

Conservation status and vocal and morphological description of the Grand Comoro Scops Owl *Otus pauliani* Benson 1960

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Summary

The Grand Comoro Scops Owl *Otus pauliani*, confined to forest on Mount Karthala on Grand Comoro, Indian Ocean, is a distinct species based on the evidence of its plumage and voice. In November 1989 studies of territorial calling birds at night revealed its presence between 1,000 and 1,900 m on the north, west and south flanks of the volcano, on which there exists some 10,000 ha of suitable habitat. As territory sizes may be only 5 ha, the population could well be over 1,000 pairs but, although this is encouraging, there remains a long-term threat from forest loss through habitat fragmentation (fires, logging) and the spread of the Indian Myna *Acridotheres tristis*.

Otus pauliani, confiné à la forêt du Mont Karthala sur Grand Comoro dans l'Océan Indien, représente une bonne espèce distincte basé sur son plumage et sa voix. En novembre 1989 des études d'oiseaux territoriaux, chantant la nuit, révélèrent sa présence à des altitudes entre 1,000 et 1,900 m sur les versants nord, ouest et sud du volcan où existe encore une dizaine de milliers d'hectares d'habitat convenable. Puisque souvent les territoires n'excèdent pas une superficie de 5 ha, la population peut bien comporter plus de 1,000 couples. Malgré ce fait encourageant, un danger à long terme continue à exister; la perte des forêts convenables dû à la fragmentation des habitats (feux, coupes) et à la dispersion croissante d'*Acridotheres tristis*.

Introduction

In the course of a general study of the status, relationships and preservation of Comoro birds (see Louette 1988, Louette *et al.* 1988, Louette and Stevens in press, Stevens *et al.* in press) special attention was paid to the rare and almost unknown species of this archipelago, among which figures the Grand Comoro Scops Owl (Collar and Stuart 1985). We present here an overview of its distribution on the island and discuss its present status. For a general description of the Grand Comoro environment, see Louette (1988).

Because its vocalizations are as yet rather poorly described, we provide details of those heard by us, both in view of their possible biological meaning and in view of their possible taxonomic value.

Some morphological features of the only individual caught by us (the second one ever), which seemed at variance with the rather superficial description of the holotype, are presented in detail. The holotype (at BMNH) was studied by MH and ML independently both before and after the capture of the second individual.

History

The discovery and history of the species is worth repeating in full. When studying birds on Grand Comoro on behalf of the British Ornithologists' Union in 1958, C. W. Benson found a feather belonging to an unknown species of owl or nightjar in the lining of a nest of a Humblot's Sunbird *Nectarinia humbloti*. He therefore went out at night to explore the well-forested surroundings of La Convalescence at 1,800 m on the western slope of the Karthala volcano. From several points in the forest, there was a peculiar call which he attributed to a nightjar. Benson eventually managed to obtain one of the calling birds, which proved to be a scops owl of a new, endemic species, although Benson (1960) himself did not fully appreciate this fact at the time, assuming that it was a new race of the species *Otus rutilus*, known from Madagascar and the nearby islands of Anjouan and Mayotte.

This remained the only occasion on which the bird was seen by ornithologists, except during the ICBP survey by our team in 1985, when what must have been this species was glimpsed at the type locality. However, based on Benson's accurate description of the bird's territorial call, we recorded this mysterious owl from several well-forested localities, high on the mountain during each of four visits (1981, 1983, 1985, 1989). The Grand Comoro Scops Owl, however, is not the only bird that calls at night in the Comoro forests (Greater and Lesser Vasa Parrots *Coracopsis vasa* and *C. nigra* are very noisy at night too). Finally, in November 1989, several birds were responsive to an imitation of the territorial call, and five of them were closely watched in torchlight.

On 11 November 1989, north of M'Lima Manda on the north-western slope along the track that parallels the mountain contours, one presumed male in a more open part of the vegetation responded vigorously to imitations of its territorial call and proved exceptionally confiding. It was well observed in torchlight and repeatedly photographed (Figure 1; Louette *et al.* 1990a). The next



Figure 1. Male Grand Comoro Scops Owl *Otus pauliani* north of M'Lima Manda, 11 November 1989; photograph by M. Herremans.

night, it was impossible to trap the bird with a mist-net (even when held to a height of c. 7 m above the head of two team members), but was finally simply caught by hand after the net was removed. It was measured, described, photographed and released.

