinzón and Santa Cruz. The numbers were low (356 and 366, respectively) compared to Chatham (Isla San Cristóbal, 4,798) and Albemarle Islands (Isla Isabela, 2,493), but significant nonetheless. And Townsend's study reflects only a small portion of tortoises taken during this period.

⁵ Record for MCZ R 11069 in the MCZ database is under Herpetology R-11069, *Chelonoidis nigra*, *MCZBASE: The Database of the Zoological Collections*. Available at: <https://mczbase.mcz.harvard.edu/guid/MCZ:Herp:R-11069> (accessed 5 March 2018).

⁶ There is, indeed, a mounted tortoise in the Peabody Essex Museum, Rowley, Massachusetts, but it may not be one of the tortoises brought back by the *Potomac*. Rothschild (1915: 404) noted that two specimens of *Testudo galapagoensis* in the Tring Museum had been borrowed from the Peabody Essex Museum and deposited in the British Museum (Natural History). However, when the Peabody trustees asked for their return, he found that they had been misplaced and could not be located. Instead, Rothschild replaced the two with mounted specimens, one of *T. becki* and the other of *T. microphyes*. The two missing specimens were found later among some old packing crates, and presumably remain in London. At the time of writing this paper, records of the mounted Rowley, Massachusetts Peabody Essex Museum's tortoise were unavailable due to the current covid-19 pandemic: Kathryn White (Assistant Registrar for the Collection, Peabody Essex Museum, Salem, Massachusetts) pers. comm., 8 June 2020.

⁷ The specimen may be MCZ R 1905. The Harvard Museum of Comparative Zoology catalogue attributes the specimen to the *Hassler* expedition with Charles Island (Isla Floreana) as the island of origin. Available at: <https://iif.lib.harvard.edu/manifests/view/ids:11175325> (accessed 26 May 2020). Garman (1917) identified MCZ R 1905 as a female.

⁸ Log 1606, Frigate USS *Guerriere*, Phillips Library, Peabody Essex Museum, Rowley, Massachusetts.

⁹ Eva Grizzard, pers. comm., 19 November 2018.

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SUPPORTING INFORMATION

Additional Supporting Information may be found on the online version of this article at the publisher's website available at: <https://www.eupublishing.com/doi/suppl/10.3366/anh.2022.0760>.

Supplemental Online Figures include documentation of the donation of the two tortoises to the Boston Society of Natural History and their transfer to the Harvard Museum of Comparative Zoology. Also included are the original MCZ specimen labels, historical illustrations of MCZ R 11069 and MCZ R 11070, and portraits of Francis Warriner and Lieutenant Edward B. Babbit.

Figure S1. Manuscript accession register of the Boston Society of Natural History

Figure S2. Museum of Comparative Zoology catalogue entries for MCZ R 11070 and MCZ R 11069.

Figure S3. Original Museum of Comparative Zoology tags for MCZ R 11069 (top) and MCZ R 11070 (bottom).

Figure S4. *Chelonoidus niger* (syn. *Testudo galapagoensis*), male: MCZ R 11070. Top; from Günther (1902: Plate XVII). Bottom; from Garman (1917: Plate 29).

Figure S5. Portrait of Francis Warriner (1804–1866), schoolmaster aboard the *Potomac* (Warriner, 1899: 209).

Figure S6. *Chelonoidus niger* (syn. *Testudo galapagoensis*), female: MCZ R 11069. From Garman (1917: Plate 31).

Figure S7. Lieutenant Edward Babson Babbit (1792–1840) (Browne, 1912: following 200).

Giant tortoises collected from Charles Island (Isla Floreana), Galápagos, during the voyage of USS *Potomac*, 1831–1834

ROBERT H. ROTHMAN

Thomas H. Gosnell School of Life Sciences, Rochester Institute of Technology, Rochester, NY 14623, USA (email: rhrsbi@rit.edu)

Supplemental Online Figures include documentation of the donation of the two tortoises to the Boston Society of Natural History and their transfer to the Harvard Museum of Comparative Zoology. Also included are the original MCZ specimen labels, historical illustrations of MCZ R 11069 and MCZ R 11070, and portraits of Francis Warriner and Lieutenant Edward B. Babbitt.

Date	Donor	Gift.
June	Bryant T. Tilden	Portion of the nest of the Brazilian Dove
	D. J. Browne	Dried Plants from Teneriffe Several specimens of plants from Teneriffe
	E. W. S. Greenwood	Acetabularia
+	Lieut. Babbitt U.S.N.	Two small Galapagos Turtles
+	John Downes U.S.N.	Two gigantic Galapagos Turtles (living) weighing about 320 lbs each

Figure S1. Manuscript accession register of the Boston Society of Natural History. A month after the *Potomac* arrived in Boston (23 May 1834) the Boston Society of Natural History recorded receipt of two “gigantic Gallapagos [sic] Turtles (living) weighing about 320lbs [pounds] each”. The box highlights the specimens donated by Commodore Downes. The entry immediately before Downes in the register indicates the donation of “Two small Galapagos [sic] Turtles” from Lieutenant Babbitt. Babbitt was an officer on the USS *Guerrierre*, the ship that had been relieved by Downes when the *Potomac* arrived in Valparaiso. The exact provenance and disposition of these two tortoises are unknown. See also Anonymous (1837: 521). Specimen accession ledger. Subseries 1: Catalogs and inventories. Series 1: Artifacts and specimens. Record Group 4: Collections. Boston Society of Natural History Collection. Museum of Science, Boston, used by permission. Photograph courtesy Joseph Martinez.

