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The avifauna of Bui National Park in western Ghana

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Summary

Bui National Park covers *c.* 1821 km² and is crossed by the Black Volta river. A narrow rocky escarpment extends from Bui Gorge to the extreme southwest. The vegetation consists of dry Sudanian woodland types, including an *Acacia*-dominated community and dense riparian and seasonally flooded forest on the Volta and some tributaries. We visited at the start of the rains (15–24 March 2005) and report 227 bird species. The main biome is Sudanian, with 23 biome-restricted species so far (two thirds of the total known for this biome in Ghana). We found nine regular Guineo-Congolian species, one marginal in the far south and one vagrant, all reaching their northern limits of range here. The first indications of breeding in Ghana were obtained for Plain Nightjar *Caprimulgus inornatus*, which was singing in rocky habitats, and Brown Sunbird *Anthreptes gabonicus*, nest-building on the edge of the Volta. Several species poorly known in Ghana were recorded, including White-backed Night Heron *Gorsachius leuconotus*, Pel's Fishing Owl *Scotopelia peli*, Barred Owlet *Glaucidium capense*, Dorst's Cisticola *Cisticola guinea*, Puvel's Illadopsis *Illadopsis puveli* and Yellow-billed Oxpecker *Buphagus africanus*. The dam soon to be built at Bui Gorge will flood all land below *c.* 180 m, including the southern two-thirds of the riparian forest, forested islands and adjacent woodland. A unique community will be destroyed, at the northern limit of the Guineo-Congolian/Sudanian transition zone.

Résumé

L'avifaune du Parc National de Bui à l'ouest du Ghana. Le Parc National de Bui couvre *c.* 1821 km² et est traversé par la Volta noire. Une crête rocheuse s'étend des gorges de Bui jusqu'à l'extrême sud-ouest du Parc. La végétation consiste en différents faciès de forêt claire soudanienne sèche, dont une formation à dominante d'*Acacia* et une forêt-galerie dense et inondée de manière saisonnière le long de la Volta et de certains de ses affluents. Une visite au début des pluies (15–24 mars 2005) a permis d'établir une liste de 227 espèces d'oiseaux. Le biome principal est soudanien, avec 23 espèces

restreintes à ce biome (les deux tiers du total connu pour ce biome au Ghana). Nous avons observés neuf espèces guinéo-congolaises pouvant être considérées comme régulières, outre une espèce marginale à l'extrême sud et une erratique, toutes atteignant leurs limites septentrionales ici. Pour la première fois ont été observés au Ghana des indices de nidification de l'Engoulevent terne *Caprimulgus inornatus*, chantant dans les milieux rocheux, et le Souimanga brun *Anthreptes gabonicus*, construisant son nid au bord de la Volta. Plusieurs espèces mal connues au Ghana ont été observés, dont le Bihoreau à dos blanc *Gorsachius leuconotus*, la Chouette-pêcheuse de Pel *Scotopelia peli*, la Chevêchette du Cap *Glaucidium capense*, la Cisticole de Dorst *Cisticola guinea*, la Grive-akalat de Puvél *Illadopsis puvéli* et le Pique-boeuf à bec jaune *Buphagus africanus*. Le barrage qui va être construit dans les gorges de Bui inondera toutes les terres d'une altitude inférieure à *c.* 180 m, dont les deux tiers de la forêt-galerie au sud, les îles boisées et les forêts adjacentes. Une communauté unique sera détruite, à la limite septentrionale de la zone de transition guinéo-congolaise/soudanienne.

Introduction

Bui National Park is the third largest wildlife reserve in Ghana, covering *c.* 1821 km². Its western boundary follows the border with Ivory Coast. Its main feature is the Black Volta river, which crosses the Park from the Ivory Coast border in the northwest at Ntereso, leaving in the south, just north of Bui Gorge, which is the site of a future dam (Fig. 1). In the southwest a narrow rocky escarpment extending SSW from Bui Gorge is included in the park, representing a habitat rather different from the generally flat plains of the main section. Most of the park lies at 140–250 m altitude, the hills in the southwest rising to *c.* 500 m.

The vegetation consists of several types of Sudanian woodland (*sensu* White 1983), with dense riparian and seasonally flooded forests lining the Black Volta and some tributaries. The river often floods extensively in the southern two-thirds of the park, when it forms islands of densely-forested alluvial sands. The natural regime of annual flooding and deposit of alluvials has created optimal conditions for grazing by Hippopotamus *Hippopotamus amphibius*; hence the park boasts the largest population of Hippos in the country (recently estimated at *c.* 290 animals, R. Ofori-Amanfo pers. comm.). The park was gazetted in 1971, even though it was known by then that the projected dam would flood most of the riverine forests and surrounding plains.

Prior to our visit, the avifauna of Bui N.P. was virtually unknown. The account in Ntiemoa-Baidu *et al.* (2001) is brief and contains errors (see list of species rejected below): only two of the common Guineo-Congolian species that we found are mentioned and most of the Sudanian species were missed. D. Hoddinott visited Bui on 19 May 2002 and reported one species of interest (*per* Riley 2003 and *in litt.*).