Results

Distribution

The literature was searched for all other possible records of the species, but none was found. It seems that only Benson and we ourselves stayed overnight in forested habitat at suitable altitudes (Benson 1960, Louette 1988, Louette *et al.* 1988, 1990b). Forbes-Watson (1969), Salvan (1972) and Cheke and Diamond (1986) do not mention the owl and apparently these authors did not go out at night.

All positive and negative data figure in Table 1 and Figure 2. Grand Comoro Scops Owls have up to now been found at seven (possibly eight) localities, all situated between 1,000 m and 1,900 m on the north, west or south flanks of the Karthala volcano. All these are in the forest or just beyond its upper edge. The bird heard calling at a distance in tree-heath near the forest edge from counting-station 7 (for numbers of stations see Louette *et al.* 1988) was probably actually calling from the forest itself. In fact, owls were heard during each night spent at the six forested localities: they are thus probably neither rare nor localized between 1,000 and 1,800 m in forest on Mount Karthala. The species remains unrecorded at any of the stations below 1,000 m, although most of these are still in forested habitat. Similarly, many nights spent at three camps in the forest of La Grille never yielded evidence of it, so it must be absent from the northern volcano (station 15).

The number of "males" calling simultaneously was usually between four and six for the well-forested localities (Table 1). Because the territorial calls are rather weak and only carry through the forest for about 250 m, we assume that territory size is approximately 5 ha. This fits with the observation of six (or seven) presumed males over a distance of 650 m, apparently in optimal habitat, along the track north of M'Lima Manda on 11 November 1989.

Voice

Calls were taped during each of our visits on a UHER 4200 recorder; their quality and variety was excellent during November 1989, and only some of these are presented here. Sonagrams were drawn by a Unigon 4600 spectrum analyser (UNISCAN) on an Epson FX-850 dot-matrix printer.

Benson's (1960) description of the territorial call is very apt: an indefinitely repeated, deliberate "cho" ("o" as in "gone"), at the rate of about two per second. However, some variation occurs. The first few notes of a series are a longer-drawn-out "choo", without inclination in pitch. The notes gradually shorten and speed up until the final speed of indeed almost exactly two per second is reached from about the fifth note onwards (Figure 3). These notes, with a slight drop in pitch from 1,050 Hz (Figure 4) are then invariably repeated

Table 1. The status of the Grand Comoro Scops Owl *Otus pauliani* at the various stations visited at night in the Grand Comoro forests above 500 m (see also Figure 2)

Station no.	Locality	Altitude	Vegetation	Month	Year	Number of males	Reference
<i>Positive</i>							
1	La Convalescence	1,800 m	Primary forest / tree-heath / clearing	Sept. Aug. Nov.	1958 1981 1983	"many" 5 3	1 3 3
				Oct. Dec.	1985 1989	3 2	2 4
2	M'Lima Mandia Z	1,100 m	Degraded primary forest	Oct. Nov.	1985 1989	4 3	2 3
3	M'Lima Mandia N	1,050 m	Rich pioneer forest	Nov.	1989	6	3
4	"Middle-north"	1,500 m	Forest patches / pastures / tree-heath	Oct.	1985	4	2
5	"Peter-Lut"	1,350 m	Primary forest / pioneer woodland	Oct. Oct. Nov.	1983 1985 1989	4 6 4	3 2 3
6	M'Lima Mani	1,000 m	Degraded primary forest / pioneer woodland	Oct. Nov.	1985 1989	5 4	2 3
7	M'Lima Sanga	1,850 m	Primary forest / tree-heath	Oct. Nov.	1985 1989	1 0	2 3
8	"Malakoff"	1,000 m	Forest patches	Sept. Dec.	1985 1989	0 1 (probably)	2 3
<i>Negative (summarized)</i>							
9	Kourani	800 m	Badly degraded forest	Oct.	1983	0	3
10	Niumbadjou	460 m	Degraded forest	Aug. Sept. Dec.	58-89	4 × 0	1, 3 2 3
11	Boboni	650 m	Degraded forest	Sept. Nov. Dec.	58-89	4 × 0	1, 2 3 3
12	Crater-rim	2,340 m	Tree-heath	Oct.	1983	0	3
13	Tsinimoipanga	750 m	Degraded forest	Sept.	1985	0	2
14	Idjikounzi	1,400 m	Primary forest	Sept.	1985	0	2
15	La Grille	850-1,050 m	Badly degraded forest	Aug. Nov. Dec.	58-89	5 × 0	1, 3 3 3

References: 1, Benson (1960); 2 Louette *et al.* (1988); 3, pers. obs.; 4, D. Vangeluwe, pers. comm.

