

Article X.—THE PENNANT-WINGED NIGHTJAR OF AFRICA
AND ITS MIGRATION.¹

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With Map.

In general discussions on the migration of birds, those of the tropics are apt to receive little or no notice; yet ornithologists who have traveled in tropical Africa have sometimes remarked that certain strictly Ethiopian species are present in certain regions only at definite seasons; and similarly in South America — I am told by Mr. Geo. K. Cherrie — migratory movements, perhaps of slight importance, are to be noticed. In very few cases, in Africa at least, have the courses of these migrations been traced; for seldom is the observer able to remain long enough, or to travel widely enough, to complete such investigations.

Thus, during our stay in the northeastern section of the Congo Basin, we also ascertained that while the majority of the birds were resident, certain kinds would depart and reappear in successive years with almost the same regularity that characterizes migrants in more northerly climes. Yet only a part of these were species that came from Europe or Asia in anticipation of winter, others being forms known to occur only in tropical Africa, for whose movements it would be doubly difficult to assign reasons, inasmuch as the temperature varied but slightly from month to month, and rainfall was the main element in the change of seasons. Food might vary, but any danger from lack of it seemed out of the question.

Every year we observed a number of Palearctic birds, about fifty in all. Some of these remained with us throughout the period of northern winter, for example, the kestrel, harriers, common sandpiper, yellow wagtails, swallow, and sand martin. Others such as the white stork, marsh terns, and European bee-eater continued further south, so that we saw them only during migration. But of the truly African birds nearly forty seemed to perform more or less regular migrations, some of which were observed during three successive years. One of the most enlightening cases was that of the Pennant-winged Nightjar (*Cosmetornis vexillarius*), so that from our long experience with it, and from records already published from regions we could not visit (for such a peculiarly conspicuous bird must awaken the interest

¹ Scientific Results of the Congo Expedition. Ornithology, No. 3. (For No. 1 see this Bulletin, Vol. XXXIV, 1915, pp. 509-513; for No. 2 see Vol. XXXV, 1916, pp. 23-29.)

of any traveller) it has been possible to map its seasonal distribution with considerable accuracy.

Before proceeding further, let us first consider briefly the changes of season in equatorial Africa, and the general character of the vegetation. Stretching from Sierra Leone eastward along the northern shore of the Gulf of Guinea (though interrupted in Togo and Dahomey), then southward to Loango, and eastward across the Kamerun, Gabun, and central Congo basin

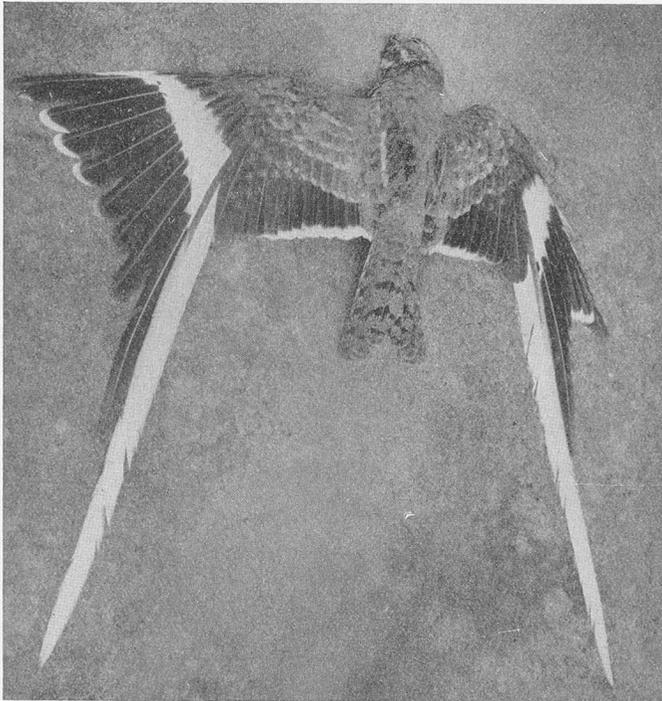


Fig. 1.—Pennant-winged Nightjar (*Cosmetornis vexillarius*).

to within a short distance of Lake Albert and the Ruwenzori Mountains, there is a great forest-belt. This is represented even in Uganda and British East Africa, though conditions there are altered through the greater elevation, by rather large forested areas, such as the Mpanga, Budonga, Mau, and Kenia forests.

