

The Grey-necked Picathartes *Picathartes oreas* and Ibadan Malimbe *Malimbus ibadanensis* in Nigeria

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Summary

The Grey-necked Picathartes *Picathartes oreas* was found in various forested areas of south-eastern Nigeria in February 1987, an event followed in September–October that year by the discovery of 91 breeding sites, reflecting a total population in the order of 500–1,000 birds. Since then a further three breeding sites have been added. Forest destruction was a major threat to this population, but killing of birds was also a problem. Conservation education, the guarding of some sites, and the development of a national park in the area, were recommended protective measures, and now good progress is being made in their implementation. More extensive surveys are needed. The Ibadan Malimbe *Malimbus ibadanensis*, endemic to south-west Nigeria, had not been seen since 1980; in October–November 1987 a survey produced observations of at least three in secondary woodland at a research farm, and subsequently the species was found nearby. A more concerted survey to clarify the species's status and ecology is needed, followed by protective recommendations and appropriate remedial action.

Introduction

The Grey-necked Picathartes *Picathartes oreas* and Ibadan Malimbe *Malimbus ibadanensis*, two threatened bird species (Collar and Stuart 1985), are of considerable importance in Nigerian conservation priorities. The Grey-necked Picathartes was believed endemic to the montane forests of Cameroon and Gabon until its discovery on Bioko, Equatorial Guinea, in 1986 (Butynski and Koster 1989) and in the forests of south-east Nigeria in 1987a,b, 1990; following the discovery of a specimen in the Estación Biológica de Doñana (female, ovaries 8.9×5 mm) from "Ngong, Evihayong", collected 24 May 1986, the species is now confirmed for mainland Equatorial Guinea also (N. J. Collar *in litt.* 1991). The Ibadan Malimbe is a little-known species endemic to a small region of south-west Nigeria, where when last recorded it appeared to be in considerable danger of extinction from habitat loss (Collar and Stuart 1985).

The International Council for Bird Preservation (ICBP) and the Nigerian Conservation Foundation (NCF) developed a plan for a survey of key forest sites that included those from which these two species were known (the others were chiefly concerned with primates). From 18 September to 9 November 1987 I conducted the ornithological survey of these sites in Nigeria to provide a rapid assessment of their conservation status and to provide specific recommendations for the protection and management of the important species encountered. The following material derives from Ash (1987a,b).

Grey-necked Picathartes

Background and methods

Following the discovery in February 1987 of evidence of *Picathartes oreas* breeding in south-eastern Nigeria (Ash 1987a), it was judged desirable to obtain further information on its abundance and distribution. Breeding was likely to be concentrated during the rains, a period when both travel and fieldwork would be difficult; nevertheless, in order to obtain the urgent evidence needed to support attempts already being made to preserve a part of the diminishing rainforests in which the species lived, it was decided to revisit the area in September–October 1987, i.e. the middle of the rains (Ash 1987b). In addition, further general and ecological information was required also on this bird (Collar and Stuart 1985). A further brief visit in 1988 produced more records.

Local hunters were widely used as sources of information. Initially they were asked if they knew about any large rocks or stones in the forests, and in the Bashu and Oban areas this immediately led to the discovery of Grey-necked Picathartes. Interestingly, the hunters in these areas were hardly aware of the birds and did not know their nests. Elsewhere most people, especially the hunters, were familiar with them, and also knew their nests well and could guide me immediately to breeding sites. The Oban and Bashu sites are within 40 km of known sites in Cameroon at Korup and Mamfe respectively (Collar and Stuart 1985, 1988), so that their occurrence in Nigeria was not unexpected if suitable habitat was available. Recently an earlier report of Picathartes in Nigeria (Hall 1981) has been found, overlooked by all other writers on this species, in which the Oban–Obudu area is referred to as “of considerable zoological interest also and reported as a locality for such animals as the Red-headed Rockfowl (*Picathartes oreas*), and more significantly, the lowland gorilla (*Gorilla gorilla gorilla*) and this should provide ample justification for appropriate conservation action”; unfortunately, no further details are given.

The following local names were found for Grey-necked Picathartes, indicating that the bird is well known: “katekwe keka” (Ashishie language), “karwe aka” (Kanyang), “kigwen ukor” (Bette), “kikpelokoko” (Bette), “ikwem rishia” (Busi). All can be translated as “the bird of the rocks”, except in the case of the Busi name, which means “fowl of the stream”. The name Picathartes was rapidly and readily adopted over a wide area during my visit.