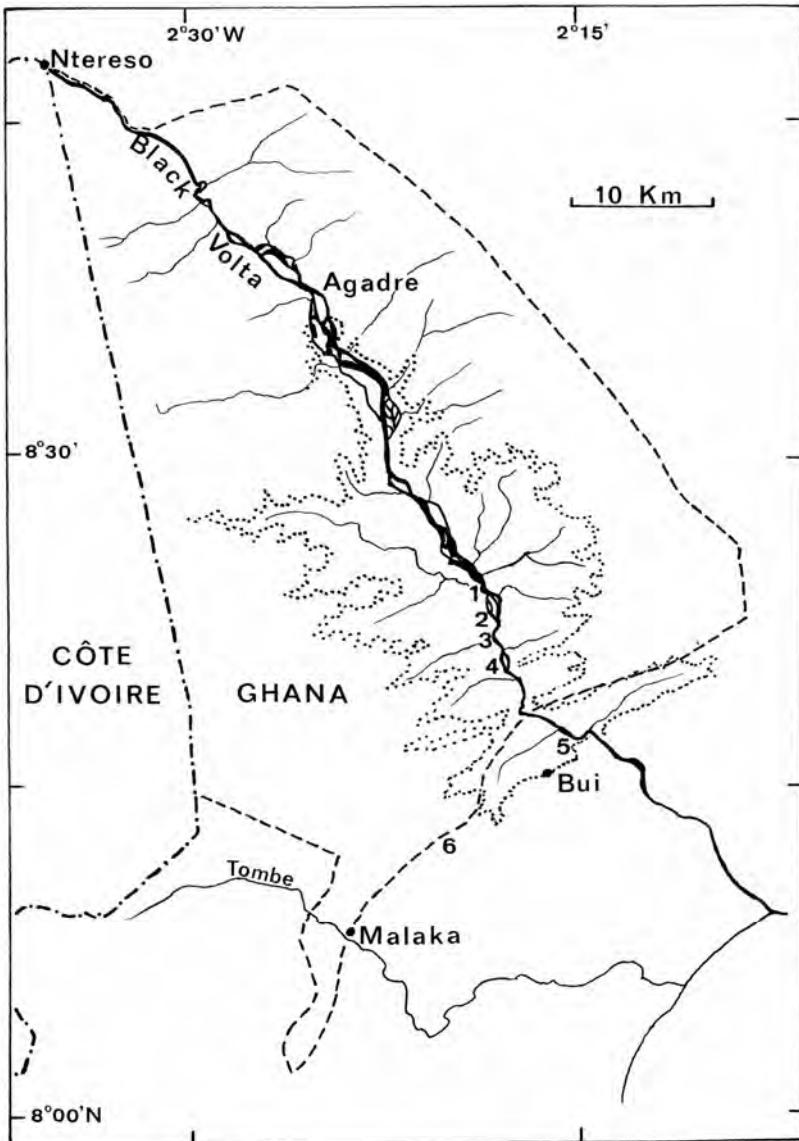


Figure 1. Map of Bui NP showing all localities visited. Numbers are: 1 = Issaka camp, 2 = Bope Island, 3 = Asantekwa camp, 4 = Tree House, 5 = Bui Gorge, 6 = Brosan. The dotted line shows the probable dam flood-line along the 180 m contour.

We spent nearly 10 days in Bui N.P., 15–24 March 2005, at a time when the interior of the park is as accessible as can be, the two best months for reaching the riverbanks being February and March. The weather was hot and humid, with several early but local storms, particularly heavy over the escarpment on 20 and 21 March. We visited all the main bush camps established by wildlife guards on the river, north to Ntereso, as well as two sites on the southwestern scarp (Fig. 1). We camped for three nights at Tree House, one at Asantekwa camp near Bope Island, one at Issaka, one each at Brosan and Malaka camps on the southwestern scarp, one at Agadre and two at Ntereso, visiting Bui camp and Bui Gorge en route. We were accompanied throughout by wildlife guard Yinye Kwaku, and he and his colleagues provided some bird records. Although our list cannot be considered complete, we place it on record in view of the forthcoming dam construction. Work started in 2008 on a hydro-electric power station and dam at Bui Gorge immediately to the south of the park, and more than half of the riparian habitat and adjacent woodland will be flooded.

Habitats

The park is entirely wooded or forested. Most of the dry forest lines rivers, but there are some patches away from streams in the south. The river is often > 100 m broad, but may braid around islands. In March a few rocks were emerging locally around or between islands. Large rocky outcrops are to be found along the southwestern scarp. In the south of the park, wooded hills near Bui Gorge and opposite Tree House have a rather pebbly substrate. Savanna vegetation nomenclature follows Arbonnier (2000).

Woodland

There are several distinct woodland types, albeit intermingling. Mature, tall *Isoberlinia*/*Afzelia* is most extensive over the southwestern escarpment and in the foothills stretching towards the Ivory Coast border. Around Brosan camp, the main trees were *Afzelia africana*, *Combretum fragrans*, *Daniellia oliveri*, *Entada africana*, *Erythrophleum africanum*, *Isoberlinia doka*, *Lannea acida*, *Monotes kerstingii*, *Parinari curatellifolia*, *Terminalia laxiflora*, *Vitellaria paradoxa*. *Afzelia*, *Daniellia* and *Isoberlinia* are often 20–22 m tall, as also near Malaka camp. *Isoberlinia* is much less common in the main body of the park. A typical list of trees on the road to Issaka camp in the centre includes *Acacia gourmaensis*, *Combretum fragrans*, *Gardenia ternifolia*, *Lannea acida*, *L. barteri*, *Piliostigma thonningii*, *Pseudocedrela kotschyi*, *Terminalia avicennioides*, *Vitellaria paradoxa*.

In the vicinity of the Volta, close to the outer edges of riparian and dry *Anogeissus* forest, the woodland is dominated by *Acacia* spp., often in monospecific stands (especially *A. gerrardii* and *A. sieberiana*); some patches may be subject to flooding and often occur next to groves of *Mitragyna inermis*, which is typical of seasonally flooded woodland. In many places thorn woodland merges gradually into dry

Anogeissus forest. In the north (Ntereso), dry open woodland, with many *Combretum fragrans* and *Pseudocedrela*, is dotted about with small thickets where *Tamarindus indica* is common, alongside *Acacia gourmaensis*, *Balanites aegyptiaca* and occasional *Ficus*. Baobabs *Adansonia digitata* are uncommon.

Forest

Riparian and seasonally flooded forest lines the Black Volta almost without interruption. It may be reduced locally to a single line of trees along some sharp bends. It is best developed in the southern two-thirds of the park, where it can be up to 100 m wide, and several large forested islands occur from Bope to Agadre (8°22' to 8°37' N). A large proportion of the trees are evergreen. The canopy is often 20–25 m tall, with some trees up to 30 m. The dominant trees on the water's edge in sections subject to flooding (Tree House, Bope, Issaka) are *Cola laurifolia*, *Cynometra vogelii*, *Parinari congensis* (usually associated with an understorey of *Myrianthus serratus*), *Pterocarpus santalinoides* and *Syzygium guineense*. Liane tangles are well developed, with *Combretum paniculatum*, *Lonchocarpus cyanescens*, *Paullinia pinnata*, *Quisqualis indica*, *Saba* and *Strophanthus*. Emergents include *Ceiba pentandra* and *Albizia ferruginea*. *Diospyros mespiliformis* is often common, also on the drier, outer edge, next to *Dialium guineense* and *Manilkara multinervis*, and there are some large *Celtis integrifolia*. Occasional figs (*Ficus platyphylla*, *F. sur* and *F. cyathistipuloides*) occur. At Issaka camp, *Berlinia grandiflora*, *Erythrophleum suaveolens* and *Uapaca heudelotii* were also noted on the water's edge. Further north near Ntereso the main tall trees lining the Volta belong to much the same species: *Albizia ferruginea*, *Ceiba*, *Celtis integrifolia*, *Cynometra vogelii*, *Dialium guineense*, *Diospyros mespiliformis*, *Manilkara multinervis*, *Parinari congensis* (over *Myrianthus serratus*), and *Pterocarpus santalinoides* is common on the water's edge.

