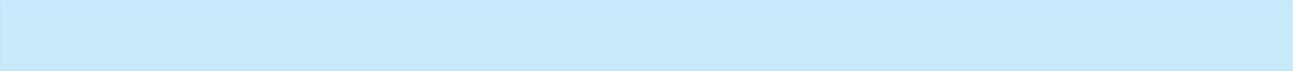


**Comments on forest reserves in north-eastern Ghana,
and the conservation status of woodland in general,
with reference to birds**

Françoise Dowsett-Lemaire & Robert J. Dowsett

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***E-mail:* Dowsett@aol.com**

General observations on the conservation of habitats. Twelve of these squares are in one block from 8°30' to 10°30'N, and from 1°W to 0°30'E. In this area, the only forest reserves of any importance for natural woodland are those under the Walewale District Forestry Office (including Gushiegu District). Of those, we visited the large Nasia Tributaries F.R. (south-east of Walewale) and the small Tanja F.R. (north-east of Gushiegu); there is also the Daka Tributaries F.R. (south-west of Gushiegu). The forest reserves under Tamale and Yendi Districts are largely devoted to Teak plantations or biofuel (*Jatropha*), and those supervised from Bimbila are also mainly under Teak. Outside the few reserves of natural woodland, the only areas of semi-intact woodland we saw along the route detailed below were between Gyafo and Wangasi on the Salaga-Tamale road (just north of Binjai), between Pigu and Nasia (Walewale Dist.), south of Gushiegu towards Tuwuo (Gushiegu Dist.), and west of Salaga on the track from Bau to Lamassa on the lake-shore (Salaga Dist.). The survival of natural woodland in the short term is at risk everywhere else, and the situation is particularly bad in all the squares along the Togo border (from Nakpanduri south to Yendi, Zabzugu, Bimbila and almost all the way to Nkwanta), and also between Tamale and Yendi, and Yendi and Kete Krachi.

Some of the countryside around Tamale, and especially around Bimbila and towards Nkwanta is so heavily populated that even the farming communities have run out of firewood: they are condemned to use the young shoots of saplings growing on roadsides. Everywhere else we were alarmed at the massive quantities of firewood (and secondarily charcoal) assembled on roadsides for sale to the cities and larger villages. Even along the most secondary or poorly maintained tracks neat piles of firewood are prepared in front of every hamlet, every cluster of huts, for collection by lorries or pickups. In places the sound of axes was permanent. At this rate it is doubtful that there will be any tall woodland left for the next generation.

Less under pressure for the moment is the riparian forest lining the major rivers or semi-permanent streams of the region, except that the plains around have been largely deforested to improve grazing (some under *Vitellaria* "orchards"), and trees on the outer edges of riparian thickets are being cut down by cattle herders. Floodplains around the bigger rivers have also been modified by cultivation, as along the Oti river west of Zabzugu, and of course near the White Volta west of Savelugu. The most intact floodplain we have seen in this whole trip is the one on the Daka river east of Salaga (see below), which will repay further study.

Overgrazing by cattle is also a problem, in floodplains, all woodland types and even forest reserves (e.g. Nasia Tributaries near Sung). In the section between Tamale and Yendi, overgrazing is so intense that secondary or coppice woodland was completely devoid of dry grass at the end of the dry season, and there was no sign of bush fires in large areas, with the apparent result that coppice woodland thus protected from fires regenerates vigorously. This is a situation akin to that of the Karoo in the Cape Province (South Africa), where overgrazing by sheep has interrupted the natural regime of dry-season bush fires.

ITINERARY AND OBSERVATIONS.

Coordinates of all camp sites are given in Appendix.

- 4 Apr. We travelled from the Dambai ferry crossing towards Salaga, stopping along the way in secondary woodland and fields near the Kete Krachi turn off (**site 1**). Two pairs of Wire-tailed Swallows seemed to be breeding on the ferry (underneath the pontoon) and made the journey with us, as well as one pair of Palm Swifts! The woodland at site 1 produced the only Streaky-headed Seed-eaters of the trip, as this species is apparently absent from drier woodland in the north-east.
- 5 Apr. Next stop on the **Daka river** crossing (near Ekumdipe) where there is still good, tall riparian forest (**Site 2**), with *Cola laurifolia*, *Manilkara multinervis*, *Parinari congensis* as main large trees, and also *Eugenia nigerrima*, *Garcinia livingsstonei*, *Pterocarpus santalinoides* and *Syzygium guineense*. A few large *Daniellia oliveri* on the outer edges of the riparian, otherwise very little woodland persists in the vicinity. Two Willcocks's Honeyguides singing in tall *Daniellia* on either side of the river from 8h50 and 9h00 respectively (6 April), and several night herons of both species watched fishing at dawn, were some of the highlights.
- 6 Apr. Discovered impressive floodplain (at least 5 km diam.) half-way between Daka river crossing and Salaga, where we found a substantial population of territorial Grasshopper Buzzards, and a huge

