

Rediscovery of the Flores Scops Owl *Otus alfredi* on Flores, Lesser Sunda Islands, Indonesia, and reaffirmation of its specific status

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The Flores Scops Owl *Otus alfredi* remained unreported for almost a century after its description in 1897, and skepticism developed regarding its validity as a species. In 1994 a fourth individual (a juvenile) was collected near the type locality, and an adult was independently mistnetted and photographed. Morphological comparisons of this juvenile, the type series and specimens of related taxa have established a set of distinctive characters (including short rounded eartufts, long auricular filaments, a collar of triangular white spots, completely unstreaked plumage, unbanded tail, heavily feathered tarsi with distal third bare, wing formula and yellow bill, feet and claws) which, in combination, establish both the specific status of *O. alfredi* and its relationships with the Mountain Scops Owl *Otus spilocephala*.

INTRODUCTION AND HISTORY

Most genera of owls are absent in the Lesser Sundas, owing in part to the subtractive effect of Wallace's Line, but numerous scops owls *Otus* spp. have surmounted the obstacles of inter-island sea crossings and radiated to occupy a variety of habitats on many islands in the eastern Indonesian archipelago. However, the taxonomic status and distribution of many *Otus* remain unclear, owing to a scarcity of well-documented records and specimens, confusing individual variation, cryptic markings, and substantial inter-island variation in morphology.

Few of these taxa are more poorly known than the Flores Scops Owl *Otus alfredi*. Prior to a contractual biodiversity survey of the Ruteng Mountains in the Manggarai (western) region of Flores (P. T. Citra Permata Eka Pratama 1994, unpubl. report), knowledge of this bird was entirely based on three specimens (sexed as 2 males and 1 female; American Museum of Natural History [AMNH] nos. 630189–630191). These were collected by Alfred Everett more than a century ago in October and November 1896 at Gunung Repok “and other hills at about 3500 feet” (c. 1,050 m) in SW Flores (Hartert 1897). Gunung Repok (8°45'S 120°21'E) is the tallest peak in the Todo Mountains, which are an

