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'The chequered history of Chattering Kingfisher *Todiramphus tutus* on Tahiti': a response

by Michael Lee & David T. Holyoak

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SUMMARY.—Van der Vliet & Jansen's (2015) review of the provenance of museum specimens and field sightings of Chattering Kingfisher *Todiramphus t. tutus*, intended to resolve long-standing confusion with respect to the identification and type locality of the species, led them to conclude that it never occurred on Tahiti. They also concluded that Society Kingfisher *T. veneratus*, previously considered to be sympatric with Chattering Kingfisher throughout the Society Islands, never occurred in the Leeward group of those islands. However, the historic reports and specimens of the naturalist R. P. Lesson of 1827, which were overlooked by van der Vliet & Jansen, and the published field records for *T. tutus* on Tahiti by D. T. Holyoak in 1972, which were dismissed by these authors, suggest their conclusions are misconceived.

Chattering *Todiramphus tutus* and Society (Tahitian) Kingfishers *T. veneratus* have been long understood to be sympatric on Tahiti, in the Society Islands of French Polynesia. While Society Kingfisher is relatively common and widespread on Tahiti and neighbouring Mo'orea, Chattering Kingfisher has been considered rare, its range restricted to upland valleys of Tahiti, with very few verified sightings during at least the last 100 years. Cibois & Thibault (2009) following Monnet *et al.* (1993), reviewed the status of Chattering Kingfisher on Tahiti, examining sight records by local birdwatchers and ornithologists published in *Te Manu*. They were unable to verify these sightings due to the lack of detailed descriptions and concluded the reports were probably of misidentified Society Kingfishers.

Subsequently, Jansen & van der Vliet (2015) investigated the location of the type specimen(s) of Chattering Kingfisher evidently collected during one or more of James Cook's three expeditions to the Pacific in 1769–79. They concluded that the type material was lost. Specimens of South Pacific kingfishers taken during these expeditions were first described by Latham (1782) and then binominally by Gmelin (1788), who gave the type locality for the 'Respected' (now Chattering) Kingfisher *Alcedo tuta* (now *T. tutus*) as Tahiti, for the 'Venerated' (now Society) Kingfisher *A. venerata* (now *T. veneratus*) as (apparently) Ha'apai, Tonga, and for several varieties of 'Sacred' Kingfisher *A. sacra* (now *T. chloris*) as the Society Islands and elsewhere in the western Pacific. Similarities in the original vernacular names and plethora of scientific names (all alluding to sacredness), similar vocalisations, and superficial similarities in plumage coloration have long caused confusion. In addition to the Tahitian names 'otatare and ruro for the Chattering and Society Kingfisher respectively (Gouni & Zysman 2007), a third Tahitian name, *eatooa*, quoted by Jansen & van der Vliet (2015) from Cook's third expedition, appears to be *e atua*, Polynesian for 'a god', reflecting the status of kingfishers in Tahitian cosmology, and not another kingfisher name.

A second paper by van der Vliet & Jansen (2015) reported the results of a comprehensive search of online database records, including information obtained by e-mail, relating to most extant specimens of Chattering Kingfisher, except for its two endemic subspecies in the Cook Islands, which were only named in 1974 (Holyoak 1974a, 1980). Those from

the Society Islands comprise 115 specimens held in 17 museums worldwide. Of the 13 specimens with provenance stated as Tahiti, the oldest being three collected by Andrew Garrett in the 1860s, van der Vliet & Jansen (2015) found eight 'questionable' and five others unable to be investigated as the details of the collector were unknown. Like Cibois & Thibault (2009), they noted the possibility of labelling confusion due to 'Tahiti', the administrative capital of French Polynesia, being used as a generalisation for other lesser-known islands in the Society group. Van der Vliet & Jansen also reviewed historic sightings of Chattering Kingfishers on Tahiti in the 20th century. They pointed out that the Whitney South Sea Expedition (1920–23) and the surveys by Monnet *et al.* (1993) did not record the species, and they dismissed the published reports of Wilson (1907) and Holyoak (1974b) who did. It led them, after previously noting that the status of Chattering Kingfisher on Tahiti was unclear (Jansen & van der Vliet 2015), to conclude that 'Chattering Kingfisher never occurred on Tahiti'.

At 1,045 km² in area and up to 2,241 m in altitude, Tahiti is by far the largest and highest of the Society Islands. 'Far more landbirds have been recorded alive' on Tahiti since European contact 250 years ago than anywhere else in eastern Polynesia (Steadman 2006). The Society Islands are a chain of eroded volcanoes and outlying atolls extending nearly 750 km in a north-west–south-east direction in the central South Pacific, which geographers and administrators divide into Windward and Leeward groups. Tahiti and nearby Mo'orea are the principal islands of the Windward group, while a sea gap of c.132 km separates Mo'orea from the nearest of the Leeward group, Huahine.

