What is *Pogoniulus makawai*?

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Qu'est-ce *Pogoniulus makawai*? Le Barbion à poitrine blanche *Pogoniulus makawai* a été décrit en 1965 sur la base d'un seul spécimen collecté dans la forêt à *Cryptosepalum* au nord-ouest de la Zambie. A cause de l'absence d'observations ultérieures, la validité de l'espèce a été mise en question. Les arguments suivants on été avancés: (1) il pourrait s'agir d'un individu aberrant du Barbion à croupion jaune *P. bilineatus*, (2) bien que la localité type appartienne à un milieu très particulier, elle n'apparaît pas comme un centre d'endémisme, (3) de nombreux observateurs ont cherché l'espèce en vain. Les auteurs présentent toutefois treize caractéristiques par lesquelles *P. makawai* diffère de *P. bilineatus*, un degré de différence qui, selon eux, ne peut être attribué à une aberration. Du reste, le structure du milieu n'est pas du tout uniforme et les efforts pour redécouvrir *P. makawai* à la localité type et dans ses environs, bien que considérables, ne peuvent être considérés comme exhaustifs. De vastes étendues de forêt à *Cryptosepalum*, un habitat dans lequel il est difficile de travailler, n'ont jamais été prospectées. Les auteurs estiment donc qu'il est prématuré de traiter *P. makawai* comme un synonyme. Des inventaires systématiques et complets sont nécessaires, s'étendant peut-être jusqu'aux régions limitrophes d'Angola ou en République Démocratique du Congo.

What is *Pogoniulus makawai*? The White-chested Tinkerbird *Pogoniulus makawai* was described in 1965 from a single specimen collected in *Cryptosepalum* forest in north-west Zambia. Lack of subsequent records has led to it being increasingly discounted as a valid species, because: (1) it could be an aberrant Yellow-rumped Tinkerbird *P. bilineatus*, (2) although *Cryptosepalum* forest is a very distinctive habitat, the type locality does not appear to be in a centre of endemism, and (3) many people have since searched for it without success. However, we find 13 separate characters by which it diverges from *P. bilineatus*, a degree of difference which we feel cannot be ascribed to aberration. Moreover, the habitat of the area is by no means uniform; and the efforts to rediscover *P. makawai* in and around its type locality, while considerable, cannot be regarded as exhaustive, particularly since large areas of *Cryptosepalum* forest, extremely difficult habitat in which to work, have never been visited. Assigning *P. makawai* to synonymy is, we feel, premature; systematic and comprehensive surveys, perhaps into adjacent Angola or DR Congo, are needed.

From the very moment of its naming, the White-chested Tinkerbird *Pogoniulus makawai* has been haunted by doubt over its taxonomic status. The paper in which Benson & Irwin (1965a) described the species—taken by their remarkable collector Jali Makawa, in whose honour it was named, in an area of *Cryptosepalum* forest north of 'Mayau' in north-west Zambia—was immediately followed by a comment (Goodwin 1965) which postulated the notion that it might, in fact, be an aberrant Yellow-rumped Tinkerbird *P. bilineatus*. Owing to the subsequent inability of anyone to confirm the existence of *P. makawai*—a comment about 'fresh material' in Fjeldså (2003) proving to have been unfounded (J. Fjeldså *in litt.* 2005)—this possibility has been entertained with increasing conviction by two pairs of authorities, Dowsett & Dowsett-Lemaire (1980, 1993) and Short & Horne (1985, 1988, 2001, 2002). As a result, the species was not recognised by Sibley & Monroe (1990), Dowsett & Forbes-Watson (1993), Aspinwall & Beel (1998) or Dickinson (2003). In the face of this substantial scepticism on the part of two highly authoritative world lists, one equally authoritative African list, and the *Handbook of the Birds of the World*, BirdLife International, having treated *makawai* as a threatened species (Collar & Stuart 1985, Collar & Andrew 1988, Collar *et al.* 1994), has since 2000 opted to regard it as Data Deficient (BirdLife International 2000)—meaning that its *taxonomic* status is unclear—although the 'species' was still

used to help define an Important Bird Area in Zambia (Leonard 2001, 2005).

