

STATUS AND ACOUSTICAL DEMARCATION OF PIGEONS OF WESTERN SAMOA

By ULF BEICHLE

A significant percentage of the 36 total species of Western Samoan land birds consists of pigeons, including 6 species of native pigeon and the Feral Pigeon (*Columba livia*) introduced by European settlers. This is considerable for such a relatively small area in the Southwest Pacific. The Tooth-billed Pigeon (*Didunculus strigirostris*) is of particular interest because it is an aberrant pigeon peculiar only to Western Samoa.

The aim here is to describe the present status of the native Samoan pigeons, including their distribution, abundance and distinctive calls. Calls are important because population estimates in the tropical rainforest are almost always based on the birds' calls. As pigeon calls often sound very similar, the tone and frequency progression of their calls are not enough. We need to know the structure of their calls.

My observation of Samoan pigeons began in 1977 and continued, with some interruptions, until 1988. The population estimates and familiarity with pigeons' sound signals stem from numerous periods in the rainforest. In the following I consider only territorial calls. A UHER 2000 tape recorder and a SONY cassette recorder WMD-6C were used to record the calls. A sonagraph KAY Elemetrics 6061 B at the Institut für Haustierkunde, Kiel University, Federal Republic of Germany, was used to produce the sonagrams.

RESULTS

CRIMSON-CROWNED FRUIT DOVE *Ptilinopus porphyraceus*

In Western Samoa, this dove can be found on the two large islands Upolu and Savai'i. On the smaller islands, I found it on Nu'utele, which is east of Upolu.

This is the commonest pigeon on these islands. It is in places common in the primary forest, less so in cultivated areas. It covers long distances to its preferred food, generally the large banyans *Ficus prolixa* and *Ficus obliqua*, and so these local concentrations give an impression of a dense population.

In Western Samoa it is hunted by amateur hunters, good marksmen being able to bag 50 - 80 birds because pigeons keep returning to their food trees or don't even bother to fly away. In spite of this hunting pressure, the species is not endangered.

Voice: The territorial coo of the Crimson-crowned Fruit Dove consists of several elements. The second and fifth elements begin with a cooing call. Typical for this species is the change of rhythm from a bisyllabic structure to a trisyllabic one. A reliable distinguishing mark is the noticeable slowdown

of the element sequence towards the end of the call, visible by the longer intervals between the trisyllabic groups, as well as within the elements of the groups. Further elements can be included to make this territorial coo last 9 - 20 s; on the average approx. 13 s.

MANY-COLOURED FRUIT DOVE *Ptilinopus perousii*

The Many-coloured Fruit Dove can be found on the three large islands of the Samoan archipelago: Savai'i, Upolu and Tutuila. It is widespread on Savai'i and Upolu, except in settlements.

Although not yet endangered, the Many-coloured Fruit Dove is declining. Extensive clearing of the primary rainforest and intensive hunting are taking a heavy toll.

Voice: This dove is often in association with the Crimson-crowned Fruit Dove, with which it shares its main foods. Both species make group songs in the fruit-bearing trees, usually members of the fig family. The Many-coloured Fruit Dove sings in two variants. The first resembles closely the song of the Crimson-crowned, but lasts less than 9 s and the intervals towards the end of the call do not lengthen. The second call is easier to recognise because the elements are cut back to something resembling a laugh at the end of the call. This laughing call is much shorter, 3.5 - 5.5 s, than the shortest call of the Crimson-crowned Fruit Dove.

PACIFIC PIGEON *Ducula pacifica*

The Pacific Pigeon is on all the larger islands of the Samoan chain. I also found it on Nu'utele, barely 1 km². Of the Samoan native pigeons the Pacific Pigeon is the most mobile. It is often seen flying higher and further than the Tooth-billed Pigeon and the White-throated Pigeon. By my observation, its diet is the fruit of *Fagraea berteriana*.

It is much less numerous on Upolu than on Savai'i, where hunting and the loss of habitat do not yet have the same effects as on Upolu. Armstrong (1932) and Clapp & Sibley (1966) have already called attention to the decrease of this species.

Voice: The structure of its territorial coo differs from the coo-sounds of the other species. It consists of a constant cooing, lasting about 1.5 s, with an arched progression on the sonagram (upper limit). This cooing generally can be heard in intervals of a few minutes. Shorter intervals of 3 - 12 s do occur occasionally. Besides cooing, the Pacific Pigeon utters a single coo-sound which is almost identical to the advertising coo of the White-throated Pigeon. Being seldom uttered, presumably to establish contact with a nearby partner, it is less important for the identification of this species than the cooing.

