

Birds, including extinct species, encountered by the Malaspina Expedition on Vava'u, Tonga, in 1793

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ABSTRACT: Four drawings and a short manuscript reference from the Spanish Malaspina Expedition provide certain records of five species of birds on the island of Vava'u, Kingdom of Tonga, in 1793. Three of these are extant species known historically on Vava'u: Purple Swamphen (*Porphyrio porphyrio*), Purple-capped Fruit-Dove (*Ptilinopus porphyraceus*), and Blue-crowned Lorikeet (*Vini australis*). Also depicted is what is believed to be an extinct rail, probably flightless, of the genus *Gallirallus*, with possible relatives known from bones on 'Eua, Tongatapu Group, and from an historical account on Tahiti. Another drawing appears to represent a male of the extinct parrot *Eclectus infectus*, recently described from bones from 'Eua and from Lifuka and 'Uiha in the Ha'apai Group. Thus, this parrot and an extinct rail appear to have survived on Vava'u as late as the end of the eighteenth century.

KEY WORDS: *Eclectus infectus* – extinct parrot – extinct rail – *Gallirallus* – *Porphyrio* – *Ptilinopus* – *Vini*.

INTRODUCTION

The Malaspina Expedition was an interesting and long poorly-known chapter in the history of global exploration. Towards the end of the eighteenth century, the Spanish government, inspired by the immense public interest in the great voyages of scientific exploration and discovery mounted by Britain and France, determined not to be outdone and outfitted its own expedition to establish the worth of Spain in this new enterprise.

The expedition, authorized by King Carlos III and carried out in the reign of his son Carlos IV (Mones, 1996), was placed under the command of Alejandro Malaspina, scion of a prominent Italian family and then a captain in the Spanish navy, who was equipped with two vessels, the *Descubierta* and *Atrevida*, and a gathering of scientists and draughtsmen. Included were three naturalists – Antonio de Pineda, who headed the team of naturalists (Madulid, 1982), and Tadeo Haenke and Luis Née, who were primarily botanists (Stearn, 1973; Madulid, 1989), although Pineda noted that Haenke was “also a zoologist” (Beddall, 1979: 101). The ships sailed from Cadiz on 30 June 1789, explored from Montevideo around the coasts of Patagonia and Chile, up the western coast of South America and north to Mexico, California, and as far as Alaska. The expedition then crossed the Pacific to Guam, continued to the Philippines, where Pineda died, then to New Zealand, Australia, Tonga, back to South America, and, after 62 months absence, returned to Spain in September 1794.

By almost any measure the expedition was a success, the scholars accounted themselves with distinction, bringing back much new information on astronomy, hydrography, physics, politics and natural history, including excellent illustrations of plants and animals. Had all this been assembled and published in timely fashion, it would have brought credit to all concerned and the original goal of the expedition would have been served admirably. But the enterprise then took an unfortunate turn. Malaspina, whether through his own actions or the plotting of others, fell dramatically out of favor with the Spanish court, and in April 1796

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he was stripped of his rank and sentenced to ten years "exile" in a castle in La Coruña. All the papers concerning the expedition were seized and kept locked and sealed from public scrutiny. It was even forbidden to mention Malaspina's name in any publication (Madulid, 1981). After eight years in prison, Malaspina was released in 1803 with the provision that he never set foot in Spain again. He died in obscurity in Italy in 1810.

Almost a century would pass after the Malaspina "scandal" before any sanctioned account of the expedition was published in Spanish (Malaspina, 1885). This had been preceded by an edition published in Russian in 1824–1827 (David *et alii*, 2001: xv) and by a very rare published diary of one of the ensigns on the expedition (Viana, 1849). Of late years, however, documenting the expedition and its archives, now mostly in the Museo Naval in Madrid, has become something of an industry (Palau de Iglesias, 1980; Sotos Serrano, 1982; Malaspina, 1984; Higuera Rodríguez, 1985–1994; Anonymous, 1987–1999; Villanueva, 1989; David *et alii*, 2001, 2003), with hundreds of papers and books having been published on the subject (Madulid, 1989: 34), few of which pertain to natural history. By the time it became generally available, however, most of the information gathered by the expedition was mainly of historical interest, any new finds in natural history, for example, having long been superceded. An exception may be four drawings of birds made on the island of Vava'u, Kingdom of Tonga 1793. Although these illustrations have been noted and published previously (for example, Sotos Serrano, 1982), they have never been subject to critical scientific evaluation. Their considerable importance lies in the fact that two of the birds depicted appear to be extinct species that have not otherwise been recorded in historic times. Prehistoric bones of these, or closely related, species have been discovered and described from elsewhere in the Tongan archipelago, however (Kirchman and Steadman, 2005; Steadman, 2006). The drawings from the Malaspina Expedition provide documentation that some seemingly prehistorically extinct Tongan birds may have persisted as late as the end of the eighteenth century on Vava'u.