Van der Vliet & Jansen (2015), in proposing that Chattering Kingfisher (*tutus*) never occurred on Tahiti, concluded that it has always been restricted to five of the high Leeward Islands: Huahine, Ra'iaatea, Tahaa, Bora Bora and Maupiti, where it is still present. They also dismissed the reliability of specimens recorded from the northern atoll of Tūpai (or Motu Iti), considering them 'questionable' and 'unusual' on the grounds that the present range of the species is restricted to volcanic islands. They concluded that *tutus* never occurred on Tūpai. Thereafter, they went further, proposing that Society Kingfisher (*veneratus*) never occurred on the Leeward group, only on the Windward Islands.

These inferences concerning the respective distributions of Chattering and Society Kingfishers are mutually reinforcing. By dismissing long-accepted assumptions of sympatry, they apparently provide a neat and simple solution to a long-standing ornithological problem. Van der Vliet & Jansen (2015) appear to have also been influenced by theoretical biogeographic considerations. In support of a biogeographic dividing line between the Windward and Leeward groups, they cite the allopatric subspeciation (speciation following del Hoyo & Collar 2014, Thibault & Cibois 2017) of Grey-green Fruit Dove *Ptilinopus purpuratus* and Raiatea Fruit Dove *P. chrysogaster*, and the speciation of two extinct parakeets *Cyanoramphus zealandicus* (endemic to Tahiti) and *C. ulietanus* (endemic to Ra'iaatea). They argued: 'These examples demonstrate that the avifauna of the Leeward Islands has its own history, independent of the Windward Islands of Tahiti and Moorea, making the absence of Chattering Kingfisher on Tahiti unsurprising'. They also pointed out that there is no paleontological record of Chattering Kingfisher from Tahiti, an absence that nevertheless has little significance because there is no fossil record of *any* bird known from Tahiti. The only significant site with avian fossils in the Society Islands is at Fa'ahia, on Huahine (Steadman 2006).

Van der Vliet & Jansen (2015) made no reference in either of their papers to the records published by R. P. Lesson. This is an unfortunate omission, given that it was Lesson in a paper published in *Mémoires de la Société d'Histoire naturelle de Paris* (1827: 419–422) who first erected the genus *Todiramphus* for the two kingfishers in question: Chattering Kingfisher



Left: Figure 1. Chattering Kingfisher *Todiramphus tutus* (as *T. sacer*) from Lesson (1827a) (Biodiversity Heritage Library, digitised by NCSU Libraries; www.biodiversitylibrary.org)

Right: Figure 2. Society Kingfisher *T. v. veneratus* (as *T. divinus*) from Lesson (1827a) (Biodiversity Heritage Library, digitised by NCSU Libraries; www.biodiversitylibrary.org)

(as *Todiramphus sacer*, now *T. tutus*; Fig. 1) and Society Kingfisher (as *T. divinus*, now *T. veneratus*; Fig. 2). This was based on his own field observations and specimens taken during his visit to the Society Islands, where he explicitly recorded both species as being present on Tahiti and Bora Bora. Lesson, a naval surgeon and zoologist, was a leading scientist in the 1822–25 scientific circumnavigation by the French naval corvette *La Coquille* under the command of L. I. Duperrey. The expedition's scientific achievements were considerable, especially in ornithology (Cuvier 1825, Dickinson *et al.* 2015, Lee 2016). *La Coquille* called at the Society Islands in 1823, staying at Tahiti from 3 to 22 May and at Bora Bora from 25 May to 9 June. At both islands Lesson and his colleagues undertook extensive surveys and collected specimens (Cuvier 1825, Duperrey 1826, 1828). The timing of the visit was historically significant, entailing the first ornithological survey of the Society Islands since those by Cook's naturalists Johann & Georg Forster and Anders Sparrman in 1774. Its timing was critical because it took place just a few years before the invasion of Black Rat *Rattus rattus*, an arboreal predator which has had a devastating impact on the avifauna of eastern Polynesia and most islands of remote Oceania, including New Zealand, where birds evolved in the absence of predatory mammals (Atkinson 1985). Today, just 12 of the 19 landbirds first recorded by European explorers on the Society Islands are extant, several of them being highly endangered (Steadman 2006). The accounts of Lesson and his colleagues P. Garnot and J. S. C. Dumont d'Urville therefore provide a valuable snapshot of the state of the environment on Tahiti and Bora Bora at this period.