The northern boundary of the West African forest lies, roughly speaking, between 4 and 9 degrees of north latitude; and its southern edge between 3 and 5 degrees of south latitude. Consequently it offers a formidable barrier to birds of the more open country, a definite equatorial belt, depend-

ing upon the more copious rains near the equator, which are apt to be distributed more or less throughout the year, whereas a little further away to the north and south there is one long dry season, and even at as low a latitude as 5 degrees this may last five or six months. These countries of prolonged drought, on the other hand, as well as much of the tableland of eastern Africa, are covered with grasslands, often varied with bushes, or scrub, or wooded along the streams. The grass, as a rule, dries out and is burned off by the natives during each dry season, a time of year which corresponds in a way to the winter of the temperate zones, and covers, to the north of the equatorial forest, the months from December to April at least, while to the southward it is reversed, in agreement with the southern winter.

Now, returning to the birds, we find that Caprimulgidæ are represented on the Ethiopian continent by four different genera, but the two monotypic genera *Macrodipteryx* and *Cosmetornis* are by far the most striking, especially because of the extraordinary modification of the inner primaries in the wings of adult males. With *Cosmetornis vexillarius* the second and third, particularly the former, are long and narrow, truly pennant-shaped, and attain a length of 67 centimeters, $2\frac{1}{2}$ times the total length of the bird, from the bill to the tip of the tail. Several of the other primaries are somewhat lengthened so that the whole outline of the wing is altered and squared, the longer feathers waving out behind in flight. Once seen on the wing it can never be forgotten; it immediately impressed me as a weird, strangely exaggerated, batlike creature.

Our first year in Africa was spent within the limits of the forest region, and this curious bird, first seen and collected near Lukolela and Bolengi on the middle Congo, July 18 and 20, 1909, was observed thereafter only at long intervals, at Medje (Ituri District) in March, 1910, and again in July, 1910. The reason for these irregular appearances, as we learned later, was the simple fact that the species was found in the forest region only during migration, spending the greater part of the year in the open country to the north, east, and south.

The following October we left the Ituri Forest, and came out into the more open upper Uele District; but even here this particular nightjar was not to be seen, although Judge Smets spoke of having seen such a bird at Niangara in July previous. It was not until March that our goatsucker reappeared, this time in numbers. But the adult males at this season showed no long plumes, not because they had moulted, but simply because the old feathers now projected little beyond the neighboring remiges, having been *broken off* short, as a result no doubt of wear and accidents amid the grass, aided by the brittleness of the shafts. Besides adults of both sexes, there were often individuals still in juvenal plumage.

From now on the species was common until August. The long plumes of the males were molted in May. Here Woosnam's¹ observations agree with mine, and I doubt the accuracy of the statement in Stark and Selater's 'Birds of South Africa' that they are shed in December or January. So long a time is required for the complete development of these feathers that the basal sheath is often still present in August.

Their habits are worthy of brief mention. As might be expected, they spend the day on the ground, but will fly up if disturbed, and then occasionally alight even in small trees. Like other members of the family, they begin to feed at dusk, and during the middle of the night often sit on open spots along roads and the like, taking wing again to feed just before dawn. But unlike many other nightjars, they are, we found, practically mute.

Of the fat, winged termites ("white ants") which fly in such great numbers in this region from April to August, they are very fond. Indeed, the real cause of the migration we are studying may very possibly be traced to their appetite for these particular insects, which tempt so many other African birds, and are esteemed even by the negroes. When the termites are swarming from their nests during the evening, the Pennant-winged Nightjars will sometimes gather in large flocks to catch them; as a result they acquire a heavy subcutaneous layer of fat, which, coupled with the tenderness of the skin and the weak attachment of the feathers, renders them exceedingly difficult to prepare for the collection.

In June they had taken to flying high in the air during the early evening, often in pairs as though mated. But there was no sign of their breeding; the reproductive organs were in a quiescent state, and neither eggs nor nestlings ever came to our notice. By the first of September the species had disappeared almost completely. The rains were by no means finished, but continued till late November. Where had they gone?

