Threatened Birds of Asia:
The BirdLife International Red Data Book

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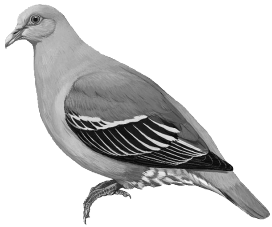
FLORES GREEN-PIGEON

Treron floris



Critical □ —
Endangered □ —
Vulnerable ■ C1

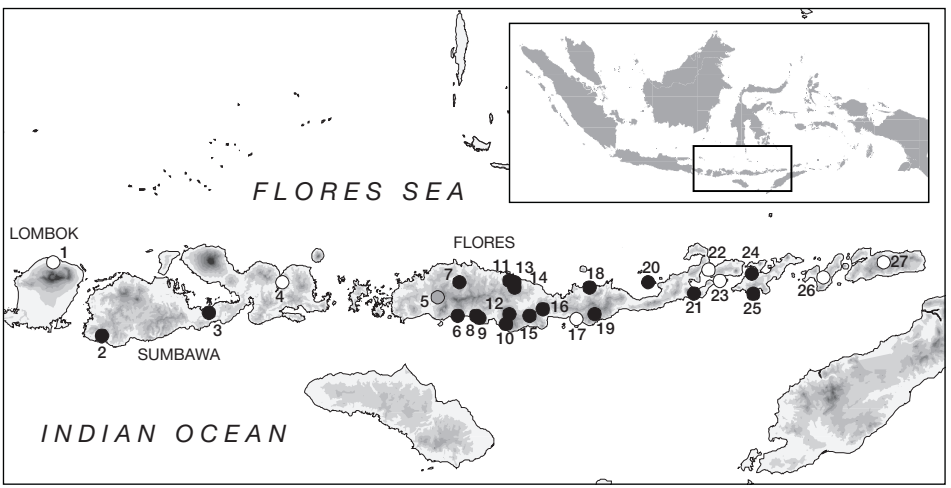
This frugivore is inferred to have a small population which is undergoing rapid diminution owing to continuing habitat loss. As such it qualifies for upgrading from Near Threatened to Vulnerable despite its apparent tolerance of degraded habitats.

DISTRIBUTION The Flores Green-pigeon is known from the islands of Lombok, Sumbawa, Flores, Solor, Lomblen, Pantar and Alor in Nusa Tenggara, Indonesia. Its absence from Komodo (and therefore presumably the other islands between Sumbawa and Flores) is apparently real, although if the species is nomadic it may occur infrequently there (Butchart *et al.* 1996); its absence from Adonara, east of Flores, is probably illusory, as some good habitat (dry scrubby coastal vegetation on rocky outcrops) exists, but no birds were seen in a five-day survey in December 2000 (C. Trainor *in litt.* 2001). It may also occur on some Flores Sea islands, as birds assumed to be Grey-cheeked Green-pigeons *Treron griseicauda* on Tanahjampea in 1992 seemed to be closer to *floris* (Dutson 1995). Records are from:

■ ***INDONESIA*** *Lombok* **Bayan** ("Batjan"), 200 m, April 1909 (Rensch 1931a; specimen in SMF);

Sumbawa **Batu Hijau**, 550 m, July/August 1993 (Butchart *et al.* 1996), including the Dodo Jaranpusang forest, c.40 km east of Batu Hijau, July 1999 (D. Lesmana *per* C. Trainor *in litt.* 2001); **Ampang**, 1988 (Andrews 1988); **Bima**, 1842 (Schlegel 1862–1873);

Flores **Orong**, 550 m, April 1974 (Schmutz 1977); **Iteng**, 30 km south of Ruteng, 1998 (C. Trainor *in litt*. 1999); **Gapong**, 15 km north of Ruteng, 1998 (C. Trainor *in litt*. 1999); **Kisol**,