Short & Horne (1988) retained it as a species (with considerable reluctance), as did Sinclair & Ryan (2003)—whose report that the voice of *makawai* is 'subtly different from Yellow-rumped Tinkerbird' is presumably based on the comment in Aspinwall & Beel (1998) that the voices of the two taxa 'may differ'—but the trend in general suggests that because of this taxonomic uncertainty *P. makawai* will steadily disappear as a target of ornithological interest and investigation, and hence of conservation activity. This is in spite of two rather strong declarations in favour of *makawai* as a good species, one by the late C. W. Benson in a personal communication to NJC in Collar & Stuart (1985: 355), in which its 'validity as a species has been most emphatically reasserted', and the other by G. R. Graves, also to NJC, reported in Collar & Rudyanto (2003: 107–108), in which 'following a preliminary (two-hour) inspection of the type, the White-chested Tinkerbird seems likely to prove a good species'. Neither of these judgements was published in a place where much notice would be taken of it—nor perhaps was the plea by Irwin (2003)—and 40 years after the species was named we feel the time has come to examine the evidence afresh, and to weigh more carefully the case for and against *makawai* as a taxonomic entity.

The case for

The case for has hardly been made since the first description. The only subsequent arguments in favour are the two personal judgements just quoted, neither of which comes with any detail to support the conviction. The first thing to be done, therefore, is simply to list out, as clearly as possible, the diagnostic features of *P. makawai* as they emerge in Benson & Irwin's (1965a) comparison with *P. bilineatus* (not all of which are explicitly indicated as distinguishing marks, but which our comparison of text and specimens suggests was their intention): (1) white supraorbital stripe lacking; (2) white line below the ear-coverts only commencing behind the gape, not running below the eye in a continuous band from over the bill; (3) yellow fringes to the secondaries and wing-coverts paler, possibly narrower; (4) chin black, flecked centrally with white (chin whitish in *bilineatus*); (5) throat and upper breast creamy white, fading to pale yellow on the lower chest (throat to belly pale whitish grey in *bilineatus*, belly with a slight greenish tinge); (6) lower breast to belly lacking greenish tinge; (7) central belly black (no such mark in *bilineatus*); (8) entire underparts below breast with pale blackish 'shadow-barring' (absent in *bilineatus*); (9) underside of the bend of wing black, not white; (10) tibial feathering more suffused black; (11) bases of feathers on mantle and underparts pale (dark in *bilineatus*); (12) bill heavier, more arched and less conical, with cutting edges of the upper mandible flared around the gape; (13) black bill whitish basally and from the nostrils to halfway along the cutting edges (all black in *bilineatus*); (14) rictal bristles at the level of greatest development found in any individuals of *bilineatus*; (15) legs and feet markedly paler; (16) toes and claws 'equally pallid' as the legs and feet; and (17) legs slightly longer and more robust.

From our own examination we would make the following comments and qualifications on these numbered characters: the wing fringes (3) are barely perceptibly paler but unquestionably narrower than in *bilineatus*; in contrast to the glossy, inky black of the rest of the plumage, the chin (4) is a matt greyish black; the central belly patch (7) is a rather irregular smudge; the shadow-barring (8) is actually throughout the underparts, even on the creamy-white throat, but so slight as to be virtually invisible on the specimen when held at arm's length; the gape-flange swelling (12) may not be greater than in some *bilineatus*, and as Goodwin (1965) pointed out, some allopatric *bilineatus* have bills that match *makawai* in size; the rictal bristles (14) are likewise barely different from those on *bilineatus*; the continuous coloration of the legs, feet, toes and claws (15, 16) form a single character; the legs are not longer than *bilineatus* and if they are more robust (17) this is too slight and unquantifiable a feature to allow. Thus we would say that the diagnosis of *makawai* rests on characters 1–11, 13 and 15 above, making 13 features in all.