Thinner riparian forest occurs along a number of tributaries, including the Tombe stream in the south (Malaka camp). *Raphia sudanica* was noted on several small streams in the south, not on the Volta itself, whereas occasional *Elaeis guineensis* and *Borassus aethiopicum* occur on the main river.

Away from the river, riparian forest often gives way to dry semi-deciduous forest dominated by *Anogeissus leiocarpus*, with *Diospyros mespiliformis*, *Lecaniodiscus cupanioides*, *Malacantha alnifolia*, *Tamarindus indica* and others. This formation then gives way to *Acacia* or other types of woodland.

The avifauna

Nomenclature follows Dowsett & Forbes-Watson (1993), with a few changes as explained in Dowsett-Lemaire & Dowsett (2007, 2008).

Altogether 227 species were recorded, all but four by ourselves, as detailed below. Biomes are indicated where relevant: GC = Guineo-Congolian element (following

Dowsett-Lemaire & Dowsett 2001); SUD = Sudanian element (belonging to the Sudanian region of White (1983), synonymous with the “Sudan-Guinea” savanna biome of Fishpool & Evans (2001). Dates are given for migrants and some other species, where considered relevant.

Phalacrocoracidae

Phalacrocorax africanus Long-tailed Cormorant. A few on the river, often perching on rocks.

Ardeidae

Nycticorax nycticorax Black-crowned Night Heron. Heard at night on the river (Issaka, Agadre), 18–21 Mar.

Gorsachius leucotis White-backed Night Heron. A pair flushed by day from dense riparian forest on Bope Island, 18 Mar, and an old nest was seen nearby. A pair in thicket near our camp at Ntereso, coming out to fish at dusk. First reported by D. Hoddinot (*per* Riley 2003), who observed four adults and a juvenile on 19 May 2002.

Ardeola ralloides Squacco Heron. One on the river, 16 Mar.

Bubulcus ibis Cattle Egret. A small flock flying over Agadre, 22 Mar. More common outside the park.

Butorides striata Green-backed Heron. Common on the river and at pools, as on the Tombe.

Egretta garzetta Little Egret. A few on the river in the south, 15–18 Mar.

Ardea cinerea Grey Heron. A few on the river, throughout.

Scopidae

Scopus umbretta Hamerkop. Common on the river and pools of tributaries.

Threskiornithidae

Bostrychia hagedash Hadada. A few in riparian forest around Tree House and Asantekwa.

Accipitridae

Aviceda cuculoides African Cuckoo Hawk. Singles and pairs (some displaying) in riparian forest and *Acacia* woodland from Tree House to Agadre.

Macheiramphus alcinus Bat Hawk. One flying over the river at dawn, Ntereso.

Milvus migrans Yellow-billed Kite. Widespread.

Gypohierax angolensis Palm-nut Vulture. A few on the river, including one that landed briefly on a nest in a *Ceiba* at Issaka. Both *Elaeis* and *Raphia* palms (important food plants) are present in small numbers, *Raphia* mainly on tributaries.

Gyps africanus African White-backed Vulture. One at Tree House, 17 Mar.

Trigonoceps occipitalis White-headed Vulture. One at Tree House, with the previous species.

Circaetus cinereus Brown Snake Eagle. One near Bui Gorge.

Terathopius ecaudatus Bateleur. Common and widespread.

Polyboroides typus African Harrier Hawk. Widespread.

Accipiter badius Shikra. A common woodland species.

Butastur rufipennis Grasshopper Buzzard. A common dry season visitor. Some moving north on the eastern boundary, 21 Mar. Singles seen drinking in the river.

Kaupifalco monogrammicus Lizard Buzzard. Widespread and common.

Buteo auguralis Red-necked Buzzard. Widespread, common on the escarpment.

Aquila wahlbergi Wahlberg's Eagle. Two circling overhead, Agadre, 22 Mar.

Hieraetus spilogaster African Hawk Eagle. One pair at Agadre.

Polemaetus bellicosus Martial Eagle. One subadult tried but failed to catch an immature Olive Baboon *Papio anubis* near Tree House.

Pandion haliaetus Osprey. One flying north over the river, Bope, 18 Mar.

Falconidae

Falco naumanni Lesser Kestrel. One flying north, 16 Mar.

F. alopex Fox Kestrel (SUD). Noisy territorial pair at cliff at Brosan camp; there is much suitable habitat along the escarpment.

F. ardosiaceus Grey Kestrel. One record near Tree House.

F. cucullatus African Hobby. A few seen from Tree House to Agadre; one carrying a small bird, another catching insects with its talons.

F. biarmicus Lanner Falcon. One near the escarpment.

Phasianidae

Francolinus albogularis White-throated Francolin. Calling in woodland near Ntereso. Also known to guards in the south. May be more common, as sings mainly in the rains.

F. bicalcaratus Double-spurred Francolin. Common and widespread.

F. achantensis Ahanta Francolin (GC). Local: confined to the densest riparian forest and thicket, from Asantekwa to Agadre. Not recorded at Tree House.

Ptilopachus petrosus Stone Partridge. Common and widespread, all habitats.

Numididae

Numida meleagris Helmeted Guineafowl. Small numbers in main section of the park.

Rallidae

Amaurornis flavirostra Black Crake. A pair duetting in herbaceous vegetation on the river, Ntereso.

Heliornithidae

Podica senegalensis African Finfoot. Widespread on the river, along wooded banks and on well wooded arms of the Black Volta.

Otididae

Eupodotis melanogaster Black-bellied Bustard. Well known to guards, in woodland.

Jacaniidae

Actophilornis africanus African Jacana. A few on the river, on sand and short grassland.

Burhinidae

Burhinus senegalensis Senegal Thick-knee. Widespread along the river in territorial pairs, on sand and rocks.

B. capensis Spotted Thick-knee. Local near Tree House and Agadre, calling at night, 16–22 Mar.

Charadriidae

Vanellus albiceps White-headed Plover. Widespread along the river in territorial pairs, on sand and rocks.

Scolopacidae

Actitis hypoleucos Common Sandpiper. Widespread along the river.