Distribution

Between 24 September and 17 October 1987, 91 breeding sites (including the revisited three sites found earlier in the year) were plotted on maps, and there were a great many other localities where birds were sighted. The breeding sites are listed in Appendix 1, along with the date of plotting, number of nests in the colony, and the approximate distance and bearing of the site from observation points whose coordinates are given. Distances are particularly difficult to assess in steep hilly and dense primary forest, and bear no relationship to the time travelled to cover them. Local names are given for each site, but I have depended on local interpreters for their spelling as, except for the villages, they do not appear on any map, and the situation is complicated by the

existence of several local languages in the area covered (there were at least three in an area within 20 km of Kanyang). The local names are of value because the localities are familiar to the inhabitants of the area and can be relocated by referring to them. No reliable maps were available for the area between Ikom and Obudu, so that it was impossible to give geographic coordinates for each nest-site. Even those for villages are unreliable owing to lack of agreement between various maps for the position of a site, the actual movement of villages to other sites, and sometimes the existence of several villages with the same name. Nevertheless the map (Figure 1) provides a good impression of the distribution and density of breeding Grey-necked *Picathartes* in the area searched.

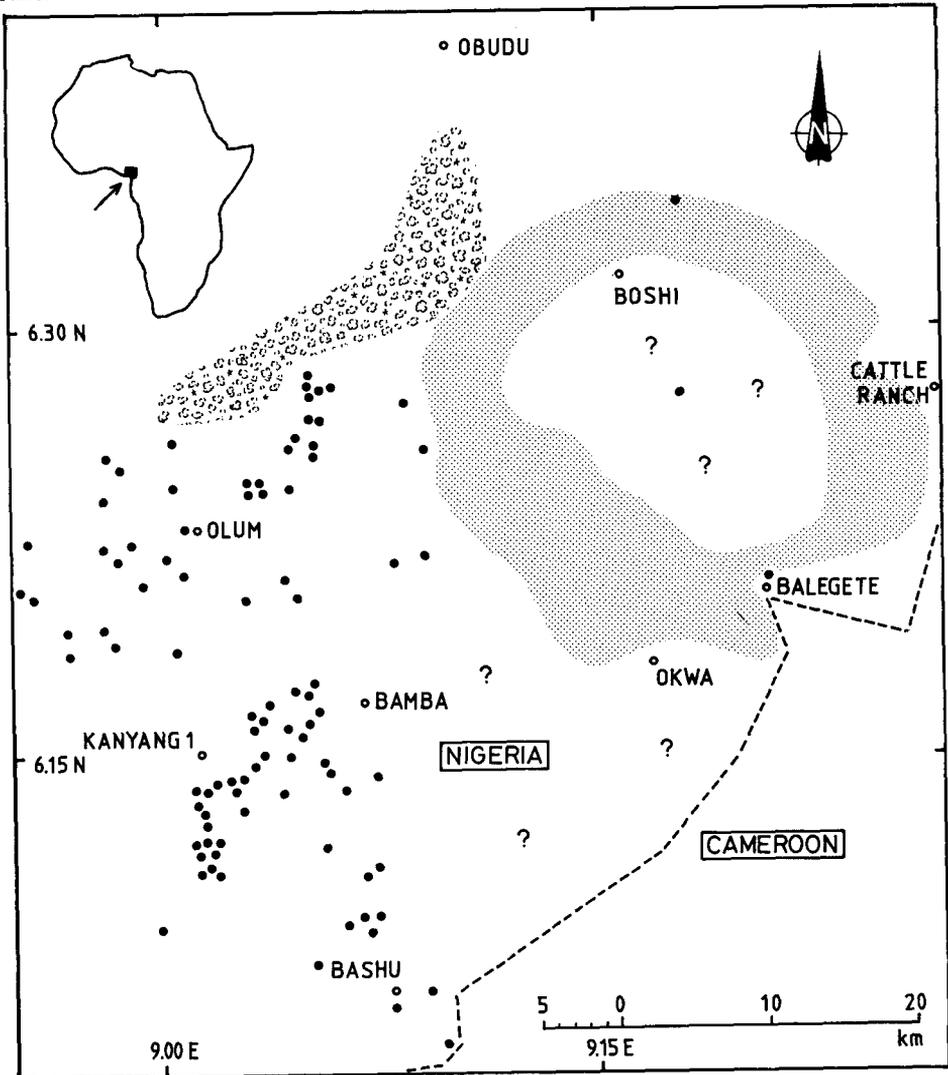


Figure 1. Distribution of 92 breeding colonies of *Picathartes oreas* in part of south-east Nigeria. (Note: two other colonies are situated outside this area to the south.) Irregular broken rings = former habitat recently destroyed by fire; stippling (grey) = presence reported, breeding status unknown; question marks = not surveyed for *Picathartes*.

The first two sites in the main survey in the Neghe area (Appendix 1) contained nests, but two further potential sites in their immediate vicinity showed no indication of occupancy by Grey-necked Picathartes: one at Etae Ojiburi (05°18'N 08°36'E) was not very suitable and was obviously much visited by people passing along a nearby forest track; the other at Etae Iboganantem (c.05°18'N 08°37'E) was an excellent site but obviously much visited by people. A large area of forest lying to the east of the Calabar–Ekang road and extending to the Cameroon border must contain more Grey-necked Picathartes, but time did not allow other reported possible sites to be examined. Forested hills to the north of Oban, Etae Aking (05°23'N 08°35'E) and Etae Itokem (05°22'N 08°32'E), were searched, but no suitable sites were found (but nevertheless might exist). Other areas here, including Oban West and the Ikpan block, which were visited in 1988, did not contain any suitable sites for Picathartes (Ash and Dowsett-Lemaire 1989). Other similar hills extend over a large area and need to be examined.