CATALOGUE OF					IN					THE MUSEUM OF COMPARATIVE ZOOLOGY.				
										Collected by				
Original Number	Original Label	Name	Sex	Locality	Number of Specimens	Collected by	When Collected	Number of Specimens	When Received	Number of Specimens	When Received	Number of Specimens	When Received	Remarks
1105	1	<i>Amelis leysiana</i> (Lac.)	♂	Bayate, near Guantanamo, Cuba.	1	C. J. Ramsden	1915	C. J. Ramsden	1915	1				
	2	"		"		"	"	"	"	1				
	3	<i>Notropis ophiops</i> (Cope)	♂	San Carlos, Guantanamo, Cuba.	1	"	"	"	"	1				
	4	"		"		"	"	"	"	1				
	5	"		"		"	"	"	"	1				
	6	"		"		"	"	"	"	1				
	7	"		"		"	"	"	"	1				
	8	"		"		"	"	"	"	1				
	9	<i>Aphaniplatys reticulatus</i> (Boul.)		"		"	"	"	"	1				
11060		"		"		"	"	"	"	1				Wetzel, Dec. 1915
	1	<i>Leiocassis multispinosa</i> (Lac.)	♂	Bayate, near Guantanamo, Cuba.	1	J. L. Pearson	1914	J. L. Pearson	1914	1				Wetzel, Dec. 1915
	2	<i>Cyclura punctata</i> (Lac.)	♂	Bayate, near Guantanamo, Cuba.	1	C. J. Ramsden	1915	C. J. Ramsden	1915	1				Wetzel, Dec. 1915
	3	<i>Taeniodes lephantocephalus</i> (Lac.)		Bayate, near Guantanamo, Cuba.	1	"	"	"	"	1				Wetzel, Dec. 1915
	4	"		"		"	"	"	"	1				Wetzel, Dec. 1915
	5	"		"		"	"	"	"	1				Wetzel, Dec. 1915
	6	<i>Taeniodes microcephalus</i> (Lac.)		Bayate, near Guantanamo, Cuba.	1	"	"	"	"	1				Wetzel, Dec. 1915
	7	<i>Taeniodes microcephalus</i> (Lac.)		Bayate, near Guantanamo, Cuba.	1	"	"	"	"	1				Wetzel, Dec. 1915
	8	"		"		"	"	"	"	1				Wetzel, Dec. 1915
	9	"		"		"	"	"	"	1				Wetzel, Dec. 1915
1107	0	"		"		"	"	"	"	1				Wetzel, Dec. 1915
	1	"		"		"	"	"	"	1				Wetzel, Dec. 1915
	2	"		"		"	"	"	"	1				Wetzel, Dec. 1915
	3	"		"		"	"	"	"	1				Wetzel, Dec. 1915
	4	"		"		"	"	"	"	1				Wetzel, Dec. 1915
1107	5	"		"		"	"	"	"	1				Wetzel, Dec. 1915

Figure S2. Museum of Comparative Zoology catalogue entries for MCZ R 11070 and MCZ R 11069. The box highlights the Potomac specimens. The cramped writing at the end of the entries refers to the Jackson (1837) dissection and the Garman (1917) monograph. The asterisks mark specimens transferred from the Boston Society of Natural History.

The catalogue entry is available at: <https://iif.lib.harvard.edu/manifests/view/ids:11466637> (accessed 5 March 2018). Used by permission, Harvard Museum of Comparative Zoology.

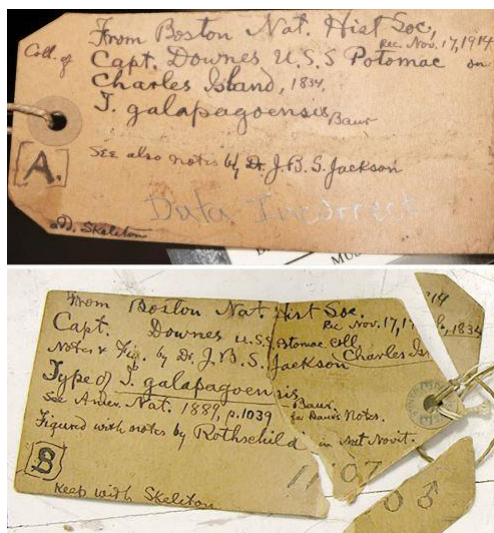


Figure S3. Original Museum of Comparative Zoology tags for MCZ R 11069 (top) and MCZ R 11070 (bottom). The “Data Incorrect” notation on the MCZ R 11069 tag was added when the specimen was later determined to be a male. The MCZ R 11070 tag, notes that the specimen was collected by Downes, received from the Boston Society, described by Jackson, illustrated by Rothschild, and considered the type of *Testudo galapagoensis* by Baur. Used by permission, Harvard Museum of Comparative Zoology.