The following year all this was repeated. Prof. Reichenow's 'Vogel-fauna des Mittelafrikanischen Seengebietes,' a copy of which I owed to the kindness of Dr. Schubotz, gave their range as "all tropical Africa." During three seasons, 1911, 1912, and 1913, we observed them regularly in the Uele District from March to August. Where did they spend the rest of the year?

By 1914 I was back again in the Ituri forest, at Avakubi, where in late February and March the birds reappeared, adult males with broken plumes, and young in juvenal plumage; and once more in July and August, the males now with long streamers. It occurred to me therefore that they must breed in the open regions south of the forest, and then migrate northward across the forest to spend the months from March to July and August

¹ Transactions of the Zoological Society of London, 1910, p. 430.

in the Sudan and Uele, and probably Uganda, returning to their breeding grounds by recrossing the forest.

On my way home I had the good fortune to meet an old acquaintance, Mr. F. DeCock, of the Belgian Agricultural Service, whom I had first known at Faradje, in the Uele, in 1911, and who had spent many an evening with me in pursuit of these very birds. Since then he had lived for a year at Nyangwe, on the Lualaba River at the southern edge of the forest; and he was able to furnish the very information I needed. The Pennant-winged Nightjar arrived at Nyangwe towards September.

The conclusions reached at that time have since been thoroughly confirmed by an examination of the published records in so far as they are accompanied with dates, in Reichenow's 'Vögel Afrikas' and 'Vogelfauna des Mittelafrikanischen Seengebietes,' Stark and Sclater's 'Birds of South Africa,' 'The Ibis' and elsewhere.

According to this evidence, *Cosmetornis vexillarius* has never been found breeding north of the equator, but only at the following localities and dates:

Lufuku River, west of L. Tanganyika,	Sept. 8	Böhm.
Mashonaland,	Sept. 28	Ayres.
Zambezi River	Nov.	Alexander.

As to the other published records, all those from September to January inclusive come from the southern part of the range, that is to say, south of the forest; as follows:

Malanje, Angola,	Sept.	Mechow.
Karema, Lake Tanganyika,	Nov., Feb.	Böhm.
Masembe, near Mpala, Lake Tanganyika,	Sept.	"
Kauwire, German East Africa (?),	Sept.	"
Kaebach, near southern end of Lake Tanganyika,	Sept.	"
Iringa, German East Africa,	Nov.	Stierling.
Songea, " " "	Oct.	"
Pembera, " " "	Oct.	Fülleborn.
Bukama, Katanga, Belgian Congo,	Sept.	Bequaert.
Lufupa River, Katanga, Belgian Congo,	Oct.	Neave.
Kalungwizi River, east of Lake Moero,	Sept.	"
Ndola, N. W. Rhodesia,	Oct.	"
Lake Nyasa,	Sept., Oct.	Kirk.
Mt. Somba, Nyasaland,	Sept., Jan.	Whyte.
Victoria Falls,	Jan.	Oates.
Umfuli River, Mashonaland,	Oct.	Jameson.
Ganyani River, "	Sept.	"
Bulawayo, Rhodesia,	Nov.	Douglas.
Chirinda, Gazaland,	Jan.	Swynnerton.
Umswirezi River, Gazaland,	Nov.	"
Elephant's Vlei, German S. W. Africa,	Oct.	Andersson.

But this is just the season, as our observations show, when it is entirely absent from the northern part. Published records from north of the forest are few, and those with dates decidedly rare:

Djur, Bahr-el-Ghazal,	no date	Schweinfurth.
Bongo, " " "	" "	V. Heuglin.
Tingasi (near Niangara), Uele District,	July	Emin Pasha.
Semio, Uele District, Belgian Congo,	March	Bohndorff.
Loko, Nigeria,	July	Hartert.
Alhadjin Galibu, Adamaua,	May	Riggenbach.
River Benue, near Garua,	June	"
Kokumi, " "	July	"

These may be supplemented with our own data:

Faradje, Uele District, Belgian Congo,	March 13 to Aug. 19 (regularly). Exceptionally on Sept. 3 and 26.
Nzoro, " " " "	April to July.
Aba, " " " "	July.
Garamba, " " " "	May to July.
Niangara. " " " "	March to July.