Pteroclididae

Pterocles quadricinctus Four-banded Sandgrouse. Dry season visitor with numbers decreasing in Mar according to the guards. Seen and heard when coming to drink at dusk at Asantekwa, 17 Mar, and a pair at Ntereso, 22 Mar.

Columbidae

Streptopelia senegalensis Laughing Dove. Commensal, near Bui camp and Tree House.

S. vinacea Vinaceous Dove. Very common throughout.

S. semitorquata Red-eyed Dove. Common, especially in riparian vegetation.

Turtur abyssinicus Black-billed Wood Dove. Common throughout.

T. afer Blue-spotted Wood Dove. Confined to riparian forest where common, alongside congener.

Treron waalia Bruce's Green Pigeon. Noted only near Ntereso, feeding on figs of *Ficus platyphylla* with African Green Pigeons.

T. calvus African Green Pigeon. Small numbers throughout.

Psittacidae

Poicephalus robustus Brown-necked Parrot. A few seen flying over riparian forest, from Tree House to Ntereso; also in escarpment woodland near Malaka.

P. senegalus Senegal Parrot (SUD). Very common throughout.

Agapornis pullarius Red-headed Lovebird. Guard Seidu Mulbassi gave a good description of this species.

Psittacula krameri Rose-ringed Parakeet. Local in riparian forest in the north (Ntereso), but present in the south at times (Yinye Kwaku); probably subject to local movements.

Musophagidae

Tauraco persa Green Turaco (GC). Common in riparian forest and adjacent thicket or woodland. A chorus of Violet Turaco almost always led to an answer by Green Turacos, but when Green Turacos sang spontaneously (especially at dawn and dusk), their calls did not prompt Violet Turacos into song. Seen eating flowers of *Khaya senegalensis*.

Musophaga violacea Violet Turaco (SUD). Common in riparian forest, thicket and woodland.

Crinifer piscator Western Grey Plantain-eater. Common throughout.

Cuculidae

Clamator levallantii Striped Cuckoo. Common, calling at all localities in woodland and especially riparian forest.

Pachyoccyx audeberti Thick-billed Cuckoo. Small numbers heard calling in most localities (mainly riparian forest), from Bope Island to Ntereso.

Cuculus solitarius Red-chested Cuckoo. Calling throughout.

C. clamosus Black Cuckoo. Heard only in escarpment woodland (near Brosan camp, 19–20 Mar), where African Golden Oriole (a potential host) was very common, but not found in riparian on the Black Volta (normally a good habitat), perhaps as a result of the scarcity of orioles, even though Tropical Boubou (another potential host) was very common in the area.

C. gularis African Grey Cuckoo. Calling throughout.

Chrysococcyx klaas Klaas's Cuckoo. Widespread, especially in riparian forest.

C. caprius Didric Cuckoo. Widespread in small numbers.

Ceuthmochares aereus Green Coucal. In dense riparian forest and thicket, in small numbers throughout, from the Tombe stream to Ntereso.

Centropus leucogaster Black-throated Coucal (GC). Locally near Ntereso and Agadre in very dense riparian forest.

C. senegalensis Senegal Coucal. Very common throughout.

Tytonidae

Tyto alba Barn Owl. Heard at both camps on the escarpment (in rocky woodland).

Strigidae

Otus senegalensis African Scops Owl. Widespread in woodland and dry riparian forest.

O. leucotis White-faced Owl. Uncommon, heard near Tree House and Asantekwa in *Acacia* woodland and edge of riparian forest.

Bubo africanus Spotted Eagle Owl. Widespread on rocky hills, escarpment, dry woodland.

B. lacteus Verreaux's Eagle Owl. Heard only in riparian forest near Asantekwa.

Scotopelia peli Pel's Fishing Owl. Adult heard near Tree House.

Glaucidium perlatum Pearl-spotted Owlet. Widespread in woodland in the south.

G. capense Barred Owlet. Heard on the edge of riparian forest near Tree House.

Strix woodfordii African Wood Owl. Widespread in riparian forest from Tree House to Agadre.

Caprimulgidae

Caprimulgus pectoralis Fiery-necked Nightjar. On the edge of riparian forest, at Asantekwa and Issaka, not singing much. Song imitated by Snowy-headed Robin Chat.

C. inornatus Plain Nightjar. A male seen at close range by day resting in riparian forest near Tree House, 16 Mar. The white edging for at least half the length of the outer tail feather was clearly seen. The low churring song, half the speed of that of Long-tailed Nightjar, was heard on the opposite side of the river (at dusk) from a pebbly hill; also heard on the top of the escarpment, in rocky woodland near Malaka camp, 20–21 Mar.

C. tristigma Freckled Nightjar. Common and very noisy in rocky woodland on the escarpment.

C. climacurus Long-tailed Nightjar. Common in woodland.

Macrodipteryx longipennis Standard-winged Nightjar. A male seen in woodland at dusk near Ntereso, 23 Mar. Also reported from the south by guards.

Apodidae

Telacanthura ussheri Mottled Spinetail. In woodland with Baobabs: three near Bope; a pair near Ntereso.

Cypsiurus parvus Palm Swift. Small numbers throughout, nesting in *Borassus*.

Apus apus Eurasian Swift. Common, moving through daily.

A. affinis Little Swift. A few near cliff on the escarpment at Brosan camp.

Trogonidae

Apaloderma narina Narina's Trogon. Widespread in riparian woodland, from Tree House to Ntereso; very vocal. Appeared more common in Bui than in many parts of Ghana.

Alcedinidae

Alcedo quadibrachys Shining Blue Kingfisher. Several pairs on the river where the water is shallow, with rapids and rocks (*e.g.* Asantekwa, Bope Island, Issaka).

A. cristata Malachite Kingfisher. Several on the river at pools or in areas of shallow water; also at pools on the Tombe stream.

Ceyx pictus Pygmy Kingfisher. Widespread in thicket and riparian vegetation.

Halcyon leucocephala Grey-headed Kingfisher. In rocky woodland and edge of riparian vegetation, but rather uncommon, north to Agadre. Breeding in small sand banks.

H. malimbica Blue-breasted Kingfisher. Common in riparian forest throughout.

H. senegalensis Woodland Kingfisher. One silent bird seen on the edge of the river at Agadre, 22 Mar.

H. chelicuti Striped Kingfisher. Uncommon in woodland.

Megaceryle maxima Giant Kingfisher. Several noisy pairs on the river, throughout, especially near rocks and rapids.

