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The turtle doves of Bird Island, Seychelles

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The granitic islands of the Seychelles had an endemic subspecies of turtle dove *Streptopelia picturata rostrata*, characterised by a general dull reddish-brown plumage (Goodwin 1970). On the main granitic islands and on most of the smaller ones, the Seychelles subspecies has been replaced by the nominate form *S. p. picturata* from Madagascar, which was introduced to the Seychelles, possibly around 1850 (Lever 1987); this bird is paler and has a grey head. The replacement of the endemic by the introduced form is considered to have resulted largely through hybridisation (Penny 1979). However, on two small islands (Cousin, Cousine, both free of introduced predators) birds showing characteristics of the Seychelles form persist, together with some individuals showing intermediate characters (Diamond 1984). These same islands have retained populations of several other endemic species that have become extinct on islands with large populations of introduced predators. The short-winged *rostrata* (Benson 1967) may have been more vulnerable to introduced predators than the longer-winged *picturata*, and both predation and hybridisation may have contributed to the extinction of the former.

Turtle doves showing the characteristics of *rostrata* are also present on Bird Island, a coralline cay which is somewhat isolated from the granitic islands, being 80 km north of the nearest large island, Silhouette, and a similar distance from Cousin, the nearest island with birds of *rostrata* type. The origin of the Bird Island birds is particularly interesting because turtle doves have only recently become abundant there.

The British Natural History Museum has a specimen, labelled *S. p. rostrata* (the specimen is aberrant in having white markings on the primaries and greater coverts), collected on Bird Island in 1946. In the early 1970s turtle doves were not recorded on Bird Island but an unidentified dove was seen in a *Phyllanthus casticum* tree in the centre of the island on 30 October 1973 (Feare 1979). This bird was described as red-brown, without grey on the head and rump, but buff on the lower belly and under tail coverts: the bill was red-brown. Turtle doves were not recorded by Verschuren (1986) during a one week visit to Bird Island in March 1984.

Since the 1970s, the vegetation in the centre of Bird Island has been allowed to regenerate to form a dense woodland. Turtle doves are now common in this vegetation and in *Thespesia* woodland and *Scaevola* bush along the east coast, but are seen most frequently on the small rubbish tip and around the farm (a small development rearing pigs and poultry and growing a few vegetables). All birds seen during visits in February 1992, August 1993 and June-July 1994 were generally reddish-brown, resembling the Seychelles' endemic subspecies. In view of the abundance of the Madagascar *S. p. picturata* in the Seychelles and the relative scarcity of birds resembling *S. p. rostrata*, recent colonisation of Bird Island by the latter would seem unlikely. To obtain a clearer picture of the identity of the Bird Island birds, on 14 July we caught eight individuals in mist nets set at the rubbish tip. They were weighed using a Pesola balance and the wing (flattened chord), exposed culmen and tarsus were measured. In addition, their plumage and unfeathered parts were described in detail for later comparison with specimens in the British Museum sub-department of Ornithology and each bird was photographed for later reference.

Description of the Bird Island turtle doves

Table 1 gives the weights and measurements of the eight birds that were caught, together with details of mandible, eye and rump colour (see below). The basic description was:

Crown, sides of head and chin dull maroon (but head of bird 8 glossy black); feathers on sides of neck blackish, broadly tipped with full maroon (giving the appearance of black spots on the sides of the neck); breast warm dull maroon extending to the upper belly down to about the thighs (in bird 8 the upper breast was glossy black, like the head, while the lower breast was dark maroon, almost black); lower belly pale dusky pink, vent whitish shading into pale pinky-buff under tail coverts; flanks warm maroon shading into dark charcoal towards sides of vent. Marginal coverts and lesser coverts, together with mantle and lower neck rich bronzy maroon; rump dark charcoal (birds 3 and 5), dark charcoal with feathers tipped dark chocolate brown (birds 1, 7 and 8), or rump entirely dark chocolate brown (birds 2, 4 and 6). Primaries, secondaries and their coverts dark

TABLE 1

The weights, wing (flattened chord), bill (exposed culmen) and tarsus lengths, lower mandible colour (a=all dusky pink; g=dusky pink on gape only, rest steel-blue), iris colour (outer>inner) and rump colour (c=charcoal, b=chocolate-brown, ctb=charcoal, feathers tipped brown) of 8 adult turtle doves caught on Bird Island, July 1994

Bird	Weight	Wing	Bill	Tarsus	Lower mandible	Iris	Rump
1	171	170	22	29	a	red>orange	ctb
2	188	161	20	29	g	brown-orange>ochre	b
3	175	162	21	30	a	red>orange	c
4	160	163	19	28	g	brown-orange>ochre	b
5	163	171	20	29	a	red-orange>orange-yellow	c
6	—	167	18	27	g	brown>yellow-ochre	b
7	172	160	18	27	g>a	orange-brown>orange-ochre	ctb
8	175	175	20	33	a	orange>pale ochre	ctb

Notes: bird 6 was not weighed; the gular region of the lower mandible of bird 7 had a pinkish blush below the dusky pink gape.

chocolate brown (bleached paler in old worn feathers); underwing dark chocolate brown, tinged grey, but with forward under wing coverts bronzy maroon, especially in bird 8; central rectrices dark chocolate brown, inner webs of other rectrices becoming paler for distal quarter progressively towards outer rectrix on which this area is dirty white, with some paling of the inner webs of rectrices 3 to 6; distal portions of all rectrices dirty white below, forming a terminal band c. 3.5 cm wide. Bill with distal third pale steely blue, sometimes with tip (hook) ivory; proximal two-thirds, including cere, deep dusky pink on upper and lower mandibles in birds 1, 3, 5 and 8; in birds 2, 4 and 6 proximal part of lower mandible pale steely blue but with deep dusky pink gape, while in bird 7 proximal part of lower mandible mainly pale steely blue but with deep dusky pink on gape and as a stripe below gape. Anterior of legs and upper toes deep dusky pink, posterior of legs pale steely blue. Circumorbital skin, together with small triangles in front of and behind eye naked and deep dusky pink to maroon. Iris shaded from brighter round the outside to paler towards the pupil (Table 1), birds 1, 3, 5 and 8 brighter and redder than the others.