A return to Bashu, where the first Nigerian Grey-necked Picathartes nest was found (Ash 1987a) provided further proof of breeding and a total of seven occupation sites (Appendix 1, Figure 1). West and north of here towards Obudu a further 82 occupation sites were plotted in some 866 km² of forest. Breeding over a greater area was expected, especially as birds were seen commonly by hunters up to 20 km to the north and east, but this area has not been searched yet except for the brief visit in April 1988, when breeding was recorded from below the Obudu Plateau at Aliah, Gatang and Balagete (Ash *et al.* 1989).

Population

In this kind of brief survey it is impossible to attempt an accurate assessment of population size. It was difficult to obtain an idea of the numbers of birds present, particularly because of their highly secretive nature, even after prolonged observations at a small colony. Most nests were not easily accessible, and every effort was made to cause as little disturbance as possible at colonies, so that little data were obtained on the proportion of occupied nests. Probably in all cases there were fewer pairs of birds than nests present. It was not possible to decide whether part-nests were those being built, or older disintegrated nests. Also, it is not known how long a nest may remain *in situ*, nor whether fallen nests have collapsed or have been knocked down by predators (including man).

From a sample of 58 nests in 18 colonies, 19 (33%) contained either eggs or young. If this figure is applied to the 382 nests (the 100+ nests at Ashaeshuo are omitted) in Appendix 1, a figure of 126 pairs is reached. However, this figure is likely to be too low, as most nest-contents data were obtained by myself, who included all types of nests in colony counts, whereas data collected by hunters tended to include complete nests only and these would contain a larger proportion of occupied nests. (My data were not differentiated from those obtained by others.)

There were some suggestions that in some areas the birds may be more numerous than is indicated in Appendix 1. In the Buanchor area four hunters interviewed separately were each asked to estimate carefully the total number of nests present in the area over which they hunted. The most active of these,

covering the largest area, considered that he might visit each Grey-necked Picathartes site at least two or three times per annum. He judged that there were in excess of 500 nests. An old man who claimed no longer to travel far knew of 60 nests, whilst two others in the same hunting area knew of "at least 150" and "of 50 nests". Even the lowest of these numbers refers to a sizeable population. My own survey, far from being complete, produced 28 nests in 11 sites in this same area. I did not have time to visit a site reported at the end of the survey at Ashaeshuo (Elephant Rock), reported from two sources as being a very large group of rocks with "very many" and "at least 100" nests. On Mt Kanyang where interviews with local hunters indicated there were *c.* 150 nests, the actual total in the survey was 156 (which included one estimate of *c.* 20). A very active hunter, who travelled very widely, considered that in the Ashishie-Bamba-Kanyang triangle there were very many Grey-necked Picathartes scattered throughout an area where I estimated there were over 200 nests. Taking together all this rather imprecise information I believe that an estimated total population of 500 birds is a conservative figure, and that double this may not be unreasonable.

Habitat and nest-sites

All the birds and their nests seen were in rocky areas below closed-canopy undisturbed rainforest. A prerequisite for nesting seemed to be a rock-face at least 3 m high having an overhang sufficient to provide shelter from falling rain, and sufficient dry surface to permit a nest to be attached. Although at times nests were below rocks sloping at 20° to the horizontal, not one of the many seen were actually within caves. In a few places where they might have nested in caves they chose to build on exterior walls.

Table 1. Height of Grey-necked Picathartes nests above ground level

| | | | | | | | | | | | | | | |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Height (m) | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.2 | 4.5 | 4.8 | 5.1 |
| Number | 2 | 1 | 7 | 2 | 7 | 9 | 5 | 0 | 7 | 2 | 3 | 0 | 3 | 6 |

The height of nests above ground level varied greatly (Table 1), ranging from 1.2 to 5.2 m and averaging 3.1 m. One nest was stated by a hunter to be only 0.6 m above the ground. Nests were constructed of mud intermixed with rootlets and vegetable fibres, and set into a very hard stone-like structure. Frequently a network of the birds' footmarks covered the outside of the nest when there would also be a great many small holes formed by the birds' claws. This suggests that quite extensive areas of the nest may be wet mud at one time. One hunter who had spent several nights under a rock where birds were breeding claimed that they collected dry earth and moistened it with saliva, but this observation needs to be confirmed. Considerable variation in nest size was noted, and the cup for the eggs on top varied in diameter and depth, but was generally about 60 × 200 mm. The measurements of a typical nest were 400 mm long, 290 mm wide, and 140 mm thick, with a weight of *c.* 15 kg. To avoid prolonged visits to breeding colonies eggs were neither examined closely nor measured. They were variable in shape, colour and size. Coloration varied from

an almost white to a dark buff ground-colour, with various degrees of brown markings. A rotten egg removed from a nest with a large pullus measured 35.6×28.3 mm, and was of a dull brown ground-colour uniformly mottled all over with pale brown.