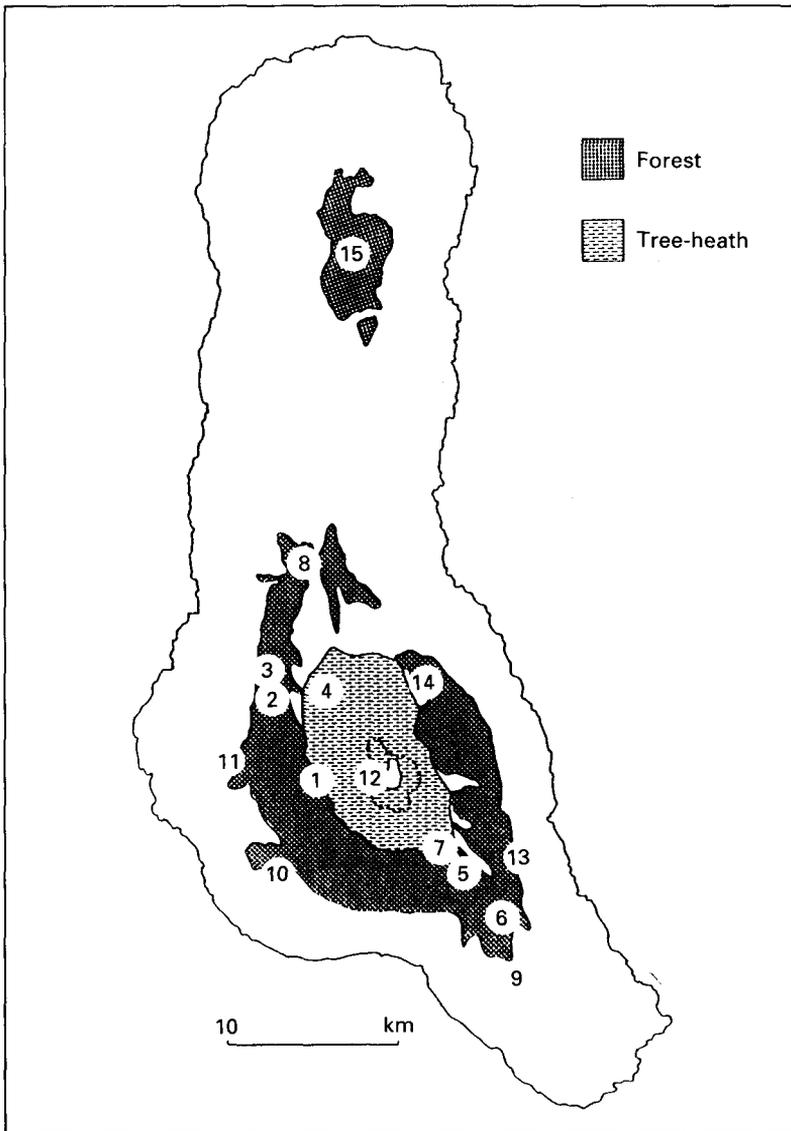


Figure 2. Location of the stations explored at night above 500 m on Grand Comoro; 1–7 positive for *Otus pauliani*, 8 probably positive, 9–15 negative.

in series. Particularly early and late at night during the presumed breeding season (September–December), series may last for tens of minutes. Herremans (1988) counted over 1,200 individual notes as only part of a series. In the middle of the night, apparently in the non-breeding season, and under less favourable weather conditions, short series of only some tens of notes are produced.

