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NEW STUDIES FIND CHALLENGES AND OPPORTUNITIES FOR THE CONSERVATION OF PRINCE RUSPOLI'S TURACO *Tauraco ruspolii*

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The Ethiopian highlands are home to two endemic species of turaco, the widespread White-cheeked Turaco *Tauraco leucotis* and the globally-threatened Prince Ruspoli's Turaco *T. ruspolii*. The two turacos co-occur only in a small region of southern Ethiopia, where *T. leucotis* lives mainly in forest and *T. ruspolii* mainly in more open woodland vegetation. Natural hybrids of the two species were reported in 2002, which may pose a further threat to the survival of *T. ruspolii*. Field work was carried out between November 2007-June 2010 to evaluate the abundance and distribution of the turaco hybrids and the impact of human-caused habitat change on Prince Ruspoli's Turaco. We obtained 342 records of *T. leucotis*, 231 of *T. ruspolii* and nine of hybrids. Hybrids were observed in the overlap zone between the ranges of the two parent species, suggesting that they are widespread in the region. Turaco hybrids are difficult to recognise and can only be safely distinguished from pure individuals at close range, therefore, we believe that the abundance of hybrids may have been underestimated. All of the hybrids were observed in anthropized habitats (i.e. habitats transformed or adapted either to meet the needs of humans, or by human activity), suggesting that habitat change may be one of the causes of hybridization. Recorded frequencies of *T. ruspolii* were quite high, especially in the Sede and Lela Lemu area, where human presence was limited. Recorded rates of turacos decreased in more anthropized habitats.

Five species of birds are endemic to the highlands of southern Ethiopia, an area of only 37,000sq km (approx. 14,285sq miles) and, therefore, smaller than the size of Denmark. Besides being biologically rich, the region is also densely populated and the impact of the human population continues to grow: satellite images show a 40% reduction in natural habitats in the past 40 years. It is not surprising, therefore, that two of the endemic species of

birds - the Ethiopian Bush Crow *Zavattariornis stresemanni* and the Liben Lark *Heteromiraфра sidamoensis* - have been moved to higher categories of threat in the latest versions of the IUCN Red List. Little is known about another of the endemic birds of southern Ethiopia, the charismatic Prince Ruspoli's Turaco, a bird which figures prominently in many of the best known books on African birds, but which not many people have had the pleasure to see.

The range of Prince Ruspoli's Turaco extends over an area of only 7,000sq km (approx. 2,700sq miles), in which agriculture, towns, mines and roads are expanding at a fast pace. Add to this the menace of hybridization with the White-cheeked Turaco, which is much more widespread in the Ethiopian highlands and extends into Eritrea and Sudan and, moreover, also occurs on the edge of the range of Prince Ruspoli's Turaco. Observations of natural hybrids of the two species, first reported in 2002, have multiplied in recent years, raising concerns that the genetic integrity of this rare species may be at risk. Many authors have, in fact, proposed that environments disturbed by human activity are conducive to hybridization.

There are a number of questions which require answers, these include:

What is the current conservation status of Prince Ruspoli's Turaco?

What is the impact of habitat change on Prince Ruspoli's Turaco and which are the most important sites for its conservation?

Is habitat change a cause of the hybridization between the White-cheeked and Prince Ruspoli's Turaco?

How numerous are hybrid turacos compared with pure-bred individuals?

In an attempt to answer these questions, a survey was undertaken in the northern part of its range, where it co-occurs with the White-cheeked Turaco. This area is a broad ecotone (transitional) belt, which includes dense forests on its northern edge, shading towards progressively drier and more open woodland, with a mix of trees and open habitats. Finally, the habitat at the most southerly edge of the area becomes dry bushland.

Between November 2007-June 2010, two of the authors (Alazar Daka and Tolera Kumsa, who are students at the University of Addis Ababa), combed the study area and used recordings of the calls of the two species of turaco in an attempt to determine their exact numbers and distribution. A total of more than 900 sites were visited and 342 records were obtained of *T. leucotis*, 231 of *T. ruspolii* and nine of hybrids. The results show that the two turacos have different habitat preferences, with the White-cheeked being a largely forest species, while Prince Ruspoli's Turaco becomes progressively less abundant as the forest becomes more dense. Prince Ruspoli's Turaco tends to be more abundant where there is more abundant open woodland with

tall trees mixed with a matrix of shrubs and open spaces. Thus, it is at the edge of the forest that the two turacos come in contact with each other and have more chances to hybridize. The original division of habitat between the White-cheeked Turaco and Prince Ruspoli's Turaco can be seen very clearly around Sede and Lela Lemu, where some of the best preserved forests survive. This area remains relatively uninhabited by people and scarcely modified by agriculture. In Sede and Lela Lemu, the White-cheeked Turaco occurs only in forest, whereas Prince Ruspoli's Turaco is found at the edge and outside of the forest. No turaco hybrids were observed in Sede and Lela Lemu, though the coverage of these sites remains insufficient to conclude that absolutely no hybrids occur there.