MALASPINA ARCHIVAL MATERIAL PERTAINING TO TONGAN BIRDS

The four drawings of Tongan birds are kept in the Museo Naval, Madrid, where I examined and measured them in 1996.¹ There are some spare annotations on the drawings, some of which were misunderstood by Sotos Serrano (1982), partly because of poor legibility and partly because they appear to be a mixture of Spanish and Latin. I have translated them in the context that seems to make the most sense. It should be noted that the name of the island Vava'u was rendered variously by the Spaniards, usually as Babau or Babao, the letters "b" and "v" usually being equivalent in pronunciation in Spanish. The following passage from Malaspina's journal for 2 May 1793 suggests that Haenke was probably responsible for the natural history observations on Vava'u:

The collections of all kinds for the Royal Museum were enriched daily. D. Tadeo Heenke [*sic*] had now, dedicated his main study to the understanding of the birds and fish which he had found in great number and variety, and not well-known in the published nature descriptions until this time.²

The manuscript archives of the Malaspina Expedition are extensive and it is quite possible that additional references to the birds of Vava'u will surface, although I found only one passage of interest in this regard.³ In folio 150 there is a long discussion of pigs that continues through the first two recto lines of folio 151, which contains the following notes concerning natural history, which I give verbatim here, with the line breaks being indicated (l).

Nosotros no hemos descubierto otro quadruplido indigeno de estas Yslas: Los Perros que de- l jo Cook han multiplicado mucho; y nada a sido mas infructuoso que nro. [nuestro] trabajo en averiguar l si se han producido algunos de los demas anima- l les que de- l jo aquel Viajero: como la Ysla a donde l llegan los extrangeros consigue [sic] una preponderancia l sobre las otras en sus cambios interiores [sic]; designan l a sus Vezinos, y los pintan detestables [sic] para que no l se vaya a ellas. Por nra [nuestra] parte no teniamos abordo l ningun animal util que dejarles; el unico quadruplido hera [sic] una ternera que siendo sola no les hera [sic] l desprovecho. Los vimos a su [sic = una] instancia algunos Patos, y si l procrean como en las Yslas de la Sociedad podran servirles con l el tiempo de alimento; pero consumiran los ratones que ellos l comen en el dia.

Se nos han presentado algunas aves de hermosisimo l plumage: los Loros pequenos son abundantes y de una her- l mosura extraordinaria; pero nada llega a las Palomas l verdes, encarnadas, y de color de Violeta. Las hoiamos [sic] l por las mañanas en el Bosque de un canto delicioso. ll [verso] De reptiles solo hemos visto un cameleon o Lagarto verde l que es el mismo de que habla Cook. No hemos visto ni l plantas ni producciones de los que de- l jo aquel Viajero. Etc.

The pertinent portions of this I have translated as follows:

We have not discovered any other quadruped [than pigs] indigenous to these islands. The dogs that Cook left have multiplied greatly; and nothing has been more fruitless than our efforts to find out if any of the other animals left by that voyager have reproduced ... We saw in one instance some ducks and if they reproduce as in the Society Islands could in time serve them [the islanders] as food; but the rats eat them for they [the rats, presumably] eat in the daytime.

We were presented with some birds of extremely beautiful plumage: the small parrots are abundant and of an extraordinary beauty; but nothing approaches [in beauty] the green doves, flesh-colored⁴, and of a violet color. We heard them in the forest in the morning with a delightful song. Of reptiles we have seen only a chameleon or green lizard that is the same [as that] of which Cook spoke. We have seen neither plants nor produce left them by that traveler.