population of Black-backed Cisticola and Quailfinches; some pans with hundreds of Spur-winged Geese; also Vitelline Masked Weavers and Silverbills in *Acacia* and *Balanites* at the southern limit of their range, and dozens of Northern Carmine Bee-eaters. Drove on to **Salaga**, stopping on the way at a small dam and pan with some natural aquatic vegetation (only Goliath Heron of the trip, and more than 20 Blue-cheeked Bee-eaters on passage, a very rare Palaearctic migrant in Ghana) and *Acacia sieberiana* groves. Then eastwards (road to Bimbila) to reach **Daka river** again (**site 3**), where thin riparian thickets alternate with broad riparian forest, up to 100 m in width and 15-20 m tall (not surprisingly Square-tailed Drongo occurs here). Many big *Manilkara multinervis*, in addition to *Cola laurifolia*, *Parinari congensis*; thickets with *Garcinia livingstonei*, *Quisqualis* creepers, *Eugenia nigerrima*; scattered *Mitragyna inermis* in plain and some large *Daniellia oliveri*. No woodland as such, but *Anogeissus* grove near the village. A Denham's Bustard flying across the floodplain was the only one of the trip. First Pygmy Sunbirds, at southern limit of range (found everywhere north of 9°N).

- 7 Apr. Re-crossed **Salaga** to take road west towards Lamassa on the lake-shore (latter rather undisturbed as only a small village nearby, several pairs of Kittlitz's Plovers and Collared Pratincoles); good bush track recently upgraded, but found very good woodland half-way between Salaga and lake-shore (**site 4**). However, the upgrading of the road is encouraging local farmers to cut trees for selling firewood to lorries for Salaga town, although this is not yet done on a large scale. Spotted Thick-knee in tall woodland, Brown-rumped Bunting in shorter woodland with many Dorst's Cisticolas in full song are all near southern limit of range here. A Black Cuckoo very noisy in woodland, but not encountered any further north on this trip.
- 8 Apr. Recrossed Salaga to take road to the north (**Tamale**), stopping to look at riparian forest along the **Mawli river** (south-east of Tamale, **site 5**), otherwise *Mitragyna* floodplain in a state of overgrazing. Some trees of riparian thicket cut down; main woody species here are *Combretum acutum*, *Quisqualis*, *Syzygium guineense* and *Vitex chrysocarpa*; Swamp Flycatcher very common in thickets on the edge of exposed water; some very strange noises of unidentified mammal in low thicket near water. Incessant traffic of Four-banded Sandgrouse coming to drink overnight under full moon. Only European Turtle Dove (singing) of the trip on 9 April. Unexpected was a female Reedbuck.
- 10 Apr. After an overnight stop at Tamale (9 April), took the road east towards **Sang** (in Yendi square). The forest reserves under Yendi Forestry Office (F.O.) situated along the Tamale-Yendi road have been destroyed to be replaced with biofuel plantations of *Jatropha curcas*. Impressive amount of machinery left idle on the roadside (there is much local opposition to expansion of activities). We decided to camp in an area of short mixed woodland and *Mitragyna* grove in a hollow, east of the *Jatropha* plantations (**site 6**). Serious overgrazing in the area, so much so that there was very little grass and this woodland cannot burn: the absence of cisticola warblers apart from Singing Cisticola also reflects this situation. One Swallow-tailed Bee-eater, of the few on this trip (4 squares in all).
- 11 Apr. Drove west towards Tamale again, but the one forest reserve under **Tamale** F.O. has largely been replaced by Teak plantations. Camped in a *Vitellaria* orchard next to patches of secondary woodland (**site 7**). Again overgrazing so prominent here that there was virtually no grass in much of the coppice woodland, which tends to regrow vigorously and become very dense (probably through lack of fires). This dense coppice woodland is beneficial to some species of wildlife, especially Black-bellied Bustard, commonly heard in the area.
- 12 Apr. Drove on to **Savelugu** and continued north to Gushie (some decent woodland left along this section of the road). Turned west to camp on **Volta river** near **Dipale** (**site 8**). Some sand banks on the Volta (with Egyptian Plovers), bordered with riparian thickets (*Quisqualis* and *Combretum acutum* dominant). The tallest riparian is formed by clusters of *Pterocarpus santalinoides* 10-12 m high. Much cultivation in the area, with small forest groves in gullies along tributaries. Only Red-throated Bee-eaters of the trip! whereas Carmine are far more widespread (8 squares).
- 13 Apr. Took the road from Pigu towards Gushiegu, to visit **Nasia Tributaries F.R.** from the south, i.e. the village of **Sung** (**site 9**). Quite a variety of woodland types and cover in this reserve, unfortunately crisscrossed by tracks coming from the village of Sung, to collect trees for charcoal and firewood, and to graze cattle. No deliberate clearing for gardens in the reserve as far as we could see, but graz-

ing and woodcutting are taking their toll. *Vitellaria paradoxa*, *Combretum fragrans* and *Terminalia* spp. are dominant. *Lannea acida* also common; then *Acacia* spp., *Azelia africana*, *Anogeissus*, *Burkea africana*, *Entada africana*, *Gardenia ternifolia*, some big *Daniellia oliveri* (rare), *Detarium microcarpum*, *Parkia biglobosa*, *Piliostigma thonningii*, *Pseudocedrela kotschyi*, *Pterocarpus erinaceus*, *Sterculia setigera*, *Strychnos* sp. Some trees reach 15-18 m, but most are 8-10 m tall. Yellow Penduline Tits particularly common here, around *Vitellaria* buds and flowers; high density of Four-banded Sandgrouse flushed from the ground, in pairs or small family groups. Only African Hoopoe (singing), and first Quailfinch Indigobird *Vidua nigeriae* of the trip, singing on morning of 14th on the edge of small pan, in non-breeding dress (this latter is new for Ghana). Incidentally, the track from Pigu to Gushiegu is in very poor condition, so narrow in places that it will soon become impassable if some serious roadwork is not undertaken.

