

A Contribution to the Ornithology of Northern Gobir (Central Niger)



1st Edition, June 2010

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In Memory of Salihou Aboubacar a.k.a Buda

c.1943 to September 2005



Buda was a much respected hunter from Bagarinnaye and it was thanks to his interest in my field guides and his skill (and evident delight) in identifying the birds on my Chappuis discs in the early days of my stay that motivated me to explore local ethno-ornithology. Whilst for practical reasons most of my enquiries were made with one of his sons (Mai Daji), his knowledge and continual interest was a source of inspiration and he will be sorely missed.

Buda is shown here with a traditional Hausa hunting decoy made from a head of a *burtu*, the Abyssinian ground hornbill (*Bucorvus abyssinicus*). With incredible fieldcraft, cloaked and crouched, with the head slowly rocking, game was stalked to within shooting distance....but the best hunters Buda told me could get so close, they plucked their prey with their hands.

Acknowledgements

Several people have played vital roles in this report for which I would like to extend my warmest thanks. In Niger, Mai Daji and his late father Buda for sharing their bird knowledge with me and Oumar Tiousso Sanda for translating our discussions. Jack Tocco for transcribing Mai Daji's bird names into standard Hausa and helping with their etymology and Ludovic Pommier for getting my records into a workable database. Above all I would like to thank Joost Brouwer for his wise council and unwavering encouragement for this report which I have been promising him to finish for far too long.

I would also like to acknowledge the critical role played by three institutions which provided me with access to key ornithological documents: the Alexander Library of the Edward Grey Institute in Oxford, the library of BirdLife International in Cambridge and finally L'Institut de Recherche pour le Développement who have made much of the pioneering Sahelian ornithological research carried out by its predecessor, O.R.S.T.O.M, freely available on-line (<http://www.documentation.ird.fr/>).

FOREWORD

This report is a first effort to document the avifauna of northern Gobir and as such it must be considered as work in progress. It is based on three distinct sources: personnel observation over 205 not necessarily successive days (mainly in 2001-02) generally in the territory of the two conjoined villages of Bagarinnaye and Maijémo, population 928 at November 2001, (henceforth referred to in the singular as the village B&M and with the Hausa term *karkara* used to refer to its territory), the observations of Mai Daji a B&M farmer and hunter as well as a fairly extensive literature review. The emphasis is on the combined findings from these sources since on their own they have their distinct weaknesses; my *raison d'être* in the village was not ornithology, my enquiries with Mai Daji were incomplete and my literature review cannot be called exhaustive. Ultimately the report is intended to produce an annotated species list which records the phenology and breeding status of the species encountered. Due to the data used it harbours no pretence at quantification beyond some subjective measures of abundance. However, it is my contention that such a list when combined with good qualitative descriptions of the various habitats and their histories can, with care (see Remsen, 1994), reveal certain species, perhaps even assemblages of species, indicative of the degree of human impact on the landscape. I intend to expand on this topic in a future paper, but in the interim, this report represents the evidence basis and personnel learning ground from which such an objective can spring from. As such it must be stressed that at times I purposefully push the limits of my knowledge by presenting some tentative but flagged hypotheses. My hope is that these will be modified by future observation or commentary and the body of knowledge on the avifauna of northern Gobir will benefit as a result.

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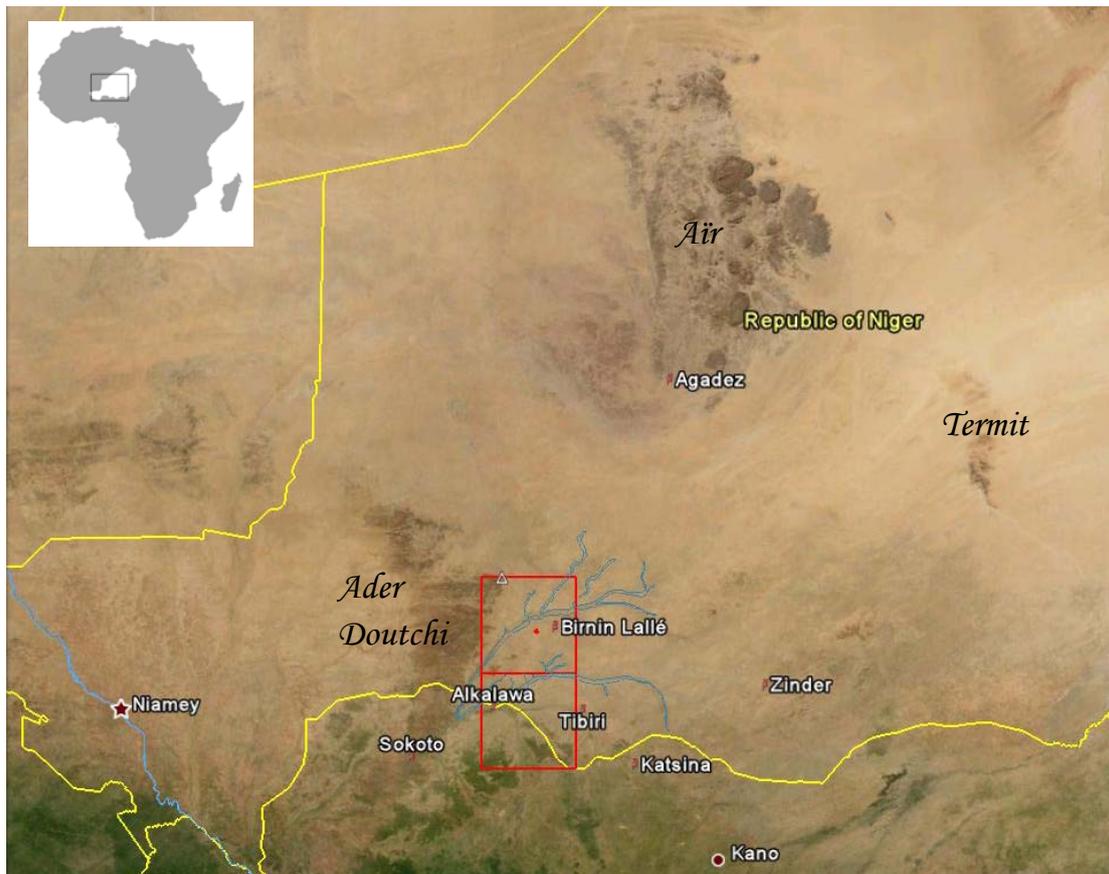
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LOCATING GOBIR

Gobir will probably not be a familiar region to many readers and many an atlas will not bring clarification. Indeed on one level it could be considered a defunct regional term since no modern territorial unit bears this name. I have chosen to use it because regional history has been so entwined with the ancient Hausa polity of Gobir and humans are, along with climate, one of the most important factors moulding the region's birdlife. A second and more accidental advantage of the regional name is that Gobir, though historically a rather fluid territorial unit, is nonetheless identifiable¹ with two degree squares, which is highly fortuitous with the advent this month of the Niger Bird DataBase (NiBDaB <http://www.bromus.net/nibdab/>). The observations reported here concern the northernmost of these two degree squares shown in Figure 1² (between 6° and 7° East and 14° and 15° North), henceforth is referred to as northern Gobir. Though by and large the observations come from one village territory (c. 26.5 km²) which falls within the "Dakoro C" half degree square of NiBDaB (c. 3,025 km²) I have nonetheless chosen to consider them within the context of the wider northern Gobir degree square and the more diverse habitats it contains.

Figure 1: Gobir in Regional Perspective



¹ The seat of the King of Gobir, Tibiri, is however a mere 6km east of the 7° E longitude.

² I have however taken the liberty of including some observations made where the N30 road to Dakoro crosses the Goulbi'n Kaba, which are fractionally south (c. 5km) of the 14° latitude.

GOBIR: A BRIEF HISTORY

Gobir was an important pre-colonial state situated strategically within the desert-side economy of the Central Sudan. Its power and reach changed markedly through its history in response to warfare and raiding on and by its neighbours as well as internal dissent. Gobir reached its apogee in the late 18th century (Sutton, 1979: 195) when its capital was at Alkalawa (see Figure 1). Previously, from around 1450 to 1600, the capital had been at Birnin Lallé (Laya, 1992: 461), 20 km to the east of where I made the majority of my observations. The surrounding area was apparently densely populated and well watered (*ibid.*), but following a massacre by the Tuareg, the population relocated to various locations to the south and southwest. The area vacated probably remained uninhabited for the next 300 years, frequented only by nomadic herders and hunters, who may have practised itinerant agriculture.

In 1804 a former member of the Gobir court, Ousman Dan Fodio, launched a jihad that was to create the largest empire in Africa at the time of the European partition at the end of the nineteenth century, the Sokoto Caliphate. Defeats at the battles of Alkalawa (1808) and Dakurawa (1835) forced the animist Gobir to move their capital eastwards to Tibiri (see Figure 1) where they could remain independent in the shelter of the Baban Rafi (“great gallery forest”³). This situation more or less pertained until the arrival of the colonial powers at the turn of the 20th century. In the period 1906-08 when a joint British-French expedition demarcated the line between their two respective colonies there were only a few settlements northeast of the Doutchi Zana uplands and north of the Goulbi’n Kaba—see Figure 2—(Grégoire & Raynaud, 1980: 104).

With the Pax Gallica and the subsequent imposition of head tax, northern Gobir became an agricultural frontier zone with an influx of settlers, many of whom were Gobirawa, the people of Gobir⁴. The administrative town of Dakoro was established in 1947 and though attempts were made to limit the northward spread of agriculture, it continued beyond the official limit (the Tarka valley) until the mid 1960s. The slow halt in the northward advance of agriculture was brought around by the deterioration of the more favourable wetter conditions that had generally prevailed since 1945 and an increasing frequency of droughts and associated famines which were particularly severe in 1973/4 and 1984. Today the limit of rainfed agriculture in Gobir, bar a few pockets slightly further north, lies just south of the 15° parallel.

³ Rafi is more often translated as stream, but the forest in question extended southwest beyond the Goulbin Maradi river into modern day Sokoto and Zamfara states (Nigeria), to form an effective screen from Sokoto known as the Ruma Bush (Boyd, 1982: 17). Some remnants of this forest, contained with various forest reserves, can be seen in Figure 1.

⁴ There were certainly other settlers including other Hausaphones (particularly from the neighbouring polities of Katsina to the southeast, Tessaoua to the east, Birnin Konni to the southwest and the Ader Doutchi to the west), as well as various Fulani and Turaeg groups and a few Kanouri.

A REGIONAL PERSPECTIVE OF THE GOBIR LANDSCAPE

The contemporary landscape of northern Gobir bears witness to the long shadow of geomorphological history extending back at least to the Paleocene when the shifting shorelines of the Trans-Saharan Sea crossed the region. Sedimentation processes in the shallow waters provided the material for the later formation of the rocky uplands extending far to the west, the Ader Doutchi, which peak just within our area at Tébaro (746m), as well as the chain of smaller outliers around Doutchi Zana (570m)—see Figure 2. The ornithological significance of these uplands has yet to be evaluated, but clays and ferralitic gravels dating from the same epoch have since been exposed on the edge of the surrounding plain and they are far from insignificant in some of the observations reported here. However, before we consider these elements we must continue geochronologically.

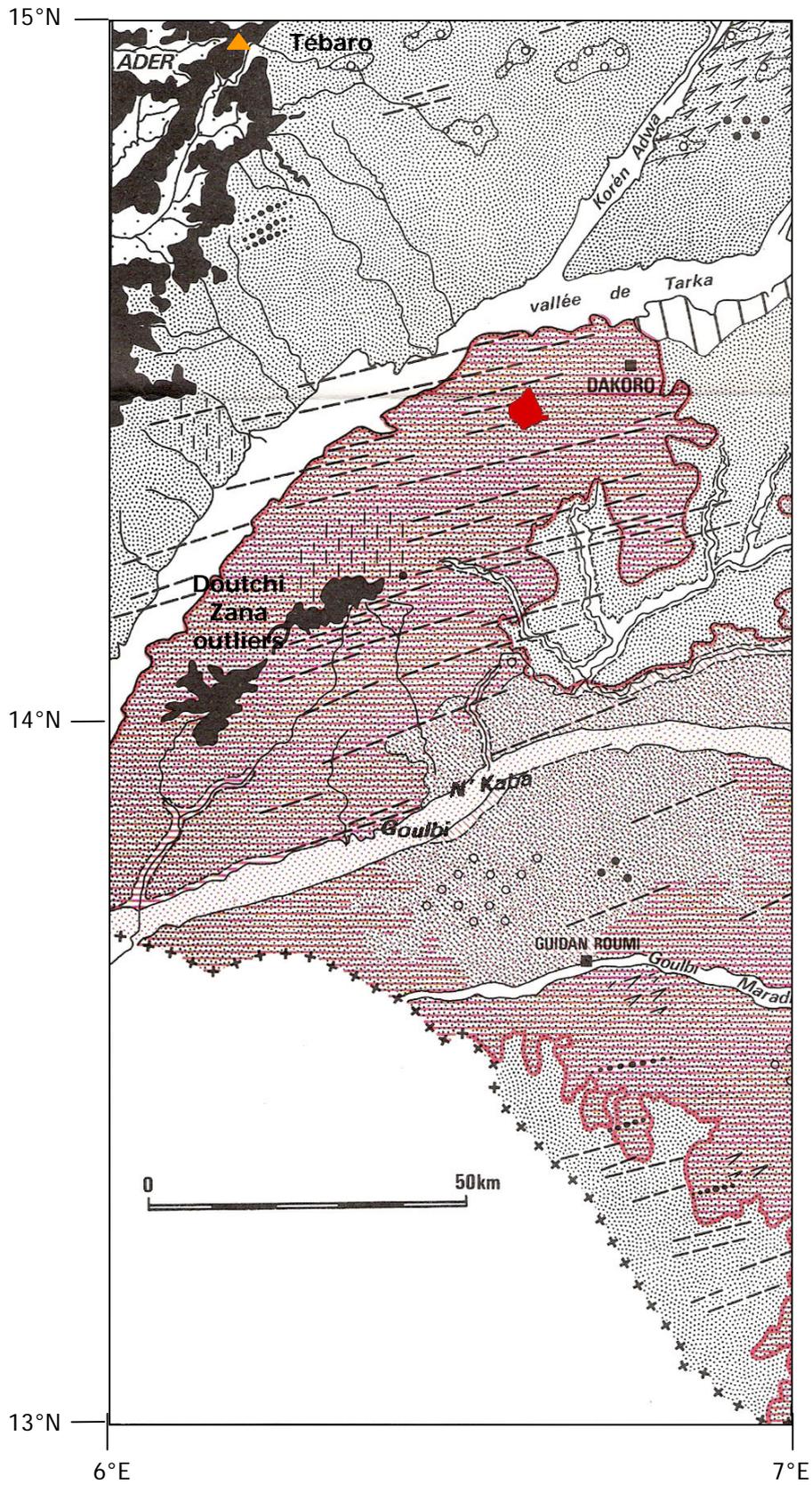
Leaping the intervening closure of the Trans-Saharan Sea, its drying out and accompanying regional topographic changes, a significant feature of today's Gobir landscape appeared some 20 to 30,000 years ago during a humid phase in the Pleistocene, namely the Tarka and Goulbi n'Kaba valleys (see Figure 2). These wide valleys (3-5 km) must have channelled significant volumes but today are fossilised and devoid of surface water⁵ down to their confluence with the Rima River northeast of Sokoto. At the regional scale these valleys may be ornithologically significant as navigation landmarks for migrant birds and it has been suggested by Mundy & Cook (1971: 21) that the Sokoto-Rima valley system forms one of the three northern Nigerian "gateways" for Palaeartic migrants (the other two being the Hadejia-Nguru wetlands and Lake Chad). On a smaller scale, the significance of these valleys relates to their relatively shallow water tables (depth 25-50m) compared to the surrounding plain (50-80m) which has allowed them a distinct vegetation cover and as the avian record will show, some distinctive birds.

Now we must turn to the most significant landscape element in northern Gobir (and beyond) in terms of surface area, the plains. In the arid period that followed the formation of the valleys (the Ogolien, 20,000-12,000 years BP), the dunes around the Termit massif in eastern Niger were mobilised leading to the importation of enormous quantities of sandy drift by the dominant north-easterly winds. This material constitutes the basis of a discontinuous dune system that dominates the landscapes of southern Niger/northern Nigeria borderlands from Lake Chad to the Ader Doutchi uplands.

⁵ Unlike the Tarka, which drains from the north, the Goulbi n'Kaba has some headwaters situated to the south (near Katsina) and it is therefore possible to observe surface water in the upper reaches of this valley during the rains (e.g. around Tessaoua). This water however percolates away before reaching the lower fossilised sector of the valley south of Gobir Tudou.

Figure 2: The Landscape of Gobir

(Source: Adapted from the 'hors series' map that accompanied Mainguet *et al*, 1979)
Solid red = the *karkara*. Solid black = ironstone.
See text for further explanations.



Across much of this ancient erg⁶ the landscape presents a rather monotonous hummocky terrain, but northern Gobir on the western margins has the distinction of a more varied sand cover toposequence. On first appearances however it is easy to misinterpret the landscape processes involved since much of Gobir falls within an area subject to intense erosion—see the reddest areas in Figure 2. As the authors of this map point out, this area has a predilection for degradation by naturally occurring aeolian and hydraulic processes that make it difficult to apportion the degree of man's involvement (Mainguet *et al.* 1979).

Transecting northern Gobir northeast to southwest the elevation increases slightly (by up to 175m) around the Doutchi Zana outliers. This has resulted in a thinning sand cover that is more susceptible to erosion. The diagonal dashed lines on Figure 2 indicate areas of longitudinal deflation, which is to say areas where the wind has removed loose material to reveal subsurface deposits of compact soils and/or gravely material. The avifaunal significance of these are twofold. Firstly they aid surface runoff and thus help fill the numerous small and median sized wetlands found across the area. These wetlands, or more correctly pans, are notably less frequent in the dunelands to the east as far as the Lake Chad watershed around Zinder. Secondly they augment the heterogeneity of the landscape and this will become clearer when the study site is presented in detail.

THE CLIMATE OF GOBIR

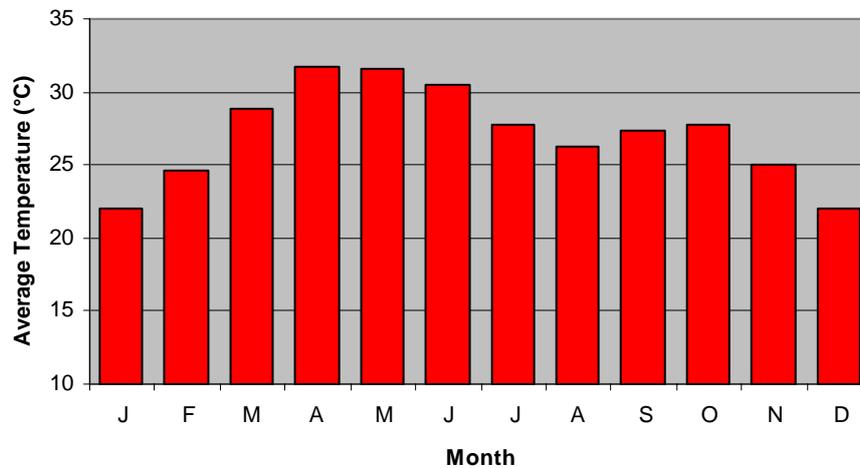
The climate for northern Gobir is typically Sahelian and was considered by my Gobirawa informants in terms of five seasons, three⁷ of which are climatically distinct (wet, dry and dry & cold) plus two shorter more sub-seasons either side of the rains (the often-times stiffling pre-rains hot season and the sometimes equally hot post rains harvest season). To add metrics of various climatic parameters to these seasons (and show their all important variations) is relatively easy for rainfall but temperature, wind and humidity data are harder to come by.

Shown over in Figure 3 are some old temperature data from Maradi: unfortunately I have not been able to locate monthly minima and maxima which would be more useful. For Dakoro, Vilmin (1955) reported the lowest temperatures (7°C) in the December to February period, and the hottest (45°C) in April to June. He also claims that there was a tendency to experience colder temperatures further north into the pastoral zone in the winter months and this echoes claims I heard in the region. However, I have yet to locate the necessary data and Levy-Luxereau (1972: 8) reports colder minimal temperatures for Tarna near Maradi of 1.1°C in Februray 1965 and 1.9°C in January 1966.

⁶ Whether there is one erg or several is debatable. Luxereau & Roussel (1997) refer to an Erg de Maradi with parts remobilised at different times, but other authors talk of a larger Erg of Hausaland. However, only to the east of the Ader does the aeolian material originate from Termit (Mainguet *et al.* 1983).

⁷ Donaint (1975: 102) has pointed out that the Hausa, like the Zarma, Peul and Kanouri of Niger divide the year into three major seasons (with various sub-seasons) and only the Tuareg divide into four, which is a apparently a legacy of their Mediterranean Berber origins.

Figure 3: Average Monthly Temperatures from Maradi (1951-1975)
(Source: Raynaut *et al.* 1988: 12)



From November to April harmattan winds from the northeast dominate and these are often dust laden creating hazy, mist-like conditions⁸. Average wind speeds are apparently highest in this period, but the highest wind speeds are associated with the first thunderstorm of the year (Fussell, 1992). In the rainy season, humid monsoon winds from the south west dominate.

Evapotranspiration levels are high in the Sahel and its only for a brief period at the height of the rains when there may be a positive water balance between precipitation and potential evapotranspiration. Rainfall is the critical driving factor of primary productivity in the Sahel, but it is also highly capricious and variable in quantity and quality in time and space at very small scales (<1km). These characteristics get lost in annual totals but have a significant bearing on resource availability for birds.

Rainfall across Gobir generally increases the further south one goes. From the data⁹ shown over in Figure 4, Madoua has been the wettest station in more years in the 20 year period covered, with an annual average for the period of 392 mm and Dakoro has been the driest (annual average 327 mm). However, all stations have been the driest of the group at least once in this period and most tellingly the coefficients of inter-annual variation are in the 24 to 37% range. Though this variation makes it difficult to clearly discern, the Ader Douchi may have a localised orographic effect leading sometimes to slightly higher rainfall in the western sector of northern Gobir.

In accordance with the trend of decreasing rainfall northwards, the number of rainfall events also decreases the further north one goes. Rey (1989: 19) acquired the following data for Bermo (just north of our area, see Figure 14), Dakoro and Kornaka for 1987: 16, 17 & 25 events respectively. At B&M in 2002, I noted 36 days of some rainfall (but didn't have the means to measure

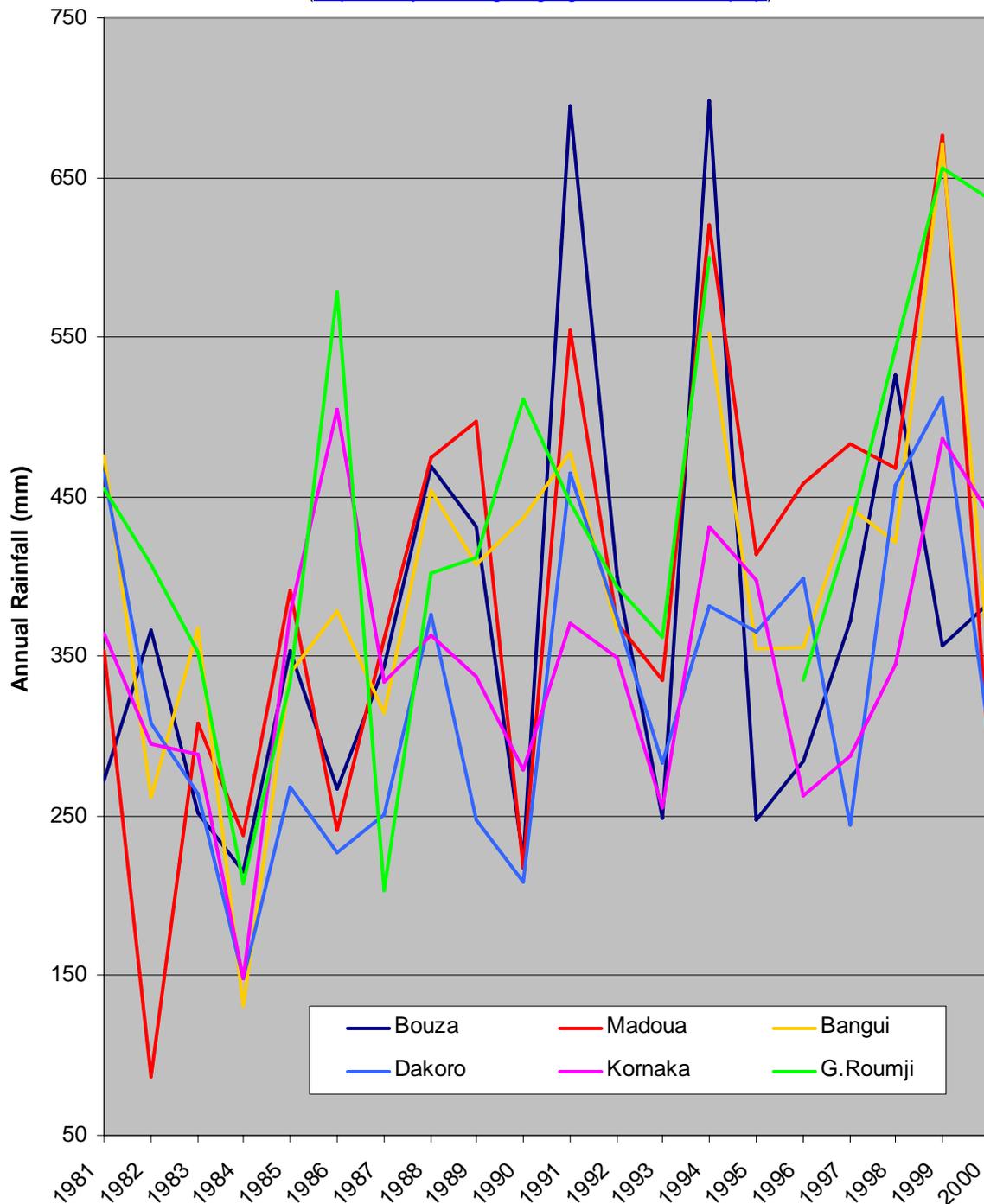
⁸ Buda was born on such a hazy harmattan day and hence his sobriquet which is the Hausa term for these conditions.

⁹ There are however some questions over the quality of this data, with for example Bangui and Guidan Roumji each having a missing year. While this does not distract from the general picture, it does caution against trying to be too numerically precise.

it) in the period from 4-5th June to 14th October, but three days just concerned a few drops and others were very fine showers. Note however that Figure 4 shows a general upward trend in total annual rainfall since this date. Generally the heaviest rainfall is in the months of July and August, with August typically the wettest month of the year. A key factor for vegetation growth is the intervals between the rainfall events and prolonged dry spells, particularly at sensitive times in the growth cycle of herbaceous plants, can be fatal.

**Figure 4: Annual Rainfall Totals for Six Stations
in and around Northern Gobir, 1981-2000**

See Figure 14 for location of stations. Data Source: Africa Data Dissemination Service
(<http://earlywarning.usgs.gov/adds/index.php>)



THE VEGETATION OF NORTHERN GOBIR

The vegetation of Gobir falls within the broad category of savanna and its typical *ad hoc* mixture of grass and woody plants can thus be related to the variable effects of five determinants: plant available moisture, plant available nutrients, herbivory, fire and anthropogenic events (Walker, 1987). Of these fire is of very minor significance in the contemporary period. Though it may have been of greater importance in the early-pioneer phase of settlement, and prior to that either as a means of stimulating grazing resources or the result of lightning, fire frequency generally decreases in West Africa from south to north in line with the diminution of biomass (Krul & Breman, 1991). Fires therefore tend to be localised in the southern Sahel and rare in the north¹⁰ and since the sparser vegetation of compacted and rocky areas is less effected than sandy areas (*ibid.*), a large part of northern Gobir is unlikely to have been greatly influenced by fire in the historical period. Apportioning the degree of responsibility for vegetation structure, diversity and change between the remaining four factors is no easy matter as they work simultaneously at various temporal and spatial scales. The task of this section is to try and discern the distribution of vegetation formations in northern Gobir and identify their principle changes in order to draw eventual inferences about their avifaunal significance.

“In Niger (Department of Maradi)...within the climatic context of a Sudano-Sahelian transition zone (between approximately 600 and 350 mm of annual rainfall), it can be stated that it is the edaphic qualities that are responsible for the organisation of the major features of the vegetation, more than the climate. The distinction between the sandy soils of the dunal formations and the more compact soils.....remains fundamental. In this way, from north to south, it is possible to find the same major types of vegetation in the same types of soil for example, a steppe shrub vegetation with *Combretum micranthum* on compact soil or a steppe shrub with *Combretum glutinosum* on sandy dunal soil. Of course, secondary floristic modifications will be tied to the climatic gradient with certain species disappearing, or being replaced by others, as the rainfall conditions vary latitudinally.” Koechlin, (1997: 21).

The excerpt above clearly underlines the importance of soil cover in understanding the general ecology of northern Gobir. However, to be in a position to understand the relationships between vegetation and birds we need to know much more about the structure of the vegetation and in this regard the task is hampered by the tendency of the few available sources to focus more on species composition. Though such information may compliment an analysis of the trophic composition of avian assemblages, it is a poor proxy for understanding the diversity of habitats. Unfortunately though, they are all that is available at present, perhaps because (*mea culpa*) cataloguing habitat components is far easier than defining habitat diversity. The information available does however have the singular advantage of presenting an historical overview of vegetation change in the latter part of the 20th century.

The first detailed vegetation description of the region dates from the mid 1960s (Figure 5 below) which was an important turning point in the region's settlement

¹⁰ Fires however appear to be almost annual in the pastoral zone north of the Tarka (see Rey, 1989:59).

history. A drought in northern Gobir in 1965, known locally as *tsaballe*, heralded the start of a climatic downturn and the slowing of the northward advance of the agricultural frontier. The resulting effects on the vegetation was a more sustained anthropogenic influence as the population focussed their attention on a limited area rather than moving on. Hamidou's population density map of Niger (1980: 32-33), indicates that the villages of northern Gobir are more widely spaced than those to the west, east and south. Within a general setting of adequate land, bush fallows were widely practised and these would have been of variable length (10 years is often cited) before being re-cleared. At this time, and persisting until the mid 1980s, fields were cleared and maintained "clean" devoid of all but a handful of shade trees. With the ensuing droughts and continuing population growth farming intensified at the expense of fallows and the farmability of the landscape also changed with dunes in particular becoming more attractive than the clayey soils in depression because of their better soil water retention capacities under lower rainfall.

The most recent (mid 1980s) description of vegetation in northern Gobir is only available for the part within Maradi administrative Région (ex. Département) but is nevertheless of excellent detail—see Figure 6. The appended photographs illustrate key vegetation characteristics. In Image A, the rolling landscape on the recent erg is typical of much of the landscape to the east, though woody cover is here perhaps exceptionally scant. This represents the start point of a basic sand cover toposequence which becomes more vegetated on older dune surfaces before thinning out on areas of deflation and finishing as barren rocky uplands. The influence of sub-surface water is well-illustrated in Image A, where the limited woody cover is located in the inter-dunal depression and in Image B by the Doum palms (*Hyphaene thebaica*) of Goulbi'n Kaba which require a shallow water table. Image C shows a *Faidherbia albida* parkland, which here in the Kori Heloum is probably tapping a shallow water table, but on the dunes can also flourish by sinking a 30m + tap root (Breman & Kesler, 1995: 120). This tree species is sometimes especially protected for its agro-ecological benefits related to its reverse phenology (see later). Images D & E illustrate the impact of herbivory where in the well-wooded Tarka *Acacia tortilis* thrives under high grazing pressure.

Before considering the specific vegetation of the study area, some major region-wide changes relative to the indicator species shown in Figure 5 & 6 should be noted. *Commiphora africana* and *Sclerocarya birrea* have declined as a result of the extended droughts, though the latter species was also heavily exploited for carving (Manvell (1999) unpublished survey of 11 Dakoro villages in 1998 and Luxereau & Roussel, 1997: 104). *Acacia tortilis* is now more dominant in the upper Tarka valley *Hyphaene thebaica* (pers obs). The perennial clump grass *Andropogon gayanus* is often reported to have decreased due to drought and grazing pressure, though a comprehensive study is wanting. Whilst some annuals have reportedly disappeared, e.g. *Ctenium elegans* (Luxereau & Roussel, 1997: 103) and *Schizachyrium exile* (Koechlin & Cheung, 1988: 7) caution is needed as significant variability in between year abundance among Sahelian annuals is well known (e.g. Wezel & Schlecht, 2004).