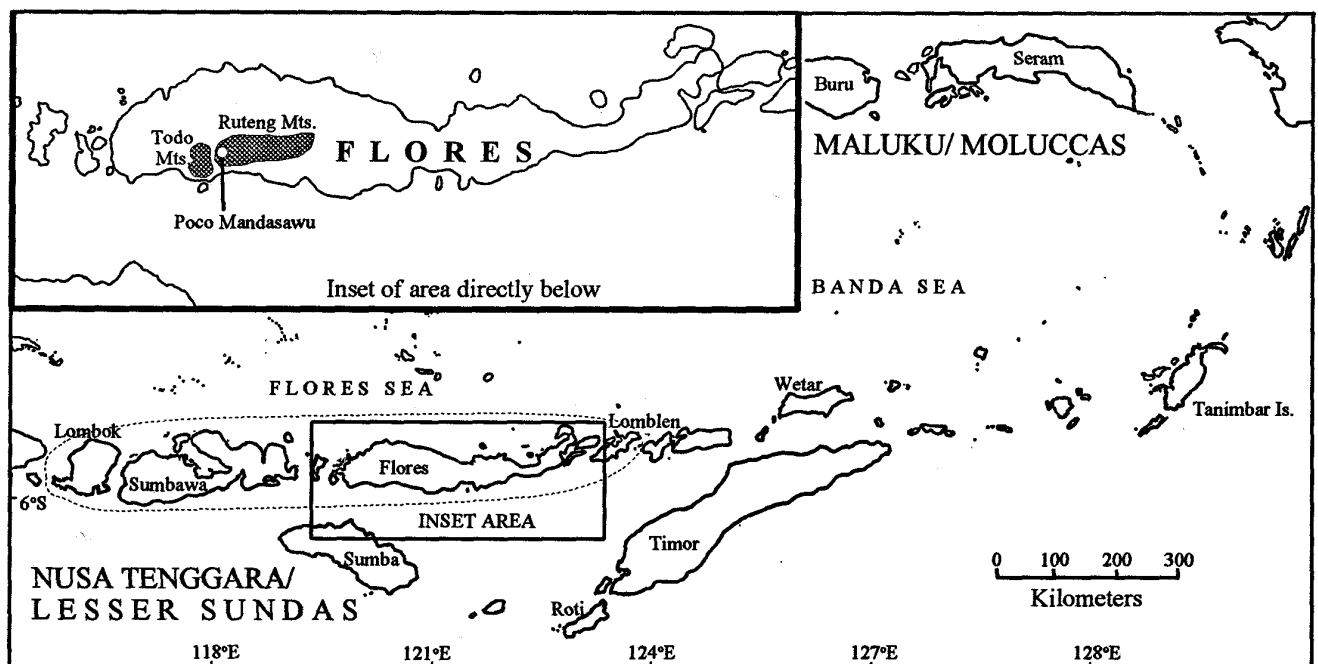


Figure 1. The Lesser Sundas with certain localities mentioned in the text and Flores inset. Dotted line on main map encloses the range of *Otus magicus albiventris*. Shaded area on inset is land above 500 m, and includes the known range of Flores Scops Owl *Otus alfredi* (Mt Repok is in the Todo Mountains, Ranamese in the Ruteng Mountains). *Otus magicus tempestatis* occurs on Wetar, and the remaining races of *O. magicus* occur in the Moluccas.



a



b



c



d



e

Figure 2. Photos of juvenile *Otus alfredi* specimen: (a) ventral; (b) lateral; (c) dorsal (by JHC); photos of mist-netted adult (d, e) from Ranamese, 9 March 1994 (by Y. de Fretes).

Table 1. Comparative measurements (in mm) of *O. alfredi* specimens.

Length Measurement	Everett specimens (Hartert 1897)	Everett specimens (remeasured by PCR [n = 3])	MZB specimen (WW and PCR)
Total	about 210 (n = 3?)	192–207	185
Wing	150–159 (n = 2)	146–160	137
Tail	81–82 (n = 3?)	76.9–77.9	69
Eartuft	—	20.0–22.1	21.5
Culmen	23 (n = 3?) (entire)	19.4–20.7 (from skull)	18.2 (from skull)
Tarsus	23 (n = 3?)	24.6–27.3	25.2

eco-physiographic western extension of the Ruteng Mountains (Figure 1).

Everett was only able to estimate the elevation at which the specimens were obtained, and he acknowledged uncertainty regarding their sex, as all three skins were acquired from local assistants working without his direct supervision (Hartert 1897). No information was provided on the habitat in which any of the three birds were captured (Hartert 1897), but the sites have been presumed to lie within montane forest (White and Bruce 1986).

In his description of the species, Hartert (1897) noted that “It is difficult to state the nearest ally of this interesting little owl”, which reminded him most of Oriental Scops Owl *O. sunia* of South and East Asia. He also mentioned a few similarities and differences between *O. alfredi*, Collared Scops Owl *O. bakkamoena* and Moluccan Scops Owl *O. magicus albiventris*. The following year *alfredi* was figured in a colour plate (Hartert 1898). Based on the description and figure, but lacking specimens of *alfredi*, Finsch (1898) could not discern any important differences between *alfredi* and red morph *O. m. tempestatis* of Wetar Island, and believed that *O. alfredi* showed similarities to other taxa of Sulawesi Scops Owl *O. manadensis* (which, in his taxonomy, included most Lesser Sundas and Wallacean *magicus*). Finsch did not go so far, however, as to synonymize *alfredi*. Hartert (1904) then countered by enumerating several distinguishing characters between *alfredi* and Lesser Sundas taxa of *magicus*, although he did suggest that *alfredi* could be the mountain form of *albiventris*. In his list of types in the Tring Museum (now at AMNH), Hartert (1925) further stated that *alfredi* “...is very far removed from the *manadensis* group, and resembles more *P. luciae* [the Bornean race of Mountain Scops Owl *O. spilocephalus luciae*], though quite different from the latter.” That same year, Stresemann (1925) produced an influential treatment of *Otus* that lumped many taxa under a few highly polytypic Asian species, although even in this framework *alfredi* was retained as a separate species and placed near *O. spilocephalus*.

For many years no further information on *Otus alfredi* became available. Several attempts were made by, among others, J. T. Marshall, Jr., B. F. King, K. D. Bishop and E. Schmutz (Marshall 1978, K. D. Bishop undated ms) to locate the species near the type locality, but none resulted in sightings or unidentified *Otus*-like calls. While preparing a monograph on the birds of Flores, G. F. Mees (*in litt.* to JHC) reconsidered Finsch’s suggestion as to the possible non-validity of *alfredi*. At Mees’s

request, Marshall examined the Flores-collected specimens of *O. magicus albiventris* and *O. alfredi* now held at AMNH, and noted that they were of identical size and wing formula, with a similar fine face pattern (G. F. Mees and J. T. Marshall independently *in litt.* to JHC). On this basis, it was concluded that *alfredi* is synonymous with *albiventris* and represented a previously unknown highland red morph. This treatment was followed by Sibley and Monroe (1993), and thus resulted in the omission of *Otus alfredi* from world lists of threatened birds (Collar *et al.* 1994).