The distribution of Flores Green-pigeon Treron floris: (1) Bayan; (2) Batu Hijau; (3) Ampang; (4) Bima; (5) Orong; (6) Iteng; (7) Gapong; (8) Kisol; (9) Nanga Rawa; (10) Inerie; (11) Ria; (12) Bajawa; (13) Wolo Tado; (14) Tiwu Bowu; (15) Ebulobo; (16) Aegela; (17) Ende; (18) Mausambi; (19) Kelimutu National Park; (20) Pulau Besar; (21) Lewotobi; (22) Larantuka; (23) Solor; (24) Lewoleba; (25) Lamalera; (26) Pantar; (27) Alor
○ Historical (pre-1950) ◍ Fairly recent (1950–1979) ● Recent (1980–present) □ Undated

seven, August 1987 (B. F. King verbally 1998), and in 1999 (I. Mauro *per* R. Drijvers *in litt*. 1999); **Nanga Rawa**, January 1990 (Gibbs 1990), at 0–100 m, September 1993 (Butchart *et al.* 1996); **Inerie** (Bena village), 12 km from Bajawa, 850 m, group of 10–15, 1998 (C. Trainor *in litt*. 1999); **Ria**, August 1997 (Pilgrim *et al.* 1997, 2000); **Bajawa**, September 1993 (Holmes 1993c); **Wolo Tado** (Nature Reserve), Riung, September 1997 (Pilgrim *et al.* 1997, 2000); **Tiwu Bowu**, one bird, August 1998 (R. Drijvers *in litt*. 1999); **Ebulobo**, 450 m, 1998 (C. Trainor *in litt*. 1999); **Aegela**, 25–30 birds including a flock of 13 at 900 m, August 1998 (R. Drijvers *in litt*. 1999); **Ende**, August–September 1897 (Hartert 1898a; three specimens in AMNH); **Mausambi**, sea-level, up to eight birds, August 1998 (R. Drijvers *in litt*. 1999); **Kelimutu National Park**, 1988 (Andrews 1988), and specifically at Koa Nara, 800 m, on the northern slope, July 1927 (Rensch 1931a), and Moni, 750 m, up to 11 birds, August 1998 (R. Drijvers *in litt*. 1999), Ende–Maumere road, 14 in a tree, August 1995 (B. F. King verbally 1998); **Pulau Besar** (offshore island), September 1993 (Butchart *et al.* 1996); **Lewotobi**, September 1989 (Bishop 1992a, Verhoeye and Holmes 1998); **Larantuka**, 1863 (Schegel 1862–1873); east end of the island, around April 1989 (S. Chester *per* K. D. Bishop *in litt*. 2000; see Population);

Solor unspecified locality, 1862 (Wallace 1863a; specimen in BMNH);

Lomblen (*Lembata*) unspecified locality, May 1897 (Hartert 1898d, three specimens in AMNH, BMNH); **Lewoleba** in swamp forest at the harbour, December 2000 (C. Trainor *in litt.* 2001); **Lamalera**, December 2000 (C. Trainor *in litt.* 2001);

Pantar unspecified locality, March/April 1897 (Hartert 1898d);

Alor unspecified locality, April and May 1897 (Hartert 1898d, six specimens in AMNH, BMNH).

POPULATION The species has been characterised as "generally uncommon" but "locally numerous about food trees" (Coates and Bishop 1997).

Lombok There is no information on status.

Sumbawa At the single site where it was encountered in 1993, the species was rare (Butchart *et al.* 1996). At the site nearby where it was encountered in 1999, three were seen and this was the only observation of the species in three months of fieldwork (C. Trainor *in litt.* 2001).