14 Apr. After morning in F.R., moved on west towards Pigu again, and turned off north towards **Saakpuli** (on a new road), to enter the same forest reserve from the south-west corner, situated in the next square (Walewale square). Camp (**site 10**) on edge of reserve. In this section there was less overgrazing and more grass, but some illegal exploitation of Mahogany (*Khaya senegalensis*) was taking place, with heavy machinery, as photographed (**Fig. 2**). This was happening inside the reserve, next to a series of pools of very fresh water (a tributary of the Nasia). Beyond this, the woodland was less damaged than near Sung, and more closed, with trees reaching 15-18 m. Just after leaving the reserve, a Secretary Bird flew across the road near Pigu, the only one of the trip.



Fig. 2. Uncontrolled forest clearance in Nasia Tributaries F.R.

15 Apr. Between Pigu and the Nasia river to the north there was good woodland left along the road outside the reserve. Moved on to **Nasia river** south of **Walewale (site 11)** to look at riparian vegetation along this important river (*Cola laurifolia*, *Combretum acutum*, *Cynometra vogelii*, *Manilkara multinervis*, *Parinari congensis*, *Vitex chrysocarpa*, *Syzygium guineense*): most of this is thicket, with a few taller trees (12-15 m) scattered along the river (mainly *Manilkara*, *Parinari*) and also a few tall *Daniellia* on the outside edges. As usual there is a sharp-edge effect between the riparian vegetation and the overgrazed plain around. Some pans in floodplain (Palearctic Little Bittern, Squacco Herons), and a dozen Zebra Waxbills, a very local species in Ghana.

16 Apr. Visited **Walewale Forestry Office**, where we informed the Manager of our observations on Nasia Tributaries FR. The manager told us he had no staff on the spot and was not aware of the location of the boundaries. Afternoon drive to Gambaga, then **Nakpanduri**, looked at the escarpment, and camped on the **Morago river (site 12)** below. We had visited the Gambaga scarp and Volta plain for 4 days in Feb 2005, and this was mainly to double-check whether the Rock Pigeons *Columba livia* have indeed deserted the escarpment (apparently they have); they were last observed at Nakpanduri in 1964. Among additions to the square, 4 Yellow-billed Oxpeckers were the most interesting. The

species was seen in 4 other squares (including both Penbik squares) on or around cattle. The riparian vegetation on the Morago was very degraded, with small thickets and scattered tall trees.

- 17 Apr. Drove south-east of Nakpanduri to the **Penbik river (site 13)** near the Togo border. It so happens that the only decent woodland left in this square is between Bunkprugu and just north of the river, something we realized too late, as in the rest of the drive through the square we would not cross any good woodland. A visit to this woodland will need to be organized next year. The Penbik (or Pembik) river is 20-30 m wide here, and is lined with thickets and forest, the richest section has large trees such as *Parinari congensis*, *Syzygium guineense*, *Pterocarpus santalinoides* and *Morelia senegalensis* (this one section had Yellow-throated Leaflove and Blue Flycatcher). Swamp Flycatcher is common in thickets bordering open water; one Black-headed Weaver in non-breeding dress, and some old nests in bushes over water; several Mourning Doves singing in riparian, at southern limit of range; large numbers of Long-tailed Cormorants fishing. Apart from some large *Daniellia* and one or two small clumps, the woodland outside has been cut for grazing cattle. Some large pans on the southern side of the river, with waterbirds (including numerous Jacanas, Squaccos, two Intermediate Egrets, a Painted and a Common Snipe, Collared Pratincole, Spur-winged Lapwings); large flocks of Speckled Pigeons came to drink. Twelve Oxpeckers was the best number encountered.
- 18 Apr. Drove south to Wenchiki (where we saw the only Crested Lark of the trip, a species new for Ghana), and west across Nabule to the square west, to camp on the **Penbik river north of Gbintiri (site 14)**. Upstream of site 13, the river here is reduced to a small stream with a few shaded pools, and trees on either side join up to form a rather dense line of thickets 10 to 25 m wide and 10-15 m tall, with *Cola laurifolia*, *Parinari congensis*, *Pterocarpus santalinoides*, *Syzygium guineense*, and some large *Daniellia* on the outside. With no exposed water Swamp Flycatcher is absent, but the vegetation is consistently denser than downstream so that both Yellow-throated Leaflove and Blue Flycatcher are more common than in "Penbik east". Cultivation and *Vitellaria* orchards in the vicinity, and beyond this some very degraded woodland where White-throated Francolin called persistently. Piapiacs were nest-building in a *Borassus*; they were more common in the Penbik plains (both squares) than anywhere else on this trip.
- 19 Apr. Drove south towards Gushiegu, looking for some woodland. No untouched woodland left anywhere in this square, and we stopped somewhere near **Katani (site 15)** in the shade of big *Parkia biglobosa*, with coppice woodland and orchards. One Chestnut-crowned Sparrow-weaver feeding on the ground next to some Chestnut-bellied Starlings (the latter at its southern limit of range). Rufous-rumped Larks singing in fields next to degraded woodland (*Acacia gourmaensis*, *Lannea acida*, *Sterculia setigera*) and several small groups of Chestnut-backed Sparrow Larks resting and preening in trees in the heat of the day. Surprisingly high density of Dorst's Cisticola in short coppice *Combretum* woodland (feeding on ground, or by hopping into low bushes of *C. fragrans*), with shoots barely 50 to 80 cm tall; it was the dominant species in this habitat, where Brown-rumped Bunting and Flappet Lark are also characteristic.
- 20 Apr. Stopped in same square to take water at Nausugu (on map, but spelt "Nausuhu" on the signboard), where 8 Forbes's Plovers were found resting and feeding in mud on edge of small lake, next to a series of bovals (inhabited by Sun Larks). Drove to **Zanteli** in next square and turned off east towards **Tanja F.R. (site 16)**. This reserve has some good woodland left, and quite a scattering of small bovals, but is crossed by some tracks and villages are expanding. After very heavy rainfall at night, Forbes's Plovers displayed aerially. Only observation on this trip of Gambaga Flycatcher, two singles in short woodland over small rocks.
- 21 Apr. Drove to Gushiegu and south through good woodland (not in reserve), then west from Tuwuo toward the **Daka river (site 17)**. Here the Daka is just a small stream, with isolated pools overshadowed by thickets 5-10 m wide and a few metres high: thus White-crowned Robin Chat is replaced by Snowy-crowned (imitating Cuckoo Hawk, Black Scimitarbill, Greater Honeyguide etc. in its song). Riparian trees are mainly *Mitragyna inermis*, plus *Cola laurifolia*, *Morelia senegalensis*, *Vitex chrysocarpa* and *Syzygium guineense*, with taller *Daniellia* and *Isoberlinia* on the outside. A Western Banded Snake Eagle on the hunt in the early morning caused alarm in Violet Turacos, then was chased by a group