Figure 5: The Vegetation of Northern Gobir: Vegetative Formations (L) & Graminaceous Layers (R)

(Source: adapted from Boulet (1964) Plates 16A & B). Red = the *karkara*. Perennial grasses are underlined

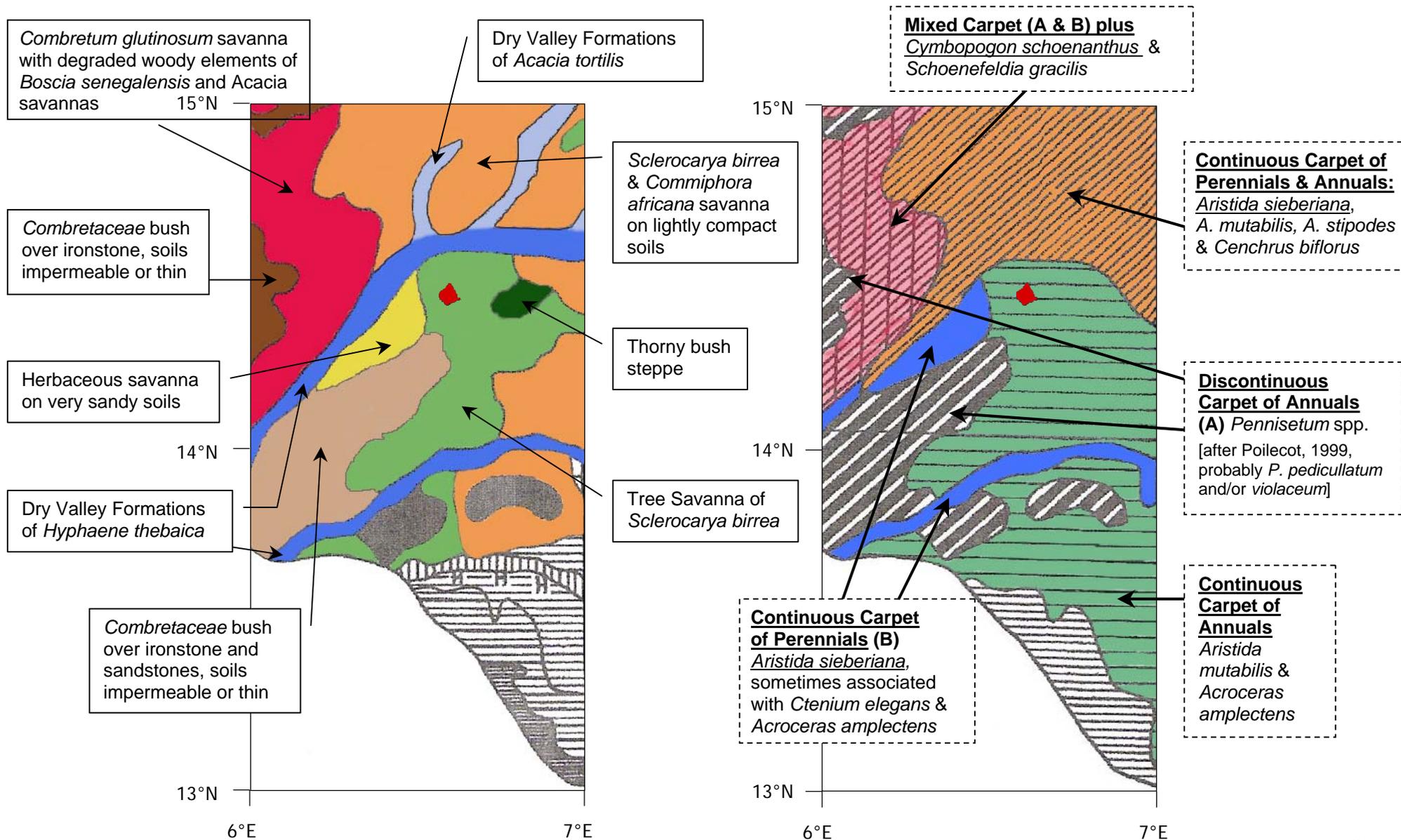
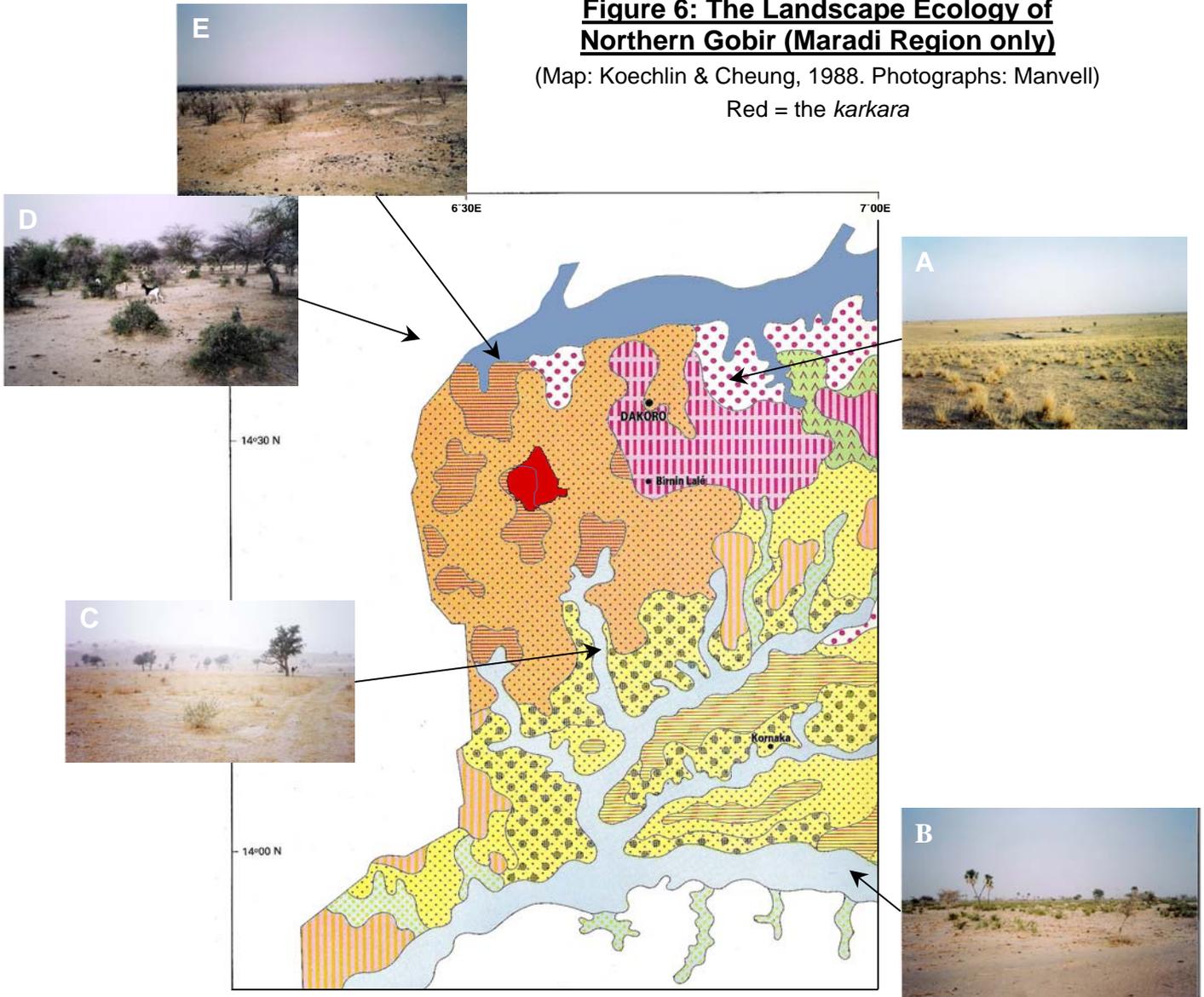


Figure 6: The Landscape Ecology of Northern Gobir (Maradi Region only)

(Map: Koechlin & Cheung, 1988. Photographs: Manvell)

Red = the *karkara*



Basic Legend

1	2	3	The Principle Valley Systems
[Pink polka-dot pattern]			Dune Formations of <i>Faidherbia albida</i> on Recent Ergs
I	II	III	Bushy Formations of <i>Combretum micranthum</i> on Compact soils
(a)	(b)		Bushy Formations of <i>Boscia senegalensis</i> on Moderately Compact Soils
A	B	C	Shrub Steppe of <i>Sclerocarya birrea</i> on Variably Compact Soils
[Green zig-zag pattern]			Steppes or Savannas of <i>Combretum glutinosum</i> on Loose Soils

Detailed Legend for Figure 6

Numbers in brackets indicate Koechlin & Cheung's original coding system. Perennial herbs are underlined. NB, some authors, such as Poilecot (1999) do not recognise *Aristida pallida* & *A. longiflora* as separate species, and consider them both as *A. sieberiana*.

The Principle Valley Systems

- 1 Tarka valley—woody step of *Balanites aegyptiaca*, *Acacia spp.* and *Schoenefeldia gracilis* (11)
- 2 Goulbin' Kaba—bushy or woody steppe of *Faidherbia albida* and *Hyphaene thebaica* (12)
- 3 Secondary dry valleys of *Faidherbia albida* (14)

Dune Formations of *Faidherbia albida* on Recent Ergs

Dunes to the south of the Tarka valley—herbaceous steppes, or very lightly wooded of *Aristida pallida* and *Aristida longiflora* (21)

Bushy Formations of *Combretum micranthum* on Compact soils

- I Thickets and bushy steppes of *Guiera senegalensis*, *Boscia senegalensis* and *Schoenefeldia gracilis*. Bas-fonds of *Piliostigma reticulata* (31)
- II Thickets and bushy steppes of *C. micranthum*, *Acacia ataxacantha*, *Schoenefeldia gracilis* and *Schizachyrium exile*: depressions of *Anogeissus leiocarpus* (32)
- III Bushy steppes of *Boscia senegalensis* and *Acacia spp.* on Dakoro clays (34)

Bushy Formations of *Boscia senegalensis* on Moderately Compact Soils

- (a) Steppes of *B. senegalensis* and *Schoenefeldia gracilis* on compact bottom zones. Soils in the Ajekoria series (41)
- (b) Bushy steppes of *B. senegalensis*, *Combretum glutinosum* and *Aristida longiflora*. Sandy dune soils of the Ajekoria series (42)

Shrub Steppe of *Sclerocarya birrea* on Variably Compact Soils

- A Steppes of *S. birrea*, *Commiphora africana* and *Schoenefeldia gracilis*. Very compact plateau soils (51)
- B Steppes of *S. birrea* and *Schizachyrium exile*. Dune system with a marked relief and soils moderately compact (52)
- C Steppes of *S. birrea*, *Combretum glutinosum*, *Aristida longiflora* and *Andropogon gayanus*. Dunes with wide undulations and lightly compacted soils (53)

Steppes or Savannas of *Combretum glutinosum* on Loose Soils

Shrubby steppes of *C. glutinosum* and *Acacia tortilis* (61)

OVERVIEW OF THE VEGETATION IN THE KARKARA

According to Koechlin & Cheung's classification (Figure 6) the main area of observation is made up of two sub-components of a landscape dominated by bushy formations of *Boscia senegalensis* on moderately compact soils. The subgroup to the west is on more compact soils with the tufted annual grass *Schoenefeldia gracilis* an indicator whereas to the east on the less compact sandy dunes, the small tree/shrub *Combretum glutinosum* and the loosely tufted perennial grass *Aristida longiflora* are indicators. Whilst I did not make detailed vegetation studies at B&M to add to or modify this description, I nevertheless generated an inventory of woody species

using local names and was familiar with their identification. My knowledge of the non-woody vegetation is however still elementary but is something I hope to improve on in future visits. In the interim, what follows is my largely subjective description of the woody vegetation.

Thirty eight woody species were recorded for the *karkara*, of which twenty six are best described as uncommon, only found in the village or rare. For the most part the area is an open farmed shrub savanna dominated by *Boscia senegalensis* and *Guiera senegalensis* up to about 2m. Some scattered trees, such as *Balanites aegyptiaca*, *Piliostigma reticulatum* and *Ziziphus mauritiana* emerge above the duneland shrubs to a height of about 5 m. Here and there a few taller *Faidherbia albida* may achieve twice or more this height. Many trees attain their greatest heights in and around water gathering depressions. Where seasonal wetlands form, *Acacia nilotica* var *adansonii* and *Combretum glutinosum* in the 5+ m height range can sometimes be found. The village itself from afar looks like a green oasis due to the density of the exotic neems (*Azadirachta indica*) which can attain 10 m.

The phenology of the ligneous cover is important from an ornithological viewpoint given the general die-back of the herbaceous layer as the dry season progresses. Following Breman & Kessler (1995: 77-81), a distinction can be made between evergreen species which have green leaves year-round, semi-evergreens that are almost without green leaves for two months and drought deciduous species which shed all leaves and have none for at least two months. It is therefore noteworthy that the two most abundant woody species, *Boscia senegalensis* and *Guiera senegalensis*, are evergreen and semi-evergreen respectively. Furthermore, all the larger, commoner trees mentioned in the preceding paragraph are semi-evergreen bar the evergreen neem, which for the time being is found almost exclusively in the village, and *Faidherbia albida*, the *gao* in Hausa, which is deciduous but with a unique phenology. Though the *gao* typically sheds its foliage in the rains and is green in the dry season and for this and various other agro-sylvo-pastoral benefits is widely protected across the Sahel, in the *karkara* it was frequently criticised by farmers for attracting bird pests and was often eliminated from their fields or heavily pruned as a consequence.

A more generalised tree management practice of relevance to birds is the tendency of farmers nowadays to manage the re-growth of woody species in their fields where up until the mid 1980s they would have cut back all regrowth on an annual basis before sowing. Today most farmers allow a few choice shoots to develop and keep these trimmed to avoid shading the millet. Consequently in-field shrubs are now often to be seen with an architecture more reminiscent of a small tree. Woody species shape and form is also influenced by another essential factor, browsing, and livestock management, of course, also has an impact on the grass layer.

The influence of livestock on vegetation in the Sahel is a complex subject. It is suffice to say that there are a large number of resident livestock in the *karkara* (about 850 small ruminants, 170 cattle and 112 equines in November 2001), but their numbers can vary greatly between years (e.g. with large reductions during food crises when they are sold off) and their management also varies widely (between stall-feeding, hobbled wandering and daily directed herding). In addition wealthier villagers also keep cattle locally only during the dry season—their numbers are guarded secrets,

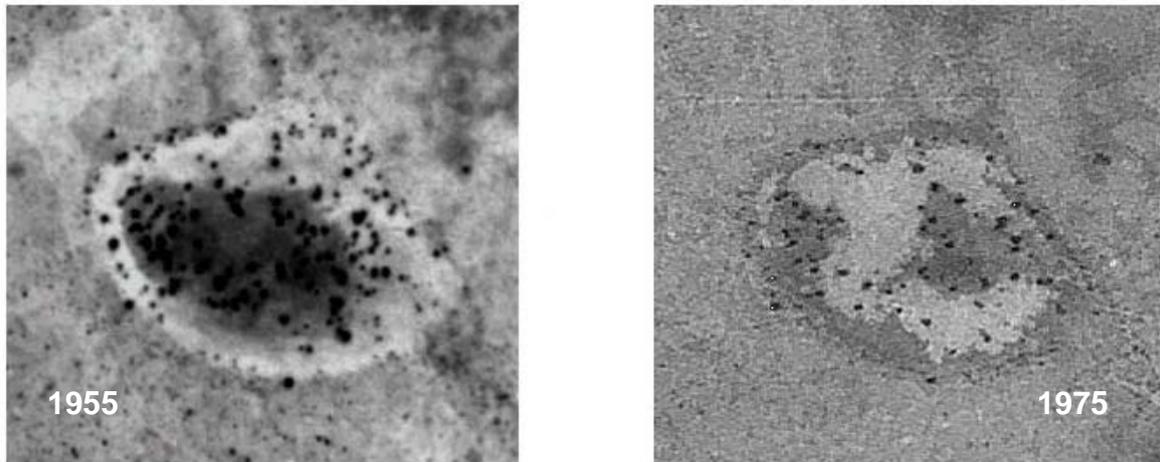
but are probably over 100—and have them taken to the verdant northern pastures in the pastoral zone during the rains. There is also the impact of non-local livestock to consider. The *karkara* is bounded to the west and east by two demarcated livestock corridors that are used by livestock herders on transhumance to and from the northern pastures. Nomadic herders also visit the area during the dry season and are sometimes offered incentives park their animals in farmers' fields overnight so they can profit from their nutrient rich manure and urine. These complex and changeable animal movements are linked to the highly variable spatio-temporal rainfall and runoff patterns which drive vegetation growth (particularly annual grasses but also the use of browse resources) as well as the availability of crop residues. Such complexity eschews simple linear relationships between animal numbers and plant resources. Livestock-vegetation interactions are nevertheless discernable e.g. in seed distribution through epizoochory for the burr grasses such as the infamous cram-cram (*Cenchrus biflorus*) and endozoochory for *Acacia* species. How birds are associated with these processes¹¹ is therefore difficult to conclude; for certain species under some circumstances a livestock related abundance of annual seeds in the soil may be a boon, whereas for others the gathering of hay to stall feed animals, an activity that is probably intensifying, may be a burden.

Before moving on to consider the various habitats in the *karkara*, a quick overview of historical vegetation changes is useful. The area was first settled around the 1935 and presumably the tree and grass cover were much denser with the vegetation resembling Boulet's tree savanna (Figure 5). Today about 85% percent of the village land is under cultivation or has recently been farmed (in fallow < 5yrs) but as previously mentioned there has been an upturn of infield woody vegetation. Of the uncultivated remaining areas, vegetation changes in the low-lying depressions and seasonal wetlands requires a brief examination due to their oasis-like role for birds. Because of their improved soil moisture conditions these localities can harbour thicker woody vegetation, including species more typically of wetter latitudes, such as *Mitragyna inermis*, *Feretia apodanthera* and *Anogeissus leiocarpus*. A comparison of aerial photographs from 1955 and 1975 and oral history accounts of impenetrable vegetation indicates a general thinning of this tree cover. Shown over in Figure 7 are the images for Tapkin Bagarinnaye, the name sake of one of the conjoined villages due to the presence of *Acacia nilotica* var *adansonii*, known in Hausa as *bagaruwa*¹². This process has advanced to the extent that in several *tabkuna* today there are few if any trees or bushes, a factor that has probably been advantageous for the spread of wild rice, *janki* (*Oryza barthii*)—see Figure 11 later. In eleven *tabkuna*, in years of favourable water levels, small parcels of cultivated rice are grown and in two other *tabkuna* attempts at a second cowpea crop using residual soil moisture were noticed. However, this process is not uniform and some still remain wooded and indeed Tapkin Bagarinnaye has developed a fringe of *bagaruwa*, probably through livestock being watered there which have deepened the pool through trampling and disseminated seeds in the process.

¹¹ These associations include direct impacts on the vegetation as granivorous birds in the Sahel have been found to have a direct impact on the soil seed bank (e.g. Hiernaux *et al.* 2009 : 121-2).

¹² *Tapkin*, (plural *tapkuna*) is the local Hausa for seasonal ponds. Lowlands without standing water but still the accompanying thicker vegetation are locally called *fadama*, (plural *fadamu*).

Figure 7: Evolution of the Woody Cover at Tapkin Bagarinnaye
See Manvell (2005: 72) for details on the imagery



THE AVIAN HABITATS OF THE *KARKARA*

The *karkara* (26.3km²) can conveniently be divided into four principle habitat types, which will be illustrated shortly:

- Dunefields (c. 2,150 ha)
- Barrens (c.350 ha)
- Wetlands (c.100 ha)
- Village (c. 11 ha)

Figure 8 over shows the distribution of the principle wetlands in the *karkara* and it is noticeable that for the most part they are grouped around the southwest in accordance with the distribution of more compact soils (Sub-group (a) in Figure 6). Some *fadamu*, which as noted above do not accumulate surface water, have been missed on this map and it is thought that they may show a greater affinity to the dunefield areas where they form in inter-dunal areas where clays and fines have been washed down slope. The largest wetland is Tawaye (c. 13 ha), which as its Hausa name meaning twins indicates, spans two depressions. The wetlands start filling when the rains have properly set in around June-July and their flood extent depends on the nature of the ensuing rainfall, and under wetter conditions, some may be temporarily linked. With high ambient evaporation levels, drying out is rapid after the rains have ceased and only the larger ones carry water until around the end of November—see Figure 11 later.

The southwest is also area were most of the barrens are to be found. These are areas where longitudinal deflation (the diagonal dashed lines of Figure 2) have removed the sand cover, assisted to a lesser extent by water runoff, to reveal underlying bare hardpan (known locally as *hoko*) which in places is covered by lateritic gravels (known locally as *tsawana*). The barrens play an important role in directing surface runoff towards the wetlands. The southwest area is heterogeneous and parts are covered in sand which is farmable. Strong winds can cause sand displacement and some farmers actively work the wind to expand their fields into the

Figure 9: The Dunefields

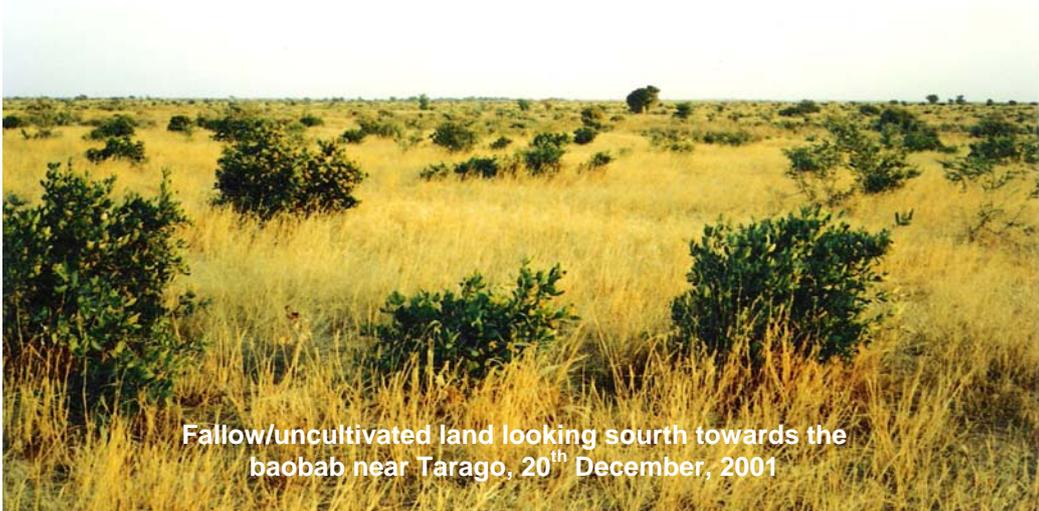


Figure 10: The Barrens

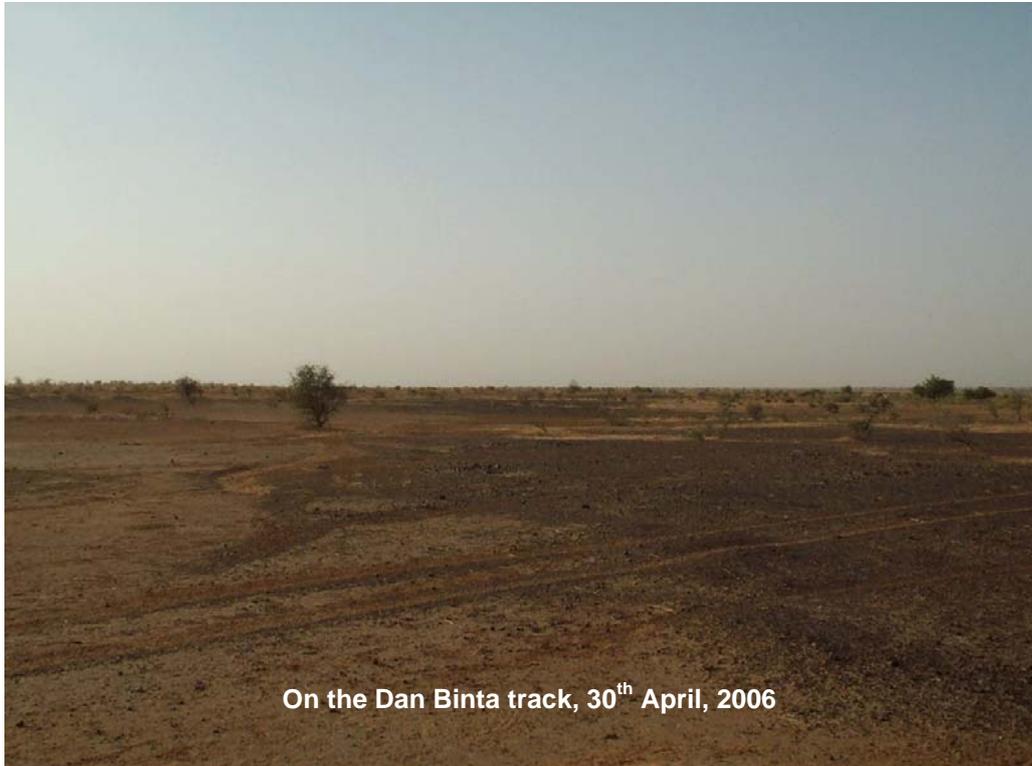
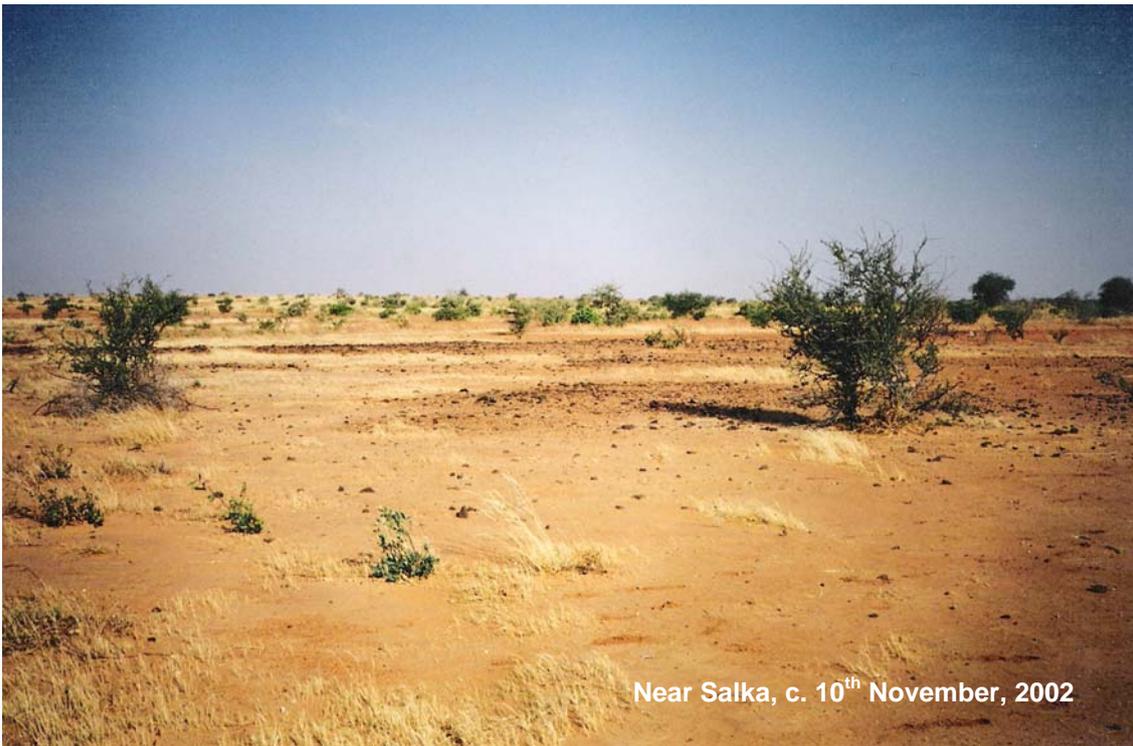


Figure 11: The Wetlands





Figure 12 : The Village



A NOTE ON THE OBSERVATIONS

My observations it must be made clear are only the result of casual observation as my primary objective for being in northern Gobir was not for ornithology. During my first visit in 1998 I was engaged in a survey of natural resource management and food security. On my return in 2001-02, I was resident in B&M for the purposes of doctoral fieldwork, researching the linkages between farming, migration, marriage and social networks. In 2006, my short visit was as part of a project evaluation. Most observations date from my doctoral research period during which I kept a daily bird list. Many observations resulted from going about my research in the village, and particularly in the February to April 2002 period, when out visiting fields. Whenever I had the chance I would wander off on a walk, but these almost invariably began around 4 or 5 pm, though I occasionally got in a quick morning visit around Tawaye just down from my house. My walks were of variable routes. Most often I would head towards Tapkin Bagarinnaye and on to the Dan Koumtchi fadama and Tapkin Salka. Sometimes I would instead go to tapkuna Zure, Tarago and Kalimbo or Haoua, Dan Kalgo and Madamba (see Figures 8 & 11). Some observations result from a short period in the village of Guidan Dodo where I conducted some comparative research and there are also observations from my local travels.

Though my observations are clearly not rigorous in field research terms, I consider them worthy of attention for two reasons. Firstly the observation period is, as far as I am aware, matchless for a single locality when compared to the ornithological record¹³ for the surrounding area: the nearest comparable studies in any direction are those around Sokoto about 200 km away from B&M by Dobbs (1945-54) and Mundy and Cook (1970-71). Secondly the farmland habitat has, in my opinion, been given insufficient attention by birdwatchers in Niger who have shown a tendency to be drawn instead to less disturbed or wetter habitats.

Following Buda's early interest in my bird recordings (Chappuis, 2000) and field guides, towards the end of my stay I attempted to record his son's knowledge of the local avifauna as in the interim Mai Daji had become a close friend of my research assistant, Oumar Sanda. Mai Daji at the time was around 41/2 years old and having once birdwatched with him at Tapkin Dan Gao, I can attest to his excellent observation abilities, which are of course a basic skill of all hunters, and hunting was his family's speciality. The methodology I adopted to record his knowledge was based around the list of birds I had seen plus some others I suspected might be present. With Oumar translating, we worked through the list, playing the Chappuis recording of the species (where appropriate: for several non-songsters, field guide images were used instead), to elicit its local Hausa name and then determining the times of year it was found in the *karkara* on the basis of the five locally defined seasons (see below), whether and when they bred, the nesting habitat and any observations he had of population changes and whether the bird was associated with any beliefs or had specific uses. These sessions were time consuming and were often fitted in at the end of the evening's work and the list was only completed very

¹³ The first, and still the most extensive work for Maradi region, comes from Dr. R. Rousselot, a veterinarian in the colonial service (Rousselot, 1947). His period of sojourn in the region is not known, but his White Stork records indicate dates from the end of 1938 to the beginning of 1940. His records are somewhat eclectic and appear to have come from his rounds in the Circonscription d'Élevage de Maradi (a somewhat larger area than today's Maradi Région), as opposed to the regular study of any particular site—he does appear though to have frequently visited Madarounfa lake.

late on my last evening. The bustards were unfortunately missed but Oumar was able to subsequently acquire this information on a later visit using image cards I had sent over. Due to the hurried nature of this work with Mai Daji, I consider the data from him preliminary. I have incorporated it into this report for the most part un-amended because the exercise of considering it in relation to my observations and the literature has often shown some valuable follow-up questions. In one particular incidence his information about quail forced me to consider an alternative species with a fascinating result—see later.

STRUCTURE OF THE REPORT

The bulk of the report is a systematic list of species that follows the nomenclature and order of Borrow & Demey (2001), It is followed by a species summary (Appendix A) and a list of historical (Appendix B) and potential species for northern Gobir (Appendix C). The majority of species are discussed in relation to my observations and those of Mai Daji’s and are compared with observations from Sokoto, and elsewhere where relevant, to put them in regional perspective. These accounts often pose questions for future research. The species data are accompanied by a table which notes the period in which they occur in the B&M *karkara* according to Mai Daji and also a summary of the number of days per month they were observed by me in northern Gobir. It should be noted that the timing of the seasons of the local calendar may be more flexible than implied. As my recording period was discontinuous, with noticeable gaps in August, January and December, the table has been shaded to indicate the bird observation days in relation to the actual number of bird recording days—see Figure 13 below. This however does not reflect observation intensity since, as mention above, my active birdwatching was erratic.