Flores In 1927 only a single locality for the species (Kelimutu) was determined, when a flock of 5–6 was encountered (Rensch 1931a). In his many years on the island Schmutz (1977) appears to have recorded the species only once (see Distribution), although on that occasion he encountered three flocks of 5–6 birds each; he found that it was sufficiently infrequently seen by local people for them to have no name for it. Verhoeye (undated) described it as uncommon except when concentrated at fruiting fig trees, when as many as 20 or more may occur (also Verhoeye and Holmes 1998). In around April 1989 "large numbers" of the species were found in the eastern end of the island, with a record of c.30 in a fruiting fig (S. Chester *per* K. D. Bishop *in litt*. 2000), but at the only site on the main island where it was observed by an expedition in 1993 it was uncommon (although one record was of up to 10 in a fruiting fig), although on the offshore island of Pulau Besar it was frequent (six flocks of 2–7 birds in one day's fieldwork) (Butchart *et al.* 1996). It was assumed to be commoner in drier habitats than those visited in 1993 (Butchart *et al.* 1993), but subsequent reflection on its status suggested that it would have declined with the clearance of its lowland habitat and might now be in trouble (Butchart *et al.* 1996). Verhoeye and Holmes (1998) commented on its notable scarcity in wetter regions and semi-evergreen forest, although it has been found in Gapong, an ever-wet site and one of the wettest in all Nusa Tenggara (C. Trainor *in litt*. 1999). Six August visits to the island over 11 years have resulted in two records, suggesting that the species might be in serious trouble (B. F. King verbally 1998); however, the sites in question may simply be seasonally inappropriate (C. Trainor *in litt*. 1999). Moreover, in 1998 fieldwork targeting this species established that it does not call, is highly inconspicuous and probably prefers drier, avifaunally poor habitat little studied by visitors, so that it is

probably greatly under-recorded; against this, it does indeed appear to occur at a low overall density, clumping around fruiting figs (C. Trainor *in litt*. 1999).

Solor A villager from Solor reported that "burung punai" (probably meaning green-pigeons) remain common on the island but under intensive hunting pressure for food, December 2000 (C. Trainor *in litt.* 2001).

Lomblen In December 2000 the species was recorded on five days out of 13 spent on the island, including a flock of 12–15 at Lewoleba harbour and a flock of at least 15 at Lamalera, with fairly good habitat in the latter area and little evidence of hunting pressure, suggesting that the overall population might be fairly stable (C. Trainor *in litt.* 2001).

There is no information on the status of the species on Pantar and Alor.

ECOLOGY ***Habitat*** The species uses primary and tall secondary (coastal and interior) forest, lightly wooded cultivation and scrub, and may prefer drier forest (Coates and Bishop 1997). This proves fairly likely, for although it inhabits lowland moist deciduous monsoon forest—including edge and patches, more rarely (or at lower densities) semi-evergreen forest, from sea-level to 1,000 m (Butchart *et al.* 1996, Verhoeye and Holmes 1998)—in 1997 it was found in patchy dry forest/savanna at Ria and in sparse dry deciduous monsoon forest at Wolo Tadho (Pilgrim *et al.* 1997, 2000), and in 1998 rarely inside closed-canopy forest, preferring instead forest edge and wooded cultivation (including coffee-shade *Erythrina* trees), even turning up in degraded beach forest and isolated fig trees in villages (R. Drijvers *in litt*. 1999). Komodo may be too dry for it, but the key habitat feature may simply be the presence of certain species of fig, since moist deciduous monsoon forest that lacked fig trees also lacked this pigeon (Butchart *et al.* 1996); however, this may not mean that no other fruit is taken, and Holmes (1993c) saw what could only have been this species "in old village fruit trees". The highest recorded elevation on Lombok is 600 m (Coates and Bishop 1997), Sumbawa 550 m and Flores 1,000 m (see above). On Sumbawa there may be niche competition with Pink-necked Green-pigeon *Treron vernans*, since the two species do not appear to overlap their ranges on the island (C. Trainor *in litt.* 2001).

Food Figs appear to be particularly important in the diet of this pigeon (Butchart *et al.* 1996, C. Trainor and R. Drijvers *in litt*. 1999). Birds on Lomblen were seen feeding in fruiting figs in December 2000, including hanging upside-down by their feet to reach isolated fruits, and concentrating on fruits in the outer foliage of the lower canopy (C. Trainor *in litt.* 2001). What fruit the species takes other than figs is not known, but from the evidence above it may sometimes feed on cultivated forms.

Breeding A female collected on Flores in April had strongly developed gonads (Schmutz 1977); two females from July had 1 mm wide follicles (Rensch 1931a), which also suggests breeding condition. The small series examined by Hartert (1898d) from Lomblen and taken in March/April consisted "mostly of young birds". Birds in loose feeding flocks in December 2000 were also actively courting, with at least a couple of pairs attempting copulation at one site, and with courtship chases frequent at another (C. Trainor *in litt.* 2001).