The dogs were doubtless descendents of those brought by Polynesians, not Cook. The ducks would presumably have been the Gray Duck (*Anas superciliosus*), which occurs throughout Tonga and was formerly abundant (Watling, 1982). The small parrots of extraordinary beauty would be the Blue-crowned Lorikeet (*Vini australis*). Being mainly green but with a brilliant blue crown, bright red throat, and a patch of red and dark purple on the belly, these birds would certainly have been perceived as "hermosisima" by the Spaniards. Although widespread in Tonga, Samoa, Niue, and the Lau group of Fiji (Watling, 1982), this lorikeet has disappeared from Vava'u since the 1870s (Steadman and Freifeld, 1998). The green doves are the Purple-capped Fruit-Dove (*Ptilinopus porphyraceus*) (see below), which is green with a violet cap.

THE DRAWINGS

Extinct rail (*Gallirallus* sp.)

This drawing (Figure 1) was considered by Sotos Serrano (1982: 250, figure 793) to be technically and stylistically the mate of the drawing of the fruit dove (below, Figure 3). It is annotated only "De Babau l Azul l Rostro Rubio" ("from Vava'u, blue, bill red"). The diagram of the eye has the pupil indicated with an "n" for "negro" (black) and the iris with an "m", presumably for "marron" or "moreno" (brown).

In the drawing, the total length of the bird from bill tip to tail tip is 163mm, distance from bottom of foot to the level of the top of the head 107mm, culmen length 24.6mm, distance from anterior margin of nostril to tip 15.9mm, length of exposed portion of mandible 22.8mm, depth of bill at anterior and posterior margin of nostril 7.8mm and 5.1mm, depth of bill at base 8.8mm, estimated length of tarsus 25mm, middle toe with claw 32mm, outer toe

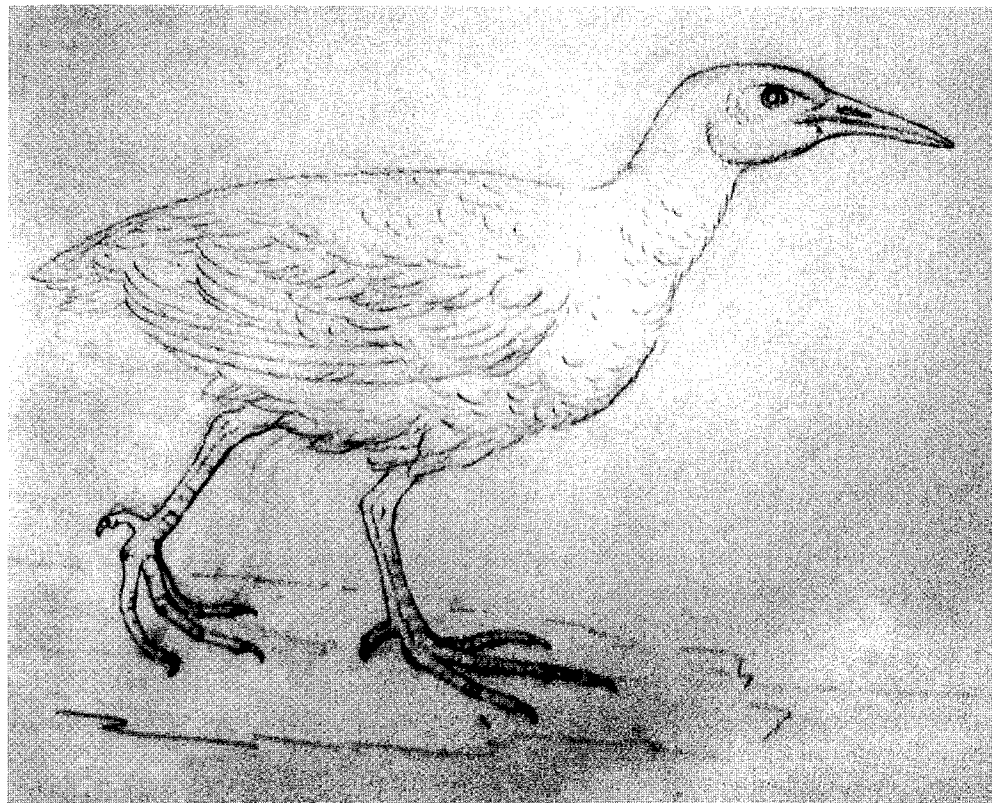


Figure 1. Extinct rail (*Gallirallus* sp.) from Vava'u, Tonga, drawn by an artist of the Malaspina Expedition in 1793. This was probably a species endemic to Vava'u that is as yet known only from this drawing.