WHITE-THROATED PIGEON *Columba vitiensis*

The White-throated Pigeon is limited to Western Samoa. Reports of it in American Samoa (Ashmole 1963) seem to be in error (Amerson *et al.* 1982). The White-throated Pigeon is definitely on Upolu and Savai'i. I did not find it on Nu'utele or Fanuatapu. It is said to be on Manono and Apolima (Dupont 1975), but I consider this to be unlikely because these small islands are cultivated and permanently inhabited.

Voice: The call is more regular than that of the Tooth-billed Pigeon. It has a less distinct arched progression and sounds nasal. A regular repetition, usually 5 or 6 times, is characteristic, followed by longer pauses.

The final element is usually very quiet and, therefore, hardly audible from a distance. The call may be repeated only 3 or 4 times, at most 7 times. A duet utterance is probable since relatively synchronized elements of varying high pitch are discernible.

SHY GROUND DOVE *Gallicolumba stairi*

Next to the Tooth-billed Pigeon the Shy Ground Dove deserves special mention because its occurrence in Western Samoa has remained inexplicable for decades and according to Bellingham & Davis (1988) "appears to be an enigma". Only through the exact identification of the sound signals of other pigeons was I able to isolate this species several times in central Upolu.

This is the rarest pigeon of the Samoan Islands. Until the middle of this century its habitat extended into the cocoa plantations (Stuenzner, pers. comm.), but it can no longer be found there. My observations indicate that it prefers habitats with sparse low-growing trees, such as areas with poor-quality soils.

Voice: Its call is repetitive with an elevated frequency at its end. This shows on the sonagram as an elongated peak. The wavelike progression, recognised by the upper limit, is clearly audible in open country from a medium distance. Of the three doves which call by repeating a monosyllabic territorial coo, the Shy Ground Dove has the shortest call and the most repetitions. A series of rapid calls consists of 1.8, medium-fast ones 1.5, and slow ones of 1.2 coos s⁻¹. In 16 calls I recorded, the number of regular repetitions varied between 18 and 65, on the average 28 calls.

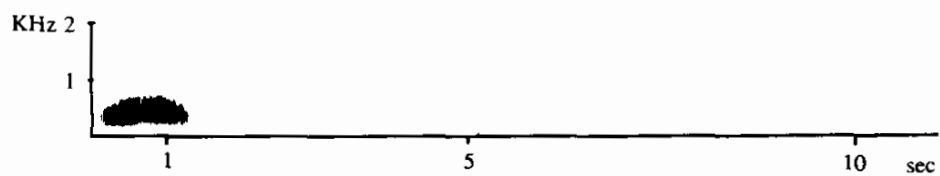
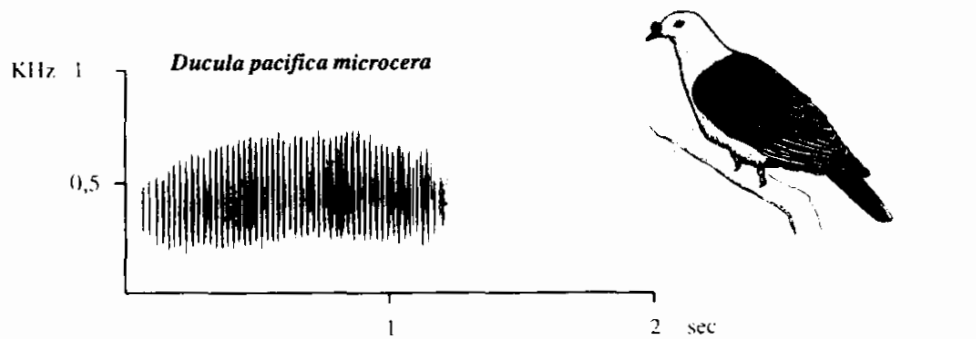
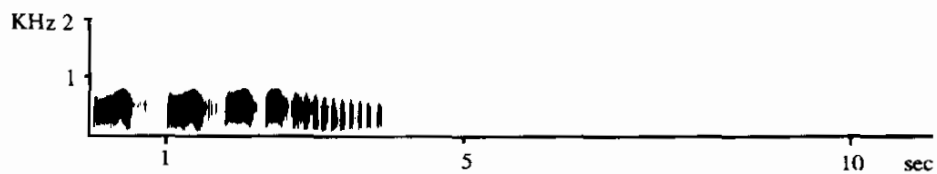
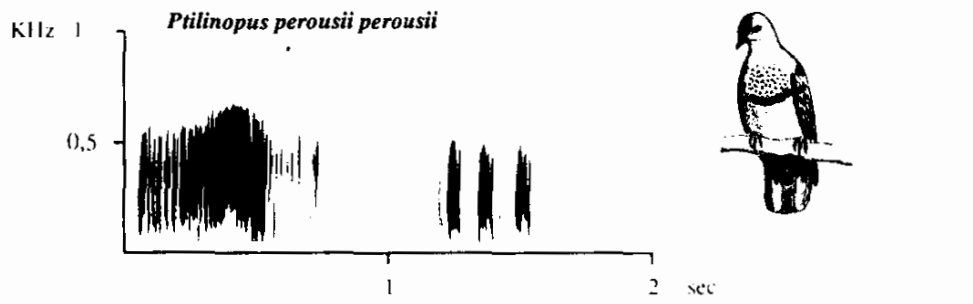
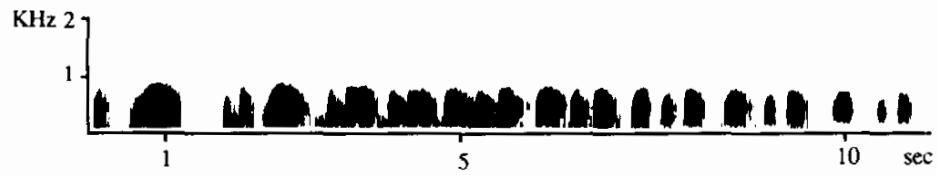
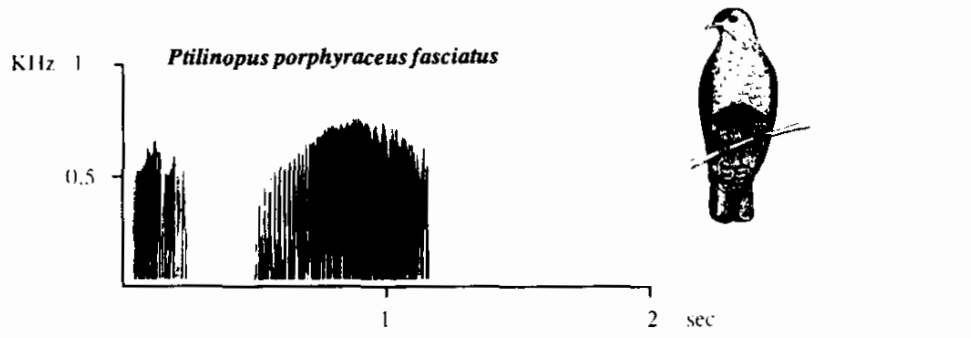
TOOTH-BILLED PIGEON *Didunculus strigirostris*