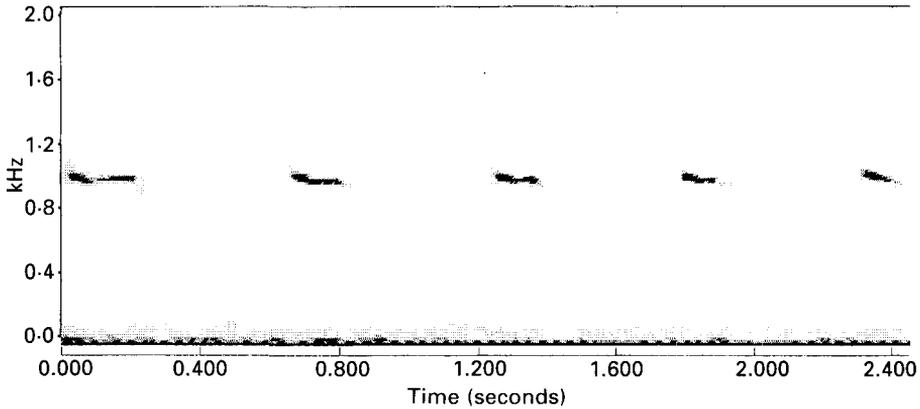


Figure 3. Introductory notes of a territorial call-series of the Grand Comoro Scops Owl *Otus pauliani* (recorded north of M'Lima Manda, 11 November 1989).

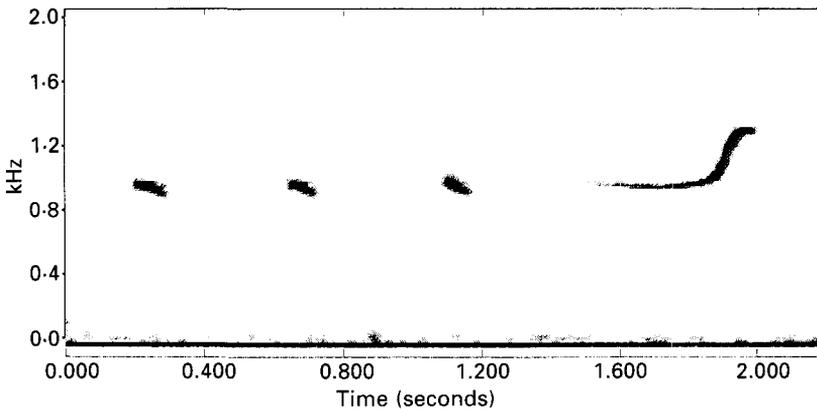


Figure 4. Three final notes of a territorial call-series followed by a female call of the Grand Comoro Scops Owl *Otus pauliani* (recorded M'Lima Mani, 18 November 1989).

Morphological description

Plumage The individual caught by us differs slightly from the holotype; we present here a synthesis based on both individuals. For a scops owl, the Grand Comoro one is remarkably uniform in colour and lacks strong markings. The upperside is dark grey-brown with indistinct barring. The scapulars are indistinctly spotted buffish. The underside is dark rufous-brown with indistinct dark longitudinal (shaft-) streaks, indistinct barring and pale mottling. The facial mask is more greyish, speckled with white (especially so on the holotype). The ear tufts are rudimentary and only occasionally seen in the field (though see Figure 1). There is a small zone of white on the lower belly, but there is more extensive white on the under-tail and under-wing coverts (Figure 5). The wings

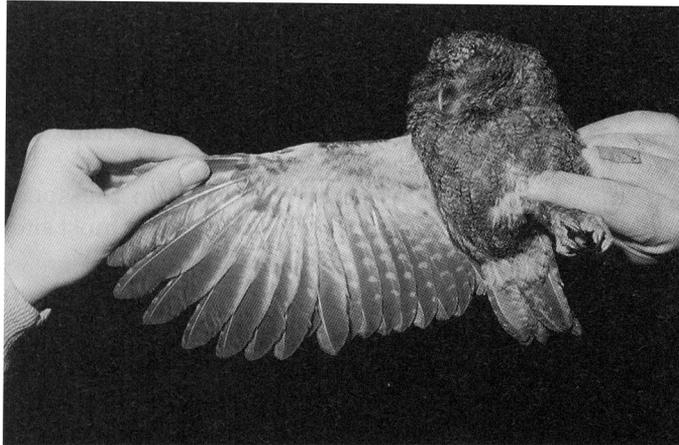


Figure 5. Ventral view of the same bird as in Figure 1.

appear whitish at the bend and each remex and rectrix has a series of yellowish-buff spots. The distal part of the tarsus appears unfeathered at first, but bears a strip of small feathers on the rear side. The iris was very dark (brown) in this and all three other (presumed) males and the presumed female that we were able to watch at close range (not yellow as Benson indicated for the male holotype specimen).