The zoological results of the *La Coquille* voyage authored by Lesson and Garnot were published in two volumes, each in two parts, with four biological atlases of coloured engravings, including one for mammals and birds (Duperrey 1826a,b, 1828, 1830, Cretella



Figure 3. Adult Chattering Kingfisher *Todiramphus tutus* (syntype; sex undetermined, collected by R. P. Lesson between 26 May 1823 and 9 June 1823, on Bora Bora) (Muséum national d'Histoire naturelle, Paris: Birds (ZO) MNHN-ZO-2006-545).



Figure 4. Juvenile (?) Society Kingfisher *T. v. veneratus* (syntype; sex undetermined, collected by R. P. Lesson between 26 May 1823 and 9 June 1823, on Bora Bora) (Muséum national d'Histoire naturelle, Paris: Birds (ZO) MNHN-ZO-2006-561)

2010). As noted, Lesson reported the descriptions and distribution of both Chattering and Society Kingfishers in his paper in *Mémoires de la Société d'Histoire naturelle* (1827a), again in *Bulletin des Sciences naturelles et de géologie* (1827b), in *Duperrey Zoologie* (1828), in his *Manuel d'ornithologie* (1828), in *Traité d'ornithologie* (1831) and in his popular work *Voyage autour du monde* (1838). Thus, contrary to van der Vliet & Jansen's (2015) findings, Lesson repeatedly reported both Chattering and Society Kingfishers on Tahiti and Bora Bora. Of Chattering Kingfisher, Lesson wrote, in translation: 'This bird is very common on the islands of Tahiti and Bora Bora' (Lesson 1827a: 422, 1827b: 270, 1828: 101, Duperrey 1828: 687). In regard to Society Kingfisher, Lesson commented that he would have considered it to be the female of the preceding species but for distinctive differences in the shape of the bill, adding, 'We procured for ourselves only two individuals killed at the island of Bora Bora' (Lesson 1827a: 422, 1827b: 271, 1828: 102, Duperrey 1828: 688). Again in his *Traité* in respect of both species he noted: 'Habite O-Taiti et Borabora' = lives on Tahiti and Bora Bora (Lesson 1831: 249–250).

Lesson evidently based his morphological descriptions of both kingfisher species on specimens he collected at Bora Bora (Voisin & Voisin 2008). In the present collections of the

Muséum national d'Histoire naturelle, Paris (MNHN), there are three kingfisher specimens from the Society Islands taken by the *La Coquille* expedition. Two are of *Todiramphus tutus* (named *T. sacer* by Lesson; Fig. 3) and one is of *T. veneratus* (*T. divinus sensu* Lesson; Fig. 4). The three specimens are considered syntypes of their respective species. Type locality in each case is Bora Bora. Weighing against the possibility that the *T. veneratus* specimen came from Tahiti is that subtle differences in feather coloration and pattern to that of the Tahiti *veneratus* suggests it represents a possible extinct Bora Bora subspecies (Voisin & Voisin 2008).

The localities for Lesson's accounts and specimens are supported by those of Wilson (1907). However, Wilson's presumed 'error' in reporting Society Kingfishers on Bora Bora led van der Vliet & Jansen (2015) to decide that 'it is clear that he was confused', and to cite this 'confusion' as a reason to discredit the reliability of his reports of Chattering Kingfisher on Tahiti. This is another mutually reinforcing argument. Van der Vliet & Jansen's conviction that Society Kingfishers never occurred on Bora Bora, nor on the other Leeward islands, induced them to calculate an 'error rate' in labelling of Society Islands kingfisher museum specimens of 5.7%. This 'error' percentage they applied to labelled Chattering Kingfishers, suggesting that 'at least six specimens could be mislabelled'. But this argument can be inverted to arrive at the opposite conclusion. If Wilson was right concerning his identification of Society Kingfishers on Bora Bora, then he is likely to have also been right about Chattering Kingfishers on Tahiti.