There is one possible further feature in Benson & Irwin (1965a): the white streak below the ear-coverts is ambiguously described as 'joining with the pale under parts' but then 'from which it is separated by a black malar streak'. On balance, we interpret this to mean that the streak *is* continuous with the white neck, but the illustration accompanying the description clearly shows the opposite,

with both *bilineatus* and *makawai* having this lower facial stripe entirely enclosed by black. In partial contrast, the illustrations of the two taxa in Short & Horne (2001) and in Sinclair & Ryan (2003) show this streak meeting the pale underparts in *bilineatus* but being enclosed by black in *makawai*, as if this is a distinct character difference; and the illustrations in Short & Horne (2002), which omit *makawai*, again depict *bilineatus* with a streak continuous with the pale collar (although the position of the painted birds makes this very easy to miss). However, careful inspection of the type of *makawai* reveals that there is no essential difference between it and *bilineatus* in this regard, both taxa having a narrow line of black that in some positions appears to isolate the white cheek-stripe and in others is broken by it. Photographs in Short & Horne (2002: 159) and in Ginn *et al*. (1989: 398) show both conditions in *bilineatus*.

The case against

Of what, then, does the case against consist? As noted, there are three independent sources of doubt: (a) Goodwin (1965), (b) Dowsett & Dowsett-Lemaire (1980, 1993), and (c) Short & Horne (1985, 1988, 2001, 2002). In reality, however, Goodwin (1965) only very tentatively suggested that 'the possibility of its being an aberrant individual of *P. bilineatus* cannot be entirely excluded', and most of his commentary was weighted against this notion. He pointed out that *makawai* shows greater melanism on the head, underwing and central belly than *bilineatus*, and less melanism on the remaining belly area and breast, admitting that 'it would be most unusual, but not unprecedented, for an aberrant individual to have more melanin than normal in some areas and less elsewhere'. He also pointed out that the greater curvature of the culmen and width of the bill of *makawai* are 'not in themselves of great significance', given that some forms of *bilineatus* have bills that approach and even match it in these characters; but he acknowledged that specimens of *bilineatus* (race *mfumbiri*) from near the type locality of *makawai* all have more slender, conical bills, suggesting some ecological separation, and again admitted that 'it would certainly be surprising if an aberrantly coloured individual happened also to have a slightly aberrant bill'. He then observed that *makawai* and *bilineatus* differ more strikingly in colour pattern than do *bilineatus* and Yellow-throated Tinkerbird *P. subsulphureus*, and pointed to the sharp difference in facial pattern of *makawai* and *bilineatus* when viewed front-on (a feature illustrated by Benson & Irwin), remarking that 'this difference could function as an isolating mechanism as there is abundant circumstantial evidence that the coloration of the head and upper breast of birds is often of primary significance in this respect'. Goodwin thus concluded 'that *makawai* is best considered as a new species, at least provisionally', and both Mayr (1971) and Snow (1978) followed this judgement, the former adding a plea for comparative studies of the calls, the latter mistakenly referring to Yellow-throated Tinkerbird *P. subsulphureus* instead of Yellow-fronted Tinkerbird *P. chrysoconus* as the third *Pogoniulus* in the area.

Dowsett & Dowsett-Lemaire (1980), in their first of two brief comments on *makawai*, took much the same line as Goodwin, but, writing 15 years later, pointed out that 'several visits to the type locality have failed to produce any further evidence, and in particular no unusual *Pogoniulus* vocalisations have been heard.' After a further 13 years their patience had worn thinner: 'investigations by a number of observers in north-western Zambia have failed to rediscover it… As anticipated by Dowsett & Dowsett-Lemaire (1980), we now believe it is no longer justified to recognise *makawai* as other than an aberrant *P. bilineatus* (Goodwin 1965)' (Dowsett & Dowsett-Lemaire 1993).

Short & Horne were always unconvinced. 'Despite intensive searches in western Zambia', they wrote, *makawai* 'remains known from but one specimen'; and because that specimen 'comes from no distinctive habitat or area of endemism, and rather closely resembles *P. bilineatus*, we are inclined to regard it as a very aberrant specimen of *bilineatus*' (Short & Horne 1985). Three years later, in *The Birds of Africa* (Short & Horne 1988) they allowed the species an entry but were profoundly sceptical:

> Status highly uncertain. Only 1 bird found, despite repeated searches… No 'odd' tinkerbird calls have been heard or unusual individuals seen… at type locality… *P. makawai* could prove to be an aberrant Yellow-rumped Tinkerbird, if its distinctive features are simple melanism.