Migration The species may be nomadic in relation to the fruiting cycle of figs within (and conceivably between) its island ranges (Butchart *et al.* 1996). Some forested or semi-wooded areas listed under Distribution (e.g. Aegila, Tiwu Bowu) are isolated by at least 10 km from other areas of forest (C. Trainor *in litt*. 2000).

THREATS The Flores Green-pigeon is one of (now) five threatened members of the suite of 17 bird species that are entirely restricted to the "Northern Nusa Tenggara Endemic Bird Area", threats and conservation measures in which are profiled by Sujatnika *et al.* (1995) and Stattersfield *et al*. (1998). Continuing deforestation in lowland Flores is likely to be causing a decline in the species (Butchart *et al.* 1996). The site at Ria is a "limited production forest" and is being opened up and settled (Pilgrim *et al.* 1997).

The need to prohibit its hunting was indicated by Butchart *et al.* (1996), although they made no other mention of hunting in relation to the species. However, Bishop (1992a) thought birds he encountered were "notably shy", and evidence suggests that hunting pressure is fairly uniform throughout the species's range, including Solor but with the apparent exception of Lomblen (C. Trainor *in litt*. 1999, 2001).

At Ruteng and Labuhanbajo birds were seen on sale as cagebirds; three pairs in Ruteng were tagged 50,000 Rph (US$6) per pair (C. Trainor, R. Drijvers *in litt*. 1999).

MEASURES TAKEN In 1997 the species was recorded in Wolo Tadho Nature Reserve, which was set up in 1990 and covers 40 km^2 (Pilgrim *et al.* 1997). It also occurs in Kelimutu National Park, e.g. at Moni on the lower fringes, but this park (50 km^2) is protected for its spectacular crater lakes, not for any wildlife that incidentally occurs within its largely non-forested area (C. Trainor verbally 2000).

MEASURES PROPOSED Research is needed to determine the causes of this bird's relative rarity and patchy occurrence (Butchart *et al.* 1996). Throughout its range it is well known to local people because they hunt it, so many data can be gathered by structured interviews (C. Trainor *in litt*. 1999). It is particularly important to study the relationship between this species and its foodplants, on the working hypothesis that the latter are exclusively figs. The distribution, status, phenology, ecological position and economic values of fig trees on Flores need to be reviewed, with a view to developing a programme of management both inside and outside forest patches; such work should be undertaken with the conservation of both the green-pigeon and Wallace's Hanging-parrot *Loriculus flosculus* directly in mind.

On Flores the key sites to secure, on current evidence, are Wolo Tadho and Mausambi, although the nature reserve at the former site needs to be extended (C. Trainor *in litt*. 1999). Effective protection of (and control of hunting in) appropriate lowland habitat containing both moist deciduous monsoon forest and semi-evergreen riverine forest would help conserve the species (Butchart *et al.* 1996; see Measures Proposed under Flores Crow *Corvus florensis*). A reserve at Ria for this and the second largest known population of the race *parvula* of Yellow-crested Cockatoo *Cacatua sulphurea* is highly desirable (Pilgrim *et al.* 1997).

On Sumbawa areas of semi-evergreen rainforest in the proposed protected areas at Selalu Legini (which embraces Batu Hijau: see Distribution and Remarks 1) and Gunung Olet Sangenges would be suitable for gazetting as a means of protecting most significant landbird taxa on the island; but the exploration of Gunung Tambora should not be omitted (Butchart *et al.* 1996). In fact, all three of these areas have been proposed for protection, in line with the National Conservation Plan for Indonesia (Jepson and Monk 1995).

The recent discovery of an apparently fairly healthy population on Lomblen (see Population) requires following up, along with an investigation of Solor, Pantar and Alor, three islands which remained unvisited (or virtually so) by ornithologists throughout the twentieth century (see Verhoeye and Holmes 1999), plus Adonara, which seems likely to hold a population (see Distribution).

REMARKS (1) Selalu Legini (as in Jepson and Monk 1995) is misspelt "Selah Legium" in Butchart *et al.* (1996).