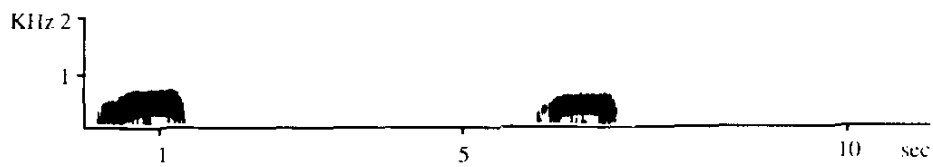
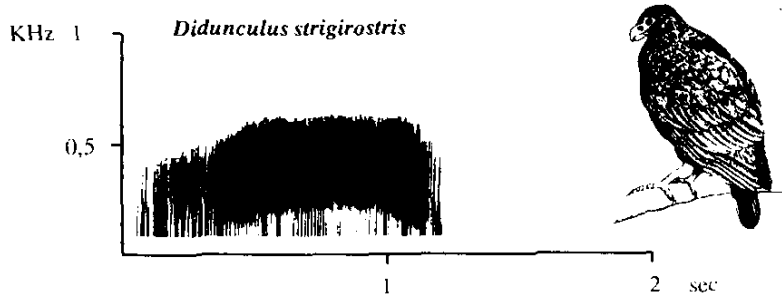
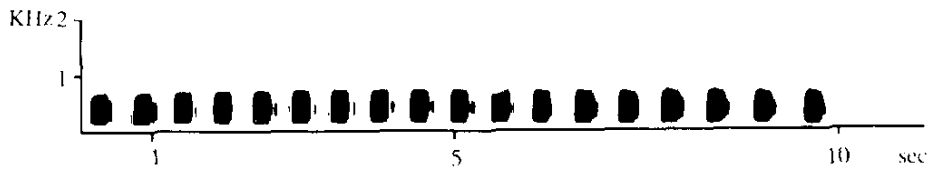
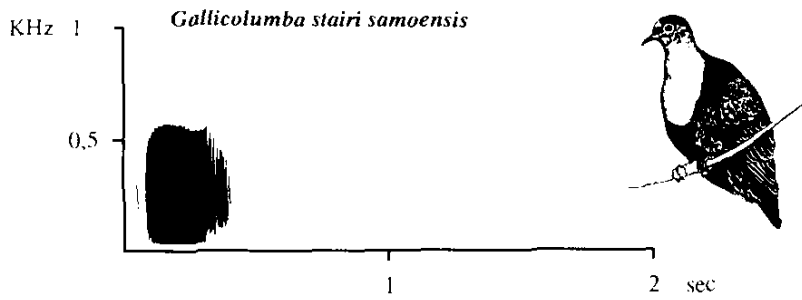
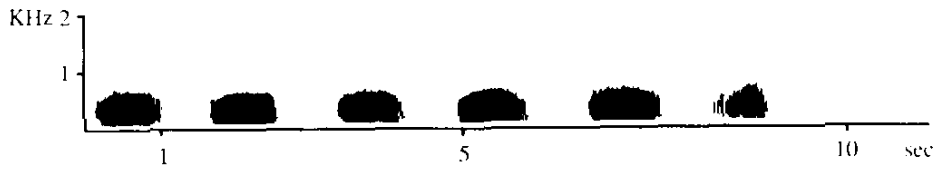
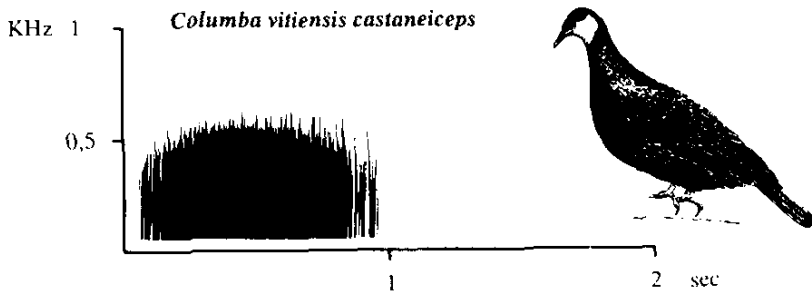
The Tooth-billed Pigeon is limited to the islands of Western Samoa. Most are on Savai'i and Upolu, but I have seen them on Nu'utele.