of right foot *c.* 23mm, hallux 8mm, wing 76mm, tip of wing to tip of tail 17mm. The left foot was drawn and erased and placed more posteriorly. There is a line in front of and over the eye perhaps indicating a superciliary stripe, and a few dashes indicating the auriculars and posterior margin of the cheek. A few scaly marks on the breast and back evidently are only indications of feathers rather than color pattern.

This illustration seems particularly lifelike and sensitive and clearly depicts a rail of the genus *Gallirallus* (following Olson, 1973). The only species of this genus in Tonga today is the widespread Banded Rail (*G. philippensis*), which thrives in disturbed habitats on Vava'u (Steadman and Freifeld, 1998). However, endemic flightless species of rails, particularly of the genera *Gallirallus* and *Porzana*, probably once occurred on nearly all the islands of Oceania prior to human colonization and subsequent extinction by hunting, habitat loss, and introduction of predators (Steadman, 1995).

There is considerable reason to believe that the rail from Vava'u depicted by an artist of the Malaspina expedition is not *G. philippensis*. Assuming the bird was about the size of *G. philippensis* and using the bill as a standard, the drawing would be about three-quarters life size. Using either the bill or the middle toe as a standard, however, the tarsus would have been much shorter and more robust than in *G. philippensis*, robustness of the hindlimb usually being characteristic of flightless rails. In the drawing, the tips of the longer primaries

all appear to be of equal length, whereas in *G. philippensis* they are graduated, the wing tip being more pointed, the more rounded wing of the drawn bird again perhaps being an indication of reduced powers of flight.

The only indication of the color of the plumage is the excessively terse "azul" ("blue") a color that in its modern concept does not occur in any of the species of *Gallirallus*, or any of the rails except the purple gallinules (*Porphyrio sensu lato*). In the eighteenth and early nineteenth centuries, however, it was not unusual for what we would now regard as a clear, light grey to be referred to as "blue". For example, in describing his Pacific Rail, now the Tahiti Rail (*Gallirallus pacificus*, Latham (1785: 235)), following notes by J. R. Forster that were later published posthumously (Forster, 1844: 177), described the breast as "bluish ash-colour" ("*coerulescenti-canum*" of Forster).

The Banded Rail is an ornately plumaged species, the dorsum being olive with conspicuous white spots and bars, the wings elaborately barred with white and chestnut, most of the underparts strongly barred with black and white, a bright chestnut ocular stripe and nape patch, and in some plumages with a tawny band across the breast. The only part that is a clear, light gray, to which the term "blue" might have applied, is the lower throat and upper breast. But if one were to apply a single adjective to *G. philippensis* it would certainly not be "blue", even if grey was meant. Although the designation "rostrum rubrum" ("beak red") for the Vava'u bird might also be applied to *G. philippensis*, the bill in that species is a rather dull, dark red, mostly at the base, the upper part and tip being duller, more brownish (see photographs in Coates, 1985: 151-152).

The rail of Vava'u would appear to have more similarity to the Tahiti Rail (*Gallirallus pacificus*) than to the living Banded Rail. This was named from descriptions and a painting by J. R. Forster and Georg Forster, respectively, of a bird captured on Tahiti on Cook's second voyage. It has never been seen since. The original painting is now in The Natural History Museum, London⁵, where I examined and measured it in 1996. Unlike the Banded Rail, gray ("blue" of the Malaspina artist) is a much more predominant color in the Tahiti Rail. In Forster's original painting the breast is done in patches of gray and white, giving an impression of slaty blue. Also perhaps more similar to the Vava'u rail, the bill color in the Tahiti Rail was described as "blood red" by Latham (1785: 235), doubtless after Forster's manuscript term "sanguineum" (Forster, 1844: 177). In the original the bill is bright red on the basal third, becoming rather abruptly pinkish and getting paler towards the tip.