Soon after this taxonomic decision, a single juvenile male specimen fitting the description of *Otus alfredi* (Table 1, Figure 2a–c) was collected by WW while he was working on a faunal inventory of the Ruteng Mountains (P. T. Citra Permata Eka Pratama, unpubl. report, 1994). WW’s assistants mistnetted the bird on 15 May 1994 at 1,400 m on the northern slopes of Poco (=Mt.) Mandasawu (8°38’S 120°26’E; see Figure 1) in relatively undisturbed wet montane forest. This specimen (MZB 30.086), now deposited at the Museum Zoologicum Bogoriense in Cibinong, West Java, renewed doubts about the correctness of synonymizing *alfredi* with *albiventris* (Holmes 1996, Coates and Bishop 1997). However, its small size compared with the AMNH specimens measured by Hartert (1897; Table 1) complicated resolution of its identity, as did the fact that the four relevant specimens could not be directly compared.

In March 1995, JHC examined and measured the type series of *alfredi* at AMNH, and indirectly compared the data with the MZB specimen, which was found to be consistent except in size. While PCR was working independently in 1997 on other aspects of Asian island *Otus* taxonomy, B. F. King expressed to her his doubts regarding the synonymy of *alfredi* with *albiventris*. This led PCR to compare the type series with all other relevant taxa. Although *alfredi* is remarkably similar in overall size to *Otus magicus albiventris* of Flores, as well as to *O. m. tempestatis* of more distant Wetar Island, *alfredi* differs strikingly in many characters unrelated to morph (Front cover, Tables 1 and 2, Figure 3a,b), including wing formula. As was long ago pointed out (Hartert 1925, Stresemann 1925), *O. alfredi* shows much closer affinities to members of the *spilocephalus* superspecies (Figure 3a,b). In order to establish the taxonomic validity of *alfredi*, the four existing specimens were compared in detailed plumage and mensural analyses with *albiventris* and all other members of Marshall’s (1978) *manadensis* superspecies.

Table 2. Non-mensural morphological distinctions between *O. alfredi* (including the MZB and de Fretes individuals), *O. magicus albiventris*, and red-morph *O. m. tempestatis*.

Character	<i>O. alfredi</i>			<i>O. magicus</i>	
	AMNH specimens	MZB specimen	de Fretes photos	<i>O. m. albiventris</i>	<i>O. m. tempestatis</i>
Eartufts	Short, broad and rounded; solid rufous	Short, broad and rounded; solid rufous	Not apparent; probably short and recumbent	Extremely long, narrow, pointed, heavily streaked	Short, fairly narrow, lightly marked
Forehead	Fine white vermiculation extending above supercilium; no black streaking or barring	Fine white vermiculation extending above supercilium; no black streaking or barring	Fine white vermiculation extending above supercilium; no black streaking or barring	No such markings above supercilium; heavy black streaking and moderate barring	No such markings above supercilium; heavy black streaking
Bill colour	Entirely orange-yellow	Entirely orange-yellow	Entirely orange-yellow	Mostly blackish, with indefinite yellowish areas on culmen ridge and base of lower mandible	Mostly blackish, with indefinite yellowish areas on culmen ridge and base of lower mandible
Rictal bristles	Very long and profuse; rufous with darker tips	Very long and profuse; rufous with darker tips	Very long and profuse; rufous with darker tips	Slightly shorter and fewer; mainly black with whitish bases	Slightly shorter and fewer; mainly black with whitish bases
Facial disk	Solid bright rufous, with long extensions to rear edge, and no black rim	Solid rufous with long extensions to rear edge, and no black rim	Solid bright rufous with long extensions to rear edge, and no black rim	Greyish, mottled, with virtually no extensions to rear edge; prominent black rim	Dull rufous, lightly vermiculated, with virtually no extensions to rear edge; black rim present but variable in prominence
Sides of neck	Row of scaly feathers with dark rufous ends and white bases	Row of scaly feathers with dark rufous ends and white bases	Not clearly visible	No such marking	No such marking
Upperparts pattern	Solid rufous	Solid rufous	Visible areas solid rufous	Heavily streaked, with fine cross-barring; no true rufous phase known	Usually heavily streaked; some fine cross barring; most saturated specimens lightly streaked and barred
Hind neck/ upper mantle	Small white triangles and short white streaks forming slight hindcollar	A few pale shaft streaks apparent; some natal down still present	Indiscernible	No white triangles; as rest of upperparts	No white triangles; as rest of upperparts
Scapular spots	White with 1-2 large clearcut dark brown blotches in the outer web, and brownish tips	White with 1-2 large clearcut brown blotches in the outer web, and brownish tips	Large and white with black edging; other features indiscernible	Most of both webs white or washed rufescent, with prominent triangular black tips	Much of outer webs white or washed rufescent, with prominent triangular black tips