of Blackcap Babblers.

- 22 Apr. Went back to main Gushiegu road and drove south to Sakpeigu, turning north-east towards Wapuli, and then east to the “**Yombateau**” river (this unusual name is in fact pronounced **Jambalvo** by the local inhabitants and probably misspelt on the country map). One of the more pleasant camp sites on this trip (**site 18**) in deep shade on the edge of the river, watching a tame Finfoot in the heat of the day (once jumping up to catch a dragonfly), and very quiet as no villages in the immediate vicinity. The river broadens in places to 20-30 m, and is lined with thickets 8 to 12 m high, sometimes quite narrow (2-5 m wide) but widening locally to patches of forest 50-60 m wide (with *Cola laurifolia*, *Cynometra vogelii*, *Dialium guineense*, *Garcinia livingsstonei*, *Quisqualis*, *Syzygium guineense*, *Vitex chrysocarpa*). Quite a lot of bush outside on the plain, with *Acacia* groves, clumps of *Mitragyna inermis* and *Vitex chrysocarpa*, and coppice woodland (inhabited by Black-bellied Bustard). Came across our second Quailfinch Indigobird of the trip, in full song in non-breeding dress; as it was singing only a few metres from our camp chairs it was easily tape-recorded.
- 23 Apr. Drove back towards Sakpeigu, stopping in woodland on a track east of the main road (**site 19**). Tall (15-16 m) *Isobertinia-Vitellaria* woodland was being degraded very fast by woodcutters for selling to the town of Yendi. Sounds of axes were continuous as we were birding the next morning. Hunters with dogs were met on the move and minutes later a male Black-bellied Bustard appeared on the road. A Bronze-winged Courser calling at night was one of only two on this trip.
- 24 Apr. Drove on to Yendi, then east on the road to Zabzugu, stopping to look at the **Oti river**. As there is a big village (Sabari) near the bridge and a lot of disturbance, we had to camp about 1 km west of the bridge, on the edge of a small floodplain (**site 20**). The river is quite wide, there is much cultivation on the sandy plain on either side, and the best patches of riparian thicket or forest are difficult of access. Ahanta Francolins heard at dusk, at northern limit of range; also a Red-chested Cuckoo. A Great Spotted Cuckoo calling near the river was not doubt interested in some Pied Crows nest-building nearby. A late Eurasian Marsh Harrier (subadult male) quartering the banks, and an equally late Great Reed Warbler (25 April). Note that the road from Yendi to Zabzugu was meant to have been paved, but only 10 km were completed out of Yendi, the rest is in appalling condition.
- 25 Apr. Turned back to Yendi, to look at the Daka river on the main road west, but as it is too open (no riparian forest, just a small marsh), drove south and reached the **Daka river** again via **Yimahegu** (**site 21**); the road ending at the river. The river here forms some large pools (with a lot of fishing activity going on) bordered by an interrupted line of thickets 8-10 m tall, locally 12-15 m (*Cola laurifolia*, *Cynometra vogelii* and *Dialium guineense* all common, also *Dissomeria crenata*, *Eugenia nigerrima*, *Garcinia livingstonei*, *Manilkara multinervis*, *Pterocarpus santalinoides*, *Quiqualis* creepers, *Syzygium guineense*, *Vitex chrysocarpa*, and *Mitragyna inermis* in the more open sections). Some tall *Daniellia* (15-18 m) on the outside, and *Mitragyna* wooded grassland, with coppice woodland beyond (with Black-bellied Bustard singing). A Willcocks’s Honeyguide was seen on the edge of riparian. Songs of Black Flycatcher with remarkable imitations of the whistles of White-faced Whistling Duck, something already observed in Digya N.P. (Dome) last year. The habitat appeared ideal for species such as White-backed Night Heron (seen on the Daka in both squares south of here), but there was too much disturbance.
- 26 Apr. Went back to Yendi-Bimbila road and drove south looking for some good woodland. Very hard to find any, eventually at Lepusi, turned off south-east to **Juo** (wrongly spelt Djoa on the map), camping in small area of good woodland on rocky hill (**site 22**). Pristine woodland is of very small extent, so fields and coppice woodland also explored (coppice dominated by *Nauclea latifolia* and *Detarium microcarpum*). In coppice woodland 1-2 m tall with much grass (in a high-rainfall area) Singing Cisticola was more common than Dorst’s.
- 27 Apr. Drove on to the **Oti river** at **Salinayi** (**site 23**), camping in riparian forest close to the village. The Oti is at least 100 m wide, with rich riparian forest and thickets on both sides; much less disturbance than in the Zabzugu square, as the road ends here. African Goshawk and Ahanta Francolins singing at dusk and dawn respectively; one or two Blue-headed Coucals. Patches of dry forest dominated by *Dialium guineense* and *Diospyros mespiliformis*, also *Lannea barteri* (common), *Ficus mucoso*, *F. sur*,