By the start of this century, in their book on barbets, their view had hardened further: they could now point to the failure of 'three decades of searching by various ornithologists and bird-watchers', and indeed they did so twice, mentioning again the 'numerous searches' in the 'relatively non-distinctive habitat in which it was found' (Short & Horne 2001). Thus *makawai* is 'almost certainly a very aberrant individual' of *bilineatus*, although in the caption to their illustration of it they described it as a 'morph' (which is a very different biological category). Even so, they gave it a separate account 'because there seems to be no simple genetic explanation for all of its distinct features, e.g. melanism would account for some features, but not the lack of yellow and grey below, nor the heavy bill found in this male' (Short & Horne 2001). On the other hand, only a year later they remarked that *makawai* 'is now generally accepted as representing an odd variant of the Yellow-rumped Tinkerbird' (Short & Horne 2002: 143), with a similar comment under the latter species (Short & Horne 2002: 184).

The case against *makawai* therefore depends on the following points: (1) that it could be an aberrant *bilineatus*; (2) that the type specimen was obtained in an area believed to be undifferentiated by habitat or by endemism; and (3) that searches have failed to find it or even to detect any unknown *Pogoniulus* calls, with emphasis variably placed on the number of searches—'intensive', 'repeated', etc.—and simply the length of time—'three decades'—without renewed contact (Snow [1978] stated, for example: 'All attempts to obtain further specimens have so far proved unavailing'). These three objections need to be examined in turn.

The case against examined

1. *Could it be an aberrant Yellow-rumped Tinkerbird?*—The possibility of *makawai* being an aberrant *bilineatus* seems to us to have been fairly well undermined by Goodwin (1965) even as he raised it. He admitted that aberrant specimens that are both more *and* less melanistic than typical birds are highly unusual; and he further admitted that for any such specimen also to be aberrant in bill morphology would compound the degree of anomaly. Apart from this, we regard the evidence in Benson & Irwin's description—amounting in our judgement to 13 points of divergence—as simply *too much* to be ascribed to aberration. In particular, the redistribution of colour pattern—the black chin, the missing white supraorbital and supraloral bands (but the retained white cheek-stripe), the black belly patch, the part-pale bill and all-pale legs, the whitish dorsal underfeathering—is entirely uncharacteristic of aberrant individuals (although it is of course somewhat problematic to speak of what is typical of atypicality); certainly nothing in the entry 'Plumage, abnormal' in Campbell & Lack (1985) indicates otherwise, and we can think of no comparable case where so distinctive a specimen has been disallowed taxonomic validity.

Moreover, since Goodwin's time of writing very considerable advances have been made in understanding the genetic basis of black plumage in birds (reviewed by Mundy 2005). In the light of these, the probability of a melanin-related mutation accounting for this divergence deserves reconsideration. Across a wide range of taxa intraspecific polymorphisms in melanin-based colours have repeatedly been found to be associated with variation in a single gene (MC1R), but these typically involve a consistent increase in the extent of melanised feathers, rather than the simultaneous darkening and lightening seen in *P. makawai* (as anticipated by Goodwin). Moreover, such mutations are typically not associated with simultaneous side-effects on other traits, such as other components of morphology. Both of these points would tend to imply that the morphological differences between *makawai* and *bilineatus* are highly unlikely to have arisen as a consequence of a one-off mutation generating a single aberrant individual.