Breeding data

The breeding season in south-east Nigeria must extend at least from August to November. Eggs were present in 14 nests, 24 September–17 October, and pulli in 12 nests, 14 September and 24 September–10 October (the 14 September date refers to two nests on a farm from which young fledged on about this date). Of the 14 nests with eggs, three contained one, 10 contained two and one a clutch of three; of the 12 nests with young, seven contained one, and five contained two, but probably few if any broods fledge more than a single chick. Forty-five per cent of colonies were of one or two nests, and 49 per cent of 3–10 nests.

Behaviour

The species is exceptionally shy and elusive in areas where it is disturbed or persecuted. However, although where undisturbed it returns to its nests more readily and can be seen well, it remains shy. It is thus not at all surprising that the species has remained unknown for so long to Europeans in Nigeria, even in areas fairly well-worked ornithologically.

Collar and Stuart (1985) state that Grey-necked Picathartes roost in pairs on old nests, so that it is of interest that one of my hunter contacts reported similar behaviour in a colony under which he himself slept. However, another hunter showed me a hole at c.45 cm above ground level in which he had killed three birds roosting together.

Many birds must wander some distance away from their breeding areas. In the north and east of the area I investigated, parties of up to eight or nine birds in the forest at considerable distances (perhaps 25–30 km) from the nearest known breeding colonies are well known to hunters. Much more work is needed on this aspect of the birds' behaviour.

Threats

The two main threats, both of which are increasing, to the Grey-necked Picathartes in Nigeria are habitat destruction and hunting pressure. The former is undoubtedly the more serious factor, and it is only a matter of time before most, if not all, of the species's habitat is destroyed, unless effective action is taken to preserve it. In the Oban/Neghe area the whole of the forest down to the Cameroon border was under concession for various purposes, according to the Chief Conservator of Forests in Calabar. Sooner or later this will mean the destruction of the remaining primary forest, much of which has already disappeared for farming purposes, replanting schemes of various kinds, and so on.

Further north between Bashu and Obudu, it is known that large areas quite recently inhabited by Grey-necked Picathartes have been destroyed in the past one or two years. Considerable forest destruction is taking place daily, and even

on inaccessible slopes where farming is impractical the trees are burned in the course of land clearance. For example, in the Bakum area hunters stated that there used to be many Grey-necked Picathartes, but that "last dry season (1987) all habitat was destroyed by extensive fire over the surrounding hills". The same comments were made at Begiagba and Bendi. Not all fires are caused by man, but most seem to be. North of Lishiukway for over 20 km, almost as far as Obudu, the forest has been cleared for farming and must quite recently have provided ideal habitat for Grey-necked Picathartes. Even so, quite obviously much suitable habitat remains, and hopefully some of the better areas can be preserved. In particular, Mt Kanyang, on which gorillas *Gorilla gorilla* apparently still exist, can be preserved as a park, but cultivation is already creeping towards some breeding sites. Similarly at Bashu, cultivation is now within 100 m of the main breeding colony.

Particularly in the Bashu–Obudu area Grey-necked Picathartes are well known to hunters and some birds are killed for food. The species is generally regarded as being too small to hunt deliberately and at two localities was described as being "hunted by children only". Nevertheless some birds are caught in snares, often at a considerable distance from breeding colonies, and are probably rarely, if ever, snared at their nests. In some areas pulli are removed from nests as food, and adults may be captured at night by lamplight.

Recommendations

There is undoubted justification for conserving major parts of forest in south-east Nigeria for their great natural beauty and as a tourist attraction (Oban Hills, Baunchor area, Obudu Plateau, a waterfall along the Ekan road, etc.); as sites of conservation and tourist/wildlife interest (Grey-necked Picathartes sites at Neghe, Bashu, Kanyang, etc.; gorilla sites at Kanyang, Buanchor, Bamba, etc.); and as representative sites for forest tree diversity and genetic pools through the montane and lowland rainforests (Oban Hills, Boshi/Okwangwo and Obudu Plateau).

An aerial survey of the whole area is needed to identify and map the more important sites, followed by a survey on foot of certain selected areas and species. The area involved extends from east of Calabar to the Cameroon border and northward through Oban Hills, Cross River South Forest Reserve, and east of Ikom northwards along the border as far as the Obudu Plateau and westwards beyond Kanyang to Buanchor, Olum and Boje (Bujia). There is a need to carry out a detailed investigation of the Buanchor area for Grey-necked Picathartes, gorillas and the distribution of birds on these isolated hills. For all this work, a reference collection of adequate maps for the whole area should be prepared, and the reproduction of copies of the most used ones will be essential.