The only other data in the literature, from any part of Africa, from March to July, are the following, and none of them is from South Africa:

Mubuku Valley, Mt. Ruwenzori,	March	Ruwenzori Exp.
Mokia, southeast of Mt. Ruwenzori,	May, June, July	" "
Toro, Uganda Protectorate,	March	Archer.
Ankole, " " "	July	Johnston.
Nguruman, German East Africa,	June	Fischer.
Kakoma, " " " "	April	Böhm.
Malanje, Angola,	May	Mechow.
Aruwimi River, Belgian Congo,	July	Jameson.

Here a few words of explanation will be necessary. The first four localities are in Uganda, directly east of the Congo forest, close to the equator, and the dates of occurrence show that the birds are found 'wintering' there regularly, as well as to the north of the forest. Nguruman and Kakoma are further east and south, though hardly within the breeding range. Malanje, however, is beyond the southern border of the forest, proving that some birds do stay throughout the year in that part of the breeding range nearest the 'winter' range. But this is not in the least surprising.

The example reported from the Aruwimi, July, is of course an early migrant crossing the forest on its way south. The only other printed records, with dates, from the forest area that I have found are those of G. L. Bates (*Ibis*, 1907, p. 432; and 1909, p. 26); River Ja, Kamerun, March 5,

10, 16. He states expressly that it is not a resident; and it will be noted that these dates of migration agree perfectly with ours, which follow:

Lukolela, on the middle Congo,	July 18.
Bolengi, " " " "	July 20.
Avakubi, Ituri District, Belgian Congo,	Feb. 24, March 12, 20;
	July 23, Aug. 10, 16.
Medje, " " " "	March 6, 23; July 29.

In order to render these data more intelligible, they have been indicated on the accompanying map. With the exception of the forest region, all places of occurrence from the months of September to January, inclusive (*i. e.*, the breeding season), have been marked with a circle; all those from March to July inclusive with a cross. All the records for the months of August and February have of necessity been omitted, for at these periods of migration the birds are distributed more or less throughout their whole range. Within the forest area, however, all the records have been included, those for February and March, on the northward migration, being represented by a \uparrow , those observed during the southward migration in July and August by a \downarrow .

The records which must, for the reasons stated above, be omitted from the map are as follows:

February.

Mt. Ruwenzori,	Archer.
Kangao's, Toro, Uganda,	"
Karema, eastern shore of L. Tanganyika,	Böhm.

August.

Karagwe, west of Lake Victoria,	v. Trotha.
Burumbu, southern Uganda,	Doggett.
Kissenji, Lake Kivu,	v. Stegmann.
Mpala, western shore of L. Tanganyika,	Böhm.
Malanje, Angola,	Mechow.
Milanji Highlands, Nyasaland,	Whyte.
Mashonaland.	Jameson.

Two exceptional records. Faradje, Uele District, Sept. Chapin.

In conclusion then, we may state that this strictly tropical nightjar, *Cosmetornis vexillarius*, migrates back and forth across the equator twice a year. In September, October, and November it breeds from Angola and Lake Tanganyika to Damaraland and the Transvaal; and in February migrates northward to Uganda and the grass-country of the Uele, the Sudan, and Nigeria. The records show that in East Africa the line dividing the breeding and non-breeding parts of the range is apparently from 3 to 5 degrees south latitude, and that a few birds remain at all seasons at the northern

edge of the breeding range; the majority, however, migrate further northward, even crossing the great West African forest to seek the open country they prefer, and thus they enjoy the best seasons for winged termites in both sections.

Surely a question has already suggested itself to the reader: Are there other cases of such migration in Africa? No doubt there are. On the other hand, however, some migrations seem to be mere extensions of range at certain seasons. Taking for example the related goatsucker, *Macrodipteryx macrodipterus*, the male of which has a long racquet-tipped feather in each wing, we find that it ranges from Senegal to Abyssinia, north of the forest, only reaching the equator in Uganda. In the Uele District we noticed that it appeared regularly about December 1, at the beginning of the dry season, but before the burning of the grass. It would lay its eggs, rear its young, and then, at the commencement of the rainy season — early April — disappear again, doubtless withdrawing to the northward. Here, too, it may be noticed that the breeding ranges of *Macrodipteryx* and *Cosmetornis* are more or less complementary; the one north, the other south of the equator.