Measurements of the second individual Wing (maximum length) 144 mm; tail 73 mm; tarsus 30.5 mm; bill to feathering 18 mm; bill to rear end of nostrils 11 mm; bill depth 10.7 mm; weight 69.5 g. These are close to Benson's (1960) measurements of the holotype as far as given (on the holotype, M. L. measured tail 70.5 mm and tarsus 27.5 mm long; the only notable differences with the second individual).

Discussion

Status

Hitherto, the breeding grounds were visited at night only during the period August–December. In each of these months calling “males” were noted, but aggressive territorial behaviour was only provoked during November 1989. Possibly, the owls establish year-round territories which are, however, only vigorously defended during the short period preceding egg-laying. This could take place in the first half of November, a period during which the breeding grounds were never visited before the 1989 trip.

The owl was present in a variety of wooded habitat. All stages between virgin and degraded primary forest, as well as some places with only patches of forest amid pastures, were found occupied. An unexpected discovery was the high density north of M'Lima Manda in an open type of pioneer woodland growing on a lava-strewn rocky soil. Localities 4 and 5, where the species is also well represented, have this habitat as well. It is peculiar that it was not found on the

eastern slopes of Karthala, which have extensive well-grown stands of this pioneer woodland; its absence at the right altitude and apparently in the right vegetation above Idjikounzi (station 14) during two consecutive nights (on which the vasa parrots were very active) in September 1985 (Louette *et al.* 1988) is probably genuine and no chance event; is there a relationship with the microclimate, this flank of the mountain being drier?

The "edge-effect" which was considered important in the species's habitat choice (Louette 1988) might have resulted from the fact that most sites where it is possible to camp on Karthala are situated in clearings.

In view of the altitudinal distribution and the habitat preference and tolerance of the species, it can be calculated that on the northern, western and southern slopes slightly less than 10,000 ha of suitable habitat exists. In view of the territorial size, this implies that the total population could amount to over a thousand pairs, possibly somewhat more if the eastern slopes of the volcano also prove to be occupied. This is good news, since the previous estimate only indicated a population size of "several tens of pairs" (Collar and Stuart 1985).

The species is not under direct threat, because it seems to hold its own (at least temporarily) in degraded forest and because the boundary of total deforestation is moving uphill only slowly and is still just below the lower edge of the bird's range. Furthermore, there now seem to be strongholds also in the pioneer type of woodland on a soil that is too rocky to be cleared for agriculture.

However, the situation may become worse in the future. The woodlands are susceptible to fire and would become threatened if the practice of burning, in order to obtain grazing land for the increasing number of cattle, were to proliferate. Also, deforestation is locally so heavy that the breeding range will become fragmented. Local extinction in the resulting patches of distribution must then be feared. This possibly already happened in the north, where suitable pockets of forest remain (e.g. near Lake Hantsongoma), but where there is now already a hiatus, the forest being completely destroyed mid-way between stations 3 and 8. Finally, the trend towards more cattle and the drastic clearance of the forest are favourable conditions for a population increase of the introduced Indian Myna *Acridotheres tristis*, which might prove the stronger competitor for nest cavities. The myna is on the increase (Stevens *et al.* in press), although it has as yet hardly invaded the lower edge of the Karthala forest, in contrast to the badly degraded forests on La Grille and on the islands of Anjouan (where *Otus rutilus* is very rare: Louette 1988) and Mayotte (where *Otus rutilus* is rather common).

Voice

Presumed male birds confronted with playback calls speed up the series of notes to a rhythm of five per two seconds. The notes become more emphasized and higher-pitched, with a steeper drop in pitch (1,250 Hz to 950 Hz: Figure 6). These notes sound rather like "chok". Whatever the significance of calls earlier in the season, these in response to playback were presumably territorial in nature; and it was only during November–December 1989 that imitations or playback actually provoked an apparently aggressive response. A totally different call was produced by a second bird closely associated with a territorially responsive "male" at M'Lima Mani on 18 November 1989. It was a long-drawn-out S-

