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Author: Raust, Philippe

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On the possible vernacular name and origin of the extinct Spotted Green Pigeon *Caloenas maculata*

by Philippe Raust

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SUMMARY.—I reviewed data from historical works and a dictionary produced by the first missionaries in French Polynesia, in an endeavour to clarify the geographic provenance and potential date of extinction of the bird known as *tīfī* in Tahiti, and which has been assumed to be the extinct Spotted Green Pigeon *Caloenas maculata*, otherwise known from a single surviving specimen held in Liverpool (UK). The name *tīfī* was used to refer to a columbid, as well as to procellariids, and to other species whose vocalisations are transcribed *ti-ti-ti*. Furthermore, what was presumably the same species was also known as the *tīfīhope'ore*, which according to the Tahitian people resembled a Long-tailed Koel *Urodynamis taitensis* but had a short tail. Spotted Green Pigeon possibly survived until sometime between 1801 and 1831, but by 1848 the species was almost certainly extinct, making the claim that it was seen in Tahiti as late as 1928 appear exceptionally unlikely.

Spotted Green Pigeon *Caloenas maculata* (J. F. Gmelin, 1788) is a very poorly known and extinct member of the Columbidae. The sole extant specimen, held at the Liverpool World Museum (WML), was described in 1783 by naturalist John Latham, and subsequently re-examined by various ornithologists, but remained mysterious until 2014. DNA analysis not only proved its specific recognition as a distinct taxon, but that it was also most closely related to Nicobar Pigeon *Caloenas nicobarica*, and can be grouped in the extended Dodo *Raphus cucullatus* clade of morphologically very diverse pigeons (Heupink *et al.* 2014). The physical characteristics of Spotted Green Pigeon suggest that it was principally arboreal and consumed fruit (Gibbs *et al.* 2001, van Grouw 2014).

The Liverpool specimen is 32 cm long and has very dark brown plumage with a green gloss. The neck feathers are elongated, and most feathers on the upperparts and wings have a yellowish patch on their tips, probably staining as the new feathers have a white tip. It has a black bill with a yellow tip, and the tip of the tail has a pale band. It has relatively short legs and long wings (van Grouw 2014). The specimen belonged to the collection of Major Davies (c.1737–1812), an army officer and topographical painter who was interested in birds. He never visited the Pacific but was in contact with Australian collectors from whom he could have obtained the specimen.

According to Latham, a second specimen of unknown origin was once held in the collection of Sir Joseph Banks, who obtained many birds during the voyages of Captain James Cook in the Pacific, especially on Tahiti. This specimen has since disappeared, but was perhaps the same individual illustrated by Latham, which differs from the WML specimen by the pale grey breast and belly. This suggests that it was an adult, whereas the Davies specimen may have been a juvenile, based on analogy with adult and juvenile Polynesian Imperial Pigeon *Ducula aurorae* (van Grouw 2014).

The species is believed to have originated on an island somewhere in the South Pacific, and del Hoyo & Collar (2014) stated: 'Thought to have come from Tahiti (French Polynesia) ... providence of specimens unknown, but, given the main area of activity of its collectors,

this is most likely to have been a Pacific species. May have been a bird described by Tahiti islanders in 1928, although probably almost extinct before epoch of European exploration of the zone. Causes of extinction unknown.'

Nevertheless, it seems unlikely that this bird could have been seen in 1928, as there were no credible sightings after 1783 (the date of the species' description by Latham), despite that Tahiti was visited by several naturalist expeditions during the 19th and early 20th centuries (Holyoak & Thibault 1982) including the Whitney South Sea Expedition in the 1920s.

Del Hoyo & Collar (2014) based their interpretation on statements by Gibbs *et al.* (2001: 394): 'The provenance of the single surviving specimen ... is unknown'; and 'It is possibly the bird described to Henry (1928) by the people of Tahiti'. However, Gibbs *et al.* (2001) were incorrect to claim that the bird was described to Teuira Henry (1847–1915); rather, the observations were reported to her grandfather, the Revd. John Muggridge Orsmond, as will be explained below.

The only objective element that links this bird to Tahiti is a sentence in the text of *Ancient Tahiti*, written by Teuira Henry, and published (posthumously) in 1928. On p. 386, there is the statement: 'The titi, which cried "titi", now extinct in Tahiti, was speckled green and white and it was the shadow of the mountain gods'. Consequently, it is necessary to examine the history of this book to understand the superficial interpretation made by Gibbs *et al.* (2001) and repeated by del Hoyo & Collar (2014).

In the first half of the 19th century, Revd. John Muggridge Orsmond (1784–1856) collected everything entrusted to him with 'ancient traditions of the Tahitian race, collecting them word for word as they were passed down generations by priests and storytellers'. This invaluable document, prefaced by J. M. Orsmond in 1848, unfortunately disappeared after having been entrusted to the French colonial administration. Teuira Henry (1847–1915), granddaughter of the pastor, devoted much of her life to reconstruct this work based on her memories, and the notes and preparatory documents gathered by her grandfather. The result was published in 1928 in Bulletin 48 of the Bernice Pauahi Bishop Museum, Honolulu, Hawaii; it is recognised as one of the most valuable and reliable sources on the civilisation and history of the Society Islands.

Ancient Tahiti devotes several pages to the birds of Tahiti and the surrounding islands. Some 46 names of landbirds from Tahiti and the Society Islands are listed, whether they are still extant ($n = 32$), extinct ($n = 4$) or unknown to science ($n = 10$). Among other things, this list contains species discovered during Cook's voyages, which were never subsequently encountered, including Raiatea Parakeet *Cyanoramphus ulietanus*, of which only two specimens survive in Tring and Vienna.