All the data resulting from the above initiatives will need to be collated in order to develop, in connection with the state and federal governments, an overall plan for the whole area in relation to tourist potential, conservation needs and scientific value. A detailed survey of the tourist potential of the area is needed. In particular the feasibility needs to be explored of establishing a national park in the area. The potential importance of Mt Kanyang and the Buanchor area, both outside the original area under consideration, may mean

either extending the area westwards, or the establishment of a separate area.

Guards/guides should be recruited at Neghe to protect existing Grey-necked Picathartes sites and to attempt to reduce human activity round good potential sites; at Bashu to arrange for hunting control and the protection of colonies; at Kanyang to guard gorillas and picathartes and organise an anti-poaching programme, with one member of the team trained for data collection; at Buanchor for both picathartes and gorillas.

Conservation education in the area is, of course, critical to any other initiatives. Large numbers of coloured illustrations of Grey-necked Picathartes need to be distributed to villagers and schools throughout the bird's distribution in conjunction with any conservation effort. The possibility needs to be explored of producing a conservation film based on the rainforest, gorillas, picathartes, etc., for conservation and fund-raising purposes. Talks and slide shows in villages, notably in the Kanyang area, would be imperative.

Alternative employment must be generated for the 20+ hunters in the Kanyang and Bashu areas who have been persuaded to abandon hunting. Suggested means are: (a) employing two or three more guides in the two areas; (b) use of local labour to develop the HQ building at Kanyang; (c) the establishment of a trial "game-farming" scheme at Bashu and Kanyang to produce alternative sources of bush-meat (e.g. Maxwell's Duiker *Cephalophus maxwelli*).

Ibadan Malimbe

Background and methods

There appear to have been no records for the Ibadan Malimbe since 1980, about which time it was thought that its "numbers appear to have declined drastically in recent years", in spite of repeated searches by several birdwatchers and ornithologists over the years, including some resident at the type-locality (Collar and Stuart 1985).

In the present search for the species it was difficult to know where to start in the absence of recent records. Its habitat preference seemed to be in forest-edge and secondary growth (Elgood 1982), so it was thought best to concentrate on some areas where it had last been seen and where such habitat still existed, rather than move around to various parts of its former range. Initially the search was centred on two areas: first the University of Ibadan campus, which is the type-locality, especially in the Botanic Garden where many malimbes had been seen recently (Ash and Sharland 1986), and second the International Institute of Tropical Agriculture's (IITA) farm which was known to have large areas of secondary woodland, was relatively undisturbed compared with most of the Ibadan area and, according to local birdwatchers, was known to contain malimbes. In addition to these two areas and a few others around Ibadan, an attempt was made, following the sightings on 2 November, to travel through much of the past known range of the species in order to look for malimbes and to make a very rough assessment of the remaining preferred habitat (Appendix 2).

I spent 10 days from 28 October to 6 November in this search, and was joined by Phil Hall and Carolyn Knight on 28 and 31 October and 1–3 November, and by A. P. Leventis on 28 October.

Observations

I was only able to find Ibadan Malimbés at one site at the IITA research farm on 2 November. This sighting referred to an adult male feeding a juvenile male, together with at least one other adult male (and probably one or two more) in a mixed bird party with *c.*15 Red-headed, *c.*10 Red-vented and two Gray's Malimbés *Malimbus rubricollis*, *scutatus* and *nitens*, eight Black-necked Weavers *Ploceus nigricollis*, 10 Yellow-mantled Weavers *P. tricolor*, two Square-tailed Drongos *Dicrurus ludwigii*, a Levaillant's Cuckoo *Clamator levaillantii*, two Red-bellied Paradise Flycatchers *Terpsiphone rufiventer* and a Grey-backed Camaroptera *Camaroptera brachyura*. They were near the edge of secondary woodland alongside the golf-course within the IITA's grounds between holes 17 and 18. In this area the woodland consists of 10% oil palms, in an area of woodland that has been largely undisturbed for *c.*25 years. The Ibadan Malimbés were feeding at 2–7 m, whereas the Red-headed and Red-vented were usually at 4–10 m, and the Gray's at 1–3 m. The undergrowth was thin enough to be able to walk through without too much difficulty.

Later in the day close to the considerable noise from a very busy road and residential area, but still within the IITA enclosure *c.*0.5 km from the original site, the same or another mixed bird party was found. This contained at least one adult male Ibadan Malimbe. In excellent views at close range identification was not difficult and our description agreed closely with that given by Elgood (1958).

Separation from Red-headed and Gray's Malimbés presents no problems, although Elgood (1988) has used my fieldnotes to correct a misleading illustration in his original description of the female. From Red-vented the much more extensive red on the breast of Ibadan is conspicuous and is separated from the black belly by an "untidy" or "ragged" margin, not so clean-cut as in Red-vented. There was a total absence of any red on the vents of any of the adults; the juvenile, in which the red was replaced by a pale orange-brown colour, was not seen clearly. In spite of rather careful examination, no trace could be seen of any red feathers among the black, nor of black feathers among the red, as mentioned by Elgood (1958).