I estimate the total population as 5000 - 7000 birds on the following basis: according to my observations of its range and random samples in many parts of Savai'i and Upolu I have estimated 2 - 3 Tooth-billed Pigeons per square kilometre. Assuming c. 800 km² of suitable habitat for Upolu, including primary rainforest and secondary forest, and c. 1600 km² for Savai'i, the estimated totals are 1600 - 2400 Tooth-billed Pigeons for Upolu and 3200 - 4800 for Savai'i (Beichle 1982, 1987).

The distribution of Tooth-billed Pigeons is closely linked with that of fruit-bearing trees of the *Dysoxylum* family. It can get at the seeds in the tough fruits of these trees by means of its strong bill, which is capable of biting and is without parallel in other pigeons. Thus, the Tooth-billed Pigeon can make use of an important food without competition (Beichle 1982).

Voice: The territorial coo is uniform and can be described as a vocal oo, just as in most pigeons. The frequency starts at 300 Hz, rises to about 460 Hz and ends at 340 Hz. The slightly arched progression can usually be heard well despite its slight frequency differences. Calls of female Tooth-





billed Pigeons seem higher pitched because of an upper harmonic missing in the territorial coo of males. This relatively unspecific sound is uttered as irregular, frequent repetitions at intervals of 6-7 s, seldom 10 s.

The call lasts about 1.5 s. I have counted calls of 2 - 87 repetitions. The birds always call from tops of trees. Each call is uttered with a slight bow of the head.

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SHORT NOTE

Harrier attacks Dabchick and Welcome Swallows attack Falcon

I have seen two very interesting instances of birds attacking other birds in flight in the last twelve months. The first example is of an Australasian Harrier (*Circus approximans*) attacking a New Zealand Dabchick (*Poliiocephalus rufpectus*).

Sarah Beadel and I visited Te Arero Bay on the northern side of Lake Rotoiti by boat on 2 December 1989. This small bay has two arms, and as we proceeded up the western arm we saw a pair of Dabchick, which we subsequently disturbed as we got closer to them in the boat. One lifted off the water and flew up the arm in front of us. A nearby Harrier quickly swooped at one of the Dabchick as it was flying just above the water. This was a definite attack, not a chance intersection of flight paths. The Harrier attacked from above and behind the Dabchick and so the Dabchick did not see it until it was within one metre, whereupon the Dabchick took evasive action and plummeted into the water, diving underwater. It did not resurface for a considerable period, and was very agitated when it did.

The second incident was witnessed on Motuhora (Whale) Island on 29 March 1990. A single New Zealand Falcon (*Falco novaeseelandiae*) was seen above Sulphur Bay and it was attacked repeatedly by a small flock of Welcome Swallows (*Hirundo neoxena*). The Falcon was taking minor evasive action but the swallows posed only small nuisance value. However, they were far quicker and more manoeuvrable than the Falcon at such close quarters.

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