DTH undertook ornithological surveys on Tahiti in August 1972, at which time he reported observing 11 individuals of Chattering Kingfisher in Mataiea district, 'tous vers 1000 m' = all at around 1,000 m altitude (Holyoak 1974b, Holyoak & Thibault 1984). We note that Cibois & Thibault (2009) also recorded that most of the recent unverified sightings, years 2002–08, are from the same area, the south-western quarter of Tahiti Nui. While three were from further north-west at Papehue, given the roughly circular shape of Tahiti Nui, all of these sites, being at similar altitude and approximately similar distances inland, are relatively close together. While R. P. Lesson, A. Garrett and S. B. Wilson can no longer answer for themselves, DTH's response to van der Vliet & Jansen's interpretations is that he has no doubts concerning the sightings he reported of *T. tutus* on Tahiti in 1972 (Holyoak 1974b, Holyoak & Thibault 1984). They were seen repeatedly, and very soon after he had handled many specimens of the species in the American Museum of Natural History, New York (AMNH), and on days when *T. veneratus* was also seen. Furthermore, his field work on 12–20 July 1972 involved observing *T. tutus* on Bora Bora, then on Ra'iātea (see Holyoak 1974a: 167–169). Consequently, he was fully familiar with the species when he met it a few weeks later in the Mataiea district of Tahiti. As recorded in Holyoak & Thibault (1984: 143), *tutus* (11 individuals) and *veneratus* (16 individuals) were then found in sympatry in the "Vallée de Mataiea", making repeated comparison possible. *T. tutus* was recognised by its white collar around the nape (lacking in *T. veneratus*), combined with brighter blue back and wing-coverts.

The two specimens of *T. tutus* collected on Tahiti by Wilson in 1904 are at AMNH (Wilson 1907) and we can find no reason to doubt the locality data. Holyoak (1974b: 169) further pointed out that Wilson's two skins from Tahiti differed from Leeward group birds in having a broader black neck-band. This sample was considered insufficient for separating subspecies, but the small size of the Tahiti population in 1972 precluded collecting specimens to check. Holyoak (1974b: 170–171) also noted that some *T. v. veneratus* from Tahiti at AMNH (Whitney Collection) display a small amount of white on the neck, suggestive of hybridisation with *T. t. tutus*. This observation and the suggested explanation, implying at least some co-existence of the two species, was not repeated in Holyoak &

Thibault (1984) and it was overlooked by van der Vliet & Jansen (2015). Thus, as noted by Holyoak & Thibault (1984: 138), the type locality of Tahiti given for *T. tutus* by Gmelin (1788) might be correct after all; and for the populations of the Leeward group the name *T. t. wiglesworthi* (Sharpe) is available if they can be shown to differ.

Militating against van der Vliet & Jansen's proposed biogeographical demarcation between the Leeward and Windward Islands, and their supposedly 'independent' avifaunas, is that some taxa are or were common to both groups: the formerly sympatric species of imperial pigeons *Ducula aurorae* and *D. galeata*, Tahiti Reed Warbler *Acrocephalus caffer* and Blue Lorikeet *Vini peruviana*, among others (Steadman 2006). Blue Lorikeet progressively disappeared from the high islands of the Society group from the late 19th century following the arrival of Black Rats. However, in 1823, Lesson observed Blue Lorikeet ('as common as sparrows in France') living in close association with kingfishers under the fronds of coconut palms on both Tahiti and Bora Bora (Duperrey 1826b: 295, 298, Lesson 1838: 351). Unfortunately, the Society Islands avifauna has been so reduced since first human settlement in c.1070 (Wilmschurst *et al.* 2011), that it is difficult to discern neat patterns and historical connections from the wreckage. Steadman (2006) concluded that this problem resulted from 'illogical discontinuities that are more likely due to anthropogenic extinctions', adding 'these avifaunas are so depleted from their condition at human contact as to challenge biologically cogent analysis'. Despite these knowledge gaps, there is evidence that the Society Islands avifauna included both sympatric and allopatric elements. Sympatric pairings of kingfishers in Oceania, while rare, do occur (as van der Vliet & Jansen concede), for example on three islands of Vanuatu in the south-west Pacific and on Palau in Micronesia (Steadman 2006). That kingfishers are sedentary territorial predators, as pointed out by Cibois & Thibault (2009), does not appear to preclude sympatry.

That being said, and notwithstanding that the impact on island avifaunas of alien predators such as Black Rat is well understood, the asymmetric response of two species of kingfishers to post-European contact environmental changes in the Windward islands on the one hand, where Chattering Kingfisher has been extirpated (or is extremely rare), and in the Leeward group on the other, where Society Kingfisher has been extirpated, merits further investigation. Van der Vliet & Jansen's (2015) inductive presumptions, however, raise more questions than they answer. The comment by Sharpe (1868: 97) about Chattering Kingfisher, approvingly quoted by them—'The confusion which has existed respecting the present species is probably unparalleled in the annals of Ornithological Science'—appears even more apposite today. Ironically, it was this confusion, or 'embarrassment' as Lesson put it, pertaining to Latham and Gmelin's kingfisher species, which he believed he had finally resolved by erecting *Todiramphus* with its two sympatric Society Island species. Lesson's accounts and his specimens cannot be dismissed easily, nor can the published observations of DTH: they are certainly problematic for any revisionist theory challenging historic records of the ranges of both Chattering Kingfisher and Society Kingfisher in the Society Islands.

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