Most of the islands of the South Pacific for which there is a fossil record appear to have had endemic, flightless populations of *Gallirallus* (Kirchman and Steadman, 2005). That this was also true in the Tongan Archipelago has now been shown by Kirchman and Steadman (2005) who have named a new species of flightless rail, *Gallirallus vekamatolu*, from fossil and archeological sites on the Tongan island of 'Eua. This was probably in the general size range of the rail from Vava'u and the Tahiti rail. As 'Eua was never connected to Tongatapu or other islands in the archipelago, it is likely that the species was endemic to 'Eua, having evolved flightlessness independently of any other populations of *Gallirallus* in Tonga. Thus, the rail of Vava'u depicted on the Malaspina Expedition probably represents an otherwise unknown taxon for which the drawing is as yet the only evidence, no prehistoric bird bones having yet been recovered from Vava'u (Steadman *et alii*, 1999:193).

The extinction of all of the flightless species of *Gallirallus* of central Polynesia following human settlement, habitat modification, and introduction of predators and diseases, allowed the islands to be colonized subsequently in relatively recent times by the volant Banded Rail

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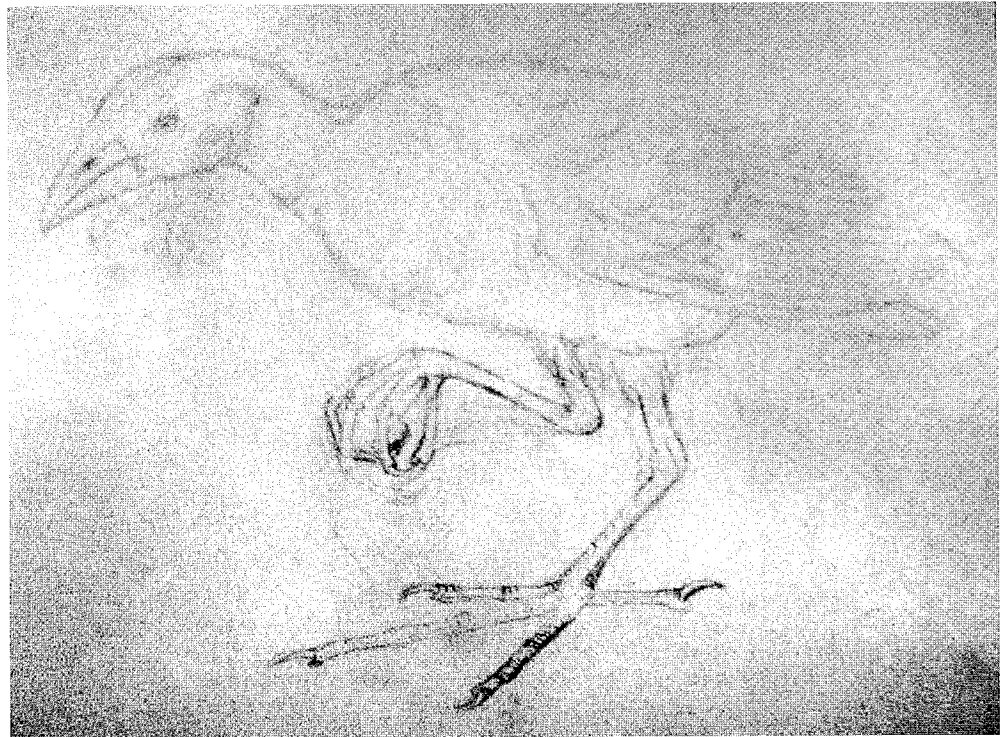


Figure 2. Purple Swamphen (*Porphyrio porphyrio*) from Vava'u, Tonga, drawn by an artist of the Malaspina Expedition in 1793. This species still occurs on Vava'u today.

G. philippensis (Kirchman and Steadman, 2005). The painting of *G. pacificus* from Tahiti and the drawing of the rail of Vava'u constitute the only remaining evidence available to us that at least some of the members of the original flightless stock differed from *G. philippensis* in being greyer and having a much brighter red bill. That is not a great deal of information about external appearance, but it is all we have.