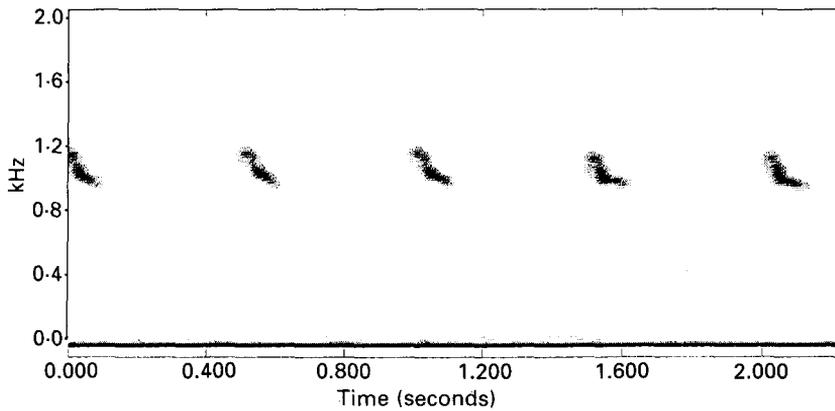


Figure 6. Part of a series of territorial calls of an incited male Grand Comoro Scops Owl *Otus pauliani* (recorded north of M'Lima Manda, 11 November 1989).

shaped whistle "choeiet" (Figure 4). We presume that this was a female call. The "female" called intermittently or in series at a rate of one note every three seconds. She responded to and approached an imitation of her call, but her presumed mate was clearly more interested, and alternately approached the source of imitation and the "female". The calls of the pair sometimes sounded as a duet. The duetting of male-type calls mentioned by Herremans (1988) actually might have been territorial quarrels. Since these authors also recorded female-type calls from a presumed family party during early December at La Convallescence, it is likely that this type of call is used outside the breeding season in a more general contact context.

Marshall (1978) had only Benson's description of the calls at hand to compare the present species with several others in the genus, but he could not find anything close to *pauliani*. We agree upon this point when consulting his sonagrams and therefore maintain it as a species distinct from *Otus rutilus*.

Morphology

Despite some differences between the two individuals, there is no doubt whatsoever that our bird belongs to the same species as the holotype. In the hand, the Grand Comoro Scops Owl gives a smallish impression with its very loose, fluffy plumage (Figure 7). The talons are weak and it is very doubtful that this owl is capable of taking vertebrate prey.

The bird's appearance and behaviour in the field is, like its voice, distinctive. The bird flies slowly with undeliberate, shallow wing-flutterings. When perched, it holds its wings rather loosely drooped along the body, giving a long-winged, short-tailed impression.

In *Otus bakkamoena* and *O. balli* from the Indo-Malayan area, most individuals have brown eyes, but some have yellow (Marshall 1978), and since Benson mentioned "yellow" for the holotype, we can assume that similar variation occurs in *pauliani*. *O. pemaensis*, *O. insularis* and *O. rutilus*, other insular scops owls in the Malagasy area, invariably have yellow irises (Marshall 1978, Kemp

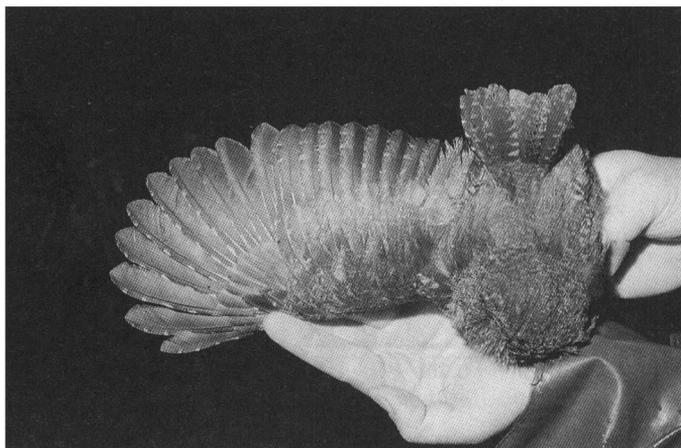


Figure 7. Dorsal view of the same bird as in Figure 1.

1988). In *O. hartlaubi*, a species from the Gulf of Guinea possibly with a similar insular history to *pauliani*, the iris is yellow (-orange) (de Naurois 1975, Kemp 1988).

In conclusion, on both acoustic and morphological evidence, the taxonomic position of *Otus pauliani* in the genus is still unclear, although its validity as a full species is definite.

Acknowledgements

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