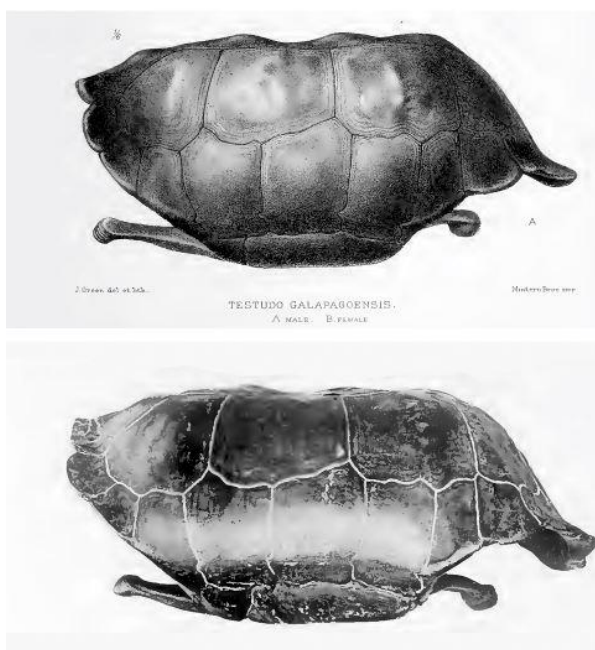


Figure S4. *Chelonoidis niger* (syn. *Testudo galapagoensis*), male: MCZ R 11070. Top; from Günther (1902: Plate XVII). Bottom; from Garman (1917: Plate 29). Both illustrations are from the left side. The illustrations clearly match photographs of MCZ R 11070.

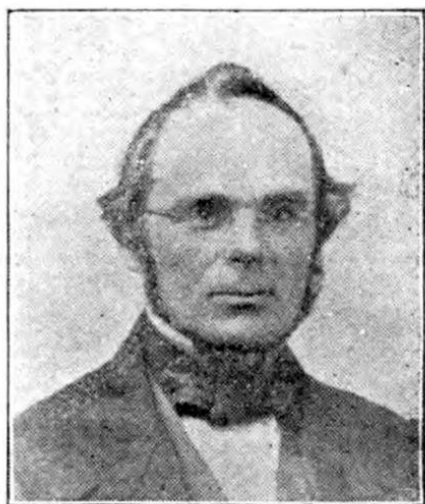


Figure S5. Portrait of Francis Warriner (1804 – 1866), schoolmaster aboard the *Potomac* (Warriner, 1899: 209). Warriner provided detailed descriptions of tortoise hunting on Floreana and mentioned that a boat had also been sent to Santa Cruz to collect tortoises there (Warriner, 1835). This excursion could account for the presence of a Pinzón tortoise, *Chelonoidis duncanensis*, among the *Potomac* tortoises. Warriner brought back three live tortoises from the trip, but by the time he wrote his account, two had died. One wonders whether these two dead tortoises were the ones dissected by Jackson (1837).

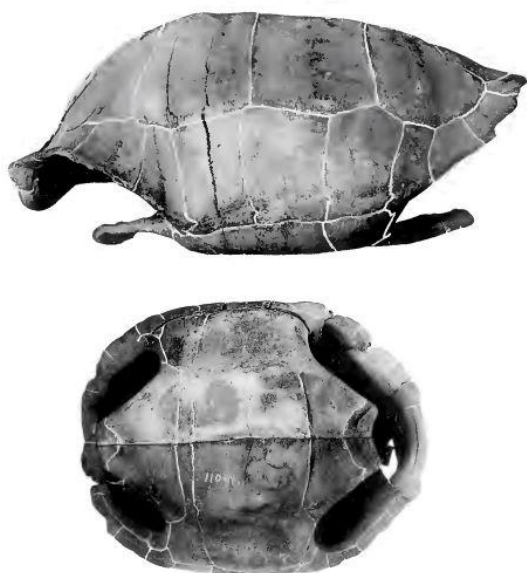


Figure S6. *Chelonoidis niger* (syn. *Testudo galapagoensis*), female: MCZ R 11069. From Garman (1917: Plate 31). Top: right side. Bottom: ventral. The illustration matches MCZ R 11069 but not the tortoise dissected by Jackson (1837).



Figure S7. Lieutenant Edward Babson Babbitt (1792 – 1840) (Browne, 1912: following 200). Babbitt was Acting Commander of the *Guerriere* and donated two tortoises of unknown provenance and disposition to the Boston Society of Natural History.