Purple Swamphen (*Porphyrio porphyrio*)

This drawing (Sotos Serrano, 1982: 251, figure 794), obviously of a species of *Porphyrio* (Figure 2), is annotated "De Babau | Corpus Viride Fuscum | Caput Crista Rubra | Oculi pupila nigra | iris rubra" ("from Vava'u, body dark green, crest red, pupil of the eye black, iris red"). None of this is out of line for the Purple Swamphen, although dark green would apply only to the back and wings rather than the whole body, most of which is bluish purple. The overall height and length of the drawing is 126mm and 195mm, the length from the posterior margin of the frontal shield to the bill tip 44mm, from the anterior margin of the nostril to the bill tip 17.7mm, length of the exposed mandible 25mm, length of the tarsi 37mm (left) and 38.5mm (right), and the middle toe with claw 60mm.

The drawing shows the bird at about half natural size. Furthermore, the proportions appear to be inaccurate. Although the overall appearance of the bird seems correct enough, using either the bill or the middle toe as a standard the tarsus is much too short. Although an extinct smaller species of *Porphyrio* has been described from the Marquesas (Steadman,

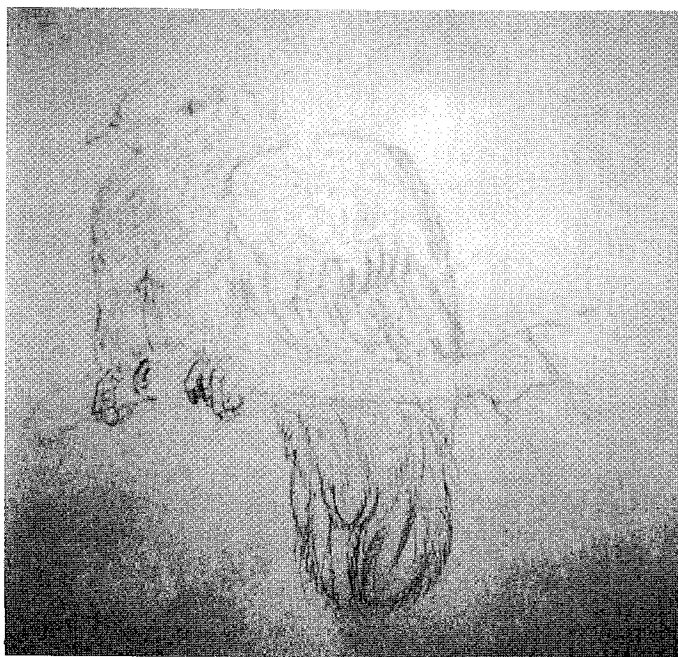


Figure 3. Purple-capped Fruit-Dove (*Ptilinopus porphyraceus*) from Vava'u, Tonga, drawn by an artist of the Malaspina Expedition in 1793. This species still occurs on Vava'u today.

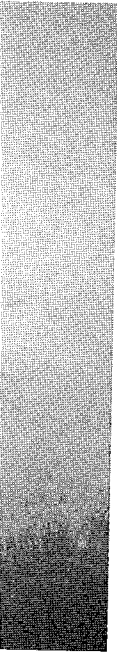
1988), no fossil remains of an endemic *Porphyrio* have been found anywhere in Tonga.⁶ Thus, there is no indication that the drawing from the Malaspina expedition represents anything other than the widespread *P. porphyrio* (*sensu lato*), which occurs on Vava'u today (Steadman and Freifeld, 1998).

Purple-capped Fruit-Dove (*Ptilinopus porphyraceus*)

The drawing (Sotos Serrano, 1982, 2: 250, figure 791) is captioned "Paloma de la Isla de Babao" ("dove of the island of Vava'u") and shows what is obviously a columbiform bird in a lifelike, hunched, sitting posture (Figure 3). Sotos Serrano (1982) could not make out part of the pencilled description, interpreting it as "mono vabaria?", which would be nonsense, "mono" being the word for monkey. It actually reads "moño violacea", although I could not determine that "violacea" is correctly spelled. The word "moño" means a tuft of hair or feathers, or topknot, and obviously refers to the purple crown patch of *Ptilinopus porphyraceus*, the extent of which is clearly demarcated in the drawing. The annotation "cuerpo verde" ("body green") also fits with this species, in which most of the rest of the upperparts are bright green. The clearly drawn crown patch and reference to "moño violacea" rule out the widespread Pacific Pigeon (*Ducula pacifica*), which could also be described as having a green body. In the drawing, the minute annotations regarding eye color indicate a pinkish ("rosa") iris, with a yellow ring around a black pupil.