2. *Is the type locality undifferentiated by habitat or endemism?*—That the type of *makawai* comes from an area of low endemism and from a widespread habitat is not in serious dispute. Nevertheless, Benson & Irwin (1965a) pointed out that *Cryptosepalum* forest in this area could be seen as 'an evolutionary centre' given the presence there of 'such distinctive forms' as the red-necked race of Crested Guineafowl *Guttera edouardi kathleenae* (although this is synonymised in Crowe *et al*. 1986), plus Margaret's Batis *Batis margaritae kathleenae* and, 'in this part of its range', Gorgeous Bush-shrike *Telephorus viridis*. Benson & Irwin (1965b) and Benson *et al*. (1971) expanded on

this, indicating that the first and third of these taxa are known in Zambia only from this area of *Cryptosepalum*, which Irwin (2003) stressed 'can hardly be described as "non-distinctive"'. T. B. Oatley (*in litt*. 2005) agrees: 'One needs to look at the region, not just the *Cryptosepalum* forest, and *Macronyx grimwoodi* [Grimwood's Longclaw] (and, if I remember rightly, some butterflies) can then be added to the list of local endemics.' Benson & Irwin (1965b) offered the following scenario:

> *Pogoniulus makawai* is according to present knowledge endemic to *Cryptosepalum*… The ancestral population may have been widespread and plentiful in a former more extensive area of *Cryptosepalum*. Thereafter, as recently as 12,000 years ago, according to Moreau, a drier period ensued, during which this population may have become isolated, and speciated into *makawai*. Subsequently, under a moister, modern regime, *bilineatus* has perhaps reinvaded the *Cryptosepalum*. It may be in active and successful competition with *makawai*, which may before long become extinct.

Whether or not it is plausible that *makawai* speciated as recently as 12,000 years ago, this explanation for its rarity makes considerable sense. It is not necessarily the case, however, that there is direct competition between *makawai* on the one side and *bilineatus* and, indeed, the syntopic Yellow-fronted Tinkerbird *P. chrysoconus* on the other; rather, one might expect *makawai* with its more voluminous bill to occupy a feeding niche that allows its co-existence with these closely related species. Benson *et al*. (1971) made this point, and F. Dowsett-Lemaire (*in litt*. 2005) has pointed out that some species of *Pogoniulus*—including indeed *chrysoconus*—are specialists on mistletoe berries (Loranthaceae and Viscaceae) (see Dowsett-Lemaire 1988), so some kind of specialism in *makawai* would seem likely to explain the co-occurrence of three congeners.

3. *Has it been exhaustively searched for?*—Finally, there is the number of times that the type locality and nearby areas of *Cryptosepalum* have been visited with no evidence of *makawai* being found. From some of the language used by those considering the issue (reference to 'intensive' surveys and 'three decades' of searching), it is easy to assume that very considerable endeavours have gone into the quest for *makawai*. But what is the truth of this? Benson & Irwin (1965b) were the first to report on a new search. The specimen was collected on 6 September 1964 during a four-day prospection of the area (3–7 September), and the area was revisited for five days, 8–12 November 1964, when 'every effort was made to find the species again, but completely without success'. The following year, in May 1965, Oatley (1969) spent three weeks in north-west Zambia, explicitly in order to document the avifauna better and to discover more about *makawai*; he camped near 'Mayau' on 2–8 May, at a time when tinkerbirds were breeding, but heard no unusual calls, observing that 'possibly the single known specimen was a vagrant from some other locality, perhaps farther west in eastern Angola' (and speculating that the heavier bill might be less important in feeding ecology than in hewing nesting cavities in harder timber than that encountered by *bilineatus*). Fifteen years after Oatley's endeavour, Dowsett & Dowsett-Lemaire (1980) reported that 'several visits' to the type locality had drawn blank. The most important of these was by R. J. Dowsett with J. Makawa himself in 1973, when they spent 9–20 August at Mayau and collected ten *bilineatus* (Dowsett 1973, R. J. Dowsett *in litt*. 2005). The only other publication on *Cryptosepalum* birds in north-west Zambia, by Bowen (1980), was a study which did not involve 'Mayau', although one of the two sites surveyed was deemed very like 'Mayau', since it produced a bird list very similar to that in Benson & Irwin (1965b). Bowen, like Oatley, was constantly alert for novel tinkerbird calls but heard none, and speculated 'that *makawai* does not extend as far north as the areas I covered'. Altogether, therefore, the evidence appears to be that relatively little work has been done in the area of the kind that would be appropriate to a serious endeavour to rediscover the species.