Figure 13: Monthly Number of Bird Recording Days in Northern Gobir

Yr	TOTAL	Dari		Rani		Bazara	Damana			Kaka		Dari	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998	15			10	5								
2001	59			2				3		2	18	29	5
2002	122	1	7.5	18.5	4	6	29.5	22		3.5	16	14	
2006	8				3	6							
	205	1	7.5	30.5	12	12	29.5	25	-	5.5	34	43	5

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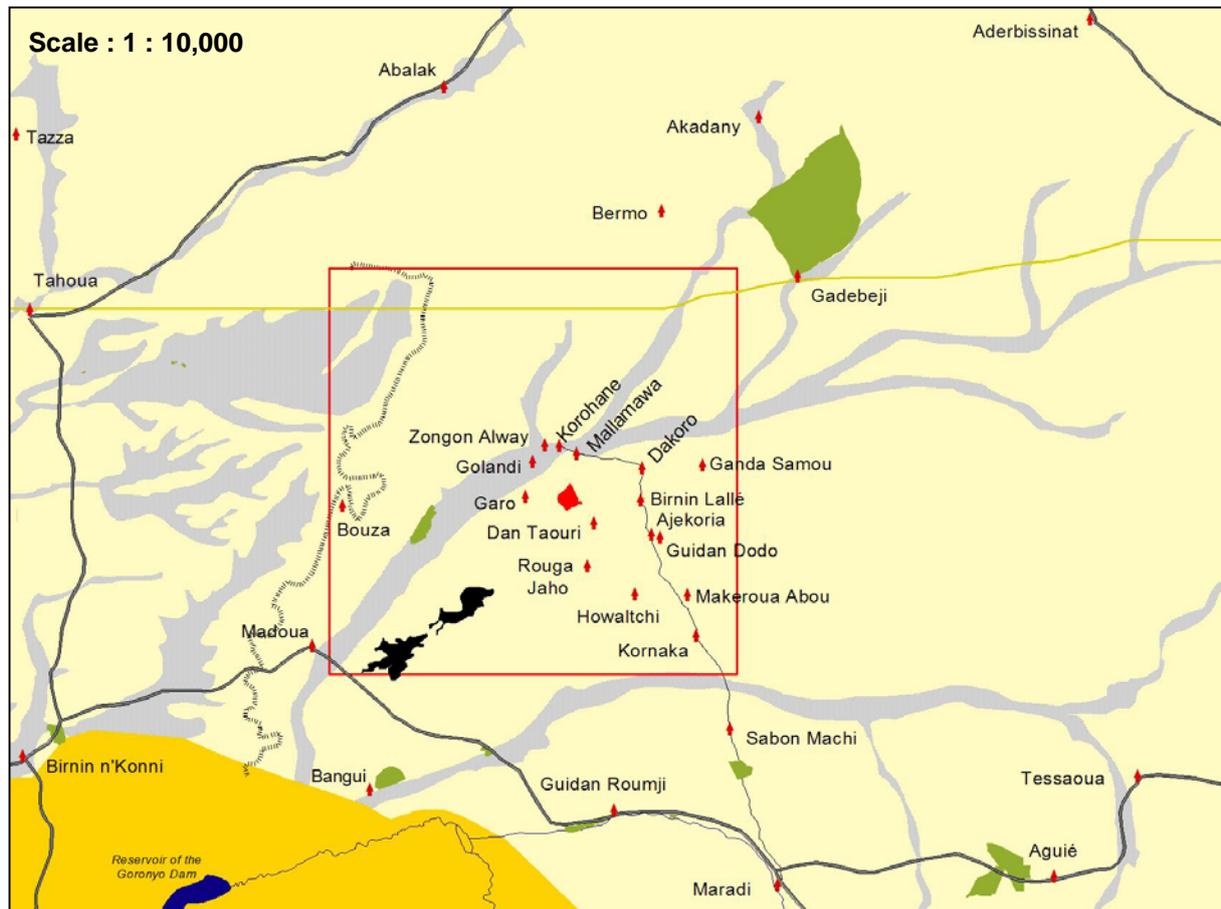
	0 days		1-5 days		6-10 days		> 10 days
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The lion’s share of recording days in Figure 13 concern observations in the B&M *karkara* where I daily recorded whatever birds I had seed. It also includes a few days spent in other north Gobir villages, particularly in 1998, March 2001 and April-May 2006. In these periods I did not keep a daily list so the observations recorded tend to be less complete. Where records of notable species were not made in the *karkara*, the location is generally mentioned in the text. Figure 14, below shows these

additional localities. Occasionally probable and possible records are shown where important and these are marked 'prob' and 'pos' accordingly in the table.

Figure 14: Localities Mentioned in the Systematic List

The line across from Tahoua is the approximate division of Giraudoux's Zone 3 and 5. The areas in green are protected forest areas (Forêts Classées)



The following conventions have been adopted in the systematic list:

Species for which the only records are uncertain are square bracketed.

Species have been assigned a resident code, which is frequently discussed in the text, and these fall into three groupings, though question marks and mixed groupings are used when the status of a species is unclear:

- MPw = Migrant Palaearctic, wintering
- MPp = passage MP
- MPsu = MP, status unknown

- R = Resident & breeding
- RR = Resident breeder but with restricted distribution
- Rn = Resident breeder with a nomadic tendency

- MAb = Migrant African, breeding
- MAnb = non-breeding MA
- MAp = passage MA
- MAnbsu = MA, non-breeding but status unknown

The following abbreviated terms are used for frequently cited references:

BoA	Birds of Africa, Vols 1-7, Edited by C Hilary Fry, Stuart Keith and Emil Urban
B&D	Borrow & Demey (2001)
Barlow & Wacher	Barlow, Wacher & Disley (1997)
Bargery on-line	An online version of the Reverend G.P Bargery's famous 1934 Hausa-English Dictionary http://maguzawa.dyndns.ws/
Giraudoux	Giraudoux et al. (1988)
Mundy & Cook	Mundy & Cook (1972-3)

The species are assigned to a dietary guild (carnivorous, herbivorous, insectivorous, granivorous or omnivorous) largely on the basis of Morel (1968)¹⁴, but are marked with an asterisk where the BoA indicates a contrary classification that I have ascribed to, or when the species was not covered by Morel.

The following tree species are mentioned in the Systematic List by their Hausa names (all italicised), as follows :

<i>adoua</i>	<i>Balanites aegyptiaca</i>
<i>anza</i>	<i>Boscia senegalensis</i>
<i>dagna</i>	<i>Sclerocarya birrea</i>
<i>gao</i>	<i>Faidherbia albida</i>
<i>sabara</i>	<i>Guiera senegalensis</i>
<i>tumfafia</i>	<i>Calotropis procera</i>

Other Hausa names used are :

<i>fadama</i>	A lowland well vegetated area without standing water
<i>karkara</i>	The village lands, in this case always referring to B&M
<i>tapkin</i>	A seasonal pond
<i>tsawana</i>	A gravelly type of barrens

The Hausa seasons shown in the table, the names of which are sometimes used in the text, can be considered as follows:

<i>dari</i>	The cold season proper (see Figure 3)
<i>rani</i>	The cold season when the temperature is rising
<i>bazara</i>	The hot season just prior to the wet season.
<i>damana</i>	The wet season
<i>kaka</i>	Harvest time

¹⁴ I have however placed his piscivores under carnivores as this is inappropriate in northern Gobir where only the rare, longer duration wetlands, such as Birnin Lallé, have fish and probably only the lungfish, *Protopterus aethiopicus*.

Ardeidae: Herons & Egrets

<i>Ardeola ralloides</i>	Squacco Heron	Héron crabier										
Carnivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002									1			

Two 29-Sep-02: these could have been either Palaearctic migrants or African birds moving south from northern wetlands where they had passed the rains—records in Giraudoux and Mundy & Cook suggest that an African population exists in Maradi and Sokoto respectively, but there are no breeding records.

<i>Ardea ibis</i>	Cattle Egret				Héron Garde-boef				<i>balbcla</i>			
Carnivore												
MAB	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>			<i>Kaka</i>		<i>Dari</i>
					arrive	breeds			depart			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							3		1	2	24	
2002					2	14	17		3	16	10	

Though Mai Daji originally didn't say this species bred, as I had suspected breeding in the old fallen *gao* in Tawaye and also at tapkin Bagarinnaye, I asked Oumar to verify this with him subsequently and he did confirm it. Mai Daji thought this species was more common before, a decline he linked to reduced rainfall. I suspect that larger more obvious breeding colonies are only found at the few larger local wetlands such as at Birnin Lallé. Though my records and Mai Daji's suggest they are only present in the *karkara* in the rains (**Earliest Date:** four 28-May-02, **Latest Date:** one 30-Nov-01), I suspect in northern Gobir they could occasionally be seen outside this period, even far from water, as I saw some 24-Mar-02 in a dry roadside tapki south of Sabon Machi (at Kiré, c. 90 km to the SSE of B&M). **Max Count:** 100 + 20-Jun-02.

<i>Butorides striatus</i>	Striated Heron				Héron à Dos Vert				<i>dan dolodolo</i>			
Carnivore												
MAB?	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>			<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2		1	1	1	
2002						1			1			

A total of seven records, typically of one or two birds. My records coincide well with Mai Daji's observations. He however didn't think it breeds but I wouldn't be surprised if it does. He claims it has declined, but as a secretive species this is not necessarily easy to support by casual observation, though the historical reduction in woody cover in the *tapkuna* is presumably detrimental for this species. Found year round at Sokoto, where egg laying was noted in August and hatching had occurred by the 24th September (Mundy & Cook).

Earliest Date: 20-Jun-02

Latest Date: 30-Nov-02

Egretta garzetta Little Egret Aigrette Garzette *farin kunkumi*

Carnivore

MPp & MA?	Dari				Rani				Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec				
2001							1			1	3					
2002										1						

Only one record outside the autumn migration window (01-Oct to 08-Nov): one at Birnin Lallé 28-Jul-01. It is interesting to speculate whether this bird was an over-summering member of a Palaearctic population (Elgood et al. (1994) suggests that it may be immature birds that over-summer and occasionally breed in Nigeria) or a member of an African population. In either case breeding at Birnin Lallé is not an impossibility. According to Mai Daji he only sees a couple annually. **Etymology:** “the small, white stone”.

ARDEA HERONS *zarbi*

Mai Daji made no distinction between the two *Ardea* herons that I identified and claims that they are found over a much longer period than my records suggest—summarised below. A possible explanation could be the presence of *A. melanocephala* in the rains—Rousselot reports a similar Hausa name for this species—but I didn’t observe it even though I was present during the supposed peak period. B&D report northward movements of *A. melanocephala* in the rains: not recorded in the northern Aïr by Newby et al. (1987) but Giraudoux notes an undated record from Aderbissinat plus an unusual record of 3 individuals at Airlit in February. At more southern latitudes the records in Giraudoux and Mundy & Cook suggest *A. melanocephala* is resident year-round. Mai Daji reported no population change in the *Ardea* herons with the remark that there are always many.

	Dari				Rani				Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec				
01 + 02										Positive id	3?					

Single unidentified *Ardea* herons the 2nd, 3rd & 8th Nov-01, are dates later than all my positively identified records (+id). Perhaps these were later birds transiting through more quickly as the *tapkuna* dry out.

Ardea purpurea Purple Heron Héron Pourpré *zarbi*

Carnivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001									2	2		
2002									2	4		

Seen on ten occasions around the end of September/early October but my absence of August and early September observations is important to bear in mind. All individual birds except once I saw two. Whether the records refer to different birds or one or two that loiter around the *tapkuna* for a few days is unclear.

Earliest Date: 29-Sep-01 & 02

Latest Date: 15-Oct-02

<i>Ardea cinerea</i>	Grey Heron					Héron Cendré					<i>zarbi</i>	
Carnivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001									1	4		
2002									2	6		

Seen within a similar period to its congener *A. cinerea* and it would be interesting to know if and for how long they had shared the same migratory route. Moreau (1972) estimates that the deep flapping flight of a Grey Heron (<40km h⁻¹) would permit it to cross the desert non-stop in 30-60 hours, depending on which way it was going and whether it had a 16 km h⁻¹ tail wind (as in autumn) or a similar head wind (in spring). An interesting question is whether such a crossing follows on from a continuous eastern Mediterranean sea crossing, or whether they have followed the coast and/or used narrowest points.

Earliest Date: 28-Sep-02

Latest Date: 16-Oct-01 & 02

Scopidae: Hamerkop

<i>Scopus umbretta</i>	Hamerkop					Ombrette					<i>karan tsuntsaye</i>		
Carnivore													
MANb	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001							1			1			

My only record from B&M concerns one I flushed at Salka on the 5-Oct but I also saw two earlier at Birnin Lallé the 28-Jul. Recorded only in the rainy season by Rousselot, which is confirmed by other Maradi region records in Giraudoux. Two that I observed at a pool in the *goulbi* near Maradi on 19-Oct-97 extend the records for their presence in the region and presumably relate to a return movement of birds that head northwards to the seasonal ponds. What is unknown however is whether this migration is post or pre-breeding. I suspect the former for the following reasons:

- Its nests are conspicuous and would presumably attract comment
- Elgood et al. (1994) reports breeding in Nigeria of the relevant subspecies *S.u.umbretta* from March to September but mainly from March to June.
- No breeding is reported in Kano by Sharland & Wilkinson (1981)
- Incredibly there are no records of this species at all from the northern wetlands of Sokoto by Dobbs (1959), Fry (1964) or Mundy & Cook. The latter authors however in their earlier note (1972: 19) on birds seen uniquely outside of Sokoto town (an area they define by a 25 mile radius from the city centre) record it breeding further south at Maru (12°15'N.), but give no further details. Nests located by Serle at Zaria (11°03'N) in March and April (1943).

Mai Daji believed this species has declined. **Etymology:** "the dog bird".

Ciconiidae: Storks

<i>Ciconia abdimii</i>	Abdim's Stork				Cigogne d'Abdim				<i>shamuwa</i>			
Carnivore												
MAB	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1		1	5		
2002					1	7	8			1		

Observation in the *dari* is presumably an error: my latest record pips that in Giraudoux for Zone 3 by three days. Seen nesting in the neighbouring village of Gasetchi (30-Jul-01 & 20-Jun-02) and if I recall correctly the village chief of Dan Taouri told me it nests there. Nest construction noted in B&M in June-July 02 but nothing came of it, which was perhaps related to disturbance by children or hunting. Used to nest in the village as it was formerly not hunted, but according to Buda the hunters now enjoy the taste and he has killed up to nine in a good day. Social acceptability of the hunting of this species (and owls, see later) may be a localised phenomenon. The hunter at Guidan Dodo reported killing it, and the teaching assistant there from Garo (11 km towards the west of B&M) reported this to be the case there but I also heard that they are not hunted at Tessoua. According to Oumar Sanda it is unheard of among the Zarma. Considered the harbinger of the rains. An observation of a bird on a nest in Dakoro town 12-Oct-01 seems late, a delayed fledging perhaps? No population change observed by Mai Daji. Favoured nest tree the *gao*.

Earliest Date: two Guidan Dodo 28-May-02 **Latest date:** c.100 seen at Dakoro (31-Oct-01)
Max count: 150+ (5-Oct-02)

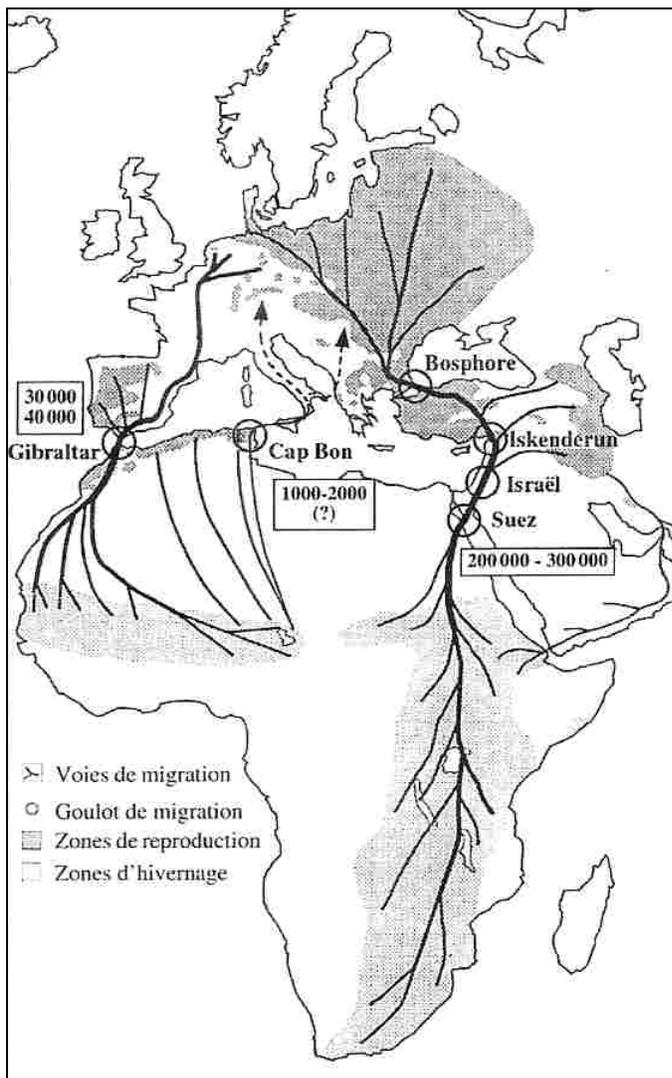
<i>Ciconia ciconia</i>	White Stork				Cigogne Blanche				<i>jayake</i>			
Carnivore												
MPp	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1	1	
2002		1										

One all alone south over B&M 11-Nov-01 and ten in an Abdim's flock seen circling over Dakoro (31-Oct-01) would seem normal passage dates. According to the map in Schulz (1995: 28) of which the annotated version in Azafzaf (2002: 391) is shown over, these birds are likely to originate from the Maghreb population, but as the ring recoveries in Giraudoux make clear, birds from elsewhere in the western European population could also be involved. A single bird I put up near the neighbouring village of Dan Koumtchi on the 27-Feb-02 is a more intriguing record. Several hypotheses are plausible:

- It could be a female returning to the north-eastern Maghreb—according to Azafzaf (2002: 388), males of the nesting population in Tunisia return at the end of December/early January and the females follow later in February, by the end of which most couples are on their breeding sites.
- A wandering/lost member of a wintering population in the wetlands to the southwest round to the southeast. In support of this, I saw about 25 birds from a vehicle on the Route Nationale 20 km east of Madoua on the 30-Dec-01 and on the 25-Jan-98, I saw three feeding at Madarounfa Lake.

- An individual that arrived in Africa via the eastern route (over the Bosphorous & Suez crossings) which then tracked over from its western Sudan/Chad wintering grounds to link up with members of the western route (Gibraltar crossing) population. Berthold *et al* (2001) have provided the first satellite tracking evidence of an eastern bird moving into the zone of the western birds (into north-east Nigeria), thus supporting a 'loop' or 'circular' migration proposition (*ibid.* 455).

Only birds ringed or otherwise marked or tracked could reveal the origins of the birds seen in the area. I came tantalisingly close to getting such information as I heard stories of at least four different birds that had been killed with rings on near B&M of which most were white storks (but a wheatear was also mentioned) and also at my comparative study site of Guidan Dodo to the east. On the 30th October 2002 I went with Mai Daji to Gasetchi to try and track down one ring that had been found about 5 years beforehand. Unfortunately the hunter had given it to another hunter in the village who had then attached it to a chicken which he later gave/sold to someone in Anzouna! The hunter who had found it originally recalled that it said "Zarmany" on it along with a few numbers! The Hausa word for Germany is the dissimilar word "Jamus" which is probably regularly heard through the popular Hausa language programs of Radio Deutsche Welle and the BBC. But German and Austrian stork rings have the word "Germania" prefixed by "Radolfzell", "Helgoland" or "Hiddensee" depending on the scheme. It therefore seems likely that indeed a German or Austrian bird had been killed.



Mai Daji has observed a decline in this species. Whilst the local area is clearly not a regular wintering area and numbers are likely to be variable between years, there is a potential explanation for this observation. If it is accepted that the birds most likely to be seen are from the north-eastern Maghreb, then the recent increase of the population in Algeria (Moali-Grine *et al* 2004)—but not in Tunisia (Azafzaf (2002)—might be attributable to an increase in over-wintering in Algeria (Samraoui & Houhamdi, 2002), which would translate to a decline in Dakoro—except perhaps for odd German/Austrian birds!

Threskiornithidae: Ibises

<i>Plegadis falcinellus</i>	Glossy Ibis	Ibis Falcinelle	<i>shaida</i>
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Carnivore

MPP &
MANb

	Dari			Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001							1			2			
2002							1						

As with *Egretta garzetta* the records may reflect individuals from both African (July records) and Palaearctic (October records) populations. About 70 were seen at Birnin Lallé 28-Jul-01 and there is a possibility these may be part of a breeding population. Sharland & Wilkinson (1981) however suggest that birds in the summer months in northern Kano state were simply summering and B&D state that nesting has only been recorded in West Africa in Mauritania and Mali. Mai Daji believes that it has declined, and whereas before flocks were seen now it is just twos or threes. Described as rare by Rousselot.
Etymology: “witness”.

<i>Threskiornis aethiopicus</i>	Sacred Ibis	Ibis Sacré	<i>kunkumi</i>
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Omnivore

MANb

	Dari			Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001											1		

Only one personal record in B&M of two birds flying SE on the 14-Nov-01. Buda claimed to have shot two at Tapkin Gahoutchi 26-Nov-01. Seasonal movements not mentioned by B&D but likely to be the case as I have two October 2001 records from the pastoral zone, where the wetland habitat is almost non-existent from the mid-dry season: two at Akadaney on the 20th (117km from the *karkara*) and one near Aderbissinat on the 27th (194 km away). Mai Daji believes that it has declined. **Etymology:** “the small stone”, a name partly shared with *Egretta garzetta*.

Anatidae: Ducks & Geese

Unlike the preceding families, a clearer species level distinction between the Afrotropical and Palaearctic members of this family can be made. The particular nature of the wetland habitat in B&M defines the temporal partitioning of it by these two elements, with the Afrotropical element able to exploit the wetlands over a longer period. The observations suggest however that the majority of Afrotropical species only use the wetlands on a double passage—unlike their Palaearctic cousins who pass just the once—but one member, *Dendrocygna viduata*, also breeds and the possibility that non-breeders of other species circulate locally in the rains cannot be discounted.

<i>Dendrocygna viduata</i>	White-faced Whistling Duck				Dendrocygne Veuf				<i>kirin jijiya</i>			
Herbivore												
MAb	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001									1	1	2	
2002						1	1		1			

According to Mai Daji it is the only breeding *Anatidae* in the village and does so in fields. Barlow & Wacher note that it makes a “Basic nest-scraps on the ground, normally away from water in grass or under low thorny vegetation, with little or no down” (1997: 135). That it is able to breed at all given the amount of human activity in the fields during the rains is perhaps linked to its tendency for nighttime feeding (B&D). No information on population change as Mai Daji’s reply that there are many now probably refers to the moment of the question (November) as he followed it by mentioning a recent observation of young on Tawaye. Buda claimed to have shot two at Tapkin Gahoutchi 26-Nov-01. **Etymology:** “kiri” means magic charm and “jijiya” means vein. This may refer to the use of its veins in traditional medicine or possibly a reference to its thin and long upright stance when nervous.

Earliest Date: two 26-Jun-02

Latest date: 26-Nov-01, two reportedly shot by Buda

<i>Alopochen aegyptiacus</i>	Egyptian Goose				Oie d’Egypte				<i>hankaka</i>			
Herbivore												
MAb?	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002						1						

Only one record from B&M of two birds on Tawaye, 24-Jun, which accords with Mai Daji’s observation that he sees only three or four each year. That they head to the wetlands of the pastoral zone to breed in the rains finds some confirmation in my observation of a pair with seven well-developed goslings at Lake Akadaney, 20-Oct-01 (plus three other adults). Irregular and rare at Sokoto according to Mundy & Cook and Dobbs (1959) respectively. Since both these authors report *Plectropterus gambensis* as common year round, the hypothesis that *Alopochen aegyptiacus* is seen in B&M over a longer period because it breeds to the north finds some support. It could potentially breed closer to B&M at Birnin Lallé. **Etymology:** *hankaka* is a verbal noun meaning “to be big, to take up space”.

<i>Plectropterus gambensis</i>	Spur-winged Goose	Oie-armée de Gambie	<i>dumniya</i>
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Herbivore

MAnb	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002							1					

One record of a single bird flying over Tawaye on the 16-Jul-02. A bird very probably of this species was seen flying south over the neighbouring village of Makyera on the 30-Jul-01. Mai Daji reports that only a couple pass each year. Though this comment is similar to the one he made for the following species, it is interesting to note that he gave a shorter timeframe. Could this be because the birds are non-breeding wanderers as opposed to breeders? Serle recorded a nest in September on the Sokoto river marshes near Kwarre (1943). **Etymology:** The black edible fruit of *Vitex doniana* has the same name: an appropriate comparison given the bird's predominant colouring.

<i>Sarkidiornis melanotos</i>	Knob-billed Duck	Canard à Bosse	<i>dane</i>
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Herbivore

MAb?	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002						2	2					

Probably the most common non-breeding Afro-tropical Anatidae to visit B&M: according to Mai Daji there has been no change in the population and many come. My first record was the morning after the first heavy rains of the year (10-Jun) and never more than a pair seen. According to Scott & Rose (1996) needs trees for nesting, which is probably an impediment to local breeding, though this might not be the case at Birnin Lallé. Otherwise presumably breeds in the wetlands of the pastoral zone and just passes through B&M on passage. This hypothesis accords well with Mundy & Cook's observations from Sokoto, "Absent for months from any one place, and overall numbers are lowest from August to December".

<i>Anas acuta</i>	Northern Pintail	Pilet (canard pilet)	<i>mai karfi</i>
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Omnivore

MPp	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											1	

Only one record from B&M of three birds (1♂, 2♀) 09-Nov that came in from the west, looked at Tawaye and then veered towards Tarago. Said by Mai Daji to always come in numbers. Unlike the preceding species there is a greater chance that these birds came from east of the Urals and passed by Egypt (Scott & Rose, 1996). Pintail numbers wintering in West Africa have recently been estimated at fewer than 500,000 birds (Wetlands International, 2006), but are likely to fluctuate (Scott & Rose, 1996). **Etymology:** "the strong one" for which the reason is unknown, but fits well with the impressive migration distances annually covered by this species.

<i>Anas querquedula</i>	Garganey						Sarcelle d'été					
Omnivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002									1			

Seven birds flew over my house on the 30-Sep. Originally unsure about the identification even though clear white wings bars seen as well as a definite eye stripe on one bird and a paler one on another, as *A. crecca* entered into my calculations, but this now appears unlikely given that only a few thousand birds winter in West Africa (Scott & Rose, 1996). As this species is the most common Palaearctic *Anitidae* in West Africa (2 million according to Wetlands International, 2006), most of my unidentified duck records shown at the end of this section, probably relate to this species. Considered to migrate on a broad front from Egypt to tropical Africa without stopping (Scott & Rose, 1996) and the origins of these birds could be anywhere from Western Europe to the Central Siberian Plateau.

<i>Anas clypeata</i>	Northern Shoveler						Souchet					
Omnivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002										1		

One on the 29-Oct at Tapkin Gahoutchi in the company of four *Aythya nyroca*. Where were they from? Assuming that this party had travelled all the way together, which need not have been the case, Scott & Rose (1996) indicate a range overlap for the West African wintering populations of these species in an area roughly identifiable as the Pannonian Plain and the northern shores of the Black Sea. The outbreak of the H5N1 strain of Avian Influenza in Northern Nigeria in January 2006 focussed attention on the potential transmission role of wild birds. This species and the two following members of the genus *Anas* were considered to have "a 'higher risk' of carrying HPAI because of their migration patterns, gregariousness, habitat preferences, tendency to mix with other species and history of occurrence of HPAI" (Wetlands International, 2006). An estimated 20,000 *A. clypeata* winter in West Africa, spread between the lower Senegal River Basin, the Inner Niger Delta and Lake Chad, though numbers between years can be highly variable (Scott & Rose, 1996: 250).

<i>Aythya nyroca</i>	Ferruginous Duck						Fuligule Nyroca					
Omnivore*												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002										1		

Four, 29-Oct at Tapkin Gahoutchi in the company of one *Anas clypeata*. Scott & Rose suggest that the relatively small (7 to 10,000) and declining number of *A.nyroca* wintering in West Africa originate from a discrete West European and North African population, but admit the evidence for this is scant (1996:179-82). Most are thought to winter in the Inner Niger Delta, and this would seem a logical destination for the north Algerian and Tunisian populations. The possibility that some Central European *nyroca* may winter further east in and around the wetlands of northern Nigeria, like some of their congeners, should not be discounted and hopefully tracking studies on this species will be initiated in the future.

DUCK spp.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										3		
2002										2	1	

Ducks are difficult to approach, perhaps particularly on small bodies of water where they have a large field of view when there is limited fringing vegetation. Furthermore such wetlands are frequently disturbed, as they are regularly used for watering animals. Dates ranged from the 01-Oct (both years) to 10-Nov-02 and the maximum count was a flock of about 100 heading north on the latest date, but this was exceptional and most concerned <5 birds except for circa 15 birds 01-10-02 and the following record. The record on the 01-Oct-01 was of circa 20 smaller ducks and circa 7 larger ducks. If as presumed most of my unidentified duck records concern *A. querquedula*, and most leave from Egypt on a broad front, constant observation at various sites along the route west could possibly pick up a ripple effect in numbers.

***Accipitridae*: Vultures, Eagles, Hawks & Allies**

Birds of prey (both *Accipitridae* and *Falconidae*) are tricky to identify and there are several species where I had problems. This difficulty is reflected in the names given by Mai Daji, which regroup several similar looking species under one term—see table below. It is therefore only with the more distinctive species that are identified by a discrete names that Mai Daji’s information can be used with some confidence, but there are nonetheless some disparities between his observations and mine and/or the literature.

<i>shaho</i>	The generic name for a bird of prey	Marsh Harrier Grasshopper Buzzard
<i>shaho madauki</i>	the <i>shaho</i> that picks things off/up	Lanner falcon Dark-Chanting Goshawk
<i>farin shaho</i>	The white <i>shaho</i>	Gabar Goshawk Shikra Montagu’s & Pallid Harrier
<i>shahon massalaci</i>	The <i>shaho</i> of the mosque	Hovering raptors: predominantly Kestrels

Brown (1970, reported in Clouet & Goar 2003: 472) has noted that raptors in the tropics tend to nest in the dry season. At this time the Sahel is probably in its less conducive state to support breeding, which perhaps explains why so few raptors do so locally. However, in the short rains and immediately afterwards prey is in abundance and it seems many species head north in their post-breeding period to profit...

RAPTOR spp.

10-Oct-02, a hot sultry day which seemed ideal for raptor passage, two raptors high over B&M may have been European Honey Buzzards (*Pernis apivorus*).

<i>Elanus caeruleus</i>	Black-shouldered Kite	Élanion Blanc	<i>đan tukuliji</i>
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Carnivore

MAnb	<i>Dari</i>	<i>Rani</i>				<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>	<i>Dari</i>
					arrive	most				few		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			2	3	
2002						1	4			4	2	

According to Mai Daji, the *đan tukuliji* arrives before the rains, reaches its maximum numbers in the rains and there are only a few birds around harvest time. B&D state that it is resident throughout except in the extreme north. Mundy & Cook noted a definite dispersion away from Sokoto with a reduction in numbers in the rains. Breeding noted in Sokoto in February and March. Not known to breed in B&M but said to have increased. There seem reasonable grounds to conclude that in B&M and its environs this species is a non-breeding migrant from the south. No records for the Aïr cited in Newby et al (1987) or Giraudoux.

Earliest date: 26-Jun-02 (one bird) **Latest date:** 19-Nov-01 (one bird)

Max count: only on three occasions saw 2 birds together, otherwise all records of singles

<i>Chelictinia riocourii</i>	African Swallow-tailed Kite	Élanion Naucler	<i>tsinkake</i>
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Carnivore

Rn	<i>Dari</i>	<i>Rani</i>				<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>	<i>Dari</i>
						Breeds						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			3									
2001			2				1			1	6	
2002		1	9	2		4						
2006					1							

Though my records correspond well with its occurrence at Sokoto, where it was noted by Mundy & Cook from November 18th to early February, my limited observation in the dari should be born in mind. However, as my Mai Daji believed it did go away, albeit for a longer period than my observations suggest, an annual absence in the *dari* seems tenable. Mating observed at B&M the 16-Mar-02 and nests seen in different *gao* trees, 24 & 26-Jun-02. The nests are rather obvious as this, its favourite tree (according to Mai Daji), is leafless at this time—on the 24-June I had to dissuade someone from knocking out the unfledged young to take home for his children to eat! Despite such pressures, Mai Daji believes the species has increased. The agricultural landscape is presumably congenial to this mainly insectivorous raptor, but quite why it feels obliged to leave for a couple of months is a mystery.

Earliest date: 19-Feb-02 (one bird) **Latest date:** 27-Nov-01 (one bird)

Max counts: 16-Mar-02 (nine birds), 01-Apr-02 (six birds)

<i>Milvus migrans</i>	Black Kite	Milan Noir	<i>jibilma</i>
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Carnivore

MAnb	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>	<i>Dari</i>	
	few										few	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2			4	2	1
2002						3	12		3	11	7	

The repartition of my records is at odds with Mai Daji's claim that this species is encountered year round. I regrettably made no attempt to distinguish between *M.m.migrans* (Palearctic) and *M.m.parasitus* (Afrotropical) races. However, it seems fairly safe to infer from the records of more diligent observers in the region (Rousselot and Mundy & Cook), that most if not all are *M.m. parasitus*. Mundy & Cook believe that Sokoto is at the southern limit of the species rainy season distribution and the Air appears to be the northern limit (map in B&D). The breeding data from Mundy & Cook suggests that it breeds in its dry season quarters, which accords with Mai Daji's reply in the negative as to whether it bred.

Earliest Date: eight 23-Jun-02**Latest Date:** one probable 17-Dec-01, otherwise one 12-Nov-02**Max Counts:** c.70 (2-Jul-02), 50+ (22-Jul-02) and c.50 with a large Abdim's flock (05-Oct-01)

<i>Necrosyrtes monachus</i>	Hooded Vulture	Vautour Charognard	<i>agulu</i>
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Carnivore

MAnbsu	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>	<i>Dari</i>	
						Most common						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1_{prob}		
2002			1			1				2		

Said by Mai Daji to have been previously more common, but a species likely to wander far in search of carrion and presumably sometimes form large flocks, but the most ever seen together was three 10-Oct-02. I thought it could potentially breed at Dakoro town given its fondness for human habitation, but Oumar Sanda's enquiries there on my behalf didn't find any evidence. Not shown above is one record south of the Goulbi'n Kaba, south of Sabon Machi (20-Mar-02). One of the few bird species said not to be eaten and the reason Mai Daji gave was because it eats donkey meat, which is taboo in Muslim culture.