Ceryle rudis Pied Kingfisher. One pair near Asantekwa, by shallow water in a sandy section.

Meropidae

Merops hirundineus Swallow-tailed Bee-eater. Widespread in small numbers, woodland and edge of riparian forest.

M. apiaster Eurasian Bee-eater. Passing through daily, in groups of up to several dozen.

Coraciidae

Coracias abyssinicus Abyssinian Roller. Only two observations: on eastern boundary near Maluwe, and near Ntereso.

C. naevius Rufous-crowned Roller. Common in woodland throughout; noisy, often displaying.

C. cyanogaster Blue-bellied Roller (SUD). A few in woodland in the central section (Asantekwa and Issaka) and near the escarpment at Brosan.

Eurystomus glaucurus Broad-billed Roller. Widespread in riparian situations.

Phoeniculidae

Phoeniculus purpureus Red-billed Wood Hoopoe. Widespread in woodland and dry forest.

P. aterrimus Black Wood Hoopoe. Woodland and dry forest, widespread but less common than its congener.

Upupidae

Upupa epops Hoopoe. Heard near Tree House, in dry woodland on pebbly hill, 16 Mar.

Bucerotidae

Tockus erythrorhynchus Red-billed Hornbill. A large population in the *Acacia/Anogeissus* woodland just outside the riparian forest. More common in the south (Tree House to Issaka). In the north, a pair in Baobab/*Anogeissus* on the boundary near Ntereso, where the favoured dry woodland is less extensive. Also on the edge of the park near Malaka camp.

T. fasciatus African Pied Hornbill (GC). Small numbers in dense riparian forest, from Bope to Agadre. Two singles near Ntereso. One on the Tombe stream in the south.

T. nasutus African Grey Hornbill. Very common in woodland throughout.

Bycanistes fistulator Piping Hornbill (GC). Frequent on the best section of riparian forest, from Tree House to Agadre.

Bucorvus abyssinicus Abyssinian Ground Hornbill. Heard near Ntereso, but guards also reported it in other areas of woodland in the south.

Lybiidae

Pogoniulus chrysoconus Yellow-fronted Tinkerbird. Small numbers throughout, in woodland and forest.

Lybius vieilloti Vieillot's Barbet. Recorded only near Agadre, Ntereso and Bui camp.

L. dubius Bearded Barbet (SUD). Frequent in woodland and riparian forest.

Indicatoridae

Indicator indicator Greater Honeyguide. Widespread and noisy in woodland.

I. minor Lesser Honeyguide. On the edge of and in riparian forest, some in song.

Picidae

Campethera punctuligera Fine-spotted Woodpecker. Uncommon in woodland near Agadre and Ntereso.

C. abingoni Golden-tailed Woodpecker. Confined to riparian forest from Tree House to Ntereso, also on the Tombe stream near Malaka camp. More often heard than seen.

Dendropicus fuscescens Cardinal Woodpecker. Widespread in riparian forest from Tombe stream to Ntereso.

Mesopicos goertae Grey Woodpecker. Common in riparian and dry forest.

Picoides obsoletus Brown-backed Woodpecker. Local in woodland near the Tombe stream and near Agadre.

Alaudidae

Mirafra rufocinnamomea Flappet Lark. Seen in woodland on the park boundary near Brosan Camp. Not displaying, so could be more common than this single record suggests.

Hirundinidae

Psalidoprocne obscura Fanti Saw-wing. One seen over the river at Issaka, 18 Mar.

Hirundo senegalensis Mosque Swallow. One pair around Baobabs on the boundary near Ntereso; one pair on the eastern boundary.

H. fuligula Rock Martin. Several around a rock face on the escarpment at Brosan, and in Bui Gorge.

H. rustica Barn Swallow. Common, passing through daily.

Delichon urbicum House Martin. Common, passing through daily.

Motacillidae

Anthus trivialis Tree Pipit. Common throughout, in woodland.

Campephagidae

Campephaga phoenicea Red-shouldered Cuckoo-shrike. AM. A few of both sexes in riparian forest.

Coracina pectoralis White-breasted Cuckoo-shrike. Several pairs in tall, mature *Isobertinia/Afzelia* woodland near the escarpment.

Pycnonotidae

Chlorocichla flavicollis Yellow-throated Leaflove. Several pairs in riparian forest in the north (Ntereso).

Pyrhurus scandens Leaflove (GC). Very common in riparian forest in the main section of the park, from Tree House to Agadre; less common in the north (Ntereso).

Bleda canicapillus Grey-headed Bristlebill (GC). Small numbers in dense riparian forest, from Tree House to Agadre.

Pycnonotus barbatus Common Bulbul. Common throughout.

Turdidae

Turdus pelios West African Thrush. Fairly common in forest and woodland. Some imitating the song of Greater Honeyguide (also imitated by Snowy-crowned Robin Chat).

Cossypha niveicapilla Snowy-crowned Robin Chat. Common in riparian forest with a few also in deciduous thicket. Less numerous in evergreen riparian than its congener. Song included imitations of Fiery-necked Nightjar.

C. albicapilla White-crowned Robin Chat (SUD). Common in riparian forest throughout.

Saxicola rubetra Whinchat. One in open woodland near Ntereso, 23 Mar.

Cercomela familiaris Familiar Chat. Common in rocky woodland on the escarpment at Brosan and Malaka.

Sylviidae

Melocichla mentalis African Moustached Warbler. Common in rank grass on the outer edge of riparian vegetation, also in low thickets and herbage on the edge of water.

Hippolais polyglotta Melodious Warbler. Common, often singing, in medium to large trees in woodland and edge of riparian forest, throughout.

Eremomela pusilla Green-backed Eremomela (SUD). Very common in woodland, throughout.

Sylvietta brachyura Northern Crombec. Common in woodland, thicket and edge of riparian forest.

Phylloscopus trochilus Willow Warbler. Common in woodland.

P. sibilatrix Wood Warbler. Common, passing through, feeding next to Willow Warbler and singing frequently.

Hyliota flavigaster Yellow-bellied Hyliota. Several in tall, mature *Isobertinia/Afzelia* woodland near the escarpment in the south.

Cisticolidae

Cisticola natalensis Croaking Cisticola. In unburnt grass in open woodland near Ntereso, likely to be slightly flooded in the rains, where some early song heard, 24 Mar.

C. guinea Dorst's Cisticola (SUD). Found in open woodland next to Croaking Cisticola near Ntereso (one singing). Almost silent at this time of year, and could be more widespread.