As drawn, the overall height of the bird from crown to tip of tail is 127mm, culmen *c.* 10mm, and bill from rictus 12.6mm. Thus it is approximately a third smaller than life size.

The species still occurs commonly on Vava'u today (Steadman and Freifeld, 1998).



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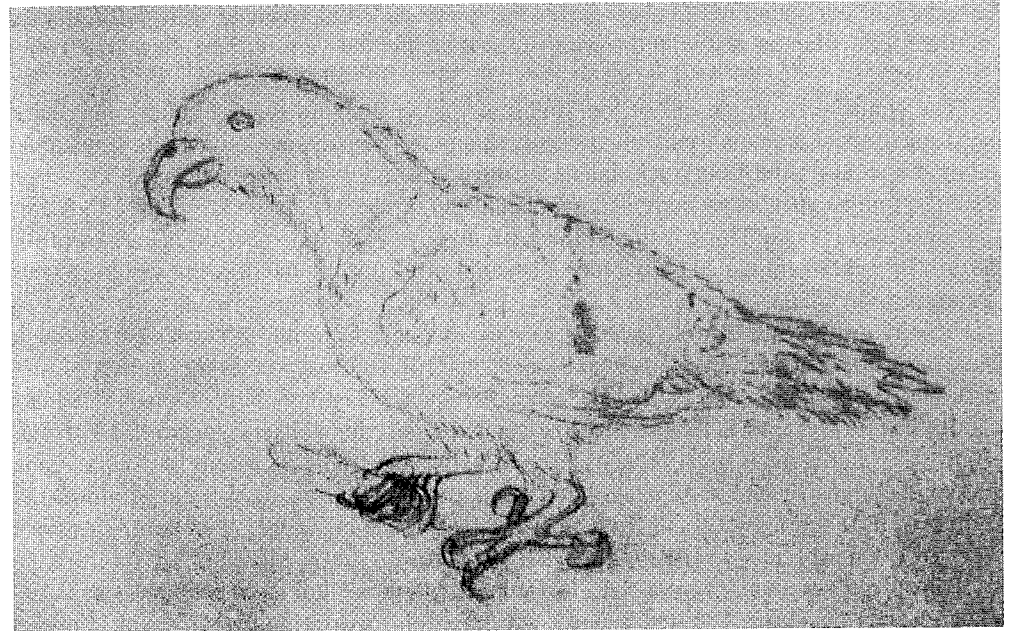


Figure 4. Parrot believed to be the extinct species *Eclectus infectus* from Vava'u, Tonga, drawn by an artist of the Malaspina Expedition in 1793. This species is otherwise known only from fossil and archeological bone remains from elsewhere in Tonga.

cf. extinct Eclectus Parrot (*Eclectus infectus*)

This drawing (Sotos Serrano, 1982: 250, figure 792) of what is obviously a parrot (Figure 4) was by a far less accomplished artist than whoever was responsible for limning the other three birds from Vava'u. Nevertheless it appears to be reasonably accurate and I believe that it portrays a species in addition to the tiny Blue-crowned Lorikeet (*Vini australis*), the only native parrot known historically from Tonga. The drawing is clearly not natural size as the overall length of the bird is only 138mm, which is even less than that of *V. australis*. Yet the culmen in the drawing measures 14mm, which is greater than in *V. australis*. Thus the proportions are quite different, with the bill being much more massive, as in *Eclectus*. The left foot shows clearly in the drawing, in which the entire tarsus and distal end of the tibia are visible, as in *Eclectus*, whereas in *Vini* the area of the tarsal joint is covered with feathers. While perhaps exaggerated by the artist, the claws are depicted as large and strong, which fits well with *Eclectus*. The Red-breasted Musk Parrot (*Prosopiea tabuensis*), introduced from Fiji to Tonga, may be ruled out as it has a very long, wedge-shaped tail, unlike the bird in the drawing. The concentric circles in which eye color is indicated seem to show that both the iris and the pupil were black.

The drawing is captioned only “Loro de Babau | Todo verde” (“parrot of Vava'u, all green”). Even in the tersest characterization, *Vini australis*, which has a brilliant purplish-blue crown, a red throat and lower face, and a red and a purple patch on the belly, could not be deemed “all green”. Again, *Prosopiea tabuensis* may be eliminated as it has the entire head and underparts red or purplish. On the other hand, although males of *Eclectus roratus*

have largely concealed red feathers under the wings and some dark blue in the primaries and rectrices, when at rest with the wings folded they could very well be viewed as being "all green".