Thus A. J. Scott, director of the Wildlife Conservation Society of Zambia, wrote to J. H. Fanshawe at BirdLife International in 1989 to report that 'no-one has made any attempt to find [*P. makawai*] since Bob Dowsett… in the early 1970s'. From 1989 things evidently changed somewhat. R. J. Dowsett (*in litt*. 2005) himself has very helpfully enumerated the observers who have been to the type locality, and he suggests that,

in all, more than two man-months have been spent there by competent field workers:

> Dylan Aspinwall (several times); Carl Beel (incl. 1–3 Sep 1995); Clide Carter (several visits), with Nigel Hunter (5–6 Oct. 1989); Pete Leonard (incl. Aug. 1996); Jorg Mellenthin (Feb. & Aug. 2000, also 2002); Bob Payne; Bob Stjernstedt (incl. 14 Apr. 1974); Paul van Daele (incl. Sep. 1998). Details of other visits are unknown, but everyone who has lived in Zambia for any length of time has visited the area (and some visiting birders), hoping to become famous. I have also passed by Mayau briefly on other occasions. In addition, Françoise [Dowsett-Lemaire] and I spent 12 days camped a bit further south in the neighbouring West Lunga National Park in Nov. 1978 (Dowsett & Dowsett-Lemaire 1978), with no sign of any unusual tinkerbird.

C. Beel (*in litt*. 2002) informed us that 'Clide Carter, Dylan Aspinwall and Bob Stjernstedt tried' to find it at some stage, although the sadly late Aspinwall (*in litt*. 1981 and 1994) did not mention such attempts and indeed in 1994 reported that he had no immediate plans to investigate the species; by that stage he was inclining to the view that *makawai* was most probably an aberrant *bilineatus*, which is, as already noted, how it was treated in Aspinwall & Beel (1998). Meanwhile Beel himself believed that only he, P. M. Leonard and P. van Daele had visited the area in recent years for any time, although Ryan & Cassidy (2003) paid a brief visit, and bird tours stop there to find Gorgeous Bush-shrike. Beel (*in litt*.) continued:

> Nearly all of us have spent time along the main Mwinilunga–Kabompo road. It is not easy to enter the forest away from this road. There is (was?) a narrow track to a game camp on the edge of West Lunga National Park which starts at Mayau. I tried to follow it, lost my car antenna and nearly my mirrors, then turned back. This track crosses a vast block of *Cryptosepalum* where no-one has tried to look. *Cryptosepalum* itself is very hard to get around in; it is very dense and tangled. This makes it very difficult to get a good look at a tinkerbird even a short distance into the forest. I think none of us spent more than a day, maybe two in the area. Very few tinkerbirds can be seen. Those seen have always been Golden-rumped and Yellow-fronted. No-one has been trying to call up each and every tinkerbird or concentrate fully on them. It is definitely true that no hard effort was made to prove or disprove the existence of *P. makawai*. Nearly all efforts were near the type locality. It might just be possible that the bird is not in prime habitat (anymore?) at that spot, especially as more people have moved into the area and cut lots of trees and burnt undergrowth. There are large tracts of *Cryptosepalum* remaining, but difficult of access and unvisited.

Slightly more recently, P. M. Leonard (*in litt*. 2004) has commented as follows:

> Very few serious expeditions have taken place. Perhaps Terry Oatley's in the 60s was the most serious, but I know of very few who have stayed more than a couple of nights before being driven away by sweat-bees and truly impenetrable jungle. I don't think the searching has been thorough at all. Everybody tags it onto a Mwinilunga trip as a token gesture, but it needs a month of hardcore canopy scanning.

This testimony is important: it suggests that a relatively rare bird of the canopy could easily go undetected in such dense and unwelcoming habitat (Beel stressed the need to provide plenty of water on a visit, and to prepare for the sweat-bees). If in fact there is some subtle habitat selection by *makawai* within the *Cryptosepalum*—for example, perhaps in taller growth along watercourses—then the lack of records since 1964 might be all the more understandable.