C. rufus Rufous Cisticola (SUD). Locally common in woodland.

C. brachypterus Short-winged Cisticola. Widespread, mainly in short, open woodland just outside riparian forest, and in seasonally flooded *Mitragyna* woodland (dry in Mar), usually with some unburnt grass.

C. aberrans Rock-loving Cisticola. Noisy pairs in grass among rocks on the escarpment at Brosan.

C. lateralis Whistling Cisticola. Widespread overall, mainly in rank grass on the lanward edge of riparian forest; also in mature, rich woodland near the escarpment.

C. erythropus Red-faced Cisticola. Common in open herbage on islands, and at landward edge of riparian forest.

C. cantans Singing Cisticola. Locally common in woodland with a shrub layer and on the landward edge of riparian forest.

Prinia subflava Tawny-flanked Prinia. Common in woodland and thicket edges.

Heliolais erythropterus Red-winged Warbler. In the same habitat as Tawny-flanked Prinias, somewhat less common and more tied to rank grass.

Apalis flavida Yellow-breasted Apalis. Common throughout in riparian forest and thicket, Tree House to Ntereso; also on the Tombe stream.

A. sharpii Sharpe's Apalis (GC). A lone male singing in several large trees at Asantekwa, 18 Mar, preened and fed for a long time in a *Celtis integrifolia* and *Albizia ferruginea*, then moved north around midday.

Camaroptera brachyura Grey-backed Camaroptera. Very common in riparian forest and any thicket or dense woodland.

Hypergerus atriceps Oriole Warbler (SUD). Common in riparian forest on the Volta throughout. Not noted in thinner riparian forest on the Tombe near Malaka.

Muscicapidae

Bradornis pallidus Pallid Flycatcher. Local in woodland at Agadre, Ntereso.

Melaenornis edolioides Northern Black Flycatcher. Scattered pairs in large trees on the edge of riparian forest, all localities.

Ficedula hypoleuca Pied Flycatcher. Common in any woodland or forest edge, throughout.

Muscicapa aquatica Swamp Flycatcher. Local in riparian forest, feeding low over the water from wooded banks at Asantekwa and Bope Island.

Myioparus plumbeus Lead-coloured Flycatcher. Common in small thickets, riparian forest and adjacent woodland throughout.

Platysteiridae

Batis senegalensis Senegal Batis. Common in woodland.

Platysteira cyanea Common Wattle-eye. Common in riparian forest throughout.

Monarchidae

Elminia longicauda Blue Flycatcher. Noted only at Ntereso, where common, and in thin riparian forest on the Tombe stream.

Terpsiphone viridis African Paradise Flycatcher. Common in riparian or dry forest and thicket; more locally in dense woodland.

T. rufiventer Red-bellied Paradise Flycatcher (GC). One pair in riparian forest on the Tombe stream in the far south.

Timaliidae

Illadopsis puveli Puvel's Illadopsis (GC). Widespread in riparian forest along the Volta, from Tree House to at least Agadre. Sang mainly at dawn, occasionally in mid-morning.

Turdoides plebejus Brown Babbler. In dry thickets, on the edge of riparian and in dense woodland; widespread.

T. reinwardtii Blackcap Babbler (SUD). Very common and noisy in riparian forest throughout, including on the Tombe stream.

Paridae

Parus leucomelas White-winged Black Tit. Widespread in woodland and edge of riparian forest.

Nectariniidae

Anthreptes gabonicus Brown Sunbird (GC). Three birds seen in low thickets on the edge of the Volta at Agadre. Two were apparently a pair, of which one bird was collecting dry vegetation from old inflorescences of *Salix* while the other sang in a subdued fashion; they flew off together.

A. collaris Collared Sunbird. Widespread in riparian forest from Tree House to Agadre.

A. platurus Pygmy Sunbird. One in non-breeding dress, calling in dry woodland near Ntereso, 24 Mar.

Nectarinia verticalis Green-headed Sunbird. Widespread in riparian forest, including on the Tombe and north to Ntereso; often on flowers of *Albizia ferruginea* and *Berlinia grandiflora*.

N. senegalensis Scarlet-chested Sunbird. Abundant in woodland and riparian forest throughout. Fond of *Albizia* flowers, alongside Splendid and Green-headed Sunbirds.

N. venusta Variable Sunbird. One in breeding dress on flowers of *Gmelina* on the boundary at Brosan, with many Scarlet-chested and some Coppery Sunbirds.

N. cuprea Coppery Sunbird. Widespread in small numbers in woodland and riparian thicket or forest, including near the escarpment.

N. coccinigastra Splendid Sunbird (SUD). Widespread, mainly in riparian forest but also in adjacent tall woodland, north to at least Agadre.

Zosteropidae

Zosterops senegalensis Yellow White-eye. Small numbers in riparian forest and thicket, also adjacent woodland.

Oriolidae

Oriolus auratus African Golden Oriole. Common in tall *Isoberlinia*/*Afzelia* woodland near the escarpment; rare in woodland in the main section of the park.

Laniidae

Corvinella corvina Yellow-billed Shrike (SUD). Locally common in open woodland, in small pockets of several territorial groups, as near Issaka and Agadre.

Malaconotidae

Nilaus afer Brubru. Local in woodland.

Dryoscopus gambensis Northern Puffback. Very common in riparian forest; also in adjacent woodland or anywhere in dry forest.

Tchagra senegalus Black-crowned Tchagra. Common in any woodland.

Laniarius aethiopicus Tropical Boubou. Common in riparian forest, including the escarpment area.

L. barbarus Yellow-crowned Gonolek. Local in riparian forest: frequent at Ntereso, uncommon at Bui Gorge and Tree House; one pair heard on the island at Agadre.

Malaconotus sulfureopectus Sulphur-breasted Bush Shrike. Common in riparian forest throughout, including the Tombe stream.

M. blanchoti Grey-headed Bush Shrike. Local on the edge of riparian and adjacent woodland, north to Ntereso.

Prionopidae

Prionopus plumatus White Helmet Shrike. Fairly common in tall *Isoberlinia* woodland near the escarpment; local elsewhere.

Dicruridae

Dicrurus ludwigii Square-tailed Drongo. Common in dense, tall-canopy riparian forest on the Volta, north to Ntereso.

D. adsimilis Fork-tailed Drongo. Widespread in tall woodland.

Corvidae

Corvus albus Pied Crow. Seen only on the eastern boundary near the road.

Sturnidae

Lamprotornis purpureus Purple Glossy Starling (SUD). Isolated pairs seen at two localities in woodland, on the escarpment and at Ntereso.