J. M. Orsmond was resident on Tahiti between 1817 and 1856, and was thus able to access information from observers alive between 1783 (the date of the species' description by Latham) and 1848 (when his work was finished).

In *Ancient Tahiti*, birds are described within relatively homogeneous groups (parrots, rails, waders, seabirds, etc.) and the minimalist description of the *titi* is included in the paragraph pertaining to the Columbidae, including Grey-green Fruit Dove *Ptilinopus purpuratus* and Polynesian Imperial Pigeon *Ducula aurorae* (both extant), suggesting that for the author and his informants the *titi* was well recognised as a columbid. Moreover, the fact that it was considered by the ancient Polynesians to emanate from the gods of the mountain suggests that it frequented remote altitude forests.

Thus, it is reasonable to speculate that the *titi* was a dark white-spotted columbid that lived in high-altitude forests, thereby approximately corresponding to what little we know of the morphology and the biology of Spotted Green Pigeon. This assumption was rejected on the grounds that the name of *titi* 'is an onomatopoeic name throughout East Polynesia

for procellariids, especially shearwaters' (Steadman 2001). However, the name is not exclusive to procellariids like Black-winged Petrel *Pterodroma nigripennis*, effectively called *titi* on Rapa, or Sooty Shearwater *Puffinus griseus* in New Zealand. Several other birds are or were also known by this vernacular name in Polynesia. For example the dictionary of some Tuamotuan dialects of the Polynesian language (Stimson & Marshall 1964) gave the following definitions for the word *titi*:

A variety of small landbird.	REA [Reao]
A variety of bird, ?the petrel.	VHI [Vahitahi]
A variety of bird, the plover; a stockier bird than the sandpiper, with a shorter beak; it is mottled grey and white.	ANA [Anaa]
A variety of bird; the turnstone.	

Nowadays, the name *titi* also designates a unique landbird found only on a few remote atolls of the Tuamotu Archipelago: the Tuamotu Sandpiper *Prosobonia parvirostris*. In fact, this name applies to many birds whose vocalisation is close to *ti-ti-ti-ti-ti* and Henry (1928) specified that the *titi* emitted the sound 'titi'. One can argue that this kind of vocalisation is not common in columbids, but some birds from this family have strange calls: Marquesan Imperial Pigeon *Ducula galeata* utters a cow-like *waah-waah*, and one given by Barking Imperial Pigeon *D. latrans* sounds like a barking dog (Pratt *et al.* 1987).

The dictionary of the Tahitian Academy (Académie tahitienne 1999) defines the word *titi* as 'Bird now extinct (T.H. 397)'. T.H obviously refers to Teuira Henry. The same dictionary also gives the synonym *titihope'ore* from the compilation of the Revd. John Davies (1772–1855), and edited by the London Missionary Society. The latter dictionary, the result of collective work by the first missionaries in Tahiti, listed no fewer than 9,986 Tahitian words that were recorded by Davies between 1801 and 1831, and was first published in 1851.

Davies defined *titihope'ore* as 'the name of a bird'. He did not mention that the bird was extinct (like T. Henry), although the *titi* possibly survived until 1831. This name can be broken down into *titi-hope-ore*. Davies' dictionary defines *ore* as referring to the negative no, or not, but it might also imply 'less', while *hope* refers to the tail of a bird. Thus *titihope'ore* could be translated as *titi* without (a long) tail.

On Rimatara, in the Austral Islands, Long-tailed Koel *Urodynamis taitensis* is known as the *titi oroveo* (Anon. 2002). Thus the *titihope'ore* might have been a bird similar to *U. taitensis* without its long tail. Long-tailed Koel is dark brown with pale beige to white spots on the tips of the back and wing feathers, and pale underparts, to some extent resembling Latham's illustration. This could explain that due to the morphological similarity (specifically the spotted aspect of the plumage) the name *titi* may have been used for both birds.

It is almost certain that in 1848, when *Ancient Tahiti* was completed, the species concerned was already extinct; Hume (2017) suggests that extirpation occurred in the 1820s.

The history and study of Henry's (1928) text, as well as these other works, reinforce the hypothesis of a Tahitian origin for the Spotted Green Pigeon, whose vernacular name was probably *titi*. But can we definitively prove this? The majority of commentators on Spotted Green Pigeon have doubted that its provenance will ever be firmly established, and none has provided suggestions to solve the mystery of its origin.

Excavations at archaeological sites have discovered many species still extant or extinct prior to or after the arrival of Europeans in French Polynesia: at least 32 undescribed or extinct species are known only from subfossil records in this region (Steadman 2006). In the Leeward Islands and Marquesas, remains of columbids related to the genus *Macropygia*, previously unknown in eastern Polynesia, were excavated (Steadman *et al.* 1992), adding a new genus to the extinct avifauna of French Polynesia. Fossil remains of an extinct species

of *Caloenas*, *C. canacorum* (Balouet & Olson 1989), have been discovered in New Caledonia and Tonga, and this species might also have occurred in Vanuatu and Fiji (Steadman 2006, Hume 2017).

If bones belonging to Spotted Green Pigeon were excavated in Tahiti, their identification would be possible using DNA. Unfortunately, few palaeontological sites on Tahiti have been studied and the examination of fossil bones has yet to reveal any undescribed species (Orliac 1997); moreover, no new site has been searched for avian bones for more than 20 years on the island.

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- Address: Société d'Ornithologie de Polynésie, P.O. Box 14706, 98701 Arue, Tahiti, French Polynesia.