VULTURE spp.

Two unidentified vultures seen taking off from Tawaye 09-Oct-01. All dark bar whitish heads, a two-tone underwing and one had a distinct, whitish Adam's apple. Juvenile *Trigonoceps occipitalis*?

Circaetus gallicus **Short-toed Eagle** Circaète Jean-le-Blanc

Carnivore

MPw?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											1	
2002										1	1	

My first record in B&M concerned a bird shot on the 30-Nov-01 that I struggled to identify between *C. gallicus* and *C. beaudouini* because of the short wing length (Outstretched wings tip to tip c.160 cm *beaudouini* = 170 cm, *gallicus* = 180 cm). However Bill Clarke identified it as the former because of the 5 lines counted across the underwing. This was confirmed by a DNA test kindly performed by Dr. Anita Gamauf of the Natural History Museum in Vienna on some feathers I recovered, which matched the b cytochrome. She also noted that the characters and measurements of these feathers further confirmed the identification. The three positive records of this species suggest it is an autumn passage migrant but the three uncertain records shown below suggest, taking consideration of my absences, that if these are *gallicus*, then it may be a Palearctic wintering species.

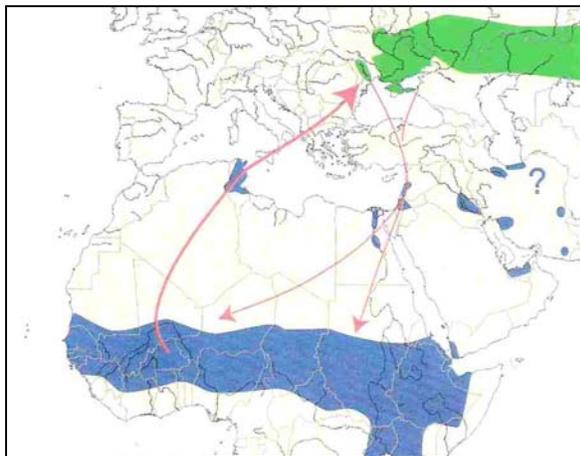
Circaetus gallicus or *C. beaudouini*

23-Feb-02 (one), 18-Mar-02 (one) & 27-Oct-02 (one possibly two).

Circus macrourus **Pallid Harrier** Busard Pâle

Carnivore

MPw	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										4	2	2
2002			3							1	2	



Though it is likely that this species is a winter visitor, this cannot be conclude definitively until it is known whether all records refer to the same individuals. Given the evidence for circular migration reported in Corso & Cordelli (2004-source of the map), whereby most birds enter Africa via the Middle East in autumn but more return via Sicily in spring, some through passage is to be expected. Comparisons with *C. pygargus*, which is also a likely winter visitor, and suspected of a similar circular migration (see below) are not possible due to problems with identification of females/juveniles (“ringtails” records presented below). All records refer to males. Only once was there a possibility that sightings referred to more than one bird.

Earliest date: 01-Oct-01 **Latest date:** 11-Mar-02

Circus pygargus **Montagu's Harrier** Busard Cendré *farin shaho*

Carnivore

MPw	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										7	1	
2002		1	5				1			5	1	

Predominantly a dry season visitor but there is a curious record of a male on the 4-Jul-02 that is made even more so by three records of ringtails in June and July (see below). Are these over-summering birds or very early returning failed/non-breeders? According to Underhill-Day (2002) birds have been noted passing south in the Gibraltar Straits as early as July. Information is not known from further into the Mediterranean, which is apparently crossed directly from southern France, though some birds also travel via the Italian peninsular or Malta crossing to Cap Bon in Tunisia (*ibid.*). Arroyo *et al* (2004: 44) indicate that there is evidence of some first year birds remaining on their wintering grounds rather than returning. The male positively identified was not however a first year bird—but see the ringtail records below—and males do not breed until their 3rd or 4th year (*ibid.*). Since numbers in spring at Gibraltar are higher than in the autumn and the opposite trend is found at the Sicily Channel/Malta crossing, there is a suspicion of partial circular migration over the wintering grounds (*ibid.*). The provenance of the wintering birds is probably the western and central European populations (a Dutch bird has been recorded in Chad and a Swedish bird in Nigeria: *ibid.*) since eastern birds winter further east and south in Africa (Underhill-Day, 2002: 231). All records refer to adult or sub-adult males and only once was a female tentatively identified because of its close association with a male. Records typically of single birds with a suspicion of two only twice. It would be fascinating to know if the B&M records for this species and *C. macrourus* refer to many or only a few individuals, i.e. whether or not they are territorial in winter. Arroyos *et al* (2004: 43) report that their diet in Western Africa is mainly locusts, which presumably is unfavourable to territorial behaviour, but also small birds. On the other hand on their breeding grounds they do eat lizards and voles so territoriality is, given a large enough area, a possibility in the Sahel.

“RINGTAILS” – female/juvenile *C. macrourus* or *C. pygargus*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										6	5	2
2002		1	10	2		2	1		2	2	2	

Predominantly single birds seen on each bird day but once saw 3 (10-Oct-02) and 4 (03-nov-02). The summer records refer to a probable juvenile 01-Jun, a probable sub-adult 18-Jun and a plain ringtail the 10-Jul, which suggest that the records concern three different birds.

Circus aeruginosus **Eurasian Marsh Harrier** Busard des Roseaux *shaho*

Carnivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										7	5	3
2002									2	4	3	

A relatively common bird of autumn passage that tends not to be seen after the pools have dried up. The speed with birds move through is not known, but some may stay a few days.

Earliest Date: 29-Sept-02 (1) **Latest Date:** 31-Dec-01 (3) **Max Count:** 10-Nov-01 (5)

<i>Micronisus gabar</i>	Gabar Goshawk	Autour Gabar	<i>farin shaho</i>
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Carnivore

R?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1				1	
2002							1		1		1	

Five records, all of individual birds. According to Mundy & Cook (1972: 36) resident in Sokoto where they note it was seen less frequently than *Melierax metabates*, which is a pattern inverse to my records.

<i>Melierax metabates</i>	Dark Chanting Goshawk	Autour sombre	<i>madauki</i>
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Carnivore

SU	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001												1

Only one record, 18-Dec. B&D report irregular southward movements during the dry season. Resident in Sokoto (Mundy & Cook).

<i>Accipiter badius</i>	Shikra	Épervier Shikra	<i>farin shaho</i>
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Carnivore

MA nb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			1		

Only two records, both of single birds: 31-Jul and 02-Oct. According to B&D, moves south to breed in the dry season, returning north in the rains. Mundy & Cook who reported this species in Sokoto from June to October, noted juveniles in July but do not go as far to say that this proved breeding. There is a 1981 April record in Giraudoux between Maradi and Guidan Roumji. The two B&M records accord with a northwards rainy season transhumance. No records for the Aïr in Newby et al (1987) or Giraudoux.

<i>Butastur rufipennis</i>	Grasshopper Buzzard	Busard des Sauterelles	<i>shaho</i>
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Carnivore

MA nbsu	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			4		
2002						1	5		2	3		

An intra-African migrant that moves north to the semi-arid belt in the rains where it breeds locally (B&D). Holyoak & Seddon (1991) give the most northern record for this species in Niger at a locality <200 km to the north of B&M at latitude 16°12' (#59). Unfortunately captured under the same term used for Marsh Harrier, so Mai Daji's observations are of limited use but said not to breed. Brouwer et al (2000) found a nesting pair in western Niger at a similar latitude to the *karkara* in August, so it can't be discounted though a lack of suitable trees (tall Combretaceae) may be a factor. Interestingly seen only on three occasions in Sokoto by Mundy & Cook and for what is a relatively easy species to identify not recorded by Rousselot—but Kemp & Kemp (1998) report that its regional status changes from year to year.

Earliest date: 20-Jun-02**Latest date:** 30-Oct-02**Max count:** 5+ 29-Sep-02

RAPTOR spp.

27/06/2002: 1 very pale (albino?) raptor high over village at 1300 hrs. Pale/cream upperwing, with slightly dark ‘mirrors’ and underwing pale but darker underwing coverts. Somehow reminded me of a harrier. A very late Long-legged Buzzard (*Buteo rufinus*)?

Buteo auguralis **Red-necked Buzzard** Buse d’Afrique *shirwa*

Carnivore

MANbsu	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	Very common											
2001										3		
2002						1	3		1			

The October 2001 records probably concern the same lone juvenile bird; all other records are of single adult birds. B&D report northward movements in the rains returning south where it breeds at the end of the rains. Mundy & Cook report it in Sokoto from late June to late January. **Earliest date:** 28-Jun-02 was a bird in the Goulbi’n Kaba on the Maradi road— a bird also seen there 12-Jul-02. **Latest date:** 15-Oct-02. Mai Daji’s observations in the rani and bazara require verification and according to him the species has become more common.

Hieraaetus pennatus **Booted Eagle** Aigle Botté

Carnivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										4	1	
2002										1	1	

Bar one possible spring record—see below—this species appears to pass through in a window of just over a month: **Earliest date:** 03-Oct-01, **Latest date:** 05-Nov-02. Seen in Sokoto by Mundy & Cook in October and from January to March. Is there a quick passage south in autumn, followed by a gradual northward movement/concentration in the Sudanian zone before a quick Sahara transit? All birds seen were of the pale form and interestingly Mundy & Cook only observed one dark phase in their 13 observations. All records of single birds and apart from one that stayed around for a few hours, all others were moving through.

RAPTOR spp.

18-Mar-02: One possible *Hieraaetus pennatus* or immature Martial Eagle (*Polemaetus bellicosus*) over village: high up and seen only from below, dark underwing primaries and light underwing coverts. In the absence of records of this latter species from Maradi region or from Mundy & Cook for Sokoto and only one record from Kano in Sharland (1981), Booted eagle seems most likely. This then would represent one of my few records of springtime raptor migration, which appears to be much less pronounced than the autumn passage.

could be either over-summering Palaearctic birds or wandering Afrotropical birds. Support for the latter hypothesis is given by Sharland & Wilkinson's note that birds observed in the wet season in Kano may be *rufescens* (1981). Furthermore if the affinity of this subspecies to mountainous areas holds, it should not be forgotten that the bird life of the Ader Douthi uplands to the west is almost unknown.

In 2001, I had a strong suspicion that I always saw a pair of kestrels around Tapkin Zure, but didn't keep sufficient track of this, or indeed ever make note of their sex or age. Mundy & Cook noted that kestrels in Sokoto had favourite feeding perches, but would a pair of migrant kestrels remain together?

Though kestrels can migrate long distances over water, there is evidence of funnelling at both ends of the Mediterranean and at Cap Bon, Tunisia (Village, 2002). Birds ringed at Cap Bon in spring, which is one potential return crossing point for birds wintering in Niger, have been recovered mainly in central Europe, Russia and east to Kazakhstan (Dejonghe, 1989).

Earliest date: 06-Oct-01 (but note prior observations caveat). **Latest date:** 02-Apr-02 (but later dates likely as Dejonghe (1989) noted passage at Cap Bon, through into May, especially of immature birds).

KESTREL spp.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										3		
2002		1 _{prob}		1 _{prob}		1 _{prob}	1 _{pos}			4	2	

The records above marked probable or possible were thought to be *F. tinnunculus* at the time, and since they concerned individual birds this identification seems likely. The other records could only be identified as kestrel spp. Except on two occasions these involved single birds, so retrospectively it is probable that they were *tinnunculus*. Three birds seen rapidly whilst riding my motorbike in the livestock trail to Korohane on the 17-Oct-02 were however potentially *F. naumanni*.

Falco biarmicus **Lanner Falcon** Faucon Lanier *shaho madauki*

Carnivore

MASu	Dari	Rani			Bazara	Damana				Kaka	Dari	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			2	12	2
2002						2	6		3	9	3	

If *shaho madauki* is used exclusively for this species (*madauki* was also used for *Melierax metabates*) this species is absent in the hot season, which concurs with my observations (none noted between 20th December and 11th June). Seasonal movements with the rains reported in B&D. Reported throughout the year at Sokoto (Mundy & Cook) where it was noted breeding in January and February, with young seen in June and July. Mai Daji said it does not breed and this may reflect a simple lack of suitable habitat (tall trees with abandoned nests, but ground nesting in the desert not unknown—Kemp & Kemp), persecution or the fact that it is a non-breeding summer migrant to the area. At times seen daily over the village where it would frequently take chicken or guineafowl poults. No more than two birds ever seen and all adults except for juveniles noted on two dates (26-Jun-02 & 05-Jul-02)—according to Kemp & Kemp moults directly into adult plumage in the second year, so this cannot be considered evidence of local breeding.

Phasianidae: Quails & Francolins

<i>Coturnix coturnix</i>	Common Quail						Caille des Blés				<i>đan fir</i>	
Omnivore*												
MPw	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											4	1
2002			4	4								

For the reasons explained in the commentary of the following species, Mai Daji's comments are not included here. My records of *Coturnix coturnix* suggest that it is a unassuming winter visitor the numbers of which are difficult to determine due to its secretive nature—on one memorable occasion after answering an urgent call of nature I flushed a bird a mere two metres from where I had made my nutrient contribution! According to Moreau (1972) the burr-grass, cram-cram (*Cenchrus biflorus*) is an important part of this species winter diet and this is found in abundance locally. According to Poilecot (1999) this plant invades animal corridors, which is in accordance with my observations and may make northern Gobir a particularly attractive place for this species. If *Cenchrus biflorus* is indeed a major part of the quail's winter diet speculation that this species is susceptible to the impact of Sahelian droughts (e.g. Marchant, 2002a) must be critically assessed: according to Poilecot the cram-cram population expands at the expense of other annuals in years of deficit rainfall.

Earliest date: 04-Nov-01 (2 or 3) **Latest date:** 01-Apr-02 (one bird)
Max count: three birds together 7-Nov-01

<i>Coturnix delegorguei</i>	Harlequin Quail						Caille Arlequin				<i>đan fir</i>	
Omnivore*												
MAsu	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>			<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

Mai Daji insisted that the *đan fir* breeds in the rainy season in grasses, weeds and even at the base of millet. This therefore casts doubt on the accordance of *đan fir* with *Coturnix coturnix*, which was my original supposition. Since Mai Daji gave distinctly different names for two potentially confusing species that I recorded locally (*Ortyxelos meiffrenii* and *Turnix sylvatica*), the species-Hausa name accordance being quite certain, I deduced that Mai Daji's information on *đan fir* referred to the inter-African migrant *C. delegorguei*. In May 2006 on a rapid return visit, Mai Daji recognised the Chappuis recording of this species. It has apparently declined in numbers, but if it is a species prone to fluctuations, like its Palaearctic cousin, inter-annual population changes are to be expected. The map in B&D indicates that this species is found within 150 km of B&M, but quite what the basis of this information is I don't know, as Mundy & Cook did not record it in their study of the birds of Sokoto. This species is not recorded in Giraudoux.

FRANCOLIN spp. (*Francolinus bicalcaratus* or *clappertoni*)*fakara*

Omnivore

R	Dari		Rani			Bazara	Damana				Kaka		Dari
	breeds												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	

Mai Daji alerted me to the presence of francolins in the area when leafing through Barlow & Wachter. My lack of observation probably reflects its secretive nature and the fact that it is active in the early morning and the late afternoon. The Maradi region is thought to be the point of contact in Niger between the western distributed *F. bicalcaratus* and the eastern *F. clapperoni* (Giraudoux) and Rousselot noted that *F. clappertoni* "Semble partager la territoire à égalité avec le suivant [*F. bicalcartus*]". Unfortunately for species determination by sound recordings, as Claude Chappuis has pointed out, the processes that have lead to the relatively recent speciation in this genus have not lead to appreciable acoustic divergence. On my rapid visit in May 2006 I asked Mai Daji whether the local *fakara* had red or brown legs and he replied the former, which suggests *F. clapperoni* is found though I would prefer to discuss this with him (and other hunters) more thoroughly and ideally see the birds before ruling out the co-presence of *F. bicalcaratus* in northern Gobir. Apparently breeds in fields at harvest time at the base of *magaria* trees (*Ziziphus mauritiana*) and was formerly more common. Its reported absence in the hot season seems improbable.

Turnicidae: Buttonquails*Ortyxelos meiffrenii*

Quail-plover

Turnix à Ailes Blanches

d'an furtua

Omnivore*

R	Dari		Rani			Bazara	Damana				Kaka		Dari
	breeds												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
1998				1									
2001											1		
2002			16	2	1	4	9						

The reason for the peak in my records in March was due to the field mapping I was doing at this time, which took me frequently to the habitat of this delightful, if not slightly quirky species. Said by Mai Daji to breed in the damana in the uncultivated grass borders around fields and to have previously been more common. Though I didn't see the species between 10th Nov and 8th March, I suspect this reflects my absence in the right habitat rather than the absence of the species. It should however be born in mind that to the south in Kano it was noted as an "occasional to rare dry season visitor or passage migrant" (Sharland & Wilkinson, 1981). It is interesting to note that B&D classify this species as a "dry-season breeder that moves north with the rains", which echoes the Sudan and Chad literature based evidence used by Elgood et al 1994 for Nigeria, where no breeding records known. In the western Sahel, reported as having an uncertain or unknown breeding season in the Ferlo (Morel, 1968), a breeding bird killed by Bates in August at Gao (p68) and Hartert captured a pullus at Zinder either 24/1 or 13/2 (cited in Giraudoux). Classified as a polyphage by Morel (1968)—Bates found both small hard seeds and tiny snail shells in three stomach examinations—which might explain some plasticity in the timing of breeding.

<i>Turnix sylvatica</i>	Little Button-quail					Turnix d'Andalousie				<i>đan badda makyaya</i>		
Omnivore												
SU	Dari	Rani			Bazara	Damana				Kaka		Dari
	Breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002							1					

Brief views of a quail like bird at the couloir fadama 4th July put down to this species which is not recorded in Giraudoux. No white on upper wing noted on explosive (snipe-like) take-off from ground so not quail-plover and furthermore on the ground it appeared to be more hunched-up (neck less) than this species. Not considered a common quail because of the dark primaries on the wing—Harlequin quail not originally considered but likewise doesn't fit my observations. The distinctive hooting call instantly recognised by Mai Daji, who claims it breeds in the damana in grassy areas in fallows or grazing areas and was previously more common. What of the year-round status he gives to this species? Said by B&D to be a wet-season visitor to the drier parts of its range, but regional evidence for this is unclear. In Sokoto a nest was found end July 1939 by Serle (1943) but Dobbs only reports flushing it sometimes from undergrowth along the Sokoto river in the dry-season and it was not recorded by Mundy & Cook. Elgood et al. (1973) indicates some unclear movements in Nigeria. According to the map in B&D, the village is at the northern limits, but they also mark a curious outlier in the Air. Detailed enquiries with the village shepherds may be useful to resolve this question. **Etymology:** "The one who misleads the shepherd" because it hides itself very well, but perhaps more specifically because once it flies up and lands it is difficult to relocate: as they say in the guides, I couldn't flush the bird I saw a second time.

Rallidae: Rails & Allies

<i>Gallinula chloropus</i>	Common Moorhen					Gallinule Poule d'Eau				<i>kurkur</i>		
Omnivore												
MAB	Dari	Rani			Bazara	Damana				Kaka		Dari
	Breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2		1	4		
2002									2	2		

The possibility of *G. angulata* was not verified and it was simply assumed that the birds in question were *G. chloropus meridionalis*. How early they come north with the rains would be interesting to know, as perhaps they need to wait for the establishment of aquatic vegetation. Only on one occasion seen away from Tapkin Bagarinnaye: a juvenile in fields some distance (c200 metres) from the nearest wetland. Perhaps adults leave on the southward return migration before juvenile birds? No population change noted by Mai Daji.

Earliest date: 29-01-01

Latest date: 31-Oct-01 (all juveniles)

Max count: 4+ 03-Oct-01

Otididae: Bustards

A widely appreciated family of gamebirds since the meat of a bustard is thought to keep the body nourished for a week. I personally only ever saw one in the karkara, which I was fortunately able to identify. The existence of the other species is due to later enquiries made by Oumar with Mai Daji using images pre-prepared from B&D—for some reason I had neglected to include these in my initial research, despite having seen the acute interest with which the bustard pages of my field guides were regarded! A total of six species, including three resident breeders, appears incredible, though not beyond the realms of possibility. The exact status of each species needs to be determined by more precise means. All were said to have previously been more common.

30-Mar-02, I picked up some bustard feathers in the north of the karkara, but sadly misplaced them. The village shepherd had seen three bustards recently near Tarago and Mai Daji had also seen tracks....

<i>Neotis denhami</i>	Denham's Bustard					Outarde de Denham				<i>bakin tuji</i>			
Omnivore													
MAAnbsu	Dari		Rani			Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2002										1			

One seen flying south from house 10-Oct. Visible migration of this species reported from the central regions of Nigeria: northward in May, southward October to December (Elgood et al 1994). Some evidence that it may be a dry season breeder in Kaduna, which if a general pattern, would mean that this bustard is unusual among its cousins who are all (?) rainy season breeders in the north (*ibid.*) No dates given for the only Zone 3 records in Giraudoux (from Rousselot) and outside of dry-season records in Parc W (only time found there), found elsewhere in Niger only during the rains.

Not so very far away from B&M on 18-Jan-98, the vehicle I was travelling in put up two large bustards for which all I was able to note was that they had large white wing patches on otherwise black wings. Retrospectively armed with B&D, this species would seem the most likely candidate (*Ardeotis arabs* being more chestnut-winged), but the dates don't at all fit with the above argument!

<i>Neotis nuba</i>	Nubian Bustard					Outarde Nubienne				<i>jan tuji</i>			
Omnivore*													
SU	Dari		Rani			Bazara	Damana				Kaka		Dari
						Breeds							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	

Long before the bustard picture exercise was conducted with Mai Daji, he had told me that he had seen this species in one of his fields on 28-Oct-02—he was convinced of his identification by the wing pattern in the field guide. The only Zone 3 record in Giraudoux is from Buchanan, near Tessaoua, which I presume was at the end of May 1922 (month not reported)—Holyoak & Seddon give more recent records only from Zone 5. Hartert (1924) reports that Buchanan found eggs at Marandet in South Air in mid-August. Said by Mai Daji to breed in sandy (jigawa) fields: but quite how such a large bird can remain hidden from farmers is a mystery.

Charadriiformes

Mai Daji's names for birds of this order that frequently wade in water are divided into two groups and appear to differentiate physiologically between longer and shorter legged species, with greenshank perhaps an error since it is placed in the later category along with the snipes and sandpipers.

dan komi ruwa Literally "the one (for whom) all (is) water" and used as a catch all name for all three longer legged species without any further differentiation

takabado A generic name for shorter legged waders used with a descriptive suffix or prefix

Rostratulidae: Painted-Snipes

Rostratula benghalensis **Greater Painted Snipe** Rhynchée Peinte *takabado mai kwai*

Omnivore

MAB	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002						1	2		1	2		

Seen in at least four different and sometimes quite small wetlands so may be quite common given their number, however Mai Daji thought this species was previously more common. **Etymology:** "The *takabado* who has eggs" and it is indeed the only breeding wetland wader in the area.

Earliest date: 20-Jun-02

Latest date: 10-Nov-02

Recurvirostridae: Stilts

Himantopus himantopus **Black-winged Stilt** Echasse Blanche *dan komi ruwa*

Insectivore

MPP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										3		
2002										1		

Recorded in a narrow window between the 2nd and the 15th October at three *tapkuna* (Tarago x 2, Guinda & Gapoutchi) and the maximum seen was nine (minimum, one). According to Dubois (1992) the optimal water depth for this species is 10-20cm and this could be a factor in determining which *tapkuna* are visited. Regrettably the age and sex composition of the flocks seen was not recorded. Delaporte & Dubois (2000) suggest that wintering birds in Lake Chad are more likely to be from eastern Mediterranean populations: Italian, and they intimate Greek birds have been found wintering both in the Niger Delta and Lake Chad.

Burhinidae: Thick-Knees

<i>Burhinus spp.</i>	Thick-Knee				Oedicnème				<i>dukau</i>			
Insectivore												
MANbsu	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002							1		(1)			

I flushed up a thick-knee at the couloir fadama (07-Jul), but didn't get good enough views to identify it. On the 29-Sept, Mai Daji reported recently killing a *dukau*. These records undoubtedly refer to either *B. capensis* or *B. senegalensis* (or both), but which is the most likely? The former would be at home in the drier areas and the latter in the wetter areas. The latter has perhaps the better mobility record, e.g. considered a regular wet season visitor in Sokoto by Dobbs (as well as occasional in the dry season) and occasional in Kano, May-July (Sharland & Wilkinson). Furthermore, I saw two *B. senegalensis* (+ possibly two others) at Lake Akadaney 20-Oct-01. However, on my quick May 2006 visit, when played the Chappuis recordings of both species Mai Daji recognised only *B. capensis*, but I would prefer to double check this information. Interestingly neither species mentioned by Rousselot. Mai Daji said they were more common before and said they didn't breed. **Etymology**: perhaps a derivative of 'duka' the verb to punch, but quite what the association is I don't know.

Glareolidae: Coursers

Mai Daji made no distinction between *Cursorius cursor* and *C. temminckii*, which is perhaps not surprising given the similarities between them. He reported that tauwa were formerly more common.

<i>Cursorius cursor</i>	Cream-coloured Courser				Courvite Isabelle				<i>tauwa</i>			
Insectivore												
SU	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002			2									

Excellent views of two birds 10-March in the "tsawana" (gravelly area – *reg*) area near Gona Nouhou—grey crown clearly seen. One judged to be of this species seen from my motorbike in a similar habitat in the eastern couloir near Tapkin Gapoutchi, 25-March. *Regs* are widely known to be the preferred habitat of this species, but what is far less clear is the origins of these birds. Firstly though my records don't help much with the temporal question, there are some grounds to think they relate to winter dispersal. My speculation here is thinly based since these records represent the first for Zone 3 in Niger and records south of the 14th parallel in Nigeria (all above the 12th) have limited accompanying details on dates in Elgood et al (1994), though at least one was in January. If indeed birds at these southern latitudes (B&M included) are wintering, the question remains where do they hail from? Elgood et al (*ibid*) supposes that these are Palaearctic birds, but until ringing or other methods can confirm or deny this, I wish to propose the alternative hypothesis that they are members of the southern Saharan population. Breeding is suspected in the northern Air (Newby et al, 1987) where the authors considered it a 'resident' species, but it should be noted that this does not exclude some migration in the population, perhaps particularly post-nuptial as noted in Algeria and Libya (Isenmann & Moali, 2000, Bundy, 1976).

<i>Cursorius temminckii</i>	Temminck's Courser	Courvite de Temminck	<i>tauwa</i>
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Insectivore

MAb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002							1			2		

First seen 6th July (2 birds) near Tapkin Salka in the bordering *tsawana* area and then much later nearby Tapkin Shinkafo (9th & 10th October, 3 & 4 birds respectively), i.e. all records from roughly the same area. Mai Daji reports that the *tauwa* breeds in the Bazara and I am confident that this is the courser he means. Though Mai Daji says their nesting habitat is the *tsawana*, I think that this habitat can be further differentiated between the two *tauwa*, with *C. cursor* preferring the more open, less vegetated areas and *C. temmincki* the more vegetated areas. The question of the seasonal status of this species is difficult to deduce on the basis of my records. Though Mai Daji said the *tauwa* was found year round, the ease of confusion with *C. cursor* means that this has to be treated with caution. However it is not unfeasible that it is resident, but at the same time there are suggestions that it could be a rainy season visitor from the south—see Sharland & Wilkinson (1981)—but the Sokoto record is unclear, though not necessarily adverse to such a hypothesis (recorded February (twice) and June (once) by Mundy & Cook, and once each in January and July followed by consecutive sighting in 3 weeks in November by Dobbs who describes it as “Regular, on passage”). Rousselot adds to the lack of clarity with his observation of young birds that could hardly fly in December at Maïki, which is a locality that I have yet to locate with precision but which if is the same as the Mayki on his map is between Kornaka and Tessaoua. The description of Borrow & Demey is perhaps the most helpful, “Nomadic, with seasonal movements in response to rainfall and burning of grasslands; some possibly longer distance migrants.”

<i>Rhinoptilus chalconotus</i>	Bronze-winged Courser	Courvite à Ailes Bronzée	<i>dān zakaran tsuntsaye</i>
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Insectivore

SU	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>	<i>Dari</i>	
					breeds	more common						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002							3					

Recorded on three occasions all in July: two at the couloir fadama on the 4th, four at the same locality on the 7th and then at least 12 in the *sabara* fringe of Salka on the 19th. There are some grounds to doubt Mai Daji's claim that this species is present year round, but since it is mainly a nocturnal species, other observers may not have been so attentive. At Sokoto, Dobbs records it as a ‘Regular, on passage’ and saw it only in October and November, but Mundy & Cook record it only once in July. Considered to have a “hump-backed bridge” migration pattern in Nigeria (i.e. a marked population shift to the north in the rains) yet noted as a rare rainy season visitor to the Hadejia wetlands and there is one record from Katsina at the end of November (Elgood et al, 1994). Oddly, the time Mai Daji says this species breeds (apparently in fadamu) is the right side of the rainy season if the dates given for Nigeria are anything to go by (laying occurs between January and February—*ibid*). B&D's statement is apt: resident and probably intra-African migrant but movements poorly understood. **Etymology:** *zakaran* means rooster and *tsuntsaye* bird but meaning of the name is not known.

Charadriidae: Plovers & Lapwings

<i>Charadrius forbesi</i>	Forbe's Plover	Pluvier de Forbes										
Insectivore*												
SU	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1					

The bird seen 31-Jul-01 at Tapkin Dan Gao, to the west of the B&M *karkara* represents only the second record for Niger. The first record was by Wim Mullié and colleagues who saw two at Gouzougourou wetlands near Guidimouni, Zinder Région on 25-Jan-05 (c. 330 km to the ESE of B&M) (Joost Brouwer *pers com.*). In Nigeria it is reported to use a specialised nesting habit of inselbergs and lateritic uplands from late March to August (Elgood et al. 1973 and Elgood et al, 1994). Whether the Douthi Zana uplands, or even more local *tsawana* are a suitable habitat is not known, but the bird could also have been a wandering non or failed breeding individual.

<i>Vanellus tectus</i>	Black-headed Lapwing	Vanneau à Tête Noire	<i>takaraukarau</i>									
Insectivore												
R	<i>Dari</i>	<i>Rani</i>	<i>Bazara</i>	<i>Damana</i>	<i>Kaka</i>	<i>Dari</i>						
	Breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1									
2001			1				4			4	23	4
2002		3	11	1	1	4	14		2	7	7	

The most commonly encountered wading bird, often seen in pairs or small groups (max count 15-Oct-02, circa 30 birds) and frequently heard at night. Mai Daji's breeding season agrees with that reported in Nigeria (mostly Mar-May –Elgood et al, 1994) but Hachimou reported recently finding a nest near one of his fields 24-Jun-02, and this is in line with the extended period also noted in Nigeria—could this have been a second clutch? Though Mai Daji indicates nesting in the *tsawana*, it is probably more expansive in its preferences. Interestingly Mai Daji said it is more common now, but whether it has inadvertently been protected by the belief that it is a sorcerer is not known—at one stage he said all birds apart from vultures are hunted. **Etymology:** “takaraukarau” is a verb meaning to waddle.

Scolopacidae: Sandpipers & Allies

<i>Philomachus pugnax</i>	Ruff				Combattant Varié				<i>d'an komi ruwa</i>			
Omnivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001									1	6	1	
2002									1	2		

Half of the West African wintering population is considered to be made up of most of the Western European population with the remainder originating from the Siberian population (Moreau, 1972 & IWSG, 2004). Autumn passage in Algeria takes place between July and November, peaking in September-October: earlier records are therefore to be expected in northern Gobir, but there are grounds to support a similar peak period. Whereas on its breeding grounds this species has an animal diet, on its winter grounds it switches to seed (Moreau, 1972). The availability of wild rice (*Oryza barthii*) in the wetlands is possibly a determining factor in numbers visiting B&M and particularly how long they remain: in 2001 the wild rice harvest was more important in Tawaye than in 2002. Other seed-bearing aquatic grasses may however be important.

Earliest date: 29-Sep-01 & 02 **Latest date:** 3 birds 06-Nov-01

Max count: 01-Oct-01 a flock at Tawaye of about 35 birds

<i>Gallinago gallinago</i>	Common Snipe				Bécassine des Marais				<i>takabado mai zane</i>			
Omnivore												
MPp	Dari		Rani		Bazara	Damana			Kaka		Dari	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											2	
2002										1	2	

The slightly later period of observation for this species compared to the other waders may reflect that it is more noticeable when the vegetation has died back. All records were I think from Tawaye and never more than two birds were seen in a day. IWSG (2004) suggests that the Western Siberian population winters south of the Sahara whereas the European population winters in Southern & Western Europe as well as Northwest Africa. **Etymology:** "The *takabado* who has lines (stripes)" but also used for the wood sandpiper, which would fit the distribution period better. **Earliest date:** 30-Oct-02 **Latest date:** 09-Nov-02

<i>Gallinago</i> spp.	SNIFE spp.	Bécassine
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One unidentified bird at Tawaye 04-Nov-01. Though the possibility of great snipe (*Gallinago media*) cannot be excluded, in Algeria there are no autumn records as they fly further to the east at this time (Isenmann & Moali, 2000) and only one from Libya (the eastern half) in November (Bundy, 1976). This could suggest that most *G. media* follow an eastern Nile route to Lake Chad and then westwards (with some making a circular migration).