Lonchocarpus sericeus and *Vitex doniana* (a pair of White-cheeked Olive-back here, a very rare or discreet species of riparian forest in Ghana). Riparian forest 15-20 m tall at the water's edge is dominated by *Cola laurifolia* and *Cynometra vogelii* with many lianes such as *Quisqualis*; *Balanites*, *Tamarindus indica*, *Acacia polyacantha* and *A. sieberiana* on the outside in well-drained sand. A colony of Northern Carmine Bee-eaters is known to local fishermen just south of here. Last Marsh Harrier of the trip (28 April) in female/immature plumage.

28 Apr. Called in at the Bimbila Forestry Office where a forest guard took us to Chamba (road to Salaga) to look at Lambo F.R. The other forest reserve under Bimbila, "Kumbo" (closer to town) is mostly Teak, and the Lambo F.R. is said to have more natural woodland. Unfortunately, the track from Sogon leading to it north of the main road was so bad that we had to stop and camp in degraded woodland (**site 24**), which was not very productive. Usual species in secondary or coppice woodland included Black-bellied Bustard, White-throated Francolin and Dorst's, Croaking, Singing and Rufous Cisticolas, and one of the very few Swallow-tailed Bee-eaters of the trip. A late Tree Pipit. The woodland bird list for this square will need improving.

29 Apr. Returned to Bimbila square in search of good woodland; the track east of Bimbila towards Kukuo did not produce much, so we continued on the main road south, then east of Kpassa almost all the way to the Togo border for another fruitless search. This square is under heavy population pressure. Drove on to Nkwanta for the night.

RESULTS OF BIRD SURVEYS

Coverage. Most of the squares explored on this trip had very few or no historical records. In "new" squares visited for 48 hours (where, as a rule, we looked at both dry woodland and riparian vegetation), species totals came to between 145-180 species; in three squares with only 24 hours spent (riparian forest, and marginally woodland; woodland only in the Salaga square but with the lake-shore), totals were between 145 and 158 species.

Seasonality. These high totals are to a large extent the result of our choice of season. April marks the start of the rainy season: every square visited had had at least one major rain shower, often two; Tamale had received four main storms in March already, which was early. Near Sung the first big rain was recorded on 4 April. There was a big storm around Savelugu on the 12th, a short one at night on the 16th (Nasia river south of Walewale), very heavy rain on the night of 20-21 April near Zanteli-Gughiegu, and heavy rain in late morning on the 24th all the way to Yendi from the north-east.

Most woodland birds breed in the early rains, and were in song. Doves and hornbills were extremely vocal. Of migratory cuckoos, African Grey and Levaillant's were very noisy everywhere (and mating), singing by day and also by night (Levaillant's often after dusk, Grey just before dawn); their respective hosts, Fork-tailed Drongo and Babblers were seen occasionally to mate or carry nest-building material. Didric Cuckoo (a weaver parasite) started to sing in a number of places, even in very dry woodland where the only weaver in breeding dress in April was Little Weaver (as north of Gushiegu on 19 April). It is possible that Red-chested Cuckoo was not yet singing normally, as heard very briefly near the Oti river at 9°16'N on 25 April. White-throated Francolin was barely singing by the 7th (Salaga), but after the middle of the month it was heard everywhere on a daily basis, and not just in the twilight hours; in the transition zone in Digya (between 7 and 8°N), the rains started in March and the first song was heard on the 16th of that month (pers. obs.).