To answer the question of what are the effects of habitat degradation on the hybridization of these two Ethiopian turacos, we focused our attention on the area between Shakiso and Kebre Mengist, the largest towns in the region. There, deforestation has been intense and natural forest has been eroded and thinned by the removal of large trees for their timber. Open habitats have been observed in what was formerly dense forest and, where forest persists, its structure is much more open and discontinuous due to illegal logging and the removal of firewood, as well as other forms of human disturbance. In partly deforested regions, the White-cheeked Turaco may remain in small patches of remnant forest, along rivers and in plantations of exotic trees such as *Eucalyptus* spp. and *Cupressus lusitanica*, which have greatly expanded in the area over the past 20 years. At the same time, at partly deforested sites, Prince Ruspoli's Turaco may be able to move into forests which have been made more open and discontinuous by the selective felling of trees. Therefore, in landscapes modified by human activity, the two species may come in contact with each other far more frequently and the chances of hybridization may be increased. Our results support this hypothesis, as observations in Shakiso and Kebre Mengist suggest that the distribution of the two species overlaps far more frequently than it does in Sede and Lela Lemu. The division of habitat in Shakiso and Kebre Mengist is much less clearly defined than it is in Sede and Lela Lemu and, indeed, the area of contact between the two turacos may be much larger in Shakiso and Kebre Mengist. As suspected, turaco hybrids were observed in this area on several occasions. Therefore, our study provides initial support to the hypothesis that habitat degradation can trigger hybridization between species. Our data, however, remain limited, with observations of only nine turaco hybrids having been recorded and, therefore, the sample size on which we base our hypothesis is insufficient to draw definitive conclusions.

On the question of how abundant hybrid turacos are in the highlands of southern Ethiopia, raw numbers suggest that hybrids make up only 1.6%

of the total number of observations recorded during field work. However, we fear that this relatively low figure may be an underestimate, as hybrid turacos are not easy to distinguish from pure-bred birds. Only birds of which a good view is obtained at close range can safely be identified as hybrids or pure-bred individuals. Moreover, we cannot exclude the possibility that the external appearance of some hybrids may be so similar to that of either one of the two parent species, that accurate identification in the field may, in some cases, be impossible. Genetic tests on laboratory samples may be the only means of establishing the true prevalence of turaco hybrids.

We do not know whether or not hybrid turacos are fertile and therefore capable of reproduction with either of their parent species. Neither do we know much about the behaviour of hybrid turacos. We know that hybrids usually occur in mixed flocks in which both pure Prince Ruspoli's and White-cheeked Turacos occur. However, a flock observed in July 2003 by Mike Pennington, a professional tour guide, was composed of five hybrids with no pure-bred individuals amongst them, which suggests that hybrid turacos can at times occur independent of the parent species. Further research is required to accurately evaluate the impact of hybridization on Prince Ruspoli's Turaco. Current results suggest that as human-caused habitat degradation escalates, reports of hybrid turacos may become increasingly more widespread.

Fortunately, Prince Ruspoli's Turaco remains abundant where appropriate habitat occurs. Although more accurate estimates of the population density will require further detailed analysis, it is reassuring to know that, where woodland makes up 50% or more of the habitat, the recorded frequency of Prince Ruspoli's Turaco is 0.3 or even higher (i.e. three or more observations for each 10 points sampled). This suggests that it is present in satisfactory numbers, especially when one considers that Prince Ruspoli's Turaco often goes unrecorded due to its shy and silent behaviour. However, the frequency of sightings decreases rapidly as the amount of agriculture increases, which shows - if there was any need - that increased human activity will certainly have a negative impact on the population of Prince Ruspoli's Turaco.

The results of our study also show the importance of the forests of Sede and Lela Lemu for the conservation of Prince Ruspoli's Turaco. The large expanses of woodland surrounding these forests are where Prince Ruspoli's Turaco was most frequently observed and, the forests themselves, are among the few remaining examples of largely intact montane forest in Ethiopia and are important not only for the White-cheeked Turaco, but probably also for many other birds, mammals and plants. These forests should be afforded greater protection to save them from rapidly growing human disturbance, which is bound to escalate, as large mining sites (gold has been found in the area) and new roads are being opened close to them.

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A FINAL REMINDER

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THE BEAUTIFUL BLUE-BELLIED ROLLER

Coracias cyanogaster

by Gary Bralsford

I have never tired of the beauty of the Blue-bellied Roller *Coracias cyanogaster*. I have had several pairs over the past six years or so, but now concentrate on keeping just two pairs. I have a 2008-bred pair and a 2009-bred pair. Both pairs were bred by my good friend Bob Jewiss in Kent and are unrelated to one another and this year (2011), I succeeded in breeding this species for the first time. Two young were reared, which have proved to be a male and a female. Only one brood was raised, which is unusual as they usually have two clutches.

This species was probably first brought to the UK from The Gambia by Dr Emilius Hopkinson in 1925 and a colour plate of it from a painting by Roland Green, illustrating an article about it by David Seth-Smith, was the frontispiece in the magazine in February 1927.

The Blue-bellied Roller measures about 28cm-30cm (approx. 11in-12in) in length, plus an additional 6cm (approx. 2¼in) which is accounted for by the tail streamers. The entire head, neck, breast and upper mantle are pale buffy or chalky white and the belly and under tail-coverts are dark ultramarine blue, as are the wings and rump. There is a patch of light blue on the wings and the tail is also shades of light blue. The back is brownish-black. When it flies the wings have a pale blue bar or band running along the base of the flight feathers. The sexes look alike. The juvenile is described later.

It is found in West Africa, in Senegal and The Gambia and in countries including Guinea, Mali, northern Sierra Leone, Ghana, Nigeria and northern Cameroon, eastwards to Chad, the Central African Republic, extreme southern Sudan and the north-east of the Democratic Republic of Congo (Zaire). It is most abundant in the west of its range and becomes increasingly scarce further east. This lovely roller is both a resident species and an intra-African migrant which undertakes a partial north-south migration linked to the rains. It is a resident in the south of its range and these birds are joined by birds from other areas in the dry season. They often migrate in small flocks, with movements occurring in the months of October-January.

Its preferred habitat seems to be savannah woodland dominated by *Isobertlinia* trees. It can, however, also be found in the rainforest zone, plantations and burnt clearings where it hunts insects fleeing the area, as well as being found in gallery forest (forest bordering rivers in otherwise open country) and dense woodland in which it searches for hollows in which to nest. It is also said to occur in damp areas with scattered *Borassus* palms.



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