L. chalybaeus Greater Blue-eared Starling. One pair in an area with *Acacia*, *Anogeissus* and Baobabs on the park boundary near Ntereso, breeding in a dead *Anogeissus*. The male gave some nasal song, which confirmed the identification.

L. caudatus Long-tailed Glossy Starling. Confined to the extreme north, in dry woodland with *Acacia*, *Ficus*, *Lannea*, *Tamarindus*, Baobabs. At least five birds seen feeding on fruit of *Lannea acida*.

Cinnyricinclus leucogaster Violet-backed Starling. Widespread in small numbers throughout, in any woodland and thicket edge. Singing.

Buphagus africanus Yellow-billed Oxpecker. Reported by several guards, especially around Buffalo *Syncerus caffer*.

Passeridae

Passer griseus Northern Grey-headed Sparrow. Local in dry woodland in the south.

Petronia dentata Bush Petronia (SUD). Small numbers in woodland throughout.

Plocepasser superciliosus Chestnut-crowned Sparrow Weaver (SUD). Widespread in any woodland, especially common in mixed *Acacia* woodland on the edge of riparian forest, with nests often in *Acacia gourmaensis* or *A. gerrardii*.

Ploceidae

Ploceus luteolus Little Weaver. Uncommon in riparian vegetation on the Volta, and adjacent *Acacia* woodland north to Ntereso. Some moulting into breeding dress, Issaka, 19 Mar.

P. nigricollis Black-necked Weaver. Uncommon in evergreen riparian forest, Tree House and Ntereso.

P. heuglini Heuglin's Masked Weaver (SUD). At least two males in breeding dress and a female, in a mixed bird party in *Acacia* woodland at Agadre; typical round, solitary nest also seen at Issaka, in an *Acacia gourmaensis* full of wasps' nests.

P. cucullatus Village Weaver. Widespread, groups feeding in riparian forest and adjacent woodland.

Anaplectes rubriceps Red-headed Weaver. Widespread in tall, mature *Isoberlinia* woodland on the escarpment, as well as in drier woodland including mixed *Acacia* near the Volta. Nests seen in *Acacia gerrardii* at Issaka; occupied nest at Ntereso, hanging at the tip of a slender branch of Baobab.

Euplectes afer Yellow-crowned Bishop. Not in breeding dress; some flocks coming to drink in the Volta at Ntereso.

E. hordeaceus Black-winged Bishop. Several groups in the north, in non-breeding dress.

E. franciscanus Northern Red Bishop. Several groups in the north, in non-breeding dress.

E. macroura Yellow-mantled Whydah. Several at Agadre and Ntereso, in open woodland.

Estrildidae

Pytilia phoenicoptera Red-winged Pytilia. Adult and immature seen in woodland at Issaka.

Lagonosticta rufopicta Bar-breasted Firefinch (SUD). Widespread, with small numbers in riparian thickets and rank grass, Tree House to Ntereso.

L. rara Black-bellied Firefinch (SUD). A few pairs on the edge of riparian forest with rank grass, at Ntereso.

L. larvata Black-faced Firefinch (SUD). Pairs seen in woodland at Issaka and Ntereso.

Estrilda caerulescens Lavender Waxbill (SUD). Widespread in riparian thickets and forest; also in adjacent woodland.

E. melpoda Orange-cheeked Waxbill. Locally from Tree House to Ntereso, edge of riparian vegetation and rank growth on the river.

Uraeginthus bengalus Red-cheeked Cordon-bleu. Very common in small thickets in woodland and edge of riparian vegetation.

Lonchura cucullata Bronze Mannikin. Widespread and common in open habitats.

Viduidae

Vidua macroura Pin-tailed Widow. Reported for the rains by a guard and by D. Bennett & B. Basuglo in 1997 (pers. comm.).

Fringillidae

Serinus mozambicus Yellow-fronted Canary. Widespread in woodland, in small numbers.

S. gularis Streaky-headed Seedeater. Fairly conspicuous in tall *Isoberlinia* woodland on the escarpment; also a few near Ntereso. Song first heard near Malaka on 21 Mar, after rain.

Emberizidae

Emberiza affinis Brown-rumped Bunting (SUD). Only in short open woodland near Issaka.

E. cabanisi Cabanis's Bunting. In tall woodland near Agadre and Ntereso.

Breeding records

Stone Partridge. Pair with a tiny chick, 15 Mar (= egg laying Feb).

Grey-headed Kingfisher. Incubating bird flushed from nest, 19 Mar (= laying Mar).

Red-billed Wood Hoopoe. Pair carrying food to nest in a dead tree, 24 Mar (laying probably Feb).

Piping Hornbill. Males carrying food to nests in two places, 18 Mar.

Common Wattle-eye. Two females begging from males, so probably incubating, 16 and 23 Mar (= laying Mar).

White-winged Black Tit. Occupied nest in dead tree, 24 Mar.

Brown Sunbird. One collecting nest material, accompanied by singing mate, 22 Mar.

White Helmet Shrike. Nest with three young almost ready to fledge, in a bare tree in woodland, 20 Mar (= laying Feb).

Greater Blue-eared Starling. Pair feeding small young in a hole in a dead *Anogeissus*, 24 Mar, still brooded by female (= laying Feb).

Red-headed Weaver. Female entering nest with food and brooding, 24 Mar (= laying Feb).

Discussion

Bui N.P. is a third of the size of Mole N.P. and the vegetation is more uniform, as unlike Mole there are no open floodplains and no bovals (grassland on laterite). Thus the above list of nearly 230 species (compared to 350 in Mole: Dowsett-Lemaire &

Dowsett 2008) likely represents a substantial proportion of the avifauna. March is a good month for detecting Palearctic migrants and most of the breeding intra-African migrants (cuckoos especially), although granivorous birds with seasonal plumage such as widows and indigobirds *Vidua* spp. are best studied in the second half of the rains and were under-represented in this survey.

Rejected species

The following species reported by Ntiamoa-Baidu *et al.* (2001) appear unlikely and are rejected pending confirmation: Red-thighed Sparrowhawk *Accipiter erythropus*, Long-tailed Hawk *Urotriorchis macrourus*, White-bellied Bustard *Eupodotis senegalensis*, Red-throated Bee-eater *Merops bulocki*, White-bellied Kingfisher *Alcedo leucogaster*, Green Crombec *Sylvietta virens*, Buff-throated Sunbird *Nectarinia adelberti*, Superb Sunbird *N. superba* and Crested Malimbe *Malimbus malimbicus*. The few Guineo-Congolian species in the biome table in Ntiamoa-Baidu *et al.* (2001) look as if they had come from a list for a different part of the country. For instance the Long-tailed Hawk is restricted to rain forest of SW Ghana, and it is highly unlikely to occur in the dry environments of Bui.