All owls (Barn, Spotted (Greyish) Eagle, White-faced and Pearl-spotted) were vocally active except African Scops, which was calling very little (once or twice in a night), or not at all in a couple of squares. In the dry months of February-March 2005 we found this bird very noisy at dusk and before dawn, in Gambaga, Gbele and Mole for example. By contrast, White-faced Owl was very active in April, with both members of a pair answering each other, or sometimes calling even before dusk, around 5 p.m. Long-tailed Nightjars were generally active still, but with a decrease in the second half of the month. Aerial displays of Flappet Larks were still discreet, and often confined to a short period before dawn or at dusk, whereas

Rufous-rumped Larks were in full song (lasting until mid-morning) in several squares north of 9°30'N from the 13th. All swallow species were breeding, collecting mud to build nests under culverts etc. Red-shouldered Cuckoo-shrikes (an intra-African migrant) were probably recently arrived and were conspicuous everywhere in riparian situations, some displaying. Among the cisticola warblers, all species but two (Rufous and Short-winged) were singing in April, and Short-winged started towards the end of the month, while Rufous became more conspicuous in the last week, often calling (alarming?) from tops of trees when flushed from grass. Brown Babblers, a species that can be overlooked at other times of year, were very conspicuous everywhere, often calling from treetops. Of passerine species confined to riparian thickets, Oriole-Warbler was perhaps the least active, singing irregularly (sometimes no more than once) in the early morning; similarly White-crowned and Snowy-crowned Robin Chats were not in full song yet.

April was excellent for Palaearctic migrants, passing through on a broad front. It was still productive for one intra-African migrant which leaves the country at the end of the dry season: Four-banded Sandgrouse, common until mid-April around 9-10°N (17 April on the Morago river), then in decreasing numbers until the 24th (Oti river west of Zabzugu).

The groups of birds under-recorded in the early versus the late rains are of course the seed-eaters, especially the bishops *Euplectes* spp. and widows *Vidua* spp., still in non-breeding dress and rather discreet, or in wandering flocks where they can still find grass seeds. Some Yellow-mantled Whydahs started to sing in late April, in non-breeding dress (in the transition zone between 7-8°N they start in March). Some *Vidua* indigobirds started singing from mid-April and two were clearly recognized on the basis of their imitations (of host species): *Vidua nigeriae* (imitating Quailfinch) and *V. larvaticola* (imitating Black-faced Firefinch).

A second visit will be planned to the more accessible areas in the rainy season, for these species and any others more conspicuous then, as well as to get dates of arriving Palaearctic migrants.

Distribution patterns and conservation concerns. Systematic surveys such as these already show some interesting patterns, even though more than a dozen savanna squares remain to be explored in north-west Ghana. Sometimes results bear no relation to the status of species as summarized by Grimes (1987). Of woodland raptors, we had not expected Cuckoo Hawk and Grasshopper Buzzard to be present (and common) in every square, evidently territorial and calling frequently (to the point that the song of Cuckoo Hawk is imitated by some Snowy-crowned Robin Chats). Grasshopper Buzzard is common in any woodland type, including *Vitellaria* orchards, and the Cuckoo Hawk is present even in coppice woodland provided there are some tall trees left. On the other hand we had no observations of vultures, Bateleur, African Hawk Eagle and Martial Eagle and very few Tawny Eagles (4 squares, two of which were in sections of Nasia Tributaries F.R.). The almost complete lack of small game (some small mongooses, hares and ground squirrels are left), even of guineafowls, is evidently responsible, as well as general disturbance.

Even more alarming is the fact that the African Fish Eagle is totally absent from the area, despite apparently suitable habitat (especially on the lower Daka, Jambalbo and Oti rivers); we have yet to see this species in Ghana. The creation of the Volta Dam in the 1960s has certainly been detrimental to Fish Eagles as fish stocks became depressed and deep water unsuitable generally, but why it should have disappeared from unspoilt rivers where fish is still abundant is not understood. But was it there in the recent past? Grimes (1987) wrote that it was a "not uncommon resident, well distributed throughout the north along major river systems and larger lakes...", although what this is based on is not clear, as there are no published records from anywhere in the north and he does not even give an unpublished source. The few published records that exist show this bird to have been mentioned rarely, and most records are more than 50 to over 100 years old: all come from the south except for one very old specimen from Kete Krachi (*per* Bouet 1955 but not in Reichenow 1897), and a vague reference to "Upper Volta" by A.W. Pomeroy, possibly near Yeji (8°13'N) where he was based in the 1920s, cited by Bannerman (1930)! Note that we did not find this species on the unspoilt Black Volta in Bui N.P. in 2005.

Although Black-bellied Bustard has proven to be quite resilient, surviving in coppice woodland in several places, the same cannot be said of Helmeted Guineafowl, which has virtually disappeared (while the domestic form is common); both francolins (Double-spurred, White-throated) remain common, however, White-throated being far more catholic than anticipated. The large Denham's Bustard (Near Threat-

ened on the IUCN Red List) was seen only once, in the Daka floodplain which looks indeed suitable for this species of large plains, and which is undoubtedly the area in which two “young birds” were found in May 1901 near Salaga (Alexander 1902: 376). Otherwise recorded in Ghana mainly as a non-breeding visitor (e.g. in Mole National Park). The Ground Hornbill is another species highly sensitive to disturbance which has (it seems) completely disappeared outside of the largest reserves, and we had none on this trip.