Banding of outer primaries	Small widely spaced whitish triangles, not reaching shaft; without dark edges	Small, widely spaced whitish triangles, not reaching shaft; without dark edges	Small, widely spaced white spots; other features indiscernible	Prominent, regularly spaced, pale bands extending evenly to shaft and to some extent beyond, and with dark edges	Prominent, regularly spaced, pale bands extending to shaft, and with dark edges
Banding of tertials and upper tail	Virtually obsolete	Slight	Indiscernible	Prominent	Prominent
Pattern of breast	Finely vermiculated cinnamon-brown, with white diamonds near feather tips and white shaft streaks; no black streaks	Finely vermiculated cinnamon-brown, with white diamonds near feather tips and white shaft streaks; no black streaks	Finely vermiculated cinnamon-brown, with white diamonds near feather tips and white shaft streaks; no black streaks	Boldly black-streaked on finely barred background	Boldly black-streaked on mostly solid rufous background
Pattern of lower underparts	White background with fine rufous-brown vermiculations, some forming narrow bars; no black streaks	White background with fine rufous-brown vermiculations, some forming narrow bars; no black streaks	White background with fine rufous-brown vermiculations, some forming narrow but noticeable bars; no black streaks	Boldly black-streaked on irregularly and finely black-barred and large white-spotted background	At least moderately black-streaked on mostly orange-rufous background with fine black-and-white barring
Feathering on legs	Extremely dense, long feathering, meeting around the back and ending 6.7–9.7 mm from joint of phalanges 1 and 2 of middle toe	Extremely dense, long feathering, meeting around the back and ending 9.2 mm from joint of phalanges 1 and 2 of middle toe	Indiscernible	Short and relatively sparse feathering but extending to base of metatarsals (mean 5.3 mm from joint); bare strip along back	Short and relatively sparse feathering but extending to base of metatarsals (mean 4.7 mm from joint) and meeting around back
Colour of feet and claws	Dark orange-yellow, lacking even dark tips to claws	Orange-yellow, lacking even dark tips to claws	Paler yellowish; tips of claws not visible	Dusky, with prominent dark tips to claws	Dusky, with prominent dark tips to claws

After the main research for this paper was completed, PCR noticed that a photograph published as “Wallace’s Scops Owl *Otus silvicola*” (Monk *et al.* 1997) actually represents *alfredi*. The photograph is a good close-up of a captive adult that corroborates persistence of the species in the wild, and provides additional information on soft-part colours (Table 2). Subsequent enquiries of the photographer (Y. de Fretes) revealed that the bird was mist-netted on 9 March 1994 in mixed deciduous and evergreen forest near Danau (= Lake) Ranamese (c. 1,200 m, 8°39’S 120°34’E) in the Ruteng Mountains (Y. de Fretes *in litt.* 1999), and additional photographs were sent us by de Fretes (see Figure 2d,e).

The MZB specimen clearly conforms in 14 of 15 characters detailed in Table 2 with the type series of *alfredi*, and lacks corresponding features of *albiventris* or *tempestatis*. Its small size is undoubtedly due to its being a juvenile, as evidenced by retention of some natal down.

MORPHOLOGICAL ANALYSIS

Most of the characters distinguishing *alfredi* from the two Lesser Sundas forms of *magicus* in Table 2 cannot be explained by polychromatism. Rarely, rufous morph scops owls of some other taxa (e.g. *spilocephalus*, *sunia*) may show a reduction of banding on the tertials and tail (vs. distinct banding in other morphs). By contrast, a survey of most museum skins of Old World *Otus* showed that the underparts of rufous morph birds retain the same basic streaking pattern observed in brown and grey morph birds of the same taxon (PCR, unpubl. data). The only exception seen to this pattern is a single specimen of *Otus sunia nicobaricus* (BMNH 86.2.1.109, discussed by Gurney 1884). In other taxa, even the most saturated rufous individuals (e.g. Madagascar Scops Owl *O. rutilus rutilus* and Mayotte Scops Owl *O. r. mayottensis*; see Lewis 1998) display some streaking of the underparts. The predominantly white, finely vermiculated, and totally unstreaked lower underparts

Table 3. Summary statistics (mm) of primary shortfalls from wingpoint for *Otus alfredi* and other relevant taxa (mean \pm s.d., *n*).