Prognosis

Of course it is difficult to draw any conclusions concerning habitat preferences or the status of the species from these limited observations. In samples totalling 223 *Malimbus* spp. identified during this 10-day search, 133 (60%) were Red-headed Malimbe, 71 (32%) were Red-vented Malimbe, 15 (17%) were Gray's Malimbe and four (2%) were Ibadan Malimbe. If this an accurate reflection of their relative abundance the Ibadan Malimbe is indeed a rare bird. This view is supported by the fact that no-one else has seen one for seven years in spite of frequent searches. Possibly it is still not uncommon locally, but the right sites need to be found first.

A close study of breeding birds is required to identify the species's ecological requirements, and to attempt to discover what changing factors may be causing its apparent decline (there is no clear evidence of a decline, but Elgood (1988) extrapolates from his observations in 1953–1954 and mine of 1987 to suggest that

he had one encounter every 40 hours of fieldwork to my one every 80 hours). Large numbers of three other species of closely related malimbes are resident in an area where enormous habitat changes have taken place in a short time. This suggests that possibly some small but very important factor has disappeared from the environment, adversely affecting Ibadan Malimbes. It may be connected with either food requirements and/or nesting sites. Possibly the latter factor is of more importance: the other three malimbes in the area have characteristic breeding niches – Gray's in low vegetation over or close to water, Red-headed high in deciduous trees, and Red-vented usually half-way along the underside of palm trees. Presumably Ibadan Malimbe requirements are different, but little precise information is available, although one nest referred to in Elgood (1958) was 18 m high in a *Bombax* tree. Ash *et al.* (1989) refer to their examination of a nesting site found by A. P. Leventis at Ibadan in 1988. The nest in an unidentified tree was in an area of well-established subsistence farms of cassava and sweet potatoes, in much degraded forest and scrub. There were also scattered palms and other trees, providing <10% canopy cover. This discovery suggests that the species can subsist in a habitat judged, at the commencement of the foregoing survey, to be inadequate for this bird. With this knowledge and the clarification of the identification of the female of the species, further observations may now be more frequent.

Recommendations

Local ornithologists should be encouraged to (a) undertake a search for the species throughout its known range; (b) identify its habitat requirements for feeding/breeding; and (c) assess the amount of suitable habitat available. A specialist ornithologist should then, if necessary, be engaged to work in conjunction with the local observers in deciding on appropriate remedial action for the species, which might require habitat management, protected-area creation or even perhaps a captive-breeding programme. All the appropriate liaison (e.g. with the Chief Conservator of Forests and the state government) will be needed once the action required is identified.

NCF and ICBP should meanwhile encourage IITA to give every possible means of protection to the secondary woodland remaining on their farm, and emphasize that at present this is within the only known site for this endangered species. IITA needs to take effective action to prevent disturbance on their woodlands by banning (a) hunting by trapping and snaring and (b) the removal of woodland products (firewood, posts, sticks, etc.).

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Appendix 1. List of *Picathartes oreas* breeding sites in south-east Nigeria

The dates are those on which the colonies were plotted. The bearing and approximate distance of each colony is given from various villages for which geographical coordinates are included. Nests are the numbers counted in each colony, the figures in parentheses being those known to contain either eggs or young. Notes: (a), both fledged one month earlier; (b), in wide area on 14 rocks; (c), based on observations in August 1987.

| Locality | Date | Bearing | Distance (km) | Nests | Notes |
|--|--------|---------|---------------|-------|-------|
| Neghe (05°17'N 08°37'E) | | | | | |
| Etae Aipcha | 24.ix | 120 | 7 | 8(2) | |
| Etae Otan | 26.ix | 120 | 12 | 2 | |
| Bashu (06°07'N 09°08'E) | | | | | |
| Annam | 4.x | 89 | 4 | 1(1) | |
| Kache Bakut | 4&10.x | 180 | 2 | 13(3) | |
| Mbe | 6.x | 352 | 8 | 9 | |
| Okpambe | 6.x | 134 | 5 | 2 | |
| Obong Kaku | 7.x | 350 | 5 | 7(3) | |
| Bebe Ber | 7.x | 339 | 5 | 1(1) | |
| Edang | 7.x | 339 | 4 | 1 | |
| Abo-Eme (06°12'N 09°01'E) | | | | | |
| Kaku Abu | 13.x | 84 | 1 | 6 | |
| Keka Kenung | 13.x | 199 | 6 | 3 | |
| Abo-Ogbagante (06°13'N 09°01'E) | | | | | |
| ? | 13.x | 170 | 3 | 2 | |
| Kaku Olim | 13.x | 23 | ? | 7 | |
| Olum (06°23'N 09°01'E) | | | | | |
| Oshuchi | 13.x | 312 | 6 | 3 | |
| Kaku Nisatray | 13.x | 291 | 6 | 5 | |
| Ashi Pillar | 13.x | 347 | 6 | 2 | |
| Aka Bebraybanda | 13.x | 261 | 6 | 6 | |
| Asu Kechi | 14.x | 334 | 3 | ? | |
| Olum | 14.x | - | - | 2 | (a) |
| Buanchor Mbaya (06°21'N 08°58'E) | | | | | |
| Kakuki Kajia | 13.x | 191 | 4 | 3 | |
| Ajakpa | 13.x | 151 | 10 | 2 | |
| Kaku Abrebi | 13.x | 330 | 10 | 1 | |
| Bechi Ubong | 13.x | 294 | 5 | 3 | |
| Kiichum One Ojong | 13.x | 331 | 2.5 | 4 | |
| Keka Nandi | 13.x | 309 | 5 | 2 | |
| Buanchor Nkanacha (06°21'N 08°58'E) | | | | | |
| Ekuwubong | 13.x | 100 | 4 | 1 | |
| Ukakasi | 13.x | 334 | 1 | 2 | |
| Intufuow | 14.x | 278 | 3 | 3(3) | |
| Kaka Ukpang | 14.x | 246 | 6 | 5(2) | |
| Buka Balang | 14.x | 234 | 6 | 2(1) | |
| Ashishie (06°24'N 09°05'E) | | | | | |
| Enun | 14.x | 321 | 2 | 5 | |
| Uka Bekin | 15.x | 196 | 5 | 1 | |
| Kinbe Ashishie | 16.x | 287 | 3 | 2 | |