Senegal Parrot still occurs in every square, but in very small numbers; sometimes only one pair was located in a square in 48 hours. The disappearance of large trees is certainly very detrimental for this hole-nesting species, which may also be trapped for trade. Very small numbers of Rose-ringed Parakeet in most squares, but strictly riparian; as for the Red-headed Lovebird, it appears largely absent from the dry north-east, as we found it only on the Morago river and the upper Penbik. Of the cuckoos, Levillant’s, African Grey and Klaas’s are in every square and common, as their respective passerine hosts are still abundant. Barn Owl has been found to be the most common owl everywhere in the north (all habitats, all squares), closely followed by White-faced Owl (woodland, thickets) and Pearl-spotted Owlet (mostly riparian), with Spotted Eagle Owl slightly less widespread (11 of 14 squares). African Scops is in almost every square but is either less common than White-faced or simply less noisy in April, although as a hole-nester it must be affected by the disappearance of large trees. No observations of Verreaux’s (Giant) Eagle Owl, and this species may be restricted to undisturbed riparian or dry forest of larger reserves. We found no evidence of Pel’s Fishing Owl either, although this could be overlooked as we camped on rivers near areas of disturbance; there is much suitable habitat left on some of the larger rivers such as the Oti and Jambalbo or lower Daka.

Standard-winged Nightjar was found in only half the squares (Long-tailed everywhere), with a preference for sandy woodland or floodplains, often feeding over open water at dusk. Of the rollers, Abyssinian is the most widespread, having adapted to *Vitellaria* orchards, as also Rufous-crowned (Purple) Roller; but there are some areas where it was very hard to find any rollers, as between Tamale and Yendi. Blue-bellied Roller is altogether absent from these drier woodlands, we had it only at 8°35'N on the Daka river. Probably the one group of small birds most affected by systematic exploitation of woodland for firewood is woodpeckers: apart from the adaptable Grey Woodpecker (mainly in riparian), other species are hard to find, above all Brown-backed; Fine-spotted was located in only 6 squares. Hornbills (Red-billed and Grey) and barbets (Vieillot’s, Bearded and Yellow-fronted Tinkerbird) remain common everywhere, however.

We had no records of Spotted Creeper or of White-fronted Black Chat. The latter was recorded only once in the general area (collected at Sang by Alexander 1902: 327, not Yendi as given by Grimes 1987) but requires large territories in pristine woodland with dead trees (in which it nests), a condition no longer met outside of the largest reserves. Yellow-bellied Hyliota is common in the transition zone (e.g. Digya, or in Volta Region) but appears absent from the drier woodlands of the north, as we found it only in the lower Daka squares (south of 9°N) in large *Daniellia* on the edge of riparian forest. Its scarcity is probably due to a change of microclimate north of 9°N, reflected by the scarcity of *Daniellia* in drier woodland.

Another group possibly affected by the degradation of woodland concerns the starlings, all tree-hole nesters: although some adaptable species remain common (Purple Glossy and Violet-backed (Amethyst) are in every square, Violet-backed mainly in riparian), we had no records of Lesser Blue-eared nor of Bronze-tailed or Greater Blue-eared; Long-tailed Starling is widespread, but depends more on riparian vegetation. Yellow-billed Oxpeckers remain rare, but have adapted to cattle, and were recorded in 5 squares (extreme north-east and near Yendi).

Overall, riparian forest is much less affected by clearance than is woodland, and the distribution maps of riparian bird species are now much improved: for instance Northern Black Flycatcher, Common Wattle-eye and Blackcap Babbler were recorded from 12 new squares, Black Crake and Oriole-Warbler from 11, White-crowned Robin Chat and Beautiful Sunbird from 10, Yellow-throated Leaflove and Swamp Flycatcher from 8, Yellow-breasted Apalis from 6 (curiously confined to the Daka, Jambalbo and Oti rivers, where common), etc.

The status of Red-chested Swallow (*Hirundo lucida*) (“uncertain” in Grimes 1987, few localities) is that of an abundant commensal species, breeding in every major village in the north, sometimes also on bridges and in culverts — and neatly replaced in the forest and transition zones by Ethiopian Swallow. Other

commensal species that have benefited from the building of roads and culverts in particular include Lesser Striped and Rufous-chested Swallows, Little and White-rumped Swifts, found in a majority of squares. Preuss's Swallow has been found on small bridges in 6 new squares but seems to avoid the drier areas of the north-east (e.g. Penbik river). Wire-tailed Swallow remains scarce (5 squares), and always near water, breeding on bridges and in culverts. Surprisingly we found more Pied-winged Swallows (in 5 squares) than Mosque, both breeding in tree holes, including Baobabs. Baobabs are one of the few trees (with *Borassus* palms) spared by the axe, and another species largely dependent on Baobabs is Mottled Spinetail (6 new squares). Fanti Saw-wing is a species of rich riparian situations breeding in banks: it seems to largely avoid the rivers of the drier north-east, as it was found only in the lower Daka square, and on the Oti river just south of 9°N. It is also possible that this species had not yet completed its migration north to its breeding quarters (although they seem to arrive by March in Mole).