T. B. Oatley (*in litt.* 2005) is surprised at Beel and Leonard's comments about the impenetrability of the habitat, and offers the following reflexions:

> In 1965, the mavunda was not 'very dense and tangled' or 'hard to get around in' and it certainly was not 'truly impenetrable jungle'. In fact, once one got through the dense edge-effect road fringe, one could walk around over a fairly open forest floor with scattered thickets of undergrowth [R. J. Dowsett *in litt*. 2005 reports similar conditions in 1973]. It sounds to me as though there has been heavy exploitation of the taller timber (resulting in dense secondary growth) in the area, which lies distant from district administrative centres and is probably seldom

> policed by forestry officers. I note that Beel explicitly refers to lots of tree cutting… Thinking over the possibilities, we concentrated most of our searching in the *Cryptosepalum* forest patches, assuming that *makawai* was a forest canopy bird. But it need not have been. The area where it was collected was a mosaic of miombo woodland and mavunda forest, and bird parties from the woodland regularly entered the canopies of the forest patches that were in their path. Another point that arises is that September, when Jali collected the bird, is the early spring month when birds (especially floaters) move around a lot looking for mates or vacancies in the breeding population. Sept/Oct is also the time when many altitudinal and other Afrotropical migrants are on the move, the time when one can find odd birds briefly sojourning in atypical habitats!

To this M. P. S. Irwin (*in litt*. 2005) adds some further thoughts:

> With long experience of collecting in the field, it is extremely difficult to say that something is not there or has been missed. Move camp a mile or two into a slightly different habitat and there will be a complete change in the species one is likely to collect. All collecting [at Mayau] was done back from the river of that name where the forest was densest. But what about somewhere miles away? And look at the *Cryptosepalum* in Angola, which seems particularly dark and dense and quite unlike that at Mayau.

Conclusion

All of these factors lead us to the conclusion that there is no firm basis yet to discount *Pogoniulus makawai* as a good species. From this it must follow that either (a) it is very uncommon throughout *Cryptosepalum* forest in north-west Zambia, or (b) it is restricted to a relatively uncommon habitat within or adjacent to *Cryptosepalum* (if the type was taken *on* the Mayau River, then perhaps it was in or near riverine forest, not *Cryptosepalum*), or (c), as Oatley (1969) speculated, it is a straggler in this area from somewhat different habitats further west in near-adjacent Angola, a very little explored area, to which we would add the southern Democratic Republic of Congo, close to the border of which the type locality of *makawai* also lies. With respect to this last point, it is worth noting that the type locality is also right on the edge of the range of *bilineatus* in Central Africa (see the maps in Snow 1978, Short & Horne 1988), so it would seem plausible that *makawai* may prove to be a replacement of *bilineatus* in slightly different habitats in this area.

Certainly a concerted, systematic endeavour over several months is likely to be required either to relocate *makawai* within the general area of the type locality or to discount it properly from the local avifauna—but even then we could not countenance abandoning the species to synonymy without much more work further west or north. (A hybrid origin of *makawai* seems, incidentally, never to have been mooted, but if a hybrid shows a degree of character intermediacy and *bilineatus* is one parent—both of which are reasonable assumptions—no plausible candidate for the other parent presents itself; on this point the explanation at once founders. Another consideration is that the type specimen of *makawai* might yet possess sufficient DNA to test against *bilineatus*, which possibly would resolve the debate at a stroke—but we can do no more than encourage the exploration of this notion.)

Meanwhile, from our study of the type specimen in the Natural History Museum, Tring, UK, we can confirm 13 points of distinction from *P. bilineatus mfumbiri* indicated by Benson & Irwin (1965a) as enumerated above (some of them evident on the accompanying plates). The specimen (BMNH 1964.33.1) was an adult breeding male, testes 9.0 × 6.5 and 7 × 6 mm, wing 56 mm, tail 32 mm, tarsus 15 mm, culmen from base of skull 13 mm (Benson & Irwin 1965a); its skull was fully ossified (BMNH label data). It was collected 'high up' in the canopy of *Cryptosepalum* forest on Kalahari sand on 6 September 1964, four miles north of Mayau, Kabompo District, Zambia, at roughly 12°42'S 24°16'E (Benson & Irwin 1965a). The geographic component of this information was adjusted by Dowsett (1980):