Variable	<i>magicus</i>		<i>alfredi</i>	continental		<i>spilocephalus</i>		<i>angelinae</i>
	<i>albiventris</i>	all <i>magicus</i>		<i>spilocephalus</i>	<i>luciae</i>	<i>hambroeckeri</i>	<i>vandewateri</i>	
P1	36.1 \pm 4.7, 20	38.8 \pm 4.2, 65	45.4 \pm 4.0, 4	44.0 \pm 2.9, 23	44.2 \pm 3.5, 7	45.9 \pm 2.4, 12	45.3 \pm 3.2, 5	42.0 \pm 5.1, 6
P2	11.8 \pm 2.0, 21	14.2 \pm 2.7, 66	23.2 \pm 2.0, 4	19.8 \pm 2.6, 22	21.0 \pm 4.0, 7	21.0 \pm 1.4, 12	21.3 \pm 0.8, 4	18.8 \pm 4.7, 6
P3	2.7 \pm 1.2, 21	4.0 \pm 1.2, 65	8.2 \pm 1.4, 4	6.8 \pm 1.8, 23	7.9 \pm 2.6, 7	7.2 \pm 1.4, 12	6.4 \pm 2.4, 5	5.7 \pm 1.9, 6
P4	0.1 \pm 0.4, 22	0.1 \pm 0.3, 66	1.5 \pm 1.8, 4	1.3 \pm 1.0, 23	2.1 \pm 1.7, 7	1.7 \pm 0.8, 12	1.6 \pm 1.2, 4	1.3 \pm 2.0, 6
P5	1.0 \pm 1.4, 20	0.9 \pm 1.3, 62	0 \pm 0, 4	0.0 \pm 0.2, 23	0.1 \pm 0.4, 7	0 \pm 0, 12	0.5 \pm 1.0, 4	0.3 \pm 0.5, 4
P6	6.9 \pm 1.6, 19	6.6 \pm 1.8, 60	3.4 \pm 2.2, 4	3.5 \pm 1.2, 22	1.4 \pm 1.6, 6	3.7 \pm 1.4, 12	2.8 \pm 1.5, 4	2.5 \pm 0.6, 4
P7	15.0 \pm 2.4, 19	14.1 \pm 2.3, 57	10.2 \pm 2.6, 4	10.1 \pm 1.7, 21	6.0 \pm 2.4, 7	10.4 \pm 1.8, 11	8.4 \pm 3.7, 4	4.0 \pm 3.4, 4
P8	22.0 \pm 2.6, 18	22.0 \pm 2.5, 57	18.0 \pm 2.6, 4	18.2 \pm 2.2, 19	12.2 \pm 3.3, 7	19.2 \pm 1.7, 11	15.4 \pm 3.7, 4	18.0 \pm 1.4, 4
P9	29.1 \pm 2.9, 17	29.4 \pm 3.0, 55	25.1 \pm 2.2, 4	25.0 \pm 2.5, 16	17.7 \pm 4.0, 6	26.3 \pm 2.1, 10	22.7 \pm 3.3, 4	24.0 \pm 1.4, 4
P10	35.8 \pm 3.2, 15	36.3 \pm 3.2, 52	34.6 \pm 3.0, 4	30.8 \pm 3.1, 16	22.5 \pm 3.7, 5	33.5 \pm 3.2, 9	27.9 \pm 3.0, 3	30.0 \pm 0.8, 4

of *alfredi*, compared with heavily streaked *albiventris*, therefore do not correlate with the effects of rufous morph saturation in other *Otus*.

The same is true of the distinctly different scapular spots, wing banding pattern, and small white triangles on the hindneck and breast of *alfredi*. These features are not present in any taxon of *Otus magicus*, or in red morph specimens of polychromatic *Otus* taxa that lack those patterns in brown and grey morphs (except in the questionable synonymy of Sumatran Scops Owl *O. stresemanni* as the red morph of *O. spilocephalus vandewateri*: King 1997; PCR unpubl. data). In addition, the four *alfredi* specimens and the live photographed bird lack a rufous suffusion to the pale components of scapular spots and wing bands that is characteristic of

other rufous morph *Otus*. In another important difference, the exceptionally long, pointed ear tufts of *O. m. albiventris* readily distinguish this taxon from both *alfredi* and *tempestatis* (see cover illustration). In fact, *albiventris* has, proportionately, the longest ear tufts of any form in the *magicus* group, while those of *alfredi* are short and rounded.