Appendix 1 (cont.)

| Locality | Date | Bearing | Distance (km) | Nests | Notes |
|-------------------------------|------|---------|---------------|--------|-------|
| Okwabang (06°26'N 09°06'E) | | | | | |
| Akaricha | 14.X | c.243 | c.6 | 2+ | |
| Ubera | 14.X | c.243 | c.6 | 3+ | |
| Utchor | 14.X | c.243 | c.6 | 1 | |
| Bakum (06°26'N 09°05'E) | | | | | |
| Baturiko area | 14.X | c.90 | 3 | 2 | |
| Baturiko area | 14.X | c.270 | 3 | 2 | |
| Kanyang 1 (06°15'N 09°01'E) | | | | | |
| Kibibi | 14.X | 165 | 2.5 | 5 | |
| Buka Kinchua | 14.X | 56 | 5 | 5 | |
| Kaku Egboya | 15.X | 105 | 3.5 | 6 | |
| Kashe Kidebe | 15.X | 188 | 4 | 3 | |
| Kaku-Kalum-Ashow I | 15.X | 180 | 4 | 1 | |
| nr. Kapie-Awang | 15.X | 177 | 5 | 1 | |
| Mbe stream | 15.X | 177 | 8 | 1 | |
| Kaku-Bukem-Abimpke | 16.X | 174 | 7 | 4 | |
| Kaku-Ashi-Mbe | 16.X | 152 | 16 | 2 | |
| Nsha stream | 16.X | 185 | 3 | 1 | |
| Kaku-Ochang-Mgbe | 17.X | 180 | 8 | 5 | |
| above Mbe-Mgbe | 17.X | 180 | 6 | 3 | |
| Kaku-Kitu-Ufu-Mgbe | 17.X | 140 | 15 | 7 | |
| Kampie-Awang | 17.X | 180 | 6 | 1(1) | |
| Kaku-Kalum-Ashow II | 17.X | 175 | 8 | 4(2) | |
| Uka Ocha I | 17.X | c.138 | c.3 | 6 | |
| Uka Ocha II | 17.X | c.138 | c.3 | 4 | |
| Uka Ocha III | 17.X | c.138 | c.3 | 12 | |
| Indep Awa Akria | 17.X | 144 | 5 | 40 | (b) |
| Kanyang 2 (06°16'N 09°01'E) | | | | | |
| Ashi Kochie Kekeg | 15.X | 75 | 3 | 10 | |
| Ashi Kepupua | 15.X | 106 | 4 | 6 | |
| Kachi Nkane | 15.X | 63 | 2.5 | c.20 | |
| Kachi Ake | 15.X | 45 | 5 | 8 | |
| Uka Ajiie | 16.X | 68 | 3 | 1 | |
| Lishiukway (06°27'N 09°06'E) | | | | | |
| Kata | 15.X | 80 | 4 | 2 | |
| Ukbong (06°27'N 09°06'E) | | | | | |
| Ugegbu | 15.X | 331 | 2 | 1 | |
| Ubua | 15.X | 357 | 2 | 2 | |
| Obunisheor | 15.X | 333 | 2 | 4 | |
| Kabeshor | 15.X | 332 | 3 | 5+ | |
| Okakwe | 15.X | 319 | 2 | 2 | |
| Abija Beebo (06°25'N 09°09'E) | | | | | |
| Inuena | 15.X | 7 | 2 | 10 | |
| Ochobeque | 15.X | 196 | 6 | 2 | |
| Bokalum (06°21'N 09°05'E) | | | | | |
| Kapuo | 16.X | 189 | 3 | 1 | |
| Ashaeshuo | 16.X | 57 | 10 | (100+) | |
| Akatah | 16.X | 180 | 5 | c.10 | |