<i>Tringa erythropus</i>	Spotted Redshank	Chevalier Arlequin	dan komi ruwa
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Carnivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										4		
2002										1	1	

The sole bird on 12-Nov was almost a month later than the preceding observation (15-Oct-02). Curiously Mundy & Cook didn't record this species at Sokoto until early January.

Earliest date: 06-Oct-01 **Latest date:** 12-Nov-02 **Max count:** four birds 08-Oct-01

[<i>Tringa stagnatilis</i>]	[Marsh Sandpiper]	[Chevalier Stagnatile]
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Carnivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1		

A briefly seen wader like a delicate greenshank at Tapkin Hurumi 06-Oct was probably this species.

<i>Tringa nebularia</i>	Common Greenshank	Chevalier Aboyeur	<i>takabado mai tsawon baki</i>
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Carnivore

MPp	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			3		
2002										1		

The July record refers to a bird at Tapkin Dan Gao, which landed briefly then flew off south. Adult birds are known to reach winter quarters as far distant as South Africa from late July, but most arrive Aug-Sept (BoA). Mai Daji reported no population change. **Etymology:** "The *takabado* who has a long mouth"

Earliest date: 31-Jul-01 **Latest date:** 15-Oct-02 **Max count:** two birds 02-Oct-02

<i>Tringa ochropus</i>	Green Sandpiper	Chevalier Cul-blanc	<i>bakin takabado</i>
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Carnivore

MPp	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1					
2002							1			1	2	

The July records refer to a single bird on the 19th (02) and one possibly two on the 31st (01). It is difficult to know whether to assign these to very early returning birds or over-summering individuals, pushed

northwards with the monsoon. Thiollay (1973) saw his first returnee in the Adrar des Iforhas (Mali, latitude circa 19°) on 25th July. There are no July records mentioned in Giraudoux et al and said to be found in the tropics from late August to early April, where a few remain in June and July (BoA). Mai Daji said it was previously more common, but this requires confirmation. **Etymology:** “The black *takabado*”.

Latest date: 12-Nov-02, two birds (max count)

<i>Tringa glareola</i>	Wood Sandpiper						Chevalier Sylvain			<i>takabado mai zane</i>		
Carnivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										4	1	
2002							3					

The July records refer to three birds the 4th, one the 5th and two probables the 16th. Most adults return to tropics late July-early September and young birds appear late August but most arrive and pass through in Sept-Nov (BoA). Possibly a greater chance than with the preceding species that these are returning migrants, though over-summering is not unknown (*ibid.*). **Etymology:** The name is also used for the snipe, which has far more noticeable stripes (*zane*), so there is perhaps an error through the distribution period given (see earlier) is more realistic for this species.

Latest date: A possible was heard 21-Nov-01, otherwise 07-Oct-01 **Max count:** three birds

GREENWOOD piper

01-Oct-01 three birds, 02-Oct-01 four/five & 15-Oct-02 one bird. Though not an id feature, *T.ochropus* is perhaps more often seen migrating singly in Algeria than *T. glareola*—see Isenmann & Moali.

<i>Actitis hypoleucos</i>	Common Sandpiper						Chevalier Guignette			<i>zakin takabado</i>		
Carnivore												
MPp	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>			<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1					
2002							3					

It is peculiar that there are I have no autumn records for B&M as I saw this species on the 19th and 20th October at lake Akadaney, 117 km to the north. Though over-summering is not unknown in the northern tropics (e.g. in Mali), the first adults penetrate south of the equator by mid-July followed by a major influx during August (adults) and September (young birds) (BoA). Said by Mai Daji to more common now, but this requires confirmation. **Etymology:** “The lion *takabado*” for which the reason is unknown.

Pteroclididae: Sandgrouse

<i>Pterocles exustus</i>	Chestnut-bellied Sandgrouse	Ganga à ventre brun	<i>buburje ta tudu</i>
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Granivore

SU

	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>			<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
						breeds						
2001											4	
2002	1	1									1	

Though my records and the map in B&D would suggest that this species is a dry season visitor, Mai Daji's observations cast doubt on this. The breeding period he gives is not too far off the period of the sole nest record given in Elgood et al from NE Nigeria (March) and it would seem strange for it to leave immediately after breeding. Confusion with *quadricinctus* is possible, and Mai Daji admitted that apart from different habitat preferences (as their names suggest), they are very similar—*exustus* prefers fields (dunes, *tudu*) and *quadricinctus* in *fadamu*. However *quadricinctus* breeds in the Guinea savanna from Oct-May (*ibid.*). Apparently nests in fields and said to be more common before, and perhaps this is because of the reduction in fallows. **Max count:** c.30, 20-Feb-02.

<i>Pterocles quadricinctus</i>	Four-banded Sandgrouse	Ganga de Gambie	<i>wirinlikile fadama</i>
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Granivore*

MAAnb

	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>			<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002						1	3					

Mai Daji's observations of this species accord perfectly with records from Nigeria (Elgood et al) as he says it doesn't breed. Apparently more common now. **Max count:** 14, 19-Jul-02, but otherwise seen in twos or threes.

SANDGROUSE spp.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001									1	2		
2002						1			(1)			

In light of the above accounts, these records could be either species. The 2002 September record refers to a report from Mai Daji that he had recently killed two, but unfortunately I didn't get to see them.

Columbidae: Pigeons & Doves

A fascinating family of birds because of their close association with man due to his cultivation of graminaceae and because of their subtle differences in ecology.

<i>Oena capensis</i>	Namaqua Dove					Tourtelette Masquée					<i>bardo</i>	
Granivore												
R & MA	Dari	Rani			Bazara	Damana				Kaka		Dari
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1		1	1	23	4
2002		2	16	4	1	16	10		2	13	5	

Though a resident species, part of the population is migratory, heading south to breed in the Sudan and Guinea savannas (B&D & Elgood et al, 1994), which is indirectly confirmed by the period of the maximum count. Mai Daji reports that it nests in shrubs (my observation of an adult with five juveniles the 14-Nov-01 tallies with the breeding period he cites) and is more common now. **Max count:** 100+ 26-Jun-02.

<i>Columba guinea</i>	Speckled Pigeon					Pigeon Roussard					<i>hamjiya</i>	
Granivore												
R	Dari	Rani			Bazara	Damana				Kaka		Dari
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											1	
2002						1			1	1		

I only saw this species twice in the karkara: two birds flying over 08-Nov-01 and 30-Sep-02 when four birds attempted to land in the village before flying off. It formerly nested in Maijémo (chez Damo) and would have had a similar commensal relationship with man as I saw in two local villages, Dan Marke Tchilako (13 km away, June record) and Guidan Dodo (26 km, October record). Such commensalism has also been noted in Sokoto (Mundy & Cook and previously by Serle, 1943) but without detail. During my sojourn in Guidan Dodo, where this species appeared quite abundant, I acquired the following information:

The birds apparently nest of their own accord in clay pots and old enamel basins put in trees. Some birds are certainly killed to eat—it was of the most frequently hunted species listed by a hunter in the village. An activity mainly practiced by children is to remove their eggs for brooding by domestic pigeons as the birds, appreciated for their cooing (and display?), then attract an interesting price.

Known to leave roosts at sunrise to forage up to 25km away (BoA), which means that birds from Dakoro town could potentially range to B&M. Though I didn't make many bird observations in this town, I did note a flock of about 50 speckled pigeons on consecutive mornings there at the end of April 2006. Buda reported that though the species was now less frequent he had shot two in 2001. Mai Daji claims it bred in the *bazara*, but an extended period is perhaps to be expected in the light of the above (Serle, 1943, records an April record in a jar in a as well as a January record). According to Mai Daji its tree preferences for nesting are Adoua, Gao and Bedi.

<i>Streptopelia vinacea</i>	Vinaceous Dove				Tourterelle Vineuse				<i>farin wala</i>			
Granivore												
SU	Dari	Rani			Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002			2									

I personally never saw this species in the local area—but did twice in the Koulbi'n Kaba on the Dakoro-Maradi road in March 2002. However, its distinctive call on the Chappuis Cds was immediately recognised by Mai Daji (and others) who said it was occasionally to be found at Tapkin Bagarinnaye in the period shown above, and that it was formerly more common—I did however have a possible sighting here 18-Nov-01. B&D report some northward movements in the rains which fits Mai Daji's recording period. An intriguing question is why is the B&M habitat unsuitable for regular occupation? Among the detailed avian ecological studies conducted in northern Senegal, a particular study of the diet of five dove species (Morel & Morel, 1972) is perhaps revealing given the vegetation similarities with Dakoro, albeit that man was largely absent from their 'orchard savanna' site. In this study a certain annual herb that resembles a small pea, *Zornia glochidiata*, was found to be a particular favourite of *S. vinacea*, but less so for *S. senegalensis*. This plant, know as *emiri* in Hausa, is found in B&M, particularly on the disturbed ground of the livestock trails. However, on Koechlin & Cheung's 1988 Carte Écologique de Département de Maradi, there is a sub-type of *Sclerocarya birrea* shrub steppe around Kornaka and the northern edge of the Goulbi'n Kaba (unit no 51, but see also the different type units 31 & 33 also found nearby), where *Zornia glochidiata* is noted as a characteristic species in lowland areas. Furthermore this plant is said to have spread as a result of droughts and over (*viz* heavy) grazing. A working hypothesis is that *Zornia glochidiata* is more common away from B&M and this influences the distribution of this dove. It should also be noted that *S. vinacea* and *S. rosegrisea* are among the most mobile of the Sahelian doves studied by Morel (1968: 106). Another potential hypothesis is inadequate nesting habitat, but this seems less likely. **Etymology:** the white dove.

<i>Streptopelia rosegrisea</i>	African Collared Dove				Tourterelle Rieuse				<i>wala gamji</i>			
Granivore												
MANbsu	Dari	Rani			Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1	3	
2002			5	1		2				2	4	

My records are roughly in accordance with the period given by Mai Daji (but note my absences) and this is in line with migratory patterns in northern Nigeria where it is mainly a non-breeding dry season visitor from October to May (Elgood et al 1994). Said to have previously been more common. As with the preceding species there is an interesting question regarding the B&M habitat, but on this occasion its suitability is less in question given my records but the issue is rather why doesn't it nest? (Assuming of course the validity of Mai Daji's observation). One possible interpretation of the distribution of this species is that B&M occupies an intermediate area between dry-season winter grounds to the south, and extensive rainy season breeding grounds to the north, whereby spring and autumn migrations are bridged by the presence of non-breeding birds. This could of course be an artefact of my observations and doesn't answer the nesting habitat question. **Etymology:** Literally the dove of the flake rubber tree (*Ficus platyphylla*), a tree not found in northern Gobir.

Streptopelia turtur European Turtle Dove Tourterelle des Bois *kurciya*

Granivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										4	1	1
2002									1	2	1	

Incredibly, these records represent the first published for Zone 3, despite the widely made claim that this unique species (the only trans-Saharan migrant to be almost completely granivorous throughout the year) has a distinctly Sahelian winter preference—but see later. The greater number of observations in October (but not the max count) tallies with the period of strongest autumn passage noted in Senegal and Mali (Aebischer, 2002). Most observations were made around the tapkuna complex Bagarinnaye/Salka/Shinkafo (but first at Tarago) where the mixture of good fringing tree cover and water equates to the frequently reported wintering habitat preferences for this species—thick Acacia woodland close to water sources (*ibid.*). However, as the water dries up by the end of November, it doesn't seem to meet the bill for this species to stay throughout the winter—or is it the inadequate tree cover? Birds then presumably head south, where they are reported to be common in Nigeria in what is better described as Sudanian not Sahelian savanna (see Elgood et al 1994)—interestingly they were reported as rare around Sokoto (Dobbs and Mundy & Cook) which may relate more to disturbance rather than lack of suitable habitat. The late record is interesting and though it could be a straggler it is worth investigating if Tapkin Birnin Lallé, 20 km to the east, which doesn't dry up until January/February, might harbour a longer wintering population. Unfortunately Mai Daji assigned this species the same name as *S. senegalensis*, so no information is available—I have however assumed that the information he gives for *kurciya* doesn't relate to *S.turtur*. A final interesting question is whether the North African race *S.t.arenicola* also passes through—the possibility is mentioned in Elgood et al 1994.

Earliest date: 30-Sep-02

Latest date: 19-Dec-01

Max count: c. 30, 12-Nov-02

Streptopelia senegalensis Laughing Turtle Dove Tourterelle Maillée *kurciya*

Granivore

R	Dari		Rani			Bazara		Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
	breeds									group near water			
2001							2			1	17	5	
2002	1	6	12	4	2	18	17		3	16	8		

This dove is one of the most regularly seen birds in B&M. Diet wise it has a penchant for both cultivated and wild grains depending on the year, which may explain why it is considered the most anthrophile of the small Sahelian doves (Morel & Morel, 1972: 354 & discussion). Mai Daji's observation of grouping around water in the autumn is perhaps not unique to this species, as I observed *S.roseogrisea* do the same—sometimes they were in mixed flocks with this species. On 27-Oct-02 I did however observe an interesting watering behaviour by this species at Tapkin Horombaki (along the cattle train to the north, beside the village of Farin Baki). A flock flew over the water and purposefully wetted their breast and belly feathers several times despite the strong wind. I suspect autumn water congregations are simply noticeable as the water sources are more concentrated and populations enlarged before migration and after the breeding season. However, the question remains how do resident dove species acquire water at the height of the dry season? According to Mai Daji this species nests in *adoua* and was formerly more common.

Max Count: 50 15-Mar-02, but numerical records not meticulously kept

Psittacidae: Parrots

<i>Psittacula krameri</i>	Rose-ringed Parakeet											Perruche à Collier	<i>tsira</i>
Herbivore													
RR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2002			1			1	1			2			

This species was not encountered in the *karkara* by myself nor known to Mai Daji, but I saw it around Ajékoria/Guidan Dodo on three occasions. I also saw one further south at Makeroua Abou on the main Dakoro road in March as well as three in the Goulbi'n Kaba in June. The question is why is it not to be seen in B&M, since it is known in the UK to be able to fly more than 20 km to roost (Marchant, 2002b). I have two hypotheses that may both hold. The first concerns its food as Morel (1968) indicates that it is a frugivore (though perhaps not strictly) and therefore I conjecture its distribution may be linked to the availability of the *dagna* fruit (*Sclerocarya birrea*)—see the discussion for the Vinaceous dove for the distribution of a steppe vegetation linked to this tree around Kornaka. I imagine of course it could also eat adoua and magaria fruits among others, which are both more common than *dagna* in B&M. The second hypothesis relates to the availability of suitable nest cavities which is a function of the distribution of old trees. Perhaps they are more abundant around Ajékoria? There is certainly a denser tree cover in the Goulbi'n Kaba, many of which are *danya*. It should finally be noted that B&D record some local seasonal movements of this species, though I am sceptical that my records refer to this type of movement.

Cuculidae: Cuckoos & Coucals

<i>Oxylophus jacobinus</i>	Jacobin Cuckoo				Coucou Jacobin				<i>baiwar suda</i>					
Insectivore*														
MAB	Dari		Rani				Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		
2001									1	1				
2002						4	1							

I originally identified an *Oxylophus* cuckoo at Tapkin Bagarinnaye 30-Sep-01 to *O. levaillanti*, but 15 days later I got better views of a bird at the same location and clearly saw no throat markings. These records represent the first for Zone 3, but its presence has been assumed since it is found as far north as the Air (Newby et al 1987). My earliest record occurred the day after the first heavy rains of the year and Oumar reported seeing about 10 in the fields that morning. It is quite incredible that a bird can migrate in such violent winds, or does it find a calm lee behind the rain front? Another interesting question is why *O. jacobinus* penetrates further north than *O. levaillanti*, which is found at Sokoto in Jun-Oct and appears the more common of the two (Mundy & Cook)? Could it relate to the distribution of host species? According to Elgood et al (1994: 138), in Nigeria, *O. levaillanti* has often been seen with the Brown babbler (*Turdoides plebejus*), which they speculate might be its only host. This host species was not encountered in B&M, but *Turdoides fulvus* was and this is known to be parasitised by *O. jacobinus* in the Air (Newby et al 1987). Though the respective distribution of *T. plebejus* and *T. fulvus* might correspond to the distribution of *O. levaillanti* and *O. jacobinus* respectively, both species it should be noted are known to use other hosts (see Lowther, 2010a). In Lowther's list, the only potential host for *O. levaillanti* that was found in B&M is the Chestnut-bellied starling (*Spreo pulcher*), a species that is rather common. For *O. jacobinus* a potential host found in B&M is the Laughing Turtle-Dove (*Streptopelia senegalensis*), which is far more abundant than *T. fulvus*. According to Mai Daji this cuckoo was formerly more common and doesn't breed, which may relate to a reduced chance of observing breeding behaviour in parasitic species—but see etymology. **Etymology:** "The slave of suda". This is probably the most intriguing bird name given by Mai Daji since he also used it for *Turdoides fulvus* and suda is a widely used name for the Black-crowned Tchagra (*Tchagra senegala*)—the Southern Tchagra (*Tchagra tchagra*) is an alleged host of *O. jacobinus* (Lowther, 2005). More investigation is required! **Earliest date:** 10-Jun-02 **Latest date:** 15-Oct-01

<i>Clamator glandarius</i>	Great Spotted Cuckoo				Coucou Geai							
Insectivore*												
MPp?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	2001									2	1	
2002									1 _{prob}	2		

Whether these birds are from the Palearctic or African population or both is not known. The fact that birds were only seen in autumn—supported by an additional observation I made of a bird between Dakoro and Akadaney 12-Oct-97—may suggest a Palearctic answer, but there are May records from Tessaoua and Zinder in Giraudoux. In Nigeria, Elgood et al (1994) indicate that the only known host is the Pied crow (*Corvus albus*), which is found locally, though its breeding status is unsure.

<i>Chrysococcyx caprius</i>	Didric Cuckoo						Coucou Didric					
Insectivore												
MAb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002							2					

Only seen on two occasions (both single birds) and these represent the first for Zone 3, though it was to be expected since it is found to the north. Though Elgood et al (1994: 140) indicate that its main hosts are the village weaver (*Ploceus cullatus*) and the black-necked weaver (*P. nigricollis*), only the former was found in B&M and I think was restricted to the village habitat, i.e. perhaps not conducive to this cuckoo. Other potential locals hosts listed in Lowther (2010a), all of which are suspected of breeding locally are: Rufous-tailed Scrub-Robin (*Cerotrachus galactotes*), Tawny-flanked Prinia (*Prinia subflava*), Cricket Longtail (*Spiloptila clamans*) and Grey-headed Sparrow (*Passer griseus*)—but see Dowsett (2005) who is sceptical of non-Ploceidae host claims. Unfortunately I didn't play the distinctive call to Mai Daji in 2002 to find out his observations of this species.

<i>Centropus senegalensis</i>	Senegal Coucal						Coucal du Sénégal				<i>dân raguwa</i>		
Omnivore													
R	Dari		Rani			Bazara		Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
1998			1										
2001										2	2	1	
2002	1						2		1	2	1		

I suspect this is one of the most sedentary species in northern Gobir and it would be interesting to know more about its territorial behaviour since it appears to be found only in fadamu, which are a restricted habitat. Unfortunately I wasn't meticulous in keeping records of where I saw this species but I certainly saw it most often around Salka and once at the Couloir fadama. Mai Daji has never seen this bird breeding and reported that it was more common before. Apparently it is sometimes trapped for marabouts but he doesn't know what they do with them. **Etymology:** "The lazy one" which presumably refers to its preference to crash around bushes rather than fly.

Tytonidae: Barn Owls

<i>Tyto alba</i>	Barn Owl					Effraie Africaine					<i>farin mujiya</i>		
Carnivore													
R	Dari		Rani			Bazara	Damana				Kaka		Dari
						breeds							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001										1			

I only encountered this species once when I flushed a bird at Salka 05-Oct. According to Mai Daji breeds in old wells and was more common before. A dead bird seen on the road just east of Madoua, 26-Sep-02.
Etymology: “The white owl (mujiya)”

Strigidae: Typical Owls

Though my infrequent observations of owls are to be expected due to their nocturnal behaviour, the lack of observation of one species is perhaps particularly telling. The species in question is the Pearl-spotted Owlet (*Glaucidium perlatum*), which I knew well from Maradi where I had a pair breeding in an old *Prosopis africana* tree in my garden in the centre of town behind the prefet’s residence in 1997-8. Being a rather vocal owl and not afraid of coming out in the day, I expected to meet him in B&M. However I never did and furthermore Mai Daji didn’t recognise its call. Looking at the records in Giraudoux and the map in B&D, it appears that this species is not encountered in the Sahel. Two candidate owls not seen are European Scops Owl (*Otus scops scops*) and the Eurasian Eagle Owl (*Bubo bubo ascalpohus*), though I expect the latter would be more at home in a rocky environment such as the Ader or around Zinder.

<i>Ptilopsis leucotis</i>	White-faced Owl					Petit-duc à Face Blanche					<i>muskuru</i>		
Carnivore													
R	Dari		Rani			Bazara	Damana				Kaka		Dari
						most							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
1998				1									
2001												1	
2002						1					1		

The first time I encountered this species in B&M I had the pleasure of observing three individuals at Salka, which flew out of a gao tree. Given the number I suspect they had bred nearby though interestingly Mai Daji hadn’t seen this species nesting. The bird seen in 1998 was at a tapki in the vicinity of Ganda Samou, a habitat similar to several B&M tapkuna. Apparently more common before when there were more trees, which I presume refers to the presence of older trees.

<i>Bubo africanus</i>	Spotted Eagle Owl				Grand-duc Africain				<i>bakan mujiya</i>				
Carnivore													
R	Dari		Rani			Bazara		Damana			Kaka		Dari
						breeds							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001							1						

Only one seen poorly at Tapkin Bagarinnaye, 29-Jul, which though I thought was this species, I wasn't convinced until after re-seeing *O.leutis*, which is clearly much smaller (and greyer). On the 26-Nov-01 one of Buda's sons shot a large owl, which Buda indicated was *Scotopelia peli* in my book but was most likely this species. Nests in holes in tree trunks and more common before. **Etymology:** "The black owl".

Caprimulgidae: Nightjars

NIGHTJAR spp.													<i>jan lahoja</i>
	Dari		Rani			Bazara		Damana			Kaka		Dari
						breeds							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001										1			
2002		1				1	1			1	1		

Of the six species of nightjars known from Zone 3 in Giraudoux, to positively identify just one despite several sightings is disappointing yet understandable given identification problems. Mai Daji used a generic word for nightjars and didn't seem to differentiate by name between those with and without wing standards. The *jan lahoja* are said to nest in *fadamu* and were more common before.

<i>Caprimulgus inornatus</i>	Plain Nightjar				Engoulevent Terne				<i>jan lahoja</i>			
Insectivore*												
SU	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	2001						1					
2002							1					

My first record concerns a bird I picked up dead on the Dakoro-Maradi road about 12km north of Kornaka (31-Jul), which was subsequently identified by Joost Brouwer. On 19-Jul-02 in an area of thick fallow vegetation between Tapkin Bagarinnaye and the village I was at last able to identify a live bird, a female.

<i>Macrodipteryx longipennis</i>	Standard-winged Nightjar				Engoulevent à Balanciers				<i>jan lahoja</i>			
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On the basis of drawings of males in my fieldguides, Mai Daji said this species was to be found in the *karkara*. The body of evidence concerning the movements of this species suggests, not without a degree of uncertainty, that this would be a rainy season visitor to B&M (Elgood et al 1973).

Apodidae: Swifts

<i>Cypsiurus parvus</i>	African Palm Swift	Martinet des Palmiers										
Insectivore*												
RR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002						1	2					

I only saw this swift just outside the northern Gobir degree grid square where the Dakoro-Maradi road crosses the Goulbi'n Kaba, "the Valley of the doum palm" (*Hyphaene thebaica*) where a few rôniers (*Borassus aethiopum*) are also to be found. Mundy & Cook said the swifts' distribution matched the rônier at Sokoto, Rousselot thought it depended on either and Bates found it where there were only mature doums in the Dallol Bosso. Both palms require shallow water tables and this generally restricts them to the main fossil valleys. In the Upper Tarka up until the 1960s the doum was a dominant tree species but over-exploitation has left only a few rare relict adults (in its low bushy form it is more common) and I don't believe there are any rôniers. There was presumably once a population of palm swifts here and there may still be downstream towards Madoua. The doum palms in the Goulbi'n Kaba are under similar pressures and in the upstream Mayahi stretch significant reductions have been documented (Peltier et al 2008). Whether the rôniers have escaped this pressure is unknown and this question may be important for the outlook of this species in northern Gobir. Uptake of agroforestry with the doum palm (to the adult tree stage) could perhaps improve its situation. Whether use of buildings as alternate nest sites, which has been noted in southern Africa, could be an adaptation in the absence in palms is unknown, as perhaps palms serve other vital roles for these swifts.

SWIFT spp. (<i>Apus pallidus</i> , <i>A.apus</i>)	<i>ririri</i>
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	Dari	Rani				Bazara	Damana				Kaka	Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2					
2002						4						
2006					1							

Not only can *A.pallidus* and *A.apus* be a challenge to distinguish, there may also be a nearby resident population of the former and immatures of both may oversummer. The single at B&M 01-May-06 was heading north and was perhaps a European bird. Mai Daji's observation period of the *ririri* concurs perfectly with all my dark swift records but the increase he had noticed is difficult to explain.

<i>Apus pallidus</i>	Pallid Swift	Martinet Pâle	<i>ririri</i>
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Insectivore*												
MPp/MAp?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1		
2002						4	8			1		

Compared to *A. apus*, this species was seen earlier in the rains, though the unidentified records above

prevent me being absolute on this point. *A. pallidus* probably shares the same delayed first breeding as *A. apus* (see below) and it is possible that these early rains birds are non-breeding individuals. The really intriguing question concerns their origins, are they:

A. p. pallidus, found from inland northern Africa across the Middle East to Iran and Pakistan?

A. p. brehmorum found from the Canary Islands to Cyprus and Turkey including coastal North Africa?

A. p. illyricus found around the eastern Adriatic?

The nominate race, *A. p. pallidus* is perhaps the most likely candidate since it breeds as nearby as the Air, where it occurs between June and November but with records in April (but none in May)—Newby et al, 1987. It is also worth asking whether the Ader Doutchi has been sufficiently prospected to rule out this area as a possible breeding location. Intriguingly Mai Daji said that some people think the *ririri* come from the rocks, (which are also said to be the haunts of spirits) and there are local historical and social linkages to the Ader. Furthermore, on a very brief visit to the western Ader in May 2006, I was told in the village of Daowré Toudou (175km to the west of B&M) that a swift species different to the ones with white that nests in the village (*A. affinis*) ‘sleeps’ in the nearby caves: on a brief examination of a nearby cave I saw some entrance holes that could have been potential nests. B&M would certainly be within foraging distance if the Ader is a breeding area. Mist netting with a tape lure in the early rains could answer the race question easily since they were seen swooping very low to the ground at this time. **Max Count:** c70 12-Jun-02, which fits Buda’s observation that *ririri* are seen in big flocks in front of storms.

<i>Apus apus</i>	Common Swift						Martinet Noir				<i>ririri</i>	
Insectivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1 _{prob}			2		
2002									2	10		

The early date of about ten birds probably of this species heading south (31-Jul) is in line with records from Mali, where they are seen from the 13th July (Perrins, 2002), but immatures are thought to oversummer (*ibid.*). **Max count:** 12-Oct-02, c 50. **Latest date:** 16-Oct-02.

<i>Apus affinis</i>	Little Swift					Martinet des Maisons				<i>el tsintsiya Allah</i>		
Insectivore												
Rn	Dari	Rani			Bazara	Damana				Kaka	Dari	
						breeds						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			3	3	2
2002			2			6	13			4	1	

Buda said that this species goes away when it is cold and returns in the hot season to nest. My absences make clarification of this difficult but they were certainly rarely seen outside of the rains/autumn period. In Sokoto this species is resident (Mundy & Cook). The Palaearctic race *A.a. galijensis* has been collected near Kano and is therefore possible (Elgood et al 1994). Mai Daji said it was previously more common and that was before *soro* houses became popular—these are rectangular flat-roofed houses and lack an overhang like the older round huts with a thatch roof. Saying that though the only place I knew for sure they nested in the village was inside the mosque. Said to signify the arrival of the rains, and if I recall correctly someone once told me they are sign of good luck if they nest in one’s house. **Etymology:** “Allah’s broom” presumably because of their habitat of nesting in mosques and the dust they generate as a result. **Max count:** 31-Jul-01, c 30.

Alcedinidae: Kingfishers**KINGFISHER spp.** (*Halcyon leucocephala* & *H. senegalensis*)*makokofa*

Dari		Rani		Bazara	Damana				Kaka	Dari	
					breeds						
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

Mai Daji did not distinguish between the two species and said they nest in tree trunks and were more common before. The literature suggests that only *H. senegalensis* is likely to breed in B&M.

*Halcyon leucocephala***Grey-headed Kingfisher**

Martin-chasseur à Tête Gris

makokofa

Omnivore

MA n b	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							3		1	1		
2002							4			1		

The earliest record, which concerned a juvenile bird (i.e. with just a trace of orange on the underbelly), ties up well with the remarkable migration and breeding cycle of this species (Elgood et al 1973). In Nigeria it has exclusive breeding and wintering grounds, so that in the south it is a dry season visitor from where it then moves north to breed in the Guinea savanna from mid-March to mid-June before the whole population heads north to the Sudan and Sahel savannas after fledging (*Ibid.*). Migration back south appears rapid as their arrival in various southern stations is synchronised around mid-November (*Ibid.*). Mundy & Cook's suspicion of breeding at Sokoto would appear unfounded.

Earliest date: 05-Jul-02 one juvenile **Latest date:** 15-Oct-02, but noted Akadaney 20-Oct-01

*Halcyon senegalensis***Woodland Kingfisher**

Martin-chasseur du Sénégal

makokofa

Omnivore

MA n bsu	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2			1	1	
2002							1					

Described as a southern concertina species by Elgood et al 1973, which is to say it moves out of the southern Guinea savannas and follows the rains north where it breeds from May to August before retracting southwards as the pools dry out. A couple seen on two dates at the end of July 01 at Tapkin Bagarinnaye which is a likely breeding location. It would be interesting to know more about inter-specific competition between the two kingfishers, as both seem to occupy the same relatively small *tapkuna*.

Earliest date: 06-Jul-02 one possible **Latest date:** 16-Nov-01 one probable

Meropidae: Bee-Eaters

Merops albicollis **White-throated Bee-eater** Guêpier à Gorge Blanche *jiriri*

Insectivore

MAp	Dari		Rani		Bazara	Damana			Kaka		Dari	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										7	3	
2002					1	10				4	5	

Mai Daji said that this species does not nest locally, which is confirmed by my observations of a double passage, with birds heading north end-May to end-July and then returning south from October to mid-November. The autumn passage seemed more contracted but involved higher daily counts. Presumably nests in the pastoral zone, possibly less than 100 km away, though others may be heading further north to breed in the Air (Newby et al, 1987). Mai Daji said this species was now more common. **Max count:** 46 south, 07-Nov-02. **Spring Passage:** 31st May to 26th July. **Autumn Passage:** 7th Oct to 12th Nov

BEE-EATER spp.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			5		
2002										2		

I suspect that these were all *Merops albicollis*, but I was mildly surprised not to encounter any other bee-eaters, especially as I had encountered *M. orientalis* to the north at Akadaney.

Coraciidae: Rollers

Coracias abyssinica **Abyssinian Roller** Rollier d'Abyssinie *tsanwaka*

Insectivore

R	Dari		Rani		Bazara	Damana			Kaka		Dari	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1		1	4	4	3
2002		1	5	2	2	3	12		2	3	1	

According to Mai Daji this species breeds in tree trunks around May and was more common before. I observed an individual 05-10-01 carrying food which could imply a longer breeding season but in Nigeria it is only recorded breeding March-June (Elgood et al, 1994). In Sokoto Mundy & Cook saw juvenile birds (i.e. lacking the long tail streamers) from June to August and also noted a virtual disappearance of this species in August and September.

Phoeniculidae: Wood-Hoopoes

<i>Phoeniculus purpureus</i>	Green Wood-Hoopoe						Irrisor Moqueur					
Insectivore												
RR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1									

I first saw this species near Rouga Jaho (16-Mar, number not noted) but never encountered it in my longer sojourn at B&M and most regrettably overlooked it in my enquiries with Mai Daji. I did however see four to the north at Akadaney, 20-Oct-01 and had a drive-by view of a single in the Tarka valley about 20km east of the 7° longitude (05-May-06). Though Elgood et al (1973) suggest that some northward movement occurs with the rains, it may also be a typical wide-ranging Sahel 'resident'. Such roaming might explain my Rouga Jaho record, as I don't recall it being an area more wooded than B&M, though there was some mature *gao* parkland in the nearby Kori Heloum (Photo C, Figure 6).