Similarly distinctive is the full, fluffy tarsal feathering of *O. alfredi*, ending abruptly well above the distal end of the tarsus, and the solid yellow bill, feet, and claws; both conditions not seen in any form of *O. magicus* or *manadensis*. Although soft part colours can change in skins, no adult specimen of any *magicus* taxon shows a predominantly yellow bill or feet, whereas these characters are entirely orange-yellow in all *alfredi*

Table 4. Colorimetric values (Minolta CR-221 chromometer) for *Otus alfredi* and red morph *O. magicus tempestatis*. Increasing values of *L* = lighter colour; increasing *a* = redder colour (vs. greener); increasing *b* = yellower colour (vs. bluer).

Variable	Lightness (<i>L</i>)		Redness (<i>a</i>)		Yellowness (<i>b</i>)	
	<i>alfredi</i>	<i>tempestatis</i>	<i>alfredi</i>	<i>tempestatis</i>	<i>alfredi</i>	<i>tempestatis</i>
Centre of crown	51.3 \pm 2.4, 3	52.8 \pm 3.9, 2	5.2 \pm 0.7, 3	6.8 \pm 2.3, 2	8.5 \pm 2.4, 3	10.7 \pm 4.9, 2
Centre of mantle	48.5 \pm 0.4, 3	51.2 \pm 1.1, 3	5.7 \pm 1.0, 3	8.0 \pm 0.4, 3	7.2 \pm 1.0, 3	10.6 \pm 1.1, 3
Auriculars	49.6 \pm 3.6, 3	58.9 \pm 3.0, 3	6.6 \pm 1.1, 3	8.0 \pm 0.6, 3	8.3 \pm 3.3, 3	15.8 \pm 3.2, 3
Inner tarsus	54.1 \pm 2.2, 2	74.8 \pm 7.4, 3	6.6 \pm 0.1, 2	4.3 \pm 1.8, 3	13.4 \pm 1.5, 2	19.5 \pm 2.5, 3