We did not catch any immature birds, but two individuals seen at the rubbish tip were duller brown, lacking maroon, with the bill also red-brown.

Main characteristics of Madagascar and Seychelles races

Thirty-eight specimens of nominate *picturata* in the British Museum collection from Madagascar were characterised by a slaty grey crown and nape, paler grey cheeks and almost white chin. The display feathers on the side of the neck were black, tipped greyish-pink. The mantle was maroon, the breast dusky pink and belly buffish, shading into white under tail coverts. The wing-lengths of 11 male and 12 females, measured when fresh and recorded on the labels, averaged 170.3 mm (range 159–176, standard error 1.3) and 178.2 mm (range 171–187, s.e. 1.7) respectively. (The wings of these same birds were measured from the skins, and averaged 165.5 mm (155–170, s.e. 1.2) for the females and 171.6 mm (165–180, s.e. 1.2) for the males. This indicates that

TABLE 2

The ratio bill depth/length (exposed culmen) of adult *Streptopelia picturata* from Madagascar (nominate *picturata*) and Seychelles (*rostrata*) specimens in the British Museum, and of doves caught on Bird Island, Seychelles, in July 1994

Locality	Ratio bill depth/length	n	Range	Standard error
Madagascar	0.27	23	0.21–0.30	0.01
Seychelles	0.32	9	0.28–0.35	0.01
Bird Island	0.32	8	0.28–0.38	0.01

during and/or after skin preparation, the wings of the preserved specimens had lost over 5 mm compared with the fresh measurements.)

Nine specimens labelled *S. p. rostrata* from the Seychelles had the head, including cheeks and chin, dark chocolate brown, most tinged maroon but some tinged purple. The tips of the display feathers on the sides of the neck were generally blue-grey. The belly, usually down to the thighs, was reddish-brown; behind the thighs this shaded into buffish on the under tail coverts. The wings of 8 of the preserved specimens (in the ninth the primaries were excessively abraded) averaged 148.9 mm (range 146–155, s.e. 1.0).

During examination of the museum specimens, the bills of *rostrata* appeared deeper in relation to their length than those of *picturata*, a feature noted by Newton (1867). Bill depth had not been measured on the birds caught on Bird Island, but the photographs allowed measurement of depth and length (exposed culmen) from which the ratio depth/length could be calculated. The same ratio was obtained from the adult museum specimens whose bills were intact (Table 2).

Identity and origin of the Bird Island turtle doves

On the basis of plumage colour, short wing-length and large bill depth/length ratio, the adult turtle doves caught on Bird Island in July 1994 conform more closely to *S. p. rostrata* than to nominate *picturata*. Differences from specimens of *rostrata* in the British Museum relate to maroon, rather than bluish, tips to the black display feathers on the side of the neck and perhaps to a somewhat longer wing in the Bird Island doves, although comparison of wing lengths between fresh and preserved specimens is difficult in these birds.

Most of the British Museum specimens of *rostrata* were collected in the late 1880s, after the introduction of *picturata* into Seychelles (Newton 1867, Oustalet 1878, Benson 1967). There is thus no certainty that these specimens are of pure *rostrata* but they are clearly very different from *picturata* from Madagascar and from the birds that inhabit the larger granitic islands today. The resemblance of the Bird Island doves to *rostrata*, rather than to birds now living on most of the granitic islands, raises questions about the origin of the Bird Island birds.

Although a vinous-headed form, *S. p. saturata*, may still exist in the Amirantes (Benson 1970), it is unlikely that this form would have reached Bird Island. It also seems unlikely that Bird Island should have been recently colonised by birds from Cousin and Cousine Islands, which have comparatively small populations of birds that show characteristics of *rostrata*, and much smaller populations of turtle doves than Mahe, Silhouette, Praslin and La Digue. The presence of *rostrata*-type doves on Bird Island in 1946 (BM specimen) and 1973 (Feare 1979) suggests that they may have been present in small numbers for many years, possibly restricted to dense shrub where they may have been overlooked. In this case, Bird Island colonists could have come from the granitic islands when the latter were still predominantly inhabited by *rostrata*. Such colonisation is unlikely to have occurred before coconuts were planted (probably with associated plantation weeds) on Bird Island in the latter half of the last century, because prior to that time the island was a huge seabird colony with little vegetation (Fryer 1910). Turtle doves might have arrived of their own accord or they could have been taken there by plantation workers as a food source (although Bird Island seabirds must have provided plentiful food). If the present population is indeed derived from birds which colonised the island over a century ago, Bird Island may support stock closer genetically to *rostrata* than vinous-headed forms surviving on other islands, all of which are nearer to islands where *picturata* occurs and thus more likely to have been diluted by that stock.

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