> …because of the importance of discovering further specimens of this species it is desirable to publish as accurate a type-locality as possible. There is no locality named Mayau, but there is a river of that name (or Mayowo) and a plain. The specimen was collected about 6 km north of where the track from

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Figures 1–3. The type and only specimen of *Pogoniulus makawai* (BMNH 1964.33.1, above), an adult male, taken near the Mayau River in north-west Zambia, September 1964, with an adult male *P. bilineatus* (BMNH 1964.33.2, below) taken at the same site three days earlier. Characters of *makawai* visible here are: no white supraorbital stripe; white line below ear-coverts commencing only behind gape; yellow edges to secondaries and wing-coverts narrower; chin black, flecked centrally white; throat and upper chest creamy-white, fading to pale yellow on lower chest; lower chest to belly without greenish tinge; central belly black; whole underparts below chest with blackish 'shadow-barring'; tibial feathering more suffused black; black bill whitish basally and from nostrils to halfway along cutting edges; legs and feet markedly pale. Other characters include underside of bend of wing black, not white; bases of feathers on mantle and underparts light, not dark.

L'unique spécimen (le spécimen type) de *Pogoniulus makawai* (BMNH 1964.33.1, en haut), un mâle adulte, collecté près de la Mayau, Zambie du nord-ouest, septembre 1964, avec un mâle adulte *P. bilineatus* (BMNH 1964.33.2, en bas) collecté à la même localité trois jours auparavant. Les caractéristiques suivantes de *makawai* peuvent être notées: absence de trait supraorbital blanc; trait blanc sous la joue commençant seulement en arrière de la commissure; rémiges secondaires et couvertures alaires à lisérés jaunes plus étroits; menton noir, tacheté de blanc au centre; gorge et haut de la poitrine blanc-crème, devenant jaune pâle sur le bas de la poitrine; absence de teinte verdâtre sur le bas de la poitrine et le ventre; milieu du ventre noir; ventre barré de sombre; plumes du tibia teintées davantage de noir; bec noir, avec la base des mandibules blanchâtre depuis les commissures jusqu'à la moitié du bec; pattes nettement pâles. D'autres caractères comprennent: dessous de la courbe de l'aile noir, non pas blanc; base des plumes du manteau et des parties inférieures claire, pas sombre.

Credit for Figure 1: N. J. Collar (© Natural History Museum)

Credit for Figures 2–3: C. N. Spottiswoode (© Natural History Museum)

Mwinilunga to Kabompo crosses the Mayau; this is at an altitude of 1,150 m at about 12°42'S 24°15'E.

As precisely as possible, it is at this site that a systematic long-term search for the species should commence, whether the habitat has been modified or not, spreading out methodically into the surrounding areas, with a particular interest in sampling any slight modifications of *Cryptosepalum* forest caused by water or other features, taking special note of mistletoe taxa and abundance, and with an eye on the fact that at this locality *bilinea-*

tus is, apparently, at the southern edge of its range in the country.

There was a time when the failure of ornithologists to locate the Red-tailed Newtonia *Newtonia fanovanae* was attributed to the type and only specimen being an aberrant Red-tailed Vanga *Calicalicus madagascariensis* (see Collar & Stuart 1985). This view was, incidentally, strongly opposed by none other than C. W. Benson (Benson *et al*. 1977), but it took years before the increased ornithological interest in Madagascar from the early 1980s yielded a conclusive result—indeed, two virtually simultaneous results (Goodman & Schulenberg 1991; also Evans 1991). The rediscoveries of the Yellow-throated Serin *Serinus flavigula* and São Tomé Grosbeak *Neospiza concolor*, each after over 100 years of absence, were likewise fundamentally a matter of scrutinising the evidence (see Collar & Stuart 1985) and patiently covering the ground in the most likely places (Ash & Gullick 1990, Sergeant *et al*. 1992). These three rediscoveries all occurred after considerable prior ornithological activity in the vicinity of the respective type localities, and they speak to us with the same single message: it is still too soon to place *Pogoniulus makawai* in synonymy with *P. bilineatus*, and if we look long and hard enough we may yet be pleasantly surprised.

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