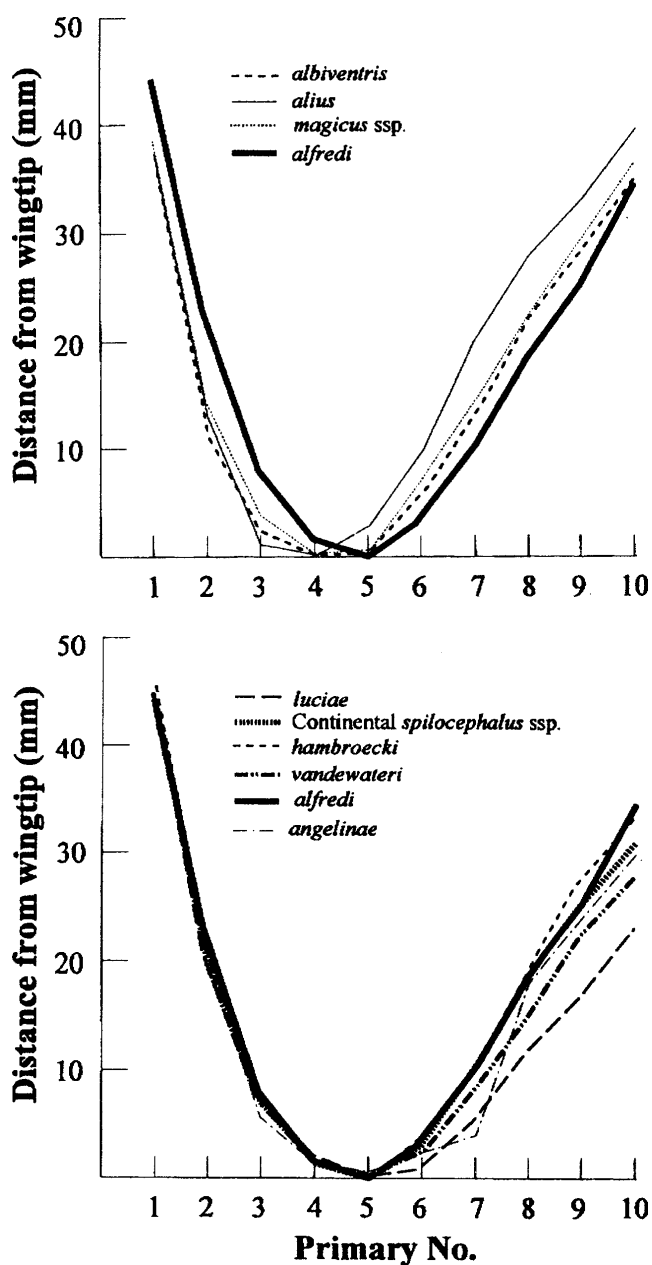


Figure 3. Graph of wing formulae (shortfalls of each primary from wingpoint) of *Otus alfredi* compared with (a) some taxa formerly or currently considered members of Moluccan Scops Owl *O. magicus*, and (b) taxa currently placed in Mountain Scops Owl *O. spilocephalus* and Javan Scops Owl *O. angelinae*. Full data are presented in Table 3.

specimens. Moreover, the AMNH *albiventris* specimens from Flores were collected on the same expedition as the Everett specimens of *alfredi*. All have presumably been subject to the same treatment and storage conditions ever since, first in Rothschild's collection, then at AMNH, indicating that these variations in soft-part colours are inherent. The yellowish colour of the bill, toes and claws of the MZB specimen noted at the time of capture by WW, and visible in the bird photographed by de Fretes (Monk *et al.* 1997), confirms the distinctiveness of these characters.

Furthermore, *Otus alfredi* shows major wing formula differences versus all taxa of *magicus* (Table 3, Figure 3a), and even greater differences compared to the three

East Indian Ocean species: Simeulue Scops Owl *O. umbra*, Enggano Scops Owl *O. enganensis* and Nicobar Scops Owl *O. alius* (Rasmussen 1998), *O. manadensis* from the Sulawesi region, and the Sangihe Scops Owl *O. collari* (Lambert and Rasmussen 1998). Conversely, *O. alfredi* shares the wing formulae of all *spilocephalus* taxa (Figure 3b), although the Bornean form *luciae* and *O. stresemanni* are somewhat different from the others (PCR unpubl. data). The unique pattern of scapular spots in *alfredi* (Table 2) is unlike that of any scops owl examined in the *manadensis* superspecies (*sensu* Marshall 1978) or the *spilocephalus* group. Wing formula and other morphological characteristics do not support the opinion that *alfredi* might be related to the *Otus* endemics of the East Indian Ocean (Marshall 1978), a group that was erroneously interpreted by White and Bruce (1986) as including the unrelated *O. sunia nicobaricus* rather than the then-undescribed *O. alius* (Rasmussen 1998).

Morphologically, *O. m. tempestatis* is clearly a member of the *magicus* group, although a distinctive one. The red morph of *tempestatis* differs markedly from *alfredi* in its paler, heavily streaked, and more orange plumage; more extensive barring of tertials, primaries and uppertail surface; and little or no rufous in the tarsal feathering (see front cover, Table 4). Unlike *alfredi*, *tempestatis* has dark-tipped claws and bill, a prominent white crescent extending from above the eye to the sides of the bill, and tarsal feathering similar to *albiventris*. The voice of *tempestatis* is unknown, and may differ substantially from *albiventris* and Moluccan *magicus* taxa. The few similarities such as eartuft length and overall rufous colour between some *tempestatis* and *alfredi* specimens are not sufficient to indicate a close relationship, and may be explained by convergence. *Otus m. tempestatis* is, so far as is known, endemic to Wetar (White and Bruce 1986), although some smaller nearby islands have not been thoroughly explored. Wetar exhibits a moderate degree of avian endemism, mainly due to its relatively isolated position in the Lesser Sundas island chain, but shows a low level of biodiversity compared with Flores, Timor and Alor (Stattersfield *et al.* 1998), a phenomenon that has been attributed to its younger geological history (Mayr 1944). Furthermore, *Otus alfredi* and *O. m. tempestatis* are probably ecologically divergent. Wetar forests are much drier than those of the Ruteng mountain chain, which evidently harbours the wettest forest habitats in the Lesser Sundas.

The photographs by de Fretes (Figure 2d,e; Monk *et al.* 1997) also allow us to note previously undescribed soft part colours for *O. alfredi*: irides yellow; orbital skin pink/reddish; entire visible portion of bill and cere yellowish; toes and claws yellowish, but tips of claws not visible. Because the juvenile plumage of *O. alfredi* is undescribed, characteristics of the natal down adhering to the sides of neck, mantle, wing coverts, scapulars, and uppertail coverts of the MZB specimen warrant comment here: the down is slightly paler rufous than the contour feathers of the first definitive plumage, and nearly uniform in colour, with only slight indications of the barring that is typical of most juvenile scops owls. In addition, compared to Everett's adult specimens, the uppertail surface of the MZB specimen is more clearly banded, a feature consistent with the norm for juveniles across numerous taxa of scops owls (Rasmussen *et al.* ms).