The comparative crudeness of the Malaspina parrot drawing suggests that it may have been made from a captive individual observed among the villagers on Vava'u rather than being drawn at leisure from a specimen in hand as the other drawings appear to have been done. A Tongan vocabulary compiled by a lieutenant on the Malaspina Expedition indicates a Tongan word "calay" for cage⁷, and there would have been little use for cages except for birds. The rather bedraggled appearance of the tail of the bird in the drawing would suggest a captive individual.

The living Eclectus Parrot (*Eclectus roratus*) is found from the Moluccas east through New Guinea and adjacent islands to the Solomons. It is unusual in that the male is mostly dark green in color, whereas the female is much brighter, being predominantly red. Steadman (2006) has now extended the range of the genus by describing a new species, *E. infectus*, from fossil and archeological remains from three islands in the Kingdom of Tonga ('Eua, the southernmost in the archipelago, and Lifuka and 'Uiha in the Ha'apai group in the middle of the chain). Two bones from an archeological site in Vanuatu were also tentatively referred to this species.

Parrots are commonly kept as pets by people of many cultures and may be transported alive for long distances. The Red-breasted Musk Parrot (*Prosopieia tabuensis*), for example, was taken from Fiji and became established in Tonga either through deliberate release or escaped individuals. Documentary evidence shows that this trade in parrots between Fiji and Tonga took place as late as the eighteenth century (Watling, 1982: 92). That *Eclectus infectus* was actually native to the Tongan archipelago, however, is definitely established by its occurrence in a paleontological site that long antedates the arrival of humans in the islands (Steadman, 2006). The drawing from the Malaspina Expedition now suggests that *E. infectus* may have survived, on Vava'u at least, until the end of the eighteenth century.

DISCUSSION

As elsewhere in the Pacific, the impact of human activity has greatly reduced the diversity of birdlife in the Tongan archipelago beginning with Polynesian colonization (Steadman, 1993). This is known from studies of the fossil and archeological record, including a well-documented paleontological deposit from 'Eua that antedates human colonization and provides a baseline against which subsequent bone records may be compared (Steadman, 1993).

As yet, there is no record of prehistoric bird bones from Vava'u (Steadman *et alii*, 1999: 193), which makes the few early records from the Malaspina Expedition of even greater value, as they suggest that the extinction process in Tonga had not run its full course even up to the close of the eighteenth century. Perhaps the negative impact of human colonization took longer to reach its apogee in Vava'u than elsewhere in the archipelago. Although Vava'u was visited during the voyage of the *Astrolabe* and *Zélée* in 1838 (D'Urville, 1842), the first serious ornithological collecting there was not until the early 1870s (Layard, 1876), the better part of a century after the Malaspina Expedition. The rail and the parrot were evidently gone by then and have not been found since.

ACKNOWLEDGEMENTS

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NOTES

¹ They are cataloged as *carpetas* (folders) 2-30, 2-32, 2-33, and 2-34. In Sotos Serrano's (1982) catalog of drawings of the Malaspina expedition they received numbers 784-787 and appear as figures 791-794.

² Herda, P. S. 1983. *A translation and annotation of the journals of the Malaspina expedition during their stay on Vava'u, Tonga, 1793*. Unpublished Masters thesis, University of Auckland. Based on the Novo y Colson edition of Malaspina's journal (Malaspina, 1885). Information supplied by Ian McAllan from a copy of Herda's thesis in Macquarie University Library, Sydney.

³ This has the following archival identification: Ms. 92; Corbetas Tomo II; Doc. 7 Fol. 140-152.

⁴ The word "encarnada" used as a descriptive for this bird is usually translated as "flesh-colored" but may be used to indicate various shades of red and presumably refers to the slight tinge of reddish in the underparts of some individuals.

⁵ The Natural History Museum, London, zoological drawing 125; Forster's number 128.

⁶ D. W. Steadman, Florida Museum of Natural History, pers. comm., 2004.

⁷ From the thesis of Herda (see note 2) *vide* Ian McAllan.

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