Appendix 1 (cont.)

| Locality | Date | Bearing | Distance (km) | Nests | Notes |
|--|---------|---------|---------------|-------|-------|
| Boje (06°13'N 08°55'E) (bearings taken from Kanyang 1) | | | | | |
| Boje Enyi | (17.X) | 313 | 12 | } | (c) |
| Kachie | (17.X) | 307 | 11 | | |
| Ebranta | (17.X) | 313 | 15 | | |
| Ebok | (17.X) | 313 | 16 | | |
| Italian | (17.X) | 305 | 18 | | |
| Bamba (06°17'N 09°07'E) | | | | | |
| Uka Mbujuo | 16.X | 189 | 11 | 1 | |
| Uka Obue | 16.X | 171 | 51 | 10 | |
| Uka Benkie | 16.X | 222 | 8 | 5 | |
| Ashi Eteanekeche | 16.X | 192 | 6 | 2 | |
| Ashi Echea | 16.X | 219 | 5 | 1(1) | |
| Uka Kochea Ishua | 16.X | 262 | 3 | 1 | |
| Uka Mbe | 16.X | 227 | 8 | 4+ | |
| Uka Ntue | 16.X | 195 | 10 | 7 | |
| Kechie Stream (06°17'N 09°03'E) | | | | | |
| Uka Bebu Abakay | 17.X | 120 | 3 | 2 | |
| Uka Ndmieiqjie | 17.X | 117 | 4 | 4 | |
| Uka Ashie Echie | 17.X | 139 | 4 | 4 | |
| Uka Kachang | 17.X | 124 | 5.5 | 3 | |
| Uka Ababe | 17.X | 70 | 4 | 2 | |
| Aliah (Allay) (06°34'N 09°18'E) | iv.1988 | — | — | 1 | |
| Busi (06°33'N 09°16'E) | | | | | |
| Gatang | iv.1988 | 159 | 12 | 4 | |
| Balagete (06°21'N 09°21'E) | iv.1988 | — | — | ?* | |

*Several breeding sites, but numbers of nests unknown.

Appendix 2. *Malimbus ibadanensis* habitat remaining in various parts of its range

| | |
|--|--|
| Ibadan (University of Ibadan, International Institute of Tropical Agriculture, J and P compound area). | Except at IITA, probably few, if any, undisturbed areas left. The other three species of malimbos exist and breed in the area; <i>rubricollis</i> and <i>scutatus</i> are probably fairly tolerant of human disturbance and nest above 5 m high. <i>Grayi</i> persists around the IITA lake and along streams elsewhere. |
| 1 Olunloyo- 2 Akanran- 3 Igikola- 4 Araromi Aparin- 5 Dagbolu- 6 Lagada- 7 Ejebo Igbo- 8 Oru- 9 Awa- 10 Busogboro- 11 Ibadan | The first part 1–3 is highly degraded secondary forest with 50–90% oil palms; 3–4 has 60–80% oil palms; 4–5 has 40–50% oil palms, soon after 95% oil palms. Around 7–8 there were suitable areas in patches and from 9–10 it was patchily good, but with extensive teak plantations; from 10 onwards it seems to be unsuitable. In summary there seemed to be many likely areas remaining. |

Appendix 2 (cont.)

1 Ibadan- 2 Egbeda- 3 Asejire-
4 Akinrere- 5 Ikire- 6 Oosa-
7 Ayepe- 8 Orile-Owu- 9 Araromi-Owu

A few possible sites in 1-2, but up to 90% oil palms in places; rather better around 4. After 5 there were some good patches but still less than 10% secondary trees. From 5-6 mainly secondary scrub with up to 90% oil palm in places but good patches and many malimbes. Between 6 and 7 some very good habitat but no malimbes seen. Thereafter good in many patches.

1 Ibadan- 2 Apeta- 3 Erinko-Obe-
4 Omi-Adio- 5 Orile-Ulugun-
6 Orile Keesi- 7 Bagbon- 8 Egba-Obeda-
9 Osiele- 10 Abeokuta- 11 Wasinmi-
12 Ajegunle- 13 Ilaro- 14 Papalanto-
15 Lagos

Very little probably suitable habitat in 1-3; some good areas around 4, and some very good areas in 4-5; 5-6 some good areas. 8 probably mostly unsuitable (up to 100% oil palms). South of 10 mostly unsuitable but a few good patches; 10-11 improving with more secondary forest. At 11 poor; and 11-12 some good areas but very patchy. 12-13 some very good habitat but much secondary forest has been and is being destroyed.

Ife-Ibadan and Iperu-Ibadan

These areas were looked at for malimbes, but at unsuitable times of the day and no habitat assessments were made.

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