The composition of the avifauna

The birds and vegetation indicate that Bui is at the northern limit of the Guineo-Congolian/Sudanian transition zone of White (1983). The Sudanian biome is dominant, with at least 23 Sudanian bird species, thus two-thirds of the species recorded for this biome in Ghana (Fishpool & Evans 2001). Of these, three are not known to occur further south in the country: Chestnut-crowned Sparrow Weaver, Lavender Waxbill and Brown-rumped Bunting (Grimes 1987 and Tauraco data bank). Bui is close to the type locality of *Cisticola guinea* at Kintampo, which is just to the south (8°4'N, 1°44'W: Dowsett-Lemaire *et al.* 2005), where the woodland vegetation has been destroyed (pers. obs.).

There are only 10 Guineo-Congolian elements, plus a vagrant, all reaching their northern limits within west-central Ghana in Bui. There appears to be a gradual dropping out of species from south to north: the Red-bellied Paradise Flycatcher has been found only in the extreme south on the Tombe stream (8°8'N), and only four species appear to reach Ntereso in the north (8°47'N). Of these, Green Turacos are common, but the numbers of Leaflove are noticeably lower (its niche being partly occupied by Yellow-throated Leaflove), and Pied Hornbill and Black-throated Coucal appear rare. Excepting Sharpe's Apalis, the remaining five Guineo-Congolian species all reach Agadre (8°37'N), where the riparian forest is still fairly luxuriant. Sharpe's Apalis is probably a vagrant, as it is present in only some of the more extensive forests in the forest/savanna transition zone in Ghana (e.g. Kyabobo: Dowsett-Lemaire & Dowsett 2007) and the riparian forests at Bui appear much too dry for it. Its normal forest range in western Ghana is not completely known, but it reaches at least the Sunyani area close to 7°30'N (A. Hester pers. comm.) and there is at least

one reliable record of a vagrant in a small forest patch at Boabeng-Fiema (7°43'N, 1°42'W, J. Teichroeb pers. comm.). For the Brown Sunbird our observations represent not only the northernmost sighting for this species in Ghana but the first indication of breeding in the country.

Other species of interest include the Plain Nightjar, as the persistent singing suggests this bird is likely to breed at Bui, in short pebbly or rocky grassland of open woodland; Grimes (1987) had no breeding records. The Red-billed Hornbill was previously known only from the far north (Grimes 1987) but we found it widespread in woodland north of 8°30'N in 2009 (pers. obs.), and densities in Bui are high in *Acacia*-dominated habitat. We have since found it in pockets of dry woodland in the southeast of the country (Shai Hills in 2005, Kalakpa Resource Reserve in 2008). Yellow-billed Oxpecker was mentioned only from Mole in the past (Grimes 1987), but is known also from Gbele Resource Reserve in the northwest and around the Penbik plain in the northeast (pers. obs.). Wildlife guards in Bui mention it as rare, and numbers must have decreased generally in Ghana (as elsewhere) through the application of pesticides on cattle. Other species with few records in the country include White-backed Night Heron, Pel's Fishing Owl, Barred Owllet, Fiery-necked Nightjar, Golden-tailed Woodpecker and Puvel's Illadopsis. The last four are now known to be widespread and locally common through the forest/savanna transition zone from the Ivory Coast border to the Togo border (pers. obs.).

Conservation issues

The Bui Gorge dam is expected to flood all land below *c.* 180 m (R. Ofori-Amanfo pers. comm.). This means that all riparian forest and adjacent woodland of the southern half or two-thirds of the park will disappear (Fig. 1). This affects all the main forested islands with the possible exception of Agadre. If Agadre is spared, the special forest avifauna of Bui, in particular the relict Guineo-Congolian species, might survive in a small pocket from there to Ntereso. If the floods reach Agadre, this avifauna will probably disappear. In any case the natural link between the forest/savanna transition zone to the south and Sudanian woodlands to the north will be interrupted. Judging by what happened after the creation of the enormous lake on the White Volta in SE Ghana, riparian forests will not regrow as the alluvial matter will sink into the lake. The Akosombo dam was constructed in the mid-1960s, flooding the riparian forests along the Afram, Sene and Volta rivers. The edges of the current Lake Volta are occupied by a thin belt of aquatic grassland and sedges, giving way to a belt of *Hyparrhenia* grass then to dry woodland, as in Digya N.P. (Dowsett-Lemaire & Dowsett 2009). The disappearance of large areas of forest seems to have led to a local drying out of the climate, whereas away from the lake the forest/savanna transition zone is in fact getting wetter, with forest expanding over savanna (cf. Dowsett-Lemaire & Dowsett 2007). As a result, the semi-forested land in the Afram plains has suffered from recurrent bush fires, so severe in 1983–4 that all cocoa farms had to be abandoned, and many of the remnant forest patches were also destroyed.

Thus the ecological future of the Black Volta region looks grim. Some of the trees and mammals are seriously threatened. In 2005 we discovered a rare species of strangling fig, *Ficus cyathistipuloides*, growing on the edge of forest islands at Issaka and Bope (identification confirmed by J.-Y. Rasplus). This tree was known only from a handful of specimens in Ivory Coast, Gabon and Congo-Kinshasa (Berg *et al.* 1984, Hawthorne & Jongkind 2006), and our record is the first for Ghana. Of the mammals, the riparian forests of Bui represent the northernmost refuge in Ghana for the Lesser Spot-nosed Monkey *Cercopithecus petaurista*: this and a small population of Black-and-White Colobus *Colobus vellerosus* will soon become extinct as they are confined to a limited area of seasonally flooded forest in the centre of the park. The population of Hippos will be particularly hard hit, as these animals depend on good-quality grazing on alluvial sands deposited by the river floods. A few individuals may survive in the north, but the river does not flood there and at present they are not common in the Ntereso area, which they visit mainly in the rainy season. With the collapse of mammal populations, the survival of vultures and oxpeckers is also in question. The conservation status of White-backed Vulture and White-headed Vulture has recently been raised to “Near-Threatened” and “Vulnerable” respectively on the IUCN Red List (BirdLife International 2008); they will probably disappear from the Bui area.

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