Coverage of floodplain grassland has improved the distribution of some species considerably: for instance Quailfinch was added to 12 squares and Black-backed Cisticola to 5 (Nasia, Penbik, Daka and Oti rivers); African Wattled Plovers (Lapwings) are in every square, but Spur-winged remains very local, on the edge of some pans. The only duck species encountered were White-faced Whistling Duck (widespread, on rivers and pans) and Spur-winged Goose (3 squares). One might have expected to find some Woolly-necked Storks in situations of tall riparian forest surrounded by floodplains, but there is probably too much disturbance everywhere with the exception of the Daka floodplain east of Salaga. The rivers of the north-east have only narrow sand banks, and Senegal Thick-knee was regularly encountered, but we had no White-headed Lapwing at all, and no Egyptian (except on the Volta near Dipale).

CONCLUSION

The rate of destruction of pristine woodland for the collection of firewood is such that we fear that the next generation will be left with only fallow land and wooded grassland or shrubland. Outside of some heavily populated areas, the main problem is that of collection of firewood for the cities and villages. This is causing far more damage than what farmers clear for themselves to cultivate. The only way to alleviate the pressure on trees is by encouraging city dwellers to use other sources of fuel for cooking, and the best resource in the short term should be cooking gas. We use a gas stove for camping, and were able to demonstrate that gas is actually cheaper than firewood. Farmers to whom we showed our camping gear did not know, very often, what gas was!

If the government of Ghana wants to save some of the country's natural woodlands for protecting soils, water resources and biodiversity, they have to make a huge effort into changing habits and making gas more easily available. The Forestry Commission in the savanna zone of the north-east has very few field staff available, and mainly where there are Teak plantations to look after. The manager at Walewale admitted he had never visited the Nasia Tributaries F.R. (the biggest natural reserve in the region we covered) and did not know where the official limits were. We saw an old, rusty signboard ("forest reserve") stuck on a tree near Sung, and it appears that inhabitants of Sung have some vague idea of where the limits were (beyond which they should not cultivate), but for how much longer?

In places of high pressure for land and cattle, riparian forest or thickets are also being damaged, with trees cut on the outer edges of riparian strips, as on the Mawli river near Tamale, on the Nasia river, or the upper Penbik. None of these important rivers is protected in any way, yet this habit of reducing riparian vegetation to ever narrowing strips is dangerous, if the quality and quantity of water are to be preserved. In general, trees are also being cut in dry gullies of temporary streams more or less everywhere.

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APPENDIX. Coordinates of camp sites.

Site 1 (square 0800AW):8°12.439'N, 0°01°709'W
Site 2 (Daka river near Ekumdipe, 0800AW):	.....8°27.881'N, 0°12.91'W
Site 3 (Daka river, 0800CW):	.....8°35.512'N, 0°21.937'W
Site 4 (west of Salaga, 0800DW):	.....8°32.927'N, 0°41.070'W
Site 5 (Mawli river, 0900BW):	.....9°16.709'N, 0°38.114'W
Site 6 (0900AW, Yendi square):	.....9°26.467'N, 0°22.970'W
Site 7 (0900BW, Tamale square):	.....9°22.917'N, 0°39.580'W
Site 8 (Volta river at Dipale, 0900DW):	.....9°48.263'N, 0°57.262'W
Site 9 (Nasia Tributaries near Sung, 0900DW):	.....9°57.072'N, 0°32.692'W
Site 10 (Nasia Tributaries near Saakpuli, 1000BW):	.....10°01.175'N, 0°45.331'W
Site 11 (Nasia river at Nasia, 1000BW):	.....10°09.374'N, 0°47.979'W
Site 12 (Morago river below Nakpanduri, 1000CW):	.....10°39.492'N, 0°12.515'W
Site 13 (Penbik river, Togo border, 1000AE):	.....10°21.605'N, 0°09.341'E
Site 14 (Penbik river, 1000AW):	.....10°20.408'N, 0°05.453'W
Site 15 (near Katani, 1000AW):	.....10°11.572'N, 0°04.624'W
Site 16 (Nanja F.R. off Zanteli, 0900CW):	.....9°58.426'N, 0°04.872'W
Site 17 (Daka river off Tuwuo, 0900CW):	.....9°45.217'N, 0°10.824'W
Site 18 (Yombateau/Jambalbvo river, 0900CE):	.....9°42.911'N, 0°08.690'E
Site 19 (0900CE):	.....9°40.552'N, 0°04.623'E
Site 20 (Oti river, road to Zabzugu near Sabari, 0900AE):	.....9°18.316'N, 0°14.955'E
Site 21 (Daka river at Yimahegu, 0900AW):	.....9°18.207'N, 0°03.609'W
Site 22 (Juo, 0900AE):	.....9°01.295'N, 0°04.165'E
Site 23 (Oti river at Salinayi, 0800CE)	.....8°57.927'N, 0°11.002'E
Site 24 (0800CW)	.....8°41.234'N, 0°13.422'W