Upupidae: Hoopoes

<i>Upupa epops</i>	Hoopoe						Huppe Fasciée				<i>alhudu-hudu</i>	
Insectivore												
MAnb & MPp	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>	<i>Dari</i>	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			2	2								
2001							1			4	4	3
2002			7	1		2	5		1	4	3	
2006				1								

Unfortunately I didn't differentiate between the Afro-tropical *U.u. senegalensis* and the Palaearctic *U.u. epops*, which in any case is no easy matter. Palaearctic migrants arrive south of the Sahara from the second half of August, peaking in September-October, with return birds noted in Morocco and Malta from early February, with the main arrival in Europe from mid-March to late April (Marchant, 2002c). The date of my maximum count ties in nicely with the October peak, but what of the Afro-tropical birds? To what extent do they show temporal overlap with their Palaearctic cousins? The situation in the Sahel is not clear according to Elgood et al (1973) as they can be both resident and wander north in the rains. Mai Daji has never seen hoopoes nesting, and though this could support a northward wandering hypothesis, it could equally reflect a lack of old trees with suitable nesting cavities. Breeding noted in March at Sokoto (Mundy & Cook) and a nest with young found at Agadez at the end of July (Giraudoux). Mai Daji said that the species was previously more common. To a probably limited extent, cadavers of this species are sought by marabouts. Their use of them may well relate to the hoopoe being twice mentioned in the Quran by its Arabic name *hud-hud*, (which is presumably the onomatopoeic root of the Hausa name) as a messenger of the Prophet Solomon (in Surah 27—see Kunstmann (1938) for this and other possible reasons).

Max count: 6 together Koren Sarki 17-Oct-02 and outside the Palaearctic wintering period, three 4-Jul-02.

Bucerotidae: Hornbills

Tockus erythrorhynchus **Red-billed Hornbill** Calao à Bec Rouge *cukoko*

Omnivore

R?

	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998				1								
2001							1					
2002						3	2					
2006					1							

This hornbill appears to be scarce in northern Gobir. My first observation was a single at Zongon Alway (Tarka valley) and it may be more common in such wooded habitats—one of the June records is from the Goulbin' Kaba. In and around the *karkara* I encountered it infrequently always in singles or pairs. Though my records suggest a shorter period than Mai Daji's, not shown is an observation of a single on route to Akadaney (18-Oct-01). The regional literature however provides scant evidence of seasonal mobility: considered resident at Sokoto (Mundy & Cook) and a similar impression is given for Niger by Giraudoux. Morel's (1968) extended Ferlo observations are more instructive and though he considered it a resident that nests August to October, year-long monthly counts over two days in a 25ha savanna had five months without observations (Jan, May, Jul, Aug & Dec). In comparison records from a 7ha gallery forest were both monthly and more numerous. In southern Africa this species is considered locally nomadic and known to follow and prey on locusts and quelea (Dean, 2004). It would seem then that this hornbill can show wandering tendencies in more open habitats and Mai Daji's seasonality requires further fieldwork to be substantiated. Buda considered this species rare and Mai Daji had not noticed any population change.

Tockus nasutus **African Grey Hornbill** Calao à Bec Noir *kilibo*

Omnivore

MANb

	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1									
2001							3			7	7	
2002			1		1	1	11		2	11	3	
2006					1							

Sharland (1964) aptly describes the passage events of this species as "route marches" and they are certainly one of the most impressive avian migrations to be seen in the Sahel as the often large, strung out bands fly over low, calling and sometimes leap-frogging each other as they pause momentarily in bushes before continuing. Mai Daji said the birds follow the herders and there is indeed some similarity in the north-south displacements both make. The general pattern is of a "northern concertina" migration with birds (non-breeders only?) moving north with the rains after breeding towards the end of the dry season, and then returning south in October (Elgood et al, 1973). The odd records out of the normal passage period may be part of a small, wandering resident population. No population change noted by Mai Daji. **Max Daily Count:** c 400 heading south 04-Oct-01 in four groups of about hundred birds each.

Capitonidae: Barbets

<i>Trachyphonus margaritatus</i>	Yellow-breasted Barbet	Barbu Perlé	<i>makokofa</i>
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Omnivore*

R	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1	1	
2002			2							1		

I first encountered this species just outside the village of Korohane and then thrice in and around the karkara, before making my last observation in a concession in Guidan Dodo. I never saw more than two birds and get the impression that it is certainly not a shy species, which makes the scarcity of my observations all the more peculiar. Unfortunately Mai Daji assigned to this species the same name he used for the kingfishers, for which his information about distribution and breeding seems more appropriate (see earlier). This species has been found nesting in May and June near Lake Chad (Elgood et al 1994) and according to B&D it is the only barbet in West Africa known to nest in self-excavated holes in earth banks.

Picidae: Wrynecks & Woodpeckers

<i>Jynx torquilla</i>	Eurasian Wryneck	Torcol Fourmilier
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Insectivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1		

There have been very few observations of this species in Niger and this represents the first for Zone 3 (Giraudoux). I was fortunate to obtain excellent views of a single bird, albeit slightly hidden, gaping in the heat in a small bush 03-Oct. As a discrete species (it was pure luck that drew my attention to the one I saw) it is probably under-recorded, but it appears that the Sahel (excluding the Senegal river region) is a transit area as according to the map in B&D, it winters further to the south and it was only recorded twice by Dobbs in Sokoto (in October and January) and not at all by Mundy & Cook.

<i>Dendropicos goertae</i>	Grey Woodpecker	Pic Goertan
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Insectivore

RR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002			1									

Three seen just outside the northern Gobir degree square in the Goulbi'n Kaba along the Dakoro-Maradi road (20-Mar). Presumably the higher tree density here is more conducive to this woodpecker than the dunes and I expect it is also to be found in the Tarka valley. Seen in the pastoral north of Dakoro on the way to Akadaney (18-Oct-01). The potential for occurrence away from the wooded valleys is however possible as local movements reported in B&D.

Alaudidae: Larks

As a family, the larks are particularly well represented in Gobir Tudu, which is not surprising since open country, ground-feeding birds are well-placed to adapt to man's landscape changes. Of the seven species encountered, two are non-breeding migrants (one Palaearctic and one Intra-African), but the residential status of the remaining species is unclear since nomadism is likely to be common. Increased understanding of niche partitioning between the larks would be particularly useful in central Niger, where a total of 12 species have been recorded. The additional species so far unrecorded in north eastern Gobir are discussed later.

<i>Mirafra cantillans</i>		Singing Bush Lark					Alouette Chanteuse				<i>d'an fifir</i>		
Omnivore													
R	<i>Dari</i>	<i>Rani</i>				<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	breeds												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001											3	1	
2002		1	7	1	1	3	11				1		

First positively identified 25-Nov-01 in a mixed flock of sparrow larks that frequented the area around a millet threshing spot at the south of Tawaye. Four probable seen here the previous day, which was the maximum ever recorded (this record is included above along with 3 possible records: one each in December, February & March). According to Morel & Morel (1984: 319), unlike the two sparrow larks, this species prefers denser vegetation for nesting and is restricted to breeding in the rains. On this latter point Mai Daji's observation concurs, and he said that they use millet stalks to make its nests, which is not necessarily contradictory, but requires elaboration in terms of the type of locality they select. According to Mai Daji this species is now more common, which is odd given that the tendency for decreased fallows is likely to have impacted on the availability of its nesting habitat. However, in the wider scheme of things it is interesting to speculate whether this species has analogies with the Corn Bunting (*Miliaria calandra*), in that it has spread into formerly unsuitable habits with the advance of the agricultural frontier. In this regard, Bates makes an interesting remark, "This lark is strictly a bird of the border of the desert; I did not find it even in the Combretaceae country, or anywhere south of 15° N. latitude on this journey" (1934: 439). He did however see this species further south near Lake Chad on an earlier journey and on his later journey took two specimens in "an exceptionally dense little thicket of *Acacia tortilis*" (*ibid.* 440). Unfortunately, though Rousselot recorded this species (and undoubtedly made many tours in both the farming and pastoral country of Maradi in the late 1930s), he is typically unhelpful with his absence of habitat notes. That this species was not recorded in Sokoto by either Dobbs or Mundy & Cook suggests that if it has profited from agricultural expansion, it had not by the time of their observations gone too far south. Interestingly it is mapped in Sokoto by B&D, but whether this range expansion is fact or fiction is not known. Elgood et al (1994) suggest that records in Zaria may have been linked to the Sahel drought of the early 1970s. Said to move north in the rains into the sub-desert to breed (B&D).

<i>Pinarocorys erythropygia</i>		Rufous-rumped Lark					Alouette à Queue Rousse					
Granivore*												
MAnb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002										1		

Only seen once, a single bird just outside the *karkara* near Ginda, 15-Oct. It was in grazed grass and attracted my attention by hopping up and flapping its wings in little sallies to catch insects. According to Elgood et al (1973:375) this species is considered to have exclusive non-breeding grounds in the Sahel, but whether it was on passage south to breed in the Guinea zone (where it is found from October to May), or had been resident throughout the rains is unknown. This species was not

recorded in the Air by Newby et al (1987): perhaps its summer grounds are more precisely the northern Sahel, i.e. Giraudoux et al's Zone 5? The scarcity of autumn records in northern Nigeria suggested to Elgood et al. (1973) that it moves quickly through this region as in spring. However, in Sokoto, Mundy & Cook were of the opinion (based on only two observations!) that birds remained in the same area for 2 or 3 weeks. They only had October and November records and their birds were in groups of 5 and 10.

<i>Calandrella brachydactyla</i>		Greater Short-toed Lark					Alouette Calandrelle				<i>el ban laigna</i>	
Granivore*												
MPw	Dari	Rani			Bazara	Damana				Kaka	Dari	
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001												1+ 2pos
2002			2	1							1 pos	

Holmes (1972: 28) experienced the same problems as me as its preference for avoiding scrub and long grass, makes this "wild and flighty [lark]...almost impossible to approach by foot to within identification distance." Though Holmes notes that it has a particular preference for hard smooth ground, I do recall seeing it on sandy ground. The unsure record of the 31st Dec' refers to the max count, just four, which is odd as it is often highly gregarious (e.g. *ibid.* & B&D). Does this reflect under-recording on my part or the nature of the year both in terms of the arriving population size and local conditions? A particularly intriguing question is the origin of these birds. I have been unable to check, but I would doubt that there have been many ringing recoveries south of the Sahara to help. It is possible however that in the hand races could be identified, though Svensson (1992: 62) refrains from identifying *artemisiana* or *woltersi* races for birds from Turkey and the Caucasus. Elgood et al (1994) report only the nominate *brachydactyla*, which is found from Iberia to the Crimea (Moreau, 1972: 115), but they suggest that *longipennis* from SW Asia also occurs. Moreau in any case believed that the sub-species do not segregate while in Africa (*ibid.*). I find it interesting that this species was not recorded during the recent Lake Chad Bird Migration Project (Gustafsson et al. 2003), nor incidentally was it recorded at Sokoto by either Dobbs or Mundy & Cook. Mai Daji's year round presence for this species would appear incorrect, particularly the idea that it breeds (on *tsawana*, rocks and hardpan): this information needs to be revisited for this uniquely named species (etymology not known).

<i>Eremalauda dunni</i>		Dunn's Lark					Alouette du Dunn				[<i>dan buwa</i>]	
Granivore*												
Rn	Dari	Rani			Bazara	Damana				Kaka	Dari	
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002			3+1pos			1					1	

This species posed identification problems as up until April 2002 I only had the Collins Bird Guide, (Svensson *et al.* 2001) which doesn't have *Mirafra cordofanica*, which is a contender (but discounted among other reasons for its red sand preference) and shows rather streaked illustrations of Dunn's. When I got B&D, the illustrations did not help much. Shirihai (1994:1) however makes the following key point: "...there is seasonal variation....In spring (from about March), many individuals are fairly worn and their general coloration is sandy-grey. Rusty feather-centres on upperparts less noticeable as well as distinctive head pattern." The status of this species in the *karkara* is unclear. Though Mai Daji's name for this lark was derived from listening to the song, I need to reconfirm as he says it nests in *adoua* and *sabara*, which is unlikely for a ground nester. Also rather confusingly he later used the same name for the quelea, but gave a different breeding time and presence period (which seem reasonably accurate). Maximum number seen was 2+ on the 28th March. Often seen in association

with sparrow larks. The bird seen in June, which I thought at the time was only a possible, but retrospectively seems more certain, landed with wings outstretched, parachute-like, which B&D report as a male display habit. Is this behaviour only seen prior to breeding? How flexible are Dunn's larks in their breeding season? Mai Daji said it was more common before but numbers presumably vary according to annual seed supply and nomadism is reported for this species (Dean, 2004). **Etymology:** literally the son of the *buwa*. The name *buwa* appears in three of Mai Daji's other bird names (Sahel Paradise Whydah, Speckle-fronted Weaver and Cut-throat) as well as being the unique name for the Grey-headed Sparrow.

Galerida cristata **Crested Lark** Cochevis Huppé *lili*

Granivore

R	Dari	Rani			Bazara	Damana				Kaka		Dari
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1				19	2
2002	1	3	7			1	4		2	6	3	

Bates (1934: 442) reported that this species was only a common bird where there was some cultivation. Mai Daji's breeding period corresponds with Bates' observation that everywhere in West Africa it breeds in the spring—my possible observation of a juvenile on 01-Nov-02 may well have been mistaken. However, Barlow & Wachter state that in The Gambia and Senegal at least it has an extended breeding season. Probably found in lower densities than the sparrow larks (the number of bird days may be indicative), but it should be noted that my residence in a village beside a large seasonal pond very probably inflated my observations of this species—Mundy & Cook report that in Sokoto it was very numerous on *fadamu*, and I recall seeing it frequently on the dried out bed or margins. The proximity of such a habitat to the village has its drawbacks and on 22-Feb-02, one was killed in a spring trap set by children. Said by Mai Daji to breed on the *hoko* and *tsawana*, i.e. relatively bare surfaces and to have been more common before. According to references within Maclean (1970), this lark, along with the other more resident species, *Mirafra cantillans*, have the distinction of both making doomed nests, unlike the other two or three other breeding larks of B&M which have exposed ones. How this relates to their residency is not evident. Said to be a partial migrant in B&D and northward, rainy season, migration into Niger is suggested by Elgood et al (1994). **Etymology:** in Bargery on-line one meaning given for *lili* is "the feathers on the neck and back of a cock": could this name thus refer to the bird's crest?

Eremopterix leucotis **Chestnut-backed Sparrow Lark** Moinelette à Oreillons Blancs *dan kolu*

Granivore

Rn	Dari	Rani			Bazara	Damana				Kaka		Dari
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1			2	14	3
2002	1		13	4	1	3	9		2	7	6	

Though like *E.nigriceps*, this species was observed all the year round, it is probably more common than its congener in the rains, and may even recede to inferior numbers in the dry season. This species has the more southern distribution of the two sparrow larks in Senegal, where it reaches its most northern distribution around Fété-Olé in a zone corresponding to the southern limit of *E.nigriceps* (Morel & Morel, 1984). Northern Gobir is probably a similar type of contact zone for the two species. According to Morel & Morel, (1974: 116), this species is capable of vast displacements in search of 'sols dégagés', such as burnt areas, to feed on and it even appears to move away from areas coming into flush. Another interesting detail about this species recounted by these authors is that birds can be

sexually active just six months after hatching and thus a bird born at the beginning of the breeding season in September/October could have a brood itself at the end of the same season (the following March). Listed as nomadic by Dean (2004). **Etymology:** unknown but see name of *E. nigriceps*.

<i>Eremopterix nigriceps</i>	Black-crowned Sparrow Lark					Moinelette à Front Blanc				<i>dān kolu baḳin karhe</i>		
Granivore												
Rn	Dari		Rani		Bazara	Damana				Kaka		Dari
						most				breeds		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			2	1								
2001										1	10	5
2002	1	2	13	2	2	4	1			5	8	

Rousselot does not list this species which is odd since Buchanan took the first West African specimen at Zinder (Bates, 1934). Bates never obtained this species south of 16°N between May and November, and uses Buchanan’s winter record (and that of Lynes’s in Darfur) as evidence of southern dry season displacements. Not recorded in Sokoto by either Dobbs or Mundy & Cook. Elgood *et al.* (1994) record it as a new species for Nigeria, where “it is now not uncommon alongside *E.leucotis* notably in the wetland around Nguru,” an expansion they relate to the “southward march of the sub-Saharan”. Interestingly the species first appeared at Fété-Olé in the Ferlo of northern Senegal after the drought of 1972 where it is known to breed in variable numbers (Morel & Morel, 1984).

My observations, contrary to Mai Daji’s suggest that it was scarcer in the rainy season. This could support Bates’ proposition that the species is more typically a dry season winterer in the latitudes of B&M. The timing of peak numbers suggests that a spring northward and an autumn southward passage through the area may take place: highest numbers were both in November, around twenty, 23rd 2001 and more than twenty, 1st 2002 and in 1998 at Mallamawa, more than ten were seen on the 30th March and the same number at Ganda Samou the 15th April. It should be stressed in order to temper this analyse, which is based on ultimately weak data, that numbers of this species fluctuated widely at Fété-Olé, where it was entirely absent in the rains in some years (*ibid.*). *E. nigriceps* is listed as nomadic by Dean (2004).

Though Mai Daji said it breeds October-November, when talking with him about an eggshell of whitish background colour with brownish-red speckles that I found on the 16-Mar-02, but which he hadn't seen, he said it would have been either *E.nigriceps* or *E.leucotis*. Morel & Morel (1984) record a reproduction period for *E.nigriceps* from October to March and a slightly longer period (August to April) for *E.leucotis*. Other important breeding differences between the species noted by these authors are: *E.nigriceps* lays two eggs, in more shady places, whereas *E.leucotis* lays only one egg in situations that are either shady or exposed. Both species raise several broods in a season. According to Mai Daji, both species nest at the base of millet stalks, a tendency that was noted only for *E.leucotis* by Morel & Morel (1984), perhaps because of its more southerly distribution. Mai Daji reported that this species has increased, but given the high likelihood variability of numbers between years, not much can be deduced from this. **Etymology:** the “*dān kolu* of black iron”. The “black iron” thus seems the differentiating factor between this species and *E. leucotis* which is curious given the not too dissimilar (without optics) black markings on the males of both species.

Hirundinidae: Swallows & Martins

<i>Riparia riparia</i>		Common Sand Martin				Hirondelle de Rivage						
Insectivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001									1	1		
2002										1		

An oft-repeated ‘fact’ in the literature is that the Sand Martin winters in the Sahel (e.g. Mead, 2002 & B&D), but in northern Gobir this is clearly not the case and this species is an infrequent autumn passage migrant seen only in small numbers (max 4) in a limited timeframe (30-Sep to 10-Oct). In Sokoto however it appears to have been a regular winter visitor (Dobbs & Mundy & Cook) and the key element would seemingly have been the availability of surface water during these month—see Elgood et al 1994 who report this species “usually near or over water” in Nigeria. Whether the species still has the same status in Sokoto is an interesting question given the reported declines at Lake Chad (*ibid.*) and this could relate to the absence of spring records at B&M.

<i>Hirundo aethiopica</i>		Ethiopian Swallow				Hirondelle d’Ethiopie				<i>el shiciya Allah</i>		
Insectivore*												
MAb	Dari		Rani		Bazara	Damana				Kaka		Dari
						breeds						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2			3	28	
2002					3	18	17		3	16	12	

The arrival of this species in B&M is considered to herald the arrival of the first rains, but less than 200 km away in Sokoto this species is found year round (Mundy & Cook). Though my earliest positive observation in the 2001-02 period was the end of May (but see over), in 2006 I saw them in Dakoro on the 5th May which coincided with high temperatures, a SW wind and lightening on the southern horizon in the evening. Is there something of interest for these birds in the vanguard of the weather system that prompts these early moves? If the on-set of the rains stimulates the necessary explosion of insect life to sustain their breeding, there is presumably a lag before this supply comes on tap, which would suggest that in the interim the birds are feeding on alternative, possibly exogenous, aerial foods. The Ethiopian swallow builds its mud nest in man-made structures and I heard in B&M back in 1998 that this was considered auspicious for the occupant, which in turn furnished the bird some protection. I unfortunately didn’t investigate this folklore any further during my longer sojourn. However Mai Daji was of the opinion that the species was more common before, which seems odd given the historical increase in *tchiguwa* houses in the village which would seem more suited to this bird than the round, thatched huts they are replacing. Perhaps though a greater prevalence of doors and windows is to blame, but more research is required. Incidentally, mosques don’t tend to have doors, which is one reason why they are a popular breeding location. Though I was not fortunate enough to have this bird breeding in my house, despite having had openings expressly made, I did have them enter my house on the 3rd October ’01, which I had hoped was a prospecting for the following year, but alas no! Interesting though that such behaviour occurs so late in the season, but perhaps it is indicative of site fidelity in this species? A more profound question is where did this species nest prior to availability of man-made structures? **Latest date:** 29-Nov-01. **Etymology:** It is not entirely clear whether this bird shares the same name as the Little Swift (*El tsintsiya Allah*: Allah’s broom), which has a certain logic, or that the different pronunciation recorded is purposeful. If this is the case, it has been suggested that it could be a derivation of *zuciya*, meaning heart.

<i>Hirundo rustica</i>	Barn Swallow						Hirondelle Rustique					
Insectivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			2	1								
2001										3	9	
2002			5						3	12		

The Barn swallow makes two distinct types of appearances in the *karkara*: a dashing northward passage in spring with no time to stop and a more leisurely refuelling on their autumn return southwards. The recorded windows of these two appearances are shown below and by chance both cover a window of equal length (52 days), though I am certain further observations would extend the periods for both.

SPRING		AUTUMN	
Earliest	Latest	Earliest	Latest
8-Mar-02	18-04-98*	28-Sep-02	19-Nov-01

* From Zongon Alway

The different types of passage have straightforward ecological explanations, but some interesting questions nonetheless remain. In spring the birds have refuelled for their northward journey much further south, but quite how far away is not known. There is probably very little sustenance available for them in Gobir at this time, but quite why they tend to fly so low to the ground as they dash through is intriguing and is perhaps a fuel optimisation strategy. In autumn, research stemming from the EURING Swallow project suggests that swallows cross the twin barriers of the Mediterranean and the Sahara in one journey as their fat gains in Italy indicate that there is no need for them to refuel in north Africa (Rubolini et al 2002). The swallow appears then not to adopt a ‘fly-and-forage’ migration strategy as one might intuitively think is the case for aerial foragers (*ibid.*). An interesting ensuing question is where do they first rest to feed after their Sahara crossing: at the first available place or do they push on as far as their fat reserves can reasonably take them? The authors cite an amazing recovery in Niger of a swallow ringed in Italy 7 days previously, which in the interim had flown 3028 km, which averages to 433 km per day! According to their calculations, this bird would have spent probably all its fuel (*ibid.*16). Where it was recovered I don’t know, but I imagine good swallow feeding can be had, depending on the rainfall, around the temporary ponds at least 250 km to the north of B&M. Rubolini *et al* are certainly rather arbitrary in their assignment of the southern end of the desert barrier (they use an Italian touring map!) and their limit seems to correspond to roughly the 16th parallel, which is probably over-conservative. The only observation I can bring to this puzzle is that I suspect they roost in small numbers at Tapkin Bagarinnaye, which is probably the only *tapki* suitable in the *karkara* due its tallish grass growing in the centre (see photo in habitat section). Ringing here could indicate the fat state of the birds and whether any linger. It should be noted that I never saw barn swallows in any great numbers and in autumn casual separation from the Ethiopian Swallows without optics is not evident—see below.

SWALLOW spp.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002			2			1						

The two March records (13th (2 birds) & 19th (1 bird)) may have been very early Ethiopian swallows and the 15 birds on June 5th could well have been of this species as well. On at least two occasions, not included above, (the 1st and 6th Nov-01) I had suspicions of single Red-rumped swallows (*Hirundo daurica*) among *H.aethiopica*, principally because they both showed white rumps, and one lacked any throat markings.

<i>Delichon urbica</i>	Common House Martin		Hirondelle de Fenêtre									
Insectivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1		
2002										3		

Very little is known about the wintering of the House Martin in Africa, partly because unlike the Barn Swallow and House Martin it doesn't roost in groups (aerial roosting is assumed) and partly because it is seen comparatively rarely (Hill, 2002). An important consequence of the first point is that ringing has been able to shed very little light on this mystery and as of 1994, over a million house martins had been ringed in Europe and North Africa but only 20 recovered south of the Sahara (*ibid.*). In B&M it was seen in a very restricted window over the two years (5th-15th October) and only in small numbers (typically one or two birds with a max of 5/6).

Motacillidae: Wagtails & Pipits

Of the five or six Motacillidae ('moving tails') seen in B&M, all are Palaeartic in origin, but only one finds the *karkara* a suitable wintering ground and the rest are autumn birds of passage.

<i>Motacilla flava</i>	Yellow Wagtail				Bergeronnette Printanière					<i>yan makiyaya</i>		
Insectivore												
MPp	Dari		Rani		Bazara	Damana			Kaka		Dari	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										6	13	1
2002									3	6	7	

The yellow wagtail has the distinction of being the most frequently observed Motacillidae in the *karkara* and also occurs in the greatest numbers, yet it does not winter here and was only seen over an 80 day period. However, limited observation at the end of September and none in August probably shortens the true length of their passage which could be as long as five months. An eastward shift for the spring migration to a Lake Chad concentration, may explain the absence of records at this time.

Earliest date: c. 20 birds, 29-Sep-02 (but six on the Maradi-Dakoro road 27th Sept—included in table)

Latest date: one bird, 17-Dec-01

Max counts: c. 50, 03-Nov-02 and c. 40, 05-Oct-01

Little can be said about the origin and behaviour of these birds. Though I had suspicions about a bird possibly roosting with 3/4 zitting cisticolas in long grass at tapkin Haoua on the 17-Dec-01, I never sought evidence for or against the occurrence of roosts, so whether birds lingered, streamed through or both is not known. Very regrettably no racial determination was made. In Nigeria, the Blue-headed wagtail, *M.f. flava* of Fenno-Scandia and North Central Europe is the predominant subspecies, but the following also occur more locally (Elgood et al. 1994) and could theoretically pass through Gobir:

- Grey-headed, *M.f. thunbergi* of North Fenno-Scandia, North Russia & NW Siberia.
- Spanish, *M.f. iberiae* of Iberia, the Balearics & NW Africa
- Ashy-headed, *M.f. cinereocapilla* of Italy & the south of France
- Black-headed, *M.f. feldegg* of SE Europe, Asia Minor & the Near East to the Caspian Sea
- The *feldegg* hybrids known as *superciliarsis* which accordingly come from different areas

(Geographical areas after Svensson, 1992)

In Niger, according to Giraudoux et al, only *flava*, *feldegg* and *thunbergi* have been recorded. At Sokoto, Mundy & Cook thought they identified four races in March (presumably a better time for identification, but one not available at B&M): *flava*, *cinereocapilla*, *thunbergi* and *flavissima*, the last of which, the British race, is considered unlikely.

Wintering site fidelity by yellow wagtails has been recorded in Nigeria and elsewhere (Wood, 2002). Stopover site fidelity by passerines in autumn about to traverse the Sahara has been both suggested (Fransson et al. 2005) and opposed (Catry et al. 2004). Stopover ecology after crossing the Saharan barrier has however been less well studied and philopatry is perhaps less likely. A progressive southward movement as the ponds that they are so fond of, dry out, has been reported (Moreau, 1972 & Wood, 1992). The yellow wagtails of B&M would be an ideal candidate species for examining their arrival ecology. Such a study could shed light on whether different races arrive successively (perhaps with birds heralding from the most northern populations first), as found on the return spring migration (Moreau, 1972), as well as the sexual patterning of arrival—males have been shown to winter further north than females in Nigeria (Wood, 2002).

Though Mai Daji seems mistaken in the observation period of this species in the *karkara*, the name he gave it has at least one fascinating parallel the other side of the continent. **Etymology:** “the shepherd” which presumably relates to an association with livestock. I do not recall having seen yellow wagtails associating with livestock and in Sokoto, Mundy & Cook only seldom saw them around cattle. Moreau (1972) however believed that all subspecies tend to associate with grazing herbivores, both wild and domestic, to an extent greater than in the breeding areas. In Tanzania he found a local name for the yellow wagtail that he translates as ‘goatherd’. It would seem that European observers might learn a thing or two about the yellow wagtail from engaging in a spot of herding!

	[<i>Motacilla cinerea</i>]	[Grey Wagtail]						[Bergeronnette des Ruiseaux]				
Insectivore*												
MPsu	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											1	

On the 21st Nov-01 whilst on my rounds in the village, I saw a wagtail land in a concession before flying off with a familiar sounding calling. I strongly suspect it was a grey wagtail, partly because of the call (though I was in work mode!) and partly because it was fearless enough to land in a concession (which would probably have rich insect pickings where the animals are tethered), which is a behaviour perhaps more becoming of *M. cinerea* than *M. flava*. However, it should be born in mind that most of my yellow wagtail observations were made around tapkin Tawaye, whose shores are a mere 75 metres from the concession in question. The only records of *M. cinerea* in Niger in Giraudoux et al were on three autumn dates near Tillabéri. In Nigeria it is not listed in Elgood et al, (1994), but there have been records in SE Cameroon, Equatorial Guinea and North Central African Republic (B&D) and Saharan records in Libya (Bundy, 1976) and Algeria (Isenmann & Moali, 2000) indicate that a few head south. As Moreau (1972) points out, opportunities for grey wagtails from the western European population to winter north of the Sahara are good, and hence its rareness in West Africa.

	<i>Motacilla alba</i>	White Wagtail						Bergeronnette Grise				
Insectivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											1	

One, 22-Nov-01, the day after the probable *M.cinerea*. Considered to be less common than *M.flava* at Sokoto, where it was closely associated with pools of water (Mundy & Cook). Moreau (1972) suggested a possible *Zugscheide* for this species, with some Western European birds in Senegal and Baltic birds in The Sudan. The contemporary view of this idea is not known, but it was regularly found in the Libyan oases (Bundy, 1976) and some may progress from there south of the Sahara and/or birds could come over from the east.

<i>Anthus campestris</i>	Tawny Pipit					Pipit Rousseline				<i>dân gajar-gajar</i>		
Insectivore												
MPw	Dari		Rani		Bazara	Damana				Kaka		Dari
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998				1								
2001											2	1
2002	1		1						1	2	1	

Despite the relative paucity of records (10 bird days including one probable in December), I suspect that this species winters in low densities in the karkara. In its winter quarters its preference for arid habitats is accentuated (Moreau, 1972), which may explain its relative scarcity at Sokoto, where it was only seen once (five birds) by Mundy & Cook, though Dobbs recorded it more often, but still considered it rare. Oddly this species was only recorded twice during the recent Lake Chad Bird Migration Project (Gustafsson et al 2003). Mai Daji's reporting of year round presence and breeding of *dân gajar-gajar* (etymology unknown) suggests either an error in assignment or that it may not refer exclusively to *A.campestris*, which could be explained by the presence of an Afro-tropical pipit, with the Plain-backed pipit, *A.leucophrys* a possible candidate (but not for breeding).

Earliest: 29-Sep-02

Latest: two, Zongon Alway, 18-Apr-98

PIPIT spp

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001			1								2	

A pipit with pinky legs at Howaltchi on the 16th March may have been *A.campestris*, but the pipit perched on a pile of bricks at Tawaye on 23rd Nov, which I described as yellow-buffy and another there with the same look the 27th I considered possible tree pipits, *A. trivialis*. According to Moreau, this species requires "trees as a rule at least 10 m high with the surface of the ground accessible" (1972: 140). This suggests that much of northern Gobir would be an unfavourable wintering ground but through passage is certain to occur.

<i>Anthus cervinus</i>	Red-throated Pipit					Pipit à Gorge Rousse		
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Insectivore

MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	2001										1	9
2002										1	2	

The 13 bird days shown include one probable and one possible, and were all in the drying bed of *tapkin* Tawaye, which is a typical, moist, grazed grass habitat for them (Moreau, 1972). Including all records, the migration window is 45 days, but it is not known whether any birds lingered, which would support the contention of Elgood et al (1994) that birds move slowly southwards as the wetlands dry out in Niger. In terms of the migration routes taken by these birds, it is interesting to note that in both Algeria and Libya it is considered more common on spring passage (Bundy, 1976, Isenmann & Moali, 2000). Could they have taken an Eastern Mediterranean route?

Earliest: one probable, 16-Oct-01 otherwise first definite record, 2 or 3 birds, 4-Nov-01.

Latest: two birds, 30-Nov-01.