CIRCUMSTANCES AND CONCLUSIONS

The above differences in morphology indicate unambiguously that *alfredi* is neither the rufous morph of *albiventris* nor a member of the *manadensis* superspecies. Instead, *alfredi* is clearly a distinct species whose closest allies are found in the *spilocephalus* group; however, a phylogenetic analysis of the entire group is needed. This conclusion is based on shared morphological patterns: similar wing formula; white triangles on the hindneck; long auricular extensions; unbanded inner webs of the primaries; dense, long tarsal feathering (completely encircling the tarsus), longer along the rear edge, with a dark rufous patch on the inner side of the "knee" (Table 4); fluffy plumage; little or no ventral streaking; and yellow bill, feet and claws. The only other plausible classification of *alfredi*, under a broad definition of the biological species concept as advocated by Stresemann (1925), would be its treatment as a highly distinct subspecies of *spilocephalus*. We cannot countenance this, however, considering the many distinct characters of *alfredi*.

Of further relevance is that Wallace's Scops Owl *Otus silvicola*, endemic to Flores and Sumbawa, is sympatric with *O. alfredi*. This relatively large species has been recorded from Ruteng town and nearby farms at c. 1,100 m, and in mountain forests in the area to 1,600 m (White and Bruce 1986). At Gunung Repok, *silvicola* was recently reported to be common at 400–1,450 m (Butchart *et al.* 1994). Ecological distinctions with *O. alfredi* remain unknown, but the great size disparity suggests dissimilar prey bases.

Otus alfredi was the only restricted-range species that was unrecorded on an expedition to Flores and Sumbawa in 1993 (Brooks and Butchart 1993). Since then, several ornithologists have attempted to locate it in the wild. Nevertheless, the only records thus far are the captures detailed in this paper and a sighting on 9 September 1997 from the forest fringe of Danau Ranamese, Ruteng Mountains, by J. Leadley and Saifuddin (Pilgrim *et al.* 1997). A single bird was observed on the first of ten nights of nocturnal fieldwork in the area. The rufous plumage and small size were clearly noted, but no vocalizations were heard.

A better understanding of the status and affinities of the Flores Scops Owl would be facilitated by knowledge of its vocalizations. These have yet to be documented despite considerable effort (Marshall 1978, Bishop ms). Recent attempts to find *alfredi* have occurred, however, during the dry (presumably non-breeding) season, when the species may be silent (Butchart *et al.* 1996). Gunung Repok villagers reported that in addition to *O. silvicola* another small but redder owl exists in the Todo Mountains, and gives a single, high-pitched whistle (Butchart *et al.* 1994). If these reports are accurate (which other, erroneous information provided by the same villagers tends to undermine: Butchart *et al.* 1996), this suggests a similarity in tone to the call of *O. spilocephalus*, although the latter is emitted in couplets throughout its wide range (Marshall 1978). While most scops owls usually make themselves known by their characteristic and persistent vocalisations, the territorial call of another enigmatic scops owl, Javan Scops Owl

Otus angelinae has not been documented, despite numerous attempts to do so (MacKinnon 1991, Becking 1994).

Recently, unidentified small rufous owls have repeatedly been observed and tape-recorded at lower elevations on the neighbouring island of Sumba, and it has been suggested that they may be *O. alfredi*. However, Linsley *et al.* (1999) pointed out that these reports may pertain to the much larger, differently marked Sumba Boobook *Ninox rudolfi*; while elsewhere it has been listed as an unidentified *Otus* (Coates and Bishop 1997, Jepson 1997). Sumba and Timor are the largest islands in the Greater and Lesser Sundas from which a scops owl species is undocumented, whereas three species of *Otus* occur on Flores.

Further research on the biology and ecological requirements of the Flores Scops Owl is urgently needed. As recommended by Butchart *et al.* (1994), future surveys should emphasize nocturnal fieldwork in the Ruteng Mountains, and as resources permit, in the ridge forests of Mata Wae Ndeo (north of Tanjung Kerita Mese peninsula) in south-west Manggarai. The rediscovery of *O. alfredi* illustrates how inadequately the avian diversity of the Ruteng Mountains is known, and underscores the critical importance of conserving the area's unique, yet increasingly degraded forests.

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