Max count: circa 6 on the 29-Nov-01

Turdidae: Thrushes, Chats & Allies

Cercotrichas galactotes **Rufous Scrub Robin** *Agrobate rubiginoux* *đan buda munta*

Insectivore

R? MA? MP?	<i>Dari</i>		<i>Rani</i>		<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1	1								
2001							1			1	1	
2002			3		2	1	7		1	1	1	

As Mundy & Cook noticed in Sokoto, this rather conspicuous bird is not often seen. In the *karkara* seeing it is dependent on being in one of the few wooded *tapkuna/fadamu* which it appears to share with its congener, *C.podobe*. Though there is much to learn about the habitat preferences and resource partitioning of the two scrub-robins, their spatial distribution is at least clear. In terms of their temporal distribution, the picture for *C.galactotes* is however particularly unclear and my records and the year round observation period of Mai Daji unfortunately do not shed any light. Though it would seem that one can see this species year-round in northern Gobir, this could well mask a pattern of seasonal alternation between two sub-specific populations that can only be reliably distinguished in the hand. The larger Palaearctic birds of the nominate race are likely winter visitors, but if they occur, and whether they replace or co-exist with the Afrotropical *C.g.minor* during their sojourn, is a matter of speculation. The alternating model of dry season Palaearctic birds and rainy season Afrotropical ones has been proposed by Morel & Morel (1978a: 29) but without supporting evidence. B&D consider it as resident with numbers supplemented by Palaearctic migrants during the dry season. Both Mundy & Cook and Dobbs report non-observation in August and September and the former speculate that there may be some northward movements with the rains. In Kano State, Sharland & Wilkinson (1981) also suggest a move north in the rains. Concerning the rains movement hypothesis, it is interesting to consider breeding dates above the 11th parallel. Serle's most confused account of this species (1943) gives a nesting record of the 15th April for Sokoto and Elgood *et al* (1994) cite what is probably a separate Sokoto record of the 17th April plus Sharland & Wilkinson's Baguada record of the 7th April. These dates accord well with Mai Daji's *rani* season breeding period, when apparently they show a preference for nesting in *dirga* bushes. Presumably the breeding period corresponds with a peak in insect availability linked to the pre-rains flush. If the breeding period is so fixed, it could be that there is either one *C.g.minor* population that migrates north 2-3 months prior to the rains and breeds upon arrival or a resident population bolstered by wandering post-breeding birds during the rains. Said by Mai Daji to have been more common before, which would seem likely given the changes in the wooded cover. **Etymology:** lewdly but for obvious reasons, "the one who opens his arsehole".

Cercotrichas podobe **Black Scrub Robin** *Merle Podobé* *bakin đan buda munta*

Insectivore

R	<i>Dari</i>		<i>Rani</i>		<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	breeds											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1	2								
2001							3			2	1	
2002			3		1	2	7		1	3	3	

Unlike the situation for *C.galactotes*, it can be said unequivocally that *C.podobe* is resident, though there are certainly unanswered questions concerning its range and dispersal behaviour. Classified by Morel & Morel (1978a: 28) as a species that defends a breeding season territory. True to Mai Daji's

later comment on nesting preferences, I saw a bird carrying food on the 31-Mar-02 into, if memory serves me well, a *dirga* bush at tapkin Hurumi. I also observed the same bird scaring off a snake climbing the bush, presumably going after its young. This raises the interesting question why *dirga*, a rare tree in the *karkara*, is a popular nesting habitat, apparently for both scrub-robin species, especially as it is leafless at this period. Perhaps it has a certain density that is convivial to restricting intruders (but not snakes!) whilst also allowing for surveillance? It is interesting to note that *Bauhinia rufescens* is a recommended hedge species in the Sahel (Yossi *et al* 2006), and should it become more widely used, birds such as the scrub-robins are likely to benefit. Mai Daji said it was more common before because there were more trees. **Etymology:** “the black one who opens his arsehole”.

<i>Phoenicurus phoenicurus</i>		Common Redstart				Rougequeue à Front Blanc						
Insectivore												
Mp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										2		
2002				1						1		

According to Riddington (2002), most arrivals appear south of the Sahara in the first half of September and most birds begin pre-migratory fattening in late March or early April. My records (10-Oct-01, 01-Apr-02 & 30-Oct-02) all of single male birds, are too biased by my limited observation in both September and April to add a northern Gobir perspective. However, what can be said is that the species is probably only found in the B&M *karkara* on passage, which can be related to the unsuitableness of the tree density (see Jones *et al* 1996). The redstart has been shown to exhibit site fidelity in Kaduna (Skilleter, 1995) and what is particularly interesting about Skilleter's faithful bird is that it arrived in various dates in November, which suggests that there may be a process of birds slowly moving southwards through the Sahel until they reach their preferred wintering site. In terms of preferred sites, I have often encountered this species regionally in fringing vegetation around wetlands, particularly *Acacia nilotica* stands e.g. at Lake Maderounfa (15-Nov-97), Lake Akadaney (19 & 20-Oct-01) and much closer to B&M, one late bird at Birnin Lallé 06-May-06. In B&M, I also only saw the redstart at various wetlands (Tarago, Hurumi & Dan Gao), but the vegetation is certainly not extensive enough to their liking. I would not be surprised however to find a wintering population at Birnin Lallé as well as in the major fossil valleys.

<i>Saxicola rubetra</i>		Whinchat				Tariet des Prés						
Insectivore*												
Mp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002				1								

One sole record, a male perched on a bush at the cattle park in front of my house, 01-04-01. There have been surprisingly few records of this species in Niger (just two listed in Giraudoux, one in December and one in March). The whinchat is considered a conspicuous spring and autumn migrant in northern Nigeria where only a few overwinter (Elgood *et al.* 1994). In Dobbs's observation period (October 1945 to December 1954), she considered this species as a “regular” dry season migrant, but some 16 years later, Mundy & Cook only recorded it thrice.

<i>Oenanthe oenanthe</i>		Northern Wheatear					Traquet Motteux				<i>ƒanta</i>		
Insectivore													
MPw	<i>Dari</i>	<i>Rani</i>				<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Most common												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001											22	5	
2002	1	3	10	2						7	10		

My numerous observations of this species, which is known to be highly territorial on its wintering grounds (Shaw, 2002), is partly an artefact of their spatial bias as one frequented the environs of my house. Whether territoriality extends to site fidelity is unknown, but regarding the method for verifying this, Mai Daji once indicated to me from images in my guide books that this species had been found with rings on. Knowing where the wheatears of northern Gobir hail from would certainly be interesting! Only ever seen in ones or twos (max daily count four, 11-Nov-01), so I expect that overall its density in mid-winter is low. Jones et al (1996) recorded wheatear densities of 1 bird ha⁻¹ around Nguru, Nigeria, which if extrapolated to the B&M *karkara*, would suggest a winter population of around 2600 birds, which does not appear realistic. My earliest and latest records (03-Oct-02 and 04-Apr-02) indicate a slightly longer presence for this species in B&M compared to Mundy & Cook’s records in Sokoto (10th October to 21st March), though it should be noted that this could simply be a distortion of their weekly rather than my daily observations. The absence of October records in 2001 is perhaps due to an oversight on my part as I had yet to initiate a daily list. Mai Daji year round observation probably reflects the fact that he lumped *O.oenanthe* with *O.heuglini* and his reported increase in numbers in the *rani*, may simply reflect its conspicuousness. Apparently the *ƒanta*, which was also the Hausa name given to this species by Rousselot, was more common before.

<i>Oenanthe hispanica</i>		Black-eared Wheatear					Traquet Oreillard					
Insectivore												
MPsu	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002										1		

I took the following notes of a bird near Tawaye on the 02-Oct-02 that led me to believe it was *O.hispanica*: overall brownish colour, especially on its back (*O.oenanthe* tends to be greyer), pale throat, large amounts of white in the tail and habit of associating with bushes and not the ground. Also it had a jizz somewhat different to *O.oenanthe*. The “Spanish” wheatear was considered common by Dobbs in Sokoto, but rare by Rousselot in Maradi and was only seen five times by Mundy & Cook. An improved understanding of the wintering biogeography of the four Palaearctic wheatears in the Sahel is certainly required.

WHEATEAR spp

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001									1	1		
2002									1	3		

The wheatears sometimes proved difficult to identify to the species level, particularly first year and females birds. These records are likely to have been, in order of probability, *O.oenanthe*, *O.hispanica*, *O.isabellina* or *O.deserti*. This latter species is only a candidate species on the basis of a single record from Sokoto by Mundy & Cook—it has otherwise only rarely been recorded in southern Niger and northern Nigeria.

<i>Oenanthe heuglini</i>	Heuglin's Wheatear						Traquet de Heuglin					
Insectivore*												
MAnb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002					1?		2					

I identified the first Heuglin's wheatear in the *karkara* on the barrens between tapkuna Salka and Bagarinnaye, 06-Jul-02 and then again four days later. The May record refers to a wheatear I saw whilst in transit from to Dakoro to B&M on the 25th and which I imagine, given the period, could only have been this species. My records concur with the 'hump-back bridge' migration pattern reported in Elgood et al (1994), whereby this species breeds in the northern Guinea savanna between October and March before moving north with the rains into the Sudan Sahel zones.

[<i>Oenanthe isabellina</i>]	[Isabelline Wheatear]						[Traquet isabelle]					
Insectivore*												
MPsu	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											1	

On the 26-Nov-01, the vocal nature of some wheatears on the dried up bed of Madamba attracted my attention. One pale sandy coloured bird in particular seemed larger and more upright than *O. oenanthe* and it even leaped into air and showed a lot of black on the rump. Unfortunately the light was fading fast and I was unable to get satisfactory views to confirm my suspicions that it was *O. isabellina* and my subsequent visits to the locality were unfruitful. It is without doubt a species that is likely to occur. Not recorded in Sokoto by Dobbs or Mundy & Cook, and there are only Zone 6 records in Niger in Giraudoux. However, there have been several recent records in the dry area north of the Hadejia wetlands (Elgood et al. 1994 and Jones et al. 1996).

<i>Myrmecocichla aethiops</i>	Northern Anteater Chat						Traquet Brun						<i>soyi</i>
Insectivore*													
R	Dari		Rani			Bazara	Damana			Kaka	Dari		
	breeds												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001											1	1	
2002			5			8	5		3	4	3		

That a burrow-nesting bird can flourish in a typically flat Sahelian landscape is a remarkable achievement and one that is dependant to a large degree on man's activities. Mai Daji's observation that it nests in wells is widely confirmed in the regional literature (Bates, Rousselot and Mundy & Cook). Bates remarked "At every place where I found it there were unused wells or large artificial holes in the ground of some kind, such as the pits out of which clay had been dug for building. These birds use horizontal holes in the sides of pits or wells, which they must make themselves, for nesting and apparently for constant residence; one such hole that I probed ran into the earth for six feet" (1934: 455). Mundy & Cook add many details to this picture, noting that "Their whole life is centred around their tunnels, and throughout the year they can be seen digging them and displaying around them" (1973:18). Maximum counts in B&M were *circa* seven, 08-Mar-02 and six, 30-Oct-02, which are small by numbers recorded at Sokoto. The latter observation is interesting because it was in the western couloir on the track from Ginda and I made the remark in my notes that it was probably the only occasion that I had seen them not near a well. In Sokoto, Mundy & Cook report birds only rarely ranging beyond about ¾ km from their tunnels, but I suspect that in more northern latitudes, birds may wander further afield more often. Rousselot suggested that some birds migrate northwards in the rains, but I have found nothing else in the regional literature to support this. The breeding period reported by Mai Daji is early compared to the dates recorded by Mundy & Cook (June). According to

Mai Daji, the *soyi*—I suspect the etymology is onomatopoeic—is more common nowadays because there are more old wells. This assessment is well founded (no pun intended) as excavation activities have undoubtedly increased in line with human population growth. Though the number of brick pits has increased with the rising popularity of mud-brick *tchiguwa* houses, they are perhaps not as suitable as wells since many are continuously worked. Despite the construction of the concrete lined well in the village in 1992, shallow wells in the bed of Tawaye remain popular for both gustatory and time-saving reasons. However, given their frequent use and that they are flooded in the rains, I wonder if it is not the abandoned dunefield wells that are the ant-eater chat's preferred type? My knowledge of these is limited, though I did come across several abandoned ones and one set of active ones, which I understand were used for one season only. These wells, which are probably no more than 10 metres deep, are sunk into seasonal but shifting water lenses and are used primarily to water animals, sometimes on a contractual basis between the cattle and field owners.

Sylviidae: Warblers

		[<i>Hippolais pallida</i>]				[Olivaceous Warbler]				[Hypolaïs Pâle]			
Omnivore													
MP? MA?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001											1		
2002			1			1							

Having identified two Olivaceous warblers at Akadaney, 19-Oct-01, it was disappointing not to be able to do so subsequently at B&M, though the three records above could all have been this species. Though the species is discrete, it could also genuinely be rare because of the absence of enough tall trees in the *karkara* (Bates, 1934). As to the races that could pass through, or even sojourn, apart from Palaearctic birds, the Afro-tropical *H.p.laeneni* (sometimes considered a separate species) is a possible non-breeding rainy season visitor (B&D). However, at odds with B&D's map of the distribution of this 'Eastern Olivaceous' is the lack of summer records from Sokoto. It should be added, that just to confuse the temporal distribution picture, over-summering Palaearctic birds are not unknown (*ibid.*).

		<i>Cisticola juncidis</i>				Zitting Cisticola				Cisticole des Joncs				<i>marai</i>
Insectivore														
R?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		
2001											7	1		
2002		1				5	2			2	1			

My records of this species, which were verified by comparing a poor quality Dictaphone recording against the Chappuis recordings, indicate a more northern limit than indicated in B&D. One seen carrying food 12-Nov-01 and juvenile-like birds seen in autumn indicate that it bred in Tawaye and also probably in the corner of Tapkin Haoua. This breeding period accords with the June to October records from Nigeria (Elgood et al 1994). If it has a clear preference for the more open grassy *tapkuna*, this species could have benefited from the progressive clearance of wetlands. The status of the species in the *karkara* is difficult to decipher from my records. Given its habitat preference, I would be inclined to think that it would move away in the dry season once the long grass has died back or been grazed down. However, an observation of 1 or 2 birds on the 23-Feb-02 suggests that they may simply go to ground—see also the *cisticola* spp. records below. Mai Daji's name for this bird, *marai*, seems equivalent to the British birder's LBJ (Little Brown Job) and is thus applied to several species.

<i>Cisticola aridulus</i>	Desert Cisticola					Cisticole du Désert				<i>ḍan kumma huwara</i>		
Insectivore												
R	Dari	Rani			Bazara	Damana				Kaka		Dari
						breeds						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002						2	7					

All my definite records of this species fall within the period when they are easily identified by their characteristic song flights. First identified beside the shrubby border of a small *tapki* and though this species has a preference for a drier, more shrubby habitat than *C.juncidis*, overlap is possible as I recorded this latter species in my garden, some 50 metres from the shoreline of Tawaye. The distinctive call and display of this species coincide with the farming season, so it is not surprising that Mai Daji was able to give a name to the recording, but unfortunately the etymology of the moniker he gave was not elucidated. Nonetheless said to be resident year round and to breed in anza bushes in the rains. Apparently has increased, which may be due to the increase in in-field woody vegetation.

CISTICOLA spp.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002			2		1	1	3					

Apart from *C.juncidis* and *C.aridulus*, two other cisticolas are possible according to the maps in B&D, *C.cantans* and *C.galactotes*.

<i>Prinia subflava</i>	Tawny-flanked Prinia					Prinia Modeste				<i>bimbeni</i>		
Insectivore												
R	Dari	Rani			Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							4			2	3	3
2002		1	13	2	1pos	1+1 prob	3+1 prob					

An important admission is needed concerning my records of this species. Only from the beginning of my sojourn starting end of May 2002, did I have the B&D guide which illustrates a species very similar in size and behaviour (particularly tail jerking, non-shy habits and association in small groups), namely, *Spiloptila clamans*. The fieldguide I was using until then was Barlow & Wacher, which only has a brief description of this latter bird. More importantly, it carries an illustration of an adult breeding TFP that has a greater resemblance to the illustration of *S.clamans* in B&D than their TFP! I should of course have been more observant—compare the distinct names given to these two species by Mai Daji. However, the long and short is that serious doubts exist for my records prior to May 2002. This is most unfortunate because it is impossible to substantiate the dry season absence of this species reported by Mai Daji. Interestingly, in Sokoto, Mundy & Cook only recorded it 11 times, from June to Aug and once in December, though Dobbs considered the “Sudan Prinia” regular and commonly seen on the marshes. Previously, Bates (1934) had speculated that there were northward non-breeding movements by this species. Elgood *et al* (1973) provide evidence both for partial migration/absence in the early dry season in eastern Kano State and against it in Malamfatori. Subsequent commentators however unequivocally regard the species as a resident in Kano State (Sharland & Wilkinson, 1981), in Senegal & Gambia (Barlow & Wacher) and western Africa more generally (B&D). Mai Daji reported that the species didn’t breed—perhaps further evidence of its mobility in B&M?—and that it was more common before.

<i>Spiloptila clamans</i>	Cricket Warbler					Fauvette à Front Écailléux				<i>d'an tadi</i>			
Insectivore*													
R	Dari		Rani			Bazara	Damana				Kaka		Dari
						breeds							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2002						5	8		1	2	1		

As noted above, I only came to identify this bird from the end of May 2002 after which I soon learnt to identify its distinctive calls. According to Brouwer *et al* (2001) it is restricted to the Sahel biome, which would explain why there are no records from Sokoto. The collected breeding dates in Elgood *et al* (1994) suggest that a longer period is possible than that indicated by Mai Daji. Apparently nests in *anza* bushes, an abundant evergreen species and said to have been more common before. **Etymology:** a tentative suggestion is a linkage with the word *ta'di*, for which one meaning given in Bargery on-line is chatting and could thus refer to reports of duetting in this species.

[<i>Camaroptera brachyura</i>]	[Grey-Backed Camaroptera]	[Camaroptère à tête grise]										
Insectivore												
?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001												1

On the 17th December I had frustratingly short views of a camaroptera like bird at Madamba and grey-backed is the only possible candidate assuming that I wasn't confused by a crombec or ermomela—though I am not very familiar with these genera, I had nonetheless seen my first grey-backed camaroptera and green-backed ermomela at Say just eight days before this observation. Additionally, the camaroptera genus probably has the most skulking members of the three. Elgood *et al* (1973) provide evidence of partial migration of the grey-backed camaroptera at Zaria, though in the Ferlo, Morel & Morel note it as one of the rare species to hold a permanent territory (1978a: 28). The map in B&D indicates it would be at its northern limit in B&M but there are records more than 150 km to the north from Holyoak & Seddon (1991) and one B&D cross mark on the Aïr. Further enquiries making use of the distinctive bleating calls of this species are required.

<i>Sylvia communis</i>	Common Whitethroat					Fauvette Grisette				<i>en ta 'anza</i>			
Omnivore													
MPw	Dari		Rani			Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
1998				1									
2001												1	
2002		1	3	1+1pos						1	1		

Boddy (2002) reports from the literature that most common whitethroats arrive in the Sahel in late September and early October and they are common in northern Nigeria from early October. Despite many October observation days, including periods in suitable habitat, my earliest record is the 30-Oct-02 (cf. *Sylvia cantillans*). Interestingly in Sokoto, Mundy & Cook's earliest arrival date was the 22nd November. Is there a slow southward movement of this species in early autumn?

Jones *et al.* (1996) found a strong positive correlation between numbers of *S.communis* and the abundance of *kalgo* trees in northern Nigeria (Dec-Jan). This tree species is neither abundant nor particularly rare in the *karkara*, and it is important to consider the wider suite of resource components available. Though the overall density of trees (as opposed to shrubs) in the *karkara* is low, Stoute *et*

al. (2001) found in the Gambia a positive correlation between whitethroats and the area covered by the shrub *Guiera senegalensis* (*sabara*), which is one of the most abundant woody species in B&M. Though I only once made a note of the woody species in which I saw the whitethroat (a *kalgo* at tapkin Dan Gao), Mai Daji's name for this species (see below) reveals an association with *anza*, a species on a par with *sabara* in terms of abundance. Though studies to date on the ecology of the whitethroat on its winter grounds have not stressed a role for *anza*, it should be noted that Morel (1968: 115) considered the leaf-litter at the base of this evergreen shrub to be an important insect refuge. Further observation is required, but my tentative general conclusion with the information presently available is that the whitethroat passes the winter in just one or two of the most wooded areas in the B&M *karkara*. Whether they remain in such areas throughout the winter is an interesting question since Vickery et al. (1999) suggest numbers at specific sites fluctuate according to food abundance, but on the other hand King & Hutchinson, (2001) have demonstrated site-fidelity in the Gambia between winters.

As to the origins of the birds, Boddy (2002) suggests with data he admits is weak, that birds wintering further east in the Sahel, breed further east in Europe. As an indication of a possible source area, a bird ringed at Malamfatori, Nigeria was recovered in Poland (Waldenström & Ottosson, 2002: E16). Increased knowledge of where different breeding populations winter is essential for the debate concerning the impact of environmental conditions on the wintering grounds on population numbers. The whitethroat has been emblematic in this debate since the 1968-69 "crash" in UK numbers (Winstanley et al. 1974), but as Payevsky (2006) has convincingly shown, population changes in Europe are neither synchronised or synchronised i.e. they don't taken place at the same time (*chronos*) or in the same space (*choros*).

Pre-migratory fattening by Common Whitethroats in the Sahel has been associated with an increase in the dietary importance of fruit in northern Senegal (Stoate & Moreby, 1995) and Lake Chad is considered an important staging ground for them to feed up on *Salvadora persica* berries (Fry et al. 1970). None of the fruit trees/shrubs mentioned in these two studies occur in northern Gobir, though alternatives, particularly the abundant *anza*, should perhaps be considered. The latest date I recorded this species in B&M is however in line with normal Sahel departure dates (Boddy, 2002)—02-Apr-02—which suggests that there is something for some of them to fuel up on. Interestingly, I recorded a later bird (18-Apr-98) in the much more wooded habitat around Zongon Alway and the possibility of local movements (even concentrations?) to resource rich habitats as the departure period approaches should be investigated.

Etymology: "the one of the *anza* bush" a name shared with *C.cantillans*, which is understandable given their resemblance.

<i>Sylvia curruca</i>	Lesser Whitethroat						Fauvette Babillarde					
Omnivore*												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002										1		

The migration of *Sylvia curruca* is somewhat exceptional because it travels southeast across Europe yet its wintering range extends relatively far to the west (Moreau, 1972). The map in B&D suggests that the main westwards extension ends near Birnin'Konni apart from two wintering 'islands' in the Niger inland delta and around the mouth of the Senegal River. Though this map ignores the northern Air wintering population reported in Newby et al. (1987), it otherwise tallies with other published records from Niger. Barring the unlocalised specimen reported by Rousselot, which incidentally for those with a penchant for genetic enquiry may be found in MHN Paris, my observation of two birds apart at *tapkin* Bagarinnaye on the 10-Oct-02 represent the westernmost records for Niger. At the time of observation I also considered Orphean warbler (*S. hortensis*), but on the basis of size concluded that they were *S.curruca*. At Sokoto only recorded by Bob Sharland (reported in Dobbs).

<i>Sylvia cantillans</i>	Subalpine Warbler					Fauvette Passerinette				<i>en ta'anza</i>			
Omnivore													
MPw	Dari		Rani			Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001										1	4	2	
2002	1									1	2		

The Subalpine warbler is something of a classic Sahelo-Sudanian winter visitor. It is a particularly intriguing migrant because it originates not only from a restricted breeding area around the Mediterranean but is also divided into four subspecies that seem to show a parapatric distribution, at least in mainland Italy, (Brambilla *et al.* 2006). The subspecies and their currently known breeding zones are as follows (from *ibid.*):

1. *S.c.cantillans* found on peninsular Italy, southern France and Iberia
2. *S.c.moltoni* found on the Balearics, Corsica, Sardinia and central-northern Italy
3. *S.c.albistriata* found from north-east Italy southeastwards to southern Turkey
4. *S.c.inornata* found in southern Spain and northern Africa

In contrast to the clear biogeography of the subspecies in the breeding season, the winter picture is thought to be more mixed. According to B&D, the nominate is found across the West African wintering zone, *inornata* from Senegal to west Niger and *albistriata* from eastern Mali eastwards. The wintering grounds of *moltoni* are unknown but birds resembling the moult patterns of this race have been ringed near Kano (Shirihai *et al.* 2001:390). Examples of all subspecies could thus be found in northern Gobir!

Unlike *S.communis*, the Subalpine warbler appears in B&M earlier (earliest date: 01-Oct-02) and territorial behaviour may have been noted relatively soon afterwards (18-Nov-01: two birds singing and chasing in *sabara* bushes at the north end of Tawaye). Sauvage *et al.* (1998) have reported relatively high rates of philopatry (site fidelity) in this species between winters in northern Senegal and such behaviour is to be expected in northern Gobir. An interesting question about the sojourn of this species in the B&M *karkara* is posed by the absence of all records in the early part of the year (bar one on New Year's Day). Though my observation days in January and February were very limited, March was rather better covered. Whilst frequency of observation is probably the explanatory factor it is worth noting the relatively few March records for this species in Giraudoux *et al.* and more significantly that Elgood *et al.* (1994) give a wintering period up until March for Nigeria (cf. mid April for *S.communis*). A shorter wintering period for *S.cantillans* is perhaps to be expected given the milder climates in the Mediterranean compared to the more northern breeding grounds of *S.communis*. In the northern Algerian Sahara, spring migration in 1966 occurred between 21st March and 14th May, peaking in late April (cited in Isenmann & Moali, 2000). Likewise in the Libyan desert Bundy (1976) reports that passage occurred in late March and April. Given that there has been much recent research interest in correlating avian migration phenology with climatic change, whether these migration periods still hold needs to be questioned. However, that question can only be answered categorically when we know the precise geography of where discrete breeding populations winter and the migration routes they follow. As Gordo *et al.* (2005) argue (but don't convincingly demonstrate) departure decisions from the wintering grounds are more likely to relate to local conditions than those on the breeding grounds. In this regard, *S.cantillans* would be a good candidate species for a more detailed study since we at least have some spatial precision (but still very coarse) in terms of where birds breed and winter.

Muscicapidae: Flycatchers

<i>Muscicapa striata</i>	Spotted Flycatcher						Gobe-mouches Gris					
Insectivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998				1								
2001										3		
2002					1					3		

According to Baker & Baker (2002), the Spotted Flycatcher, which is a nocturnal migrant, tends to arrive in West Africa in October. The recent Lake Chad Bird Migration Project (Gustafsson et al. 2003) recorded an autumn window in 2000 from 25 Aug to 11 Nov. In B&M my limited observation in September and none in August makes it impossible to describe an equivalent timeframe, though it is interesting to note that there are no November records despite it being a well-watched month. All records concerned single birds, though on two occasions I suspected I had seen two birds in the same day. In addition to the records above I saw two at Akadaney, 20-Oct-01.

My spring records are decidedly more interesting, especially when seen in regional context. The Lake Chad Bird Migration Project recorded only one spring bird on the 27-Apr-00 (*ibid.*). At Sokoto, Mundy & Cook only had two records both in autumn (27th Oct and a late bird 5th Dec) and Dobbs describes it as occasional on passage but without elaborating on the period. In Kano, Sharland & Wilkinson, (1981) report it as an 'occasional' passage migrant in October. Further south at Vom, in central Nigeria, the picture is very different and spring passage greatly exceeds that of the autumn (Smith, 1966, cited in Moreau, 1972). Though I only have two spring records (31-May-02 at B&M & 15-Apr-98 at Ganda Samou), there are in Giraudoux et al. several others from this period at latitudes roughly equal or greater than B&M. Though Baker & Baker (2002) report that birds caught in spring in Nigeria have much more fat than those caught in autumn, it would seem that not all birds make one large Saharan over-flight, as many other Palaearctic passerines do. Perhaps the ones seen in Niger in spring weren't able to fuel up sufficiently further south, which may relate to their moult state (Salewski et al. 2002). But then again, is the alternative slow journey back likely to be detrimental for an opportunistic traveller (Moreau, 1972) capable of loitering at an insect-rich spot for a few days? After all it is one of the last trans-Saharan migrant passerines to arrive back at the breeding grounds.

Timaliidae: Babblers

<i>Turdoides fulvus</i>	Fulvous Babbler						Cratélope Fauve				<i>baiwan suda</i>		
Omnivore*													
R	Dari		Rani			Bazara		Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2002			3	1	1	3	3						

According to B&D, the recent southward extension of the range of the Fulvous babbler is due to drought. Indeed my records are, based on Giraudoux et al., the first for Zone 3 and the species has only recently been recorded in Nigeria (Ottoson et al 2002). However the evidence for B&D's expansion needs to be examined. Some basic questions need answering, e.g. what is the range size of this group-living species? Do birds hold territories like their well-studied congener the Arabian Babbler (*Turdoides squamiceps*)? If ranges/territories are large, and birds always go round in groups, the chances of missing this species are presumably increased. Unfortunately my records from

northern Gobir are unable to shed much light. I encountered this species in numbers ranging from two to circa five, with three being the most frequent. Why I saw the species only from March to July may be related to the fact that I was occupied with measuring fields at this time, though if it is present year round, chances are I would have run into it at other times too. Also seen on three occasions around Dan Marke Tchilako and Zongon Baoure, 2nd & 3rd May, 2006. As regards the timings of my observations they are at odds with those of Mai Daji who claims it is absent in the dry season. As mentioned earlier, Mai Daji used the same name (*baiwar suda*) for both the Fulvous Babbler and the Jacobin Cuckoo, (*Clamator jacobinus*), which according to Lowther (2010a) is a known cuckoo-host relationship. When I was compiling species data with Mai Daji at the end of my sojourn he didn't mention breeding for this species though he had previously (19-Mar-02). If the Fulvous Babbler is indeed parasitised by the Jacobin Cuckoo, breeding would have to occur during the May-Oct window of the cuckoos appearance, but in Algeria reproduction is said to be extremely variable (Isenmann & Moali, 2000). Mai Daji reports that it was more common before and that it has a preference for *gao* trees. **Etymology:** "The slave of suda".

Nectarinidae: Sunbirds

Knowledge of any pollinating roles for the two *Nectarinidae* encountered in Gobir lags behind that pertaining to some of their southern African co-familars. There is however enough circumstantial evidence to suggest they may be implicated to some degree. For example, in a database of pollinator records for the family *Asclepiadaceae* (ASCLEPOL, 2010), there is an unpublished record for *Nectariniidae* in Kenya pollinating *Leptadenia hastata*, a fairly common species in northern Gobir. In their review of the pollination ecology of acacias, Stone *et al.*, in relation to *Nectarinidae* records note: "Whatever the reason for acacia visitation, these bird visitors have the potential to be highly effective long-distance pollen vectors" (2003: 111). Finally mistletoes, which may occur in the south of Gobir, are known to be pollinated by sunbirds (Ghazanfar, 1989).

Regardless of plant/sunbird pollen interactions, an important factor in the ecology of the two sunbird species of northern Gobir is that neither are obligate nectivores. According to research by Tai *et al.* at Zaria, nectar-feeding birds (mainly but not exclusively sunbirds) are more reliant on this source during the dry season than the rains, at which time they become insectivorous probably because of the dilution of nectar sources (2005: 25). If this holds to be true in northern Gobir, it might be possible to relate sunbird presence in the dry season to nectar resources. In the Sahel, though there is a notable period of tree flowering before the rains, phenological patterns of woody species are much more variable than in the Sudan zone (Breman & Kessler, 1995: 80-81). There is both a degree of variation between woody species, e.g. most flower once a year but *Acacia senegal* may flower twice and *Balanites aegyptiaca* and *Anogeissus leiocarpus* several times, as well as within species depending on soil moisture conditions, e.g. *Combretum aculeatum* on clay flowers in the same period every year but more variably on sandy soils (*ibid.*). Sunbirds are a surprisingly mobile group, but because they are ultimately omnivorous, is it wise to relate their movements simply to nectar-chasing? In answering this question, it would certainly be useful to understand the factors triggering the distinctly different breeding patterns of the two sunbirds found in B&M, as according to Elgood *et al.* (1973), one is a dry season breeder the other wet.

Unfortunately Mai Daji used the same name for both sunbirds (*en shamai*, etymology unknown) and furthermore his observation period (*rani* and *bazara*) does not square with mine. Though he said they have declined, caution is needed in interpreting this given the above discussion. During my brief 2006 visit to B&M, he indicated to me an *en shamai* in a village neem tree that I didn't see. I mention this because villages in Gobir are typically evergreen neem islands and thus a potentially important resource for nectar and insect eating birds when they are most often (but not exclusively) in flower around April (the time of my 2006 visit). Tai *et al.* (2005) emphasise the importance of exotic trees in Zaria as a nectar substitute for nectivorous birds in residential areas. There is some evidence (see below) for this in Nigérien towns, but the situation in Gobir villages requires further investigation.

<i>Hedydipna platurus</i>	Pygmy Sunbird						Souimanga Pygmée				<i>en shamai</i>	
Omnivore												
MAp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998				1								
2001										1		
2002									1	2	1	

According to Elgood *et al.* (1973), the pygmy sunbird breeds in the dry season, and the general pattern indicated in B&D is that there is a northward post-breeding movement in the rains. As both sources warn, there are however local variations to this pattern. In northern Gobir it would appear to be a passage migrant only, with birds presumably heading north in spring and south in autumn. In Sokoto, Mundy & Cook only identified it five times between October and March, which would fit with the above pattern, but in doing so they cast dispersions upon Dobbs's records from April to August. That autumn passage is heavier (I have an additional record from Akadaney 20-Oct-01) finds a correlate with the reported marked passage at Malamfatori (where it is found year round) reported in Elgood *et al.* (1973) and more recently by Gustafsson *et al.* (2003) who noted a peak there from 28 Oct to 9 Nov, 2000. My autumn passage window (but note lack of observations in August and early September), was 29th September to 3rd November. My sole spring record is from Ganda Samou (15-Apr) and concerned a bird feeding on *tumfafia* flowers, but whether it was the nectar is not known. This plant has an unusually extended flowering period (during the entire dry season according to von Maydell, 1990) and may therefore be an important food source when other nectars are unavailable.

<i>Cinnyris pulchella</i>	Beautiful Sunbird						Souimanga à Longue Queue				<i>en shamai</i>	
Omnivore												
MAb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2			1	1+1pos	
2002							3			1		

In the Sahel zone of Nigeria, the beautiful sunbird is a breeding rains migrant and this appears to be the case in northern Gobir (Elgood *et al.* 1973). At Sokoto, Mundy & Cook found it a rains visitor to their more Sahelian scrubby survey areas (the Sifawa scrub and the Kalambaina hills) but seem to imply that it was found year-round in their more typically Sudanian woodland sites. While Dobbs noted absences in December to February, it is harder to decipher the habitat she frequented, though it looks like she made observations in or around the same club woodlands as Mundy & Cook. Perhaps in the intervening 16 years separating their observation periods the habitat had become more conducive to sunbirds—and/or the sunbird habits had changed. My absence of records in June 2002 may be an artefact of my observations since the first rains were on the 4th/5th June. At tapkin Salka on the 18-Nov-01, I observed a juvenile hassling an adult for food—this was also my latest autumnal observation. This date is slightly late in comparison to the observation period for juveniles recorded by Mundy & Cook (July to October) and perhaps it relates to the late-setting, but ultimately good rains of that year. In this regard, it is interesting to note that Paludan (1936, cited in Giraudoux *et al.*) related the departure of this species from Zinder to just after the end of the acacia flowering in November. Maximum daily count, three on 04-Jul-02, which was also my earliest record. In Giraudoux *et al.*, there is a comment about the “gros départs début sept” of this species apart from a few individuals that remain in towns such as Maradi and Niamey, but doesn't this apply to both sunbirds?

Laniidae: True Shrikes

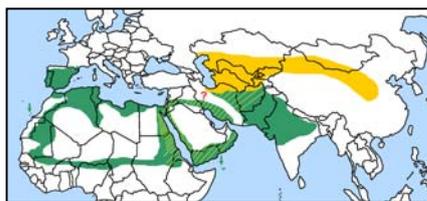
Combining a “sit-and-wait” hunting technique with territoriality, the *Laniidae*, (from the Latin, *lanio* “I tear to pieces”) is a high visibility family and has consequently been rather well studied to the extent that there is even a specialist branch of ornithology called shrikeology. Most research has however been concentrated on the five species found nearest to ornithologists in Europe and North America (Yosef, 1994). Thus, though the two shrikes found in northern Gobir are, (or more correctly, prior to a recent taxonomic change both used to be) among these five, their comportment in the Sahel is relatively less well-known. In making any comparison between shrikes in the Sahel and those in better-studied settings, an important difference is the general absence of human-provisioned perches such as barbed-wire fences and telegraph poles in Sahelian landscapes. This could be significant because hunting perches are an important determinant of shrike territory and may be a limiting resource since more posts have been shown to lead to a reduction in territory size with the energetic benefit that the amount of unusable habitat that is ordinarily included in a defended area is reduced (Yosef 1993, Yosef & Grubb 1994). Of course in the Sahel food resource variability in time and space may dilute the notions of unusable habitat and territory...

Lanius meridionalis **Southern Grey Shrike** Pie-grièche Méridionale *barshe*

Insectivore

R	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	breeds											
1998			2	1								
2001							2			3	14	5
2002	1	2	15	4	2	8	13		2	5	4	

The nameline of this “species” has shifted considerably and now reflects plumage differences as well as the habitat differences between *L.eximitor*, the former nominate, which prefers grassland with scattered trees and *L.meridionalis*, which prefers dry grassy scrub (Sangster et al. 2002). As the distribution map below shows, *L.meridionalis* is a dryland and often desert circumventing species. In the Sahel we are concerned with the race *L.meridionalis leucopygos*.



Source: Harris & Franklin (2000: 62) via http://fr.wikipedia.org/wiki/Image:Lanius_meridionalis_distr.png

- = permanent habitat
- = summer habitat
- = wintering zones

Sokoto is apparently unsuitable for this shrike as it is not mentioned by either Dobbs or Mundy & Cook. Curiously for so obvious a species, Rousselot doesn't mention it despite his forays as far north as at least Tanout and Nicolas (1950) likewise doesn't list it for the Tamesna. Hartert (1921, cited in Giraudoux et al.) reports that Buchanan found it rare on his voyage from Zinder to Aïr, but Bates, without giving an indication of abundance, thought it a desert species linked to the distribution of *Acacia tortilis*. Though nothing concrete can be drawn from these authors, they do provide interesting background to Mai Daji's observations. Though he used *barshe* (etymology to be verified) for both *L.meridionalis* and *L senator*, his observations presumably relate more to the former. In this case, that it has become more common may be related to a historical opening up of the vegetation, but could also have resulted from changes, linked or otherwise, in food abundance. Mai Daji's nesting period, during which it prefers *adoua* and *gao*, almost coincides with my two probable observations of juvenile birds (31-May-02 and 29-Jul-01). In Mali the breeding season according to Lamarche (1981) appears similar (June to October). In short this is one of the most commonly seen resident birds of B&M (on the 31-May-02, I saw at least 9 different birds) for which questions of territory and diet would be particularly interesting to study in comparison with the other *Laniidae* of B&M.

<i>Lanius senator</i>	Woodchat Shrike							Pie-grièche à Tête Rousse				<i>barshe</i>
Insectivore												
MPw	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			3									
2001										2	4	5
2002	1		4						1	1		

Two distinct subspecies have been recognised in West Africa, *L.s. senator* from Europe excluding the Mediterranean islands and Turkey, and *L.s. badius* from the Balearics, Corsica and Sardinia. Though, through ignorance I made no attempt to identify the race of birds I saw (and no mention is made in Giraudoux *et al.*), at Sokoto, Mundy & Cook found all birds to be of the nominate. *L.s. badius* is considered to winter south of the nominate in both Nigeria (Elgood *et al.* 1994) and West Africa more widely (B&D) and may therefore pass through Gobir. My observation period is defined as follows:

Earliest: 29-Sep-02 **Latest:** 30-Mar-98

Given my limited observation in August, September, April and May, it is reasonable to expect the actual period is longer, especially since it returns late (May) to its breeding grounds in Spain, France and Italy, though somewhat earlier to North Africa (April) and leaves after only three months (Isenmann & Frade, 1998 and Bechet *et al.* 1997). Sauvage *et al.* (1998) were of the opinion that recurrence of woodchat shrikes between years to the same site is probably normal for this species in the lower Senegal river valley. Whilst this is probably the case in northern Gobir—I assume they winter despite my sparse records early in the year—the really interesting question is how they manage to take and hold territories in the presence of the resident and larger *L. meridionalis*? Naturally Moreau (1972) addressed this question but he doesn't really consider the contact scenario found in northern Gobir and tends to see potential competition pertaining to other Afrotropical shrikes with different feeding regimes. For northern Gobir, primordial questions are whether they share the same habitat and food resources and if territoriality in *L. meridionalis* wanes outside the breeding season?

1st WINTER SHRIKE spp

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										2		
2002										2	2	

On six occasions, I was reluctant to identify first winter shrikes to the species level. I considered the choice to be between *L. senator* and *L. collurio*, which retrospectively would have tipped the balance in favour of the former since the latter is rare west of Lake Chad as its typical wintering grounds are in eastern and southern Africa (B&D). Nevertheless *L. collurio* was recorded on 25 occasions from 1998 to 2000 around Malamfatori (Gustafsson *et al.* 2003).

Malaconotidae: Bush-Shrikes

<i>Tchagra senegalensis</i>		Black-crowned Tchagra				Téléphone à Tête Noire				<i>suda</i>		
Insectivore												
R	Dari		Rani		Bazara	Damana			Kaka		Dari	
					breeds							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1									
2001												1
2002			2			1	2					

I encountered this surprisingly beautiful songster only on a few occasions (all of the above are sight records) but regrettably learnt its song too late to get better idea of its habits. Though at the time I was of the opinion that it was restricted to the well wooded *tapkuna* and *fadamu*, I recall two occasions when I heard what may have been this bird in dunefield farmlands. Mundy & Cook note that without its distinctive call, this bird would often pass unnoticed. According to Serle (1943) the tchagra was most evident within a 50 mile radius of Sokoto during its song period from June to September. At Sokoto, "love flights" were seen and heard by Mundy & Cook in June and July, with nest building noted in the later month. This breeding date is a bit later than that given by Mai Daji, though the birds shot or seen at Tahoua and Tillia by Bates (1934) in May and June were apparently getting ready to breed. According to Mai Daji, the *suda* prefers to nest in *dirga*, which as discussed previously, make for a particularly thick bush. That it was more common before ties up with its preference for lurking at the base of bushes (Morel, 1968: 131, Barlow & Wachter), a habitat that has decreased. Though my records are not sufficiently accurate to recall the locations where I saw this bird, I did note it in at least three different wooded patches: Madamba, Kalimbo and Marke (sud). The pale race *notha* is most likely to occur in Gobir (Bates, 1934 & B&D). **Etymology:** *suda* is apparently quite a widespread name for this bird in Hausaland but a second meaning given in Bargery on-line is a chatterbox, news-monger or gossip. Is the name an anthropomorphism or an ornithomorphism?

Oriolidae: Orioles

<i>Oriolus oriolus</i>		Eurasian Golden Oriole				Loirot d'Europe						
Omnivore												
MPp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										2		
2002									1			

Having seen two unidentified orioles fleetingly in millet fields as I went to Dakoro by bush taxi 28-Sep-01, it was not so surprising to encounter two on the 05-Oct at Salka. These were both greenish juvenile or female birds and I was content with my identification as they sallied after insects from the tree tops. Five days later, I saw two birds at Kalimbo, and this time one was a male. The real surprise came the following year when, back at Salka, on the 29-Sept, I saw five birds in the same trees! Is this an example of stop-over philopatry? Though the fact that I saw the birds over such a tight window (28th/29th Sept to 10th Oct) may be an artefact of my observation period, it is interesting to note Mundy & Cook's dates in Sokoto: 27th Sept and 1st Oct. Further east at Malamfatori, Gustafsson *et al.* (2003) saw birds on six days in 2000, between the 18th Sep and the 18 Oct. Isenmann & Moali (2000) put the scarcity or absence of autumn records in Algeria (also evident for Libya in Bundy, 1976) down to a loop migration, whereby birds pass mainly east of 17°E at this time but return mainly west of 19°E in spring. My records (there is just one in Giraudoux) challenge the wider geography of this proposition.

Corvidae: Crows

<i>Corvus ruficollis</i>	Brown-necked Raven					Corbeau Brun				<i>bakar hankaka</i>			
Omnivore													
Rn	Dari	Rani				Bazara	Damana				Kaka		Dari
											breeds		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
1998			2	2									
2001							2			5	3	1	
2002	1		9	2		3	4		1	3	3		

This is the principle corvid of Gobir Tudu, but yet not too far south it seems to be replaced by *C. albus*—there appears to be only one Sokoto record (according to Elgood *et al.* 1994, Bannerman collected one in 1948). Generally seen individually or in pairs and the high flying flock of 41 birds over tapkin Dan Gao the 20-Jun-02 was exceptional, but may relate to a pre-breeding movement. On the 17-Jul-02 I got the impression that a pair were probably nesting in a baobab NE of Dan Makao—Mai Daji said they showed a preference for nesting in Gao trees, which are certainly the commonest tall tree. Regional breeding data is very scant but perhaps this date (albeit unproven) is early given the record of an incubating female at the end of November at In Gall (cited in Giraudoux). A bird carrying nesting material to a tree east of B&M village (which regrettably I never investigated) on 11-Oct-01, is within the breeding period given by Mai Daji and is perhaps more typical. According to Mai Daji this species was more common before. It is apparently sought after for various uses unknown to Mai Daji, which could be an explanatory factor. **Etymology:** the black *hankaka*.

<i>Corvus albus</i>	Pied Crow					Corbeau Pie				<i>hankaka mai farin gaba</i>			
Omnivore													
Rn	Dari	Rani				Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
1998				1									
2001										1	3		
2002		2	3	1	1	1	4			2	1		

Probably present year round but certainly less common than the preceding corvid, though on three occasions (in April '98 around the well at Zongon Alway, and October & November in B&M) seen in more than single figures, including an impressive 100+ heading north, 28-Oct-02 (the other two occasions involved far fewer birds). B&D refer to northward movements in the rains in the north of its range, but Elgood *et al.* (1973) are more ambivalent, arguing that migration is probable but not proven and making the case that movements may relate to the dispersal of large dry season flocks to breed in the rains. Serle (1943) mentions large evening roosts in several northern Nigerian urban centres and it would be worth checking whether this is the case at Dakoro. Concerning the rainy season breeding of this species my observation of a bird carrying nesting material on the 21-Nov-01 (on the same day I saw about 9 birds heading SW), defies all regionally published data that I am aware of. Enquiries with Mai Daji about local breeding however stalled because, as Mundy & Cook (1977: 72) note, the Pied Crow “rates highly in local beliefs and magic”. Mai Daji stated, much to the chagrin of my educated assistant (who was also a close friend of Mai Daji), that he didn't think it laid eggs, but rather takes those of other birds, and that there are no males or females. Tremearne (1970 [1913]: 39) provides evidence that the former belief at least may be widely held in Hausaland, “it is said that the white-breasted crow hatches her young from stolen hen's eggs”—known parasitism by the Great Spotted Cuckoo adds a peculiar twist to this folklore! As with *C. ruficollis*, some people collect them for reasons

he didn't know—Mundy & Cook (1977) note that Pied Crow parts and eggs were regularly on sale on markets around Sokoto. Apparently more common before, which seems odd given its preference for human propinquity, but perhaps relates to over-collecting and/or a diminution of suitable tall, breeding trees. **Etymology:** *hankaka* the one with the white front.

Sturnidae: Starlings

<i>Lamprotornis chalybaeus</i>		Greater Blue-eared Starling					Choucador à Oreillons Bleus				<i>waiwaya</i>		
Omnivore													
R & MAb?	Dari	Rani				Bazara	Damana				Kaka		Dari
	breeds												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001							2			2	8	2	
2002	1		1			2	5		1	1	3		

I encountered this starling somewhat infrequently, and though my records from January to June are scant, they confirm Mai Daji's year round observations. There is however some evidence in my records to support the idea put forward by Mundy & Cook (and latterly by B&D) that there is a northward movement from the latitudes of Sokoto during the rains. What type of population moves north is difficult to decipher since breeding is known at Sokoto, and according to Mai Daji also at B&M, in the same period. Barlow & Wachter note that in the Gambia this species is both highly mobile and gregarious outside the rains. I certainly saw this species in the highest numbers (between seven and a maximum count of thirteen 05-Nov-02) in the October to December window. Around six on the 06-Jul-02 stands out as and may relate to a concentration around early rains termite eruptions as noted in the Gambia (*ibid*). Mai Daji's statement that this species shows a nesting preference for *adoua* needs to be elaborated as to whether it uses holes or constructs a nest: according to Barlow & Wachter it nests in holes and Mundy & Cook likewise found a nest hole in an acacia, and I would have thought that the *adoua*, given its diameter and hard wood is one of the less likely hole-bearing tree species in the *karkara*. That Mai Daji considered this starling previously more common may relate directly to nest-hole availability and any possible nest preference adaptation. **Etymology:** a connection has been suggested to me between the verb *waiwaya*, meaning to turn the head and the use of the same word to name this starling, but this requires further research.

<i>Lamprotornis caudatus</i>		Long-tailed Glossy Starling					Choucador à Longue Queue				<i>waiwaya mai dogon bindi</i>		
Omnivore													
MAb?	Dari	Rani				Bazara	Damana				Kaka		Dari
	breeds?												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2002						1							

I only saw this distinctive starling once in the *karkara* when a single bird landed in a *gao* beside Tawaye, made a lot of noise then flew off south on the 18-Jun-02. According to Mai Daji it breeds in *gaos* just before the rains (this record was about two weeks after the first rains), but whether this is still the case is not sure since he says he only sees a few nowadays. Mundy & Cook suspected juveniles at Sokoto in June and Bates also suspected breeding in this month in the Combretaceae country near the 14th latitude, east of the Niger river (1934: 696). I also encountered this species in or just north of the Goulbi n'Kaba, a wooded habitat more typical of this species, the 21-Dec-01 (two) and 14-Jun-02, where residency cannot be ruled out. As to the habitat preferences of this species, which are seemingly not up to the mark year-round in B&M, the BoA reports an old observation from Bannerman

that it has a penchant for neem fruits, which might have repercussions for the future should this tree spread out from its village bastions. **Etymology:** “waiwaya, the one with the long tail”.

Lamprotornis pulcher **Chestnut-bellied Starling** Choucador à Ventre Roux *cara*

Omnivore

R	Dari		Rani		Bazara	Damana				Kaka		Dari
					breeds	breeds						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998				1								
2001							1		1	1	9	5
2002	1	4	16	4	1	10	15		2	10	6	

Most regrettably I didn't take much notice of this common species and didn't even deign to record numbers for it, more the shame since I learnt retrospectively that it has a fascinating social life including co-operative breeding (Wilkinson, 1982). Birds live in groups of 9-35 members, which in the breeding season at least maintain ranges that overlap little with other groups (*ibid.*)...territory mapping and population assessment should therefore be relatively straightforward at this time! My April 1998 record refers to Zongon Alway, though I undoubtedly failed to record it elsewhere in Gobir Tudu that year. In Kano, Wilkinson (1983) has shown that it breeds in two distinct periods, before and after the rains, which I can't verify for B&M beyond Mai Daji's observation that it nests before and during the rains. Perhaps, given the species penchant for insects foraged on the ground, a different insect phenology at the higher latitudes of northern Gobir reduces the breeding season to one sole period? Certainly more detailed work would be required to make a comparison with Kano and shed light on the interesting questions of potential breeding stimuli raised by Wilkinson (*ibid.*) that may differ between the two localities. What I can say however is that Mai Daji reported that this starling is among the select group of birds in the *karkara* to have increased in numbers. It apparently has a preference for nesting in *adoua*, *gao* and other bushes, and compared to the two other starlings that have both reportedly decreased, it is tempting to assign significance to its use of constructed nests as opposed to natural cavities. With the historical shift to in-field bushy vegetation, this species has been well positioned to flourish. **Etymology:** possibly onomatopoeic.

Buphagidae: Oxpeckers

Buphagus africanus **Yellow-billed Oxpecker** Piqueboeuf à Bec Jaune *carki*

Insectivore?

MANb?	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			2									
2001			1				1			4	8	1
2002			3	2					2	11	8	

I saw the yellow-billed oxpecker (YBO) on a regular basis since there was a cattle park beside my house holding from evening to morning about 5 milch cows plus their calves. Numbers varied from single birds to a maximum count of 10 on the 11-Oct-02. In B&M I only once saw a YBO 'en brousse' and even then that was just the other side of Tawaye. My 1998 records are from Rouga Jaho and B&M, and the March 2001 record from Howaltchi, but unfortunately I can't recall whether they were village records or not, though I think, bar the B&M one, they were. A village spatial bias suggests a

high visibility that can lend increased confidence to observations by villagers. Mai Daji claimed that the YBO is absent in the cold season, and though I have one record running contrary to this (two 18-Dec) and admittedly few observation days in this period, his remark nonetheless deserves further enquiry. Several authors have indicated local seasonal movements (Morel (1968: 91) for the Ferlo where it is a rainy season visitor, and Barlow & Wachter for Gambia, who do not specify any seasonality). A tentative hypothesis for YBO movements in the cold season can perhaps be drawn from evidence that cattle ticks decline at this time (Gueye *et al.* 1994 and Gueye *et al.* 1987). The YBO, along with its red-billed congener (RBO) that is oddly absent from West Africa—see Koenig, (1997: 101) for more on this still unanswered question—are the world’s only obligate mammal gleaners (Dean & MacDonald, 1981). Feeding exclusively upon what they can glean from their host’s skin, it has until recently been assumed that they must benefit their bearer by removing parasitic ticks. However, recent experimental evidence from Zimbabwe of excluding RBOs from cattle suggests that they do not have much impact on reducing tick loads (Weeks, 2000). Though the author flags up the need to repeat the experiment in zones of different tick densities, he points to strong evidence that the preferred food of oxpeckers may be blood, obtained either directly from wounds or from engorged ticks. The case is still very much out on this (see Samish & Rehacek (1999:169-170) for a review and a reference to the fact that the YBO is more aggressive and feeds more often on wounds) and the time is surely ripe for an ethno-ornithological study of this topic. West Africa would certainly be a useful place to start such work since the YBOs of the region remain understudied in terms of geographical ecology (Koenig, 1997:102) bar Mundy & Cook’s preliminary Sokoto observations (1975). According to Mai Daji it doesn’t breed in the *karkara* (it is a hole-nester and breeding has been observed in Sokoto by Mundy & Cook in July-August). He also reports a decline, which, if accepted, can be extrapolated to a triumvirate of factors: hosts, availability of nest sites and food (Robertson & Jarvis, 2000: 245). Cattle, and to a lesser extent donkey, hosts that are maintained within and around the village have increased with the advent of animal drawn traction starting in the 1970s but increasing more markedly since the mid to late 1990s. Thus the host abundance factor can presumably nowadays be discounted, though the impact of animal death and sales out of the village during severe droughts may episodically be relevant. Bates’s omission of this species is odd and any comparative information from the 1930s would be interesting. Nest-holes have certainly become scarcer and this may inter-lock with climate-induced changes in tick populations (assuming they are a food source!) as has been suggested for the Caprivi Strip in Namibia (*ibid.*) and in northern Senegal where climate-induced vegetation changes are also a factor (Gueye *et al.* 1987). I don’t think there has been any arsenic-based cattle dipping in the region, which elsewhere has been linked to oxpecker declines e.g. Morel, (1968: 144). **Etymology:** possibly onomatopoeic.

Passeridae: Sparrows

Both sparrows were referred to as *buwa*, a term also used with suffixes and prefixes to describe other small, oftentimes brownish, flocking birds (see later). Thus Mai Daji’s observations that the resident *buwa* has increased and breeds in *adoua*, *gao* and *sabara* in the harvest period cannot be ascribed.

<i>Passer griseus</i>	Northern Grey-headed Sparrow						Moineau Gris				<i>buwa</i>	
Omnivore												
R	<i>Dari</i>	<i>Rani</i>		<i>Bazara</i>	<i>Damana</i>			<i>Kaka</i>		<i>Dari</i>		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1	1								
2001							1		1	2	17	5
2002	1	1	10	2	1	11	8		3	11	4	

Regrettably, I infrequently bothered to count this common sparrow that I often met around the village and Tapkin Bagarinnaye. On the 05-Nov-01 I saw a bird carrying feathers to the old *jiga* of Tawaye. Barlow & Wachter report that it is primarily a hole-nester and trunk fissures are common in older specimens of this tree. Perhaps though nest site availability is a limiting factor, though presumably it also makes use of the built village milieu, unlike its open-nesting more rustic congener.

<i>Passer luteus</i>	Sudan Golden Sparrow					Moineau Doré				<i>buwa</i>		
Granivore												
R/MAB?	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			2	1								
2001										1	14	4
2002	1	1	8	1	1	5			1	12	6	

Klein (1991) indicates that population movements and concentrations are linked to the amount and distribution of rainfall the preceding rainy season. During his period of study, birds moved northwards out of his two Sahel sites (Tillabéri & Diffa) with the onset of the rains and, we are led to believe, bred in two consecutive years in the Agadez region (July to October). However, as far as I am aware, he never demonstrated where the birds breeding in Agadez had been the preceding dry season or went afterwards. Uncoordinated records of the absence and presence of the golden sparrow in time and space are a hindrance to our understanding of this species. This situation stands in marked contrast to the Red-billed Quelea, which perhaps shares an equivalent pest status rank in the Sahel. There are grounds to consider this species nomadic, yet (unlike the quelea) it doesn't even get a passing mention in Dean's (2004) treatise on nomadic desert birds. Deductions from my observations and the literature are thus likely to be tenuous...

In 2002, the first rains fell on B&M the night of the 4/5th June. Having been seen daily for the preceding five days, in the next 31 days of variable observation intensity until my departure on the 22nd July (i.e. over a period also including 17 non-birding days), I only saw one bird on the 20th June. They did indeed seem to disappear and I even made a note to that affect, contrasting their departure with the flocking of quelea. From my first day back in the village on the 28th September, I began seeing them again fairly regularly. The first green millet had been harvested the 18th September. Despite my poor attention to their numbers, it is interesting that in November of both years I found it noteworthy to record seeing what stand as my two largest counts (c.20, 05-Nov-01 & c.50, 10-Nov-02). A possible difference between the years is that they may have returned later in 2001, as I only had one October record (the 14th), that year—but a “new observer arrival affect” cannot be discounted.

What can be deduced from the above? Assuming that the rain-provoked some disappearance, where did the birds go and for what reason? The Morels have shown that the Golden sparrow is less restricted to a fixed breeding period than the quelea (Morel & Morel, 1978b). The key factor initiating breeding is the availability of insects to feed their young—but they do cite evidence of young sparrows being fed both insects and grain (*ibid.* p354 and see also Ruelle & Semaille 1982: 28). The start of the rainy season probably has an important role in triggering insect supply and thus sparrow breeding, but site-specifics of the preceding season will cast a spatially and temporally varied shadow, as will the dynamics of the unfolding season. Thus, whilst the sparrow probably habitually nests in the rains, it can also do so in the dry season (Morel & Morel, 1978b: 351) and may even double-brood (Ruelle & Semaille 1982) So, if the B&M golden sparrows left to breed, where did they do so? Habit-wise, the *karkara* would appear to have the attributes suitable for local breeding (scattered thorn bushes and trees). The “disappearance” I observed may have been a simple local withdrawal to breed. As I never observed (or looked) for evidence of breeding I can't comment further. The birds could also have headed further afield to breed. If some (or all) of the dry season left to breed afar, a quick return is perhaps favourable since it is likely to coincide with the millet harvest.

There is some evidence that agriculturally induced habitat changes may have favoured the expansion of the Golden sparrow (Klein, 1991). In this regard it is interesting to note that it was not reported in Maradi by Rousselot, nor in Sokoto by either Dobbs or Mundy & Cook. Sharland & Wilkinson (1981) report that whilst formerly rare in Kano State, it had become common during several dry seasons in the 1970s. Has breeding now occurred in northern Nigeria away from Lake Chad? As a minor counter-foil to the expansion narrative, it should be noted that in B&M, several farmers expressly removed *gao* trees from their field to deter birds. Whether this was an anti-nesting or anti-roosting tactic I don't know. Neither can I deduce what species it was aimed at, but Ruelle & Semaille (1982) do note that the Golden sparrow nested in higher densities in this tree in Senegal.

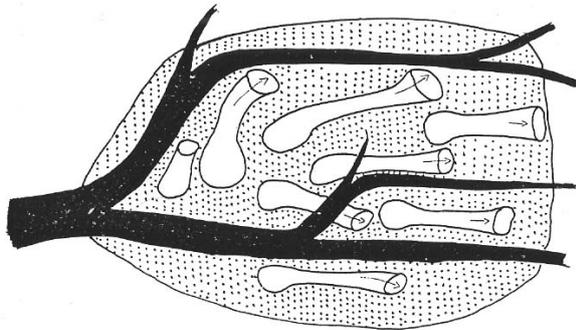
Ploceidea: Weavers

Bubalornis albirostris **White-billed Buffalo Weaver** Alecto à Bec Blanc *caḵwoiḵwoiwa*

Omnivore

R	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							3		1	3	17	5
2002	1	2	13	2	3	19	17		3	12	8	

From the outside, the bill-work of the Buffalo weaver gives the impression that it is the crudest and most functional nest architect of the colonial *Ploceidea* found in Gobir. Yet its sprawling, unshapely edifices that are such a pronounced feature of the avian landscape in semi-arid West Africa are a mass of territorial divisions much better understood from the inside. The studies of Crook (1958) in northern Senegal and southern Mauritania showed that each messy nodule of branches, which are sometimes part of a contiguous structure, is the 'lodge' of a polygamous male containing three to six nests of his harem of females. His diagram reproduced here (source: *ibid* p170) shows the structure of a lodge seen from underneath with the supporting branches in black and the mass of thorny branches stippled.



a lodge seen from underneath with the supporting branches in black and the mass of thorny branches stippled.

In B&M, there was a colony in the fallen *gao* on Tawaye as well as at the following wetlands: Bagarinnaye, Zure (?), and Tarago (?), but this is not an exhaustive list. Though the location of colonies in wetlands at B&M may be because of the distribution of available acacias, whether the colonies within the village of Guidan Dodo (tree species not noted) represent a lack of nest

options, or increased competition for nest sites in the surrounding countryside is not known. Beaver (1993) cites several authors who suspect males use the same colonies year after year. Crook (1958) reports that feeding in flocks occurs in the neighbourhood of the colony, but individuals from different colonies may be present in the same flock, and he found no evidence of group or colonial territoriality. If all the colonies in B&M were to be mapped, a colour ringing study could reveal much about the geography of population inter-change.

My records conform to Mai Daji's observation that this species is resident year round, but I am not in a position to comment from personal observation on the *bazara* breeding period he gives. However, colonies do seem to have sudden bursts of activity (for example, I made a note of a surge on the 31-Dec-01 at the Tawaye colony), but these are no more than bouts of nest building and material stealing and do not indicate actual breeding. In Sokoto, Dobbs reported that nest activity was mostly recorded between June and October and Mundy & Cook note that juveniles begin to appear in August. Morel (1968), who records nesting in August to October in the Ferlo, counts this species among those habitual granivores that time their breeding to coincide with the period of insect abundance upon which they nourish their young.

Mai Daji reports that the *caḵwoiḵwoiwa* has become more common. It is interesting to note that most peculiarly for such a brazen species, it was not recorded by either of the two resident colonial observers in the region (Rousselot and Francis Nicolas) though Bates found colonies in Tahoua and further north at Tazza. Has the spread of cultivation across the region been favourable to this species? It is has been seen to eat millet, sorghum and rice in Senegal, but is not considered a major pest (Manikowski, 1984). As an important consumer of *Boscia senegalensis* fruits, particularly in the July to September period, (Tréca & Tamba, 1997) its population-landscape interactions may be more multi-dimensional. **Max Count:** c. 50 birds flying out of a millet field near Tapkin Bagarinnaye 31-Oct-02.

Sporopipes frontalis **Speckle-fronted Weaver** Sporopipe Quadrillé *marai kin buwa*

Granivore

MAB&R?	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			1	2								
2001										3	6	4
2002			4	1	1	1	4		2		1	

With its penchant for hopping around on open patches of *tsawana*, this curious weaver is something of an oddity among the Gobir Ploceidae. Its movements are also something of a mystery. Rousselot claimed it was principally a wet season visitor to Maradi region and Mai Daji was also of the same opinion for B&M. My records are however too ambiguous, but birds seen carrying nesting material on 19-Jul-02, suggests that breeding occurs in the rains rather than the *bazara*—an observation supported by Mundy & Cook. Bates was of the opinion they nest in the autumn and the BoA mentions a November record for Zinder whereas Sharland & Wilkinson (1981) report that eggs were found in early April south of Kano, where they considered it resident. Mai Daji reported that the *marai kin buwa* was formerly more common, but if this is the long-term case rather than a fluctuation, reasons for this don't easily come to mind. **Max Count:** 12 on the 14-Mar-02.

WEAVER spp. *marai*

	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1				3	2
2002		2	9	2							3	

Only two species of true weaverbirds (Ploceinae) were identified in Gobir, *Ploceus velatus* and *P. cucullatus* (see below) but a very important temporal qualification is needed: between November and April, my ability to identify to species level was severely constrained as males were out of breeding plumage. In fact, throughout the year positive identification was more often dependent on sighting male birds, which is luckily quite easy given their colonial habit. However, the more important point is that my unidentified records are relevant and these are shown above. Mai Daji used the name *marai* for both these weavers and was of the opinion that they are present only in the *damana* and *kaka*, which relates to one of the keys question that these unidentified records raise: which species, if either, is the rainy season migrant? He also said that that *marai* were more common before, but weaver numbers are presumably prone to fluctuation in arid climes.

Ploceus velatus **African Masked Weaver** Tisserin à Tête Rousse *marai*

Granivore

MAB+R?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1		1	1	1	
2002					1	8	8		1	1	1	

On the grounds of distribution *P. velatus* would appear to have the greater proclivity for the arid zone, as it is resident in the Aïr where *P. cucullatus* is absent. Mundy & Cook report it as widespread from June to October around Sokoto, but admit they couldn't identify it outside the breeding season. My window of observations, marked at the beginning and end by the observation of males in breeding

plumage (Earliest: 31-May-02, Latest: 10-Nov-01) is perhaps slightly larger than the Sokoto window. Mundy & Cook's note that it generally seems to be a solitary nester, with one male attracting 1 to 4 females appears to be at odds with my recollections of the colonies at Tapkin Bagarinnaye: perhaps the limited number of potential nest sites encourages more communal nesting? If males experience increased competition for nest sites and females, are there selective advantages, particularly if dry season nomadism is the norm, for the early attainment of breeding plumage? Interestingly, Bates reports shooting a bird at Tahoua in April, that already showed signs of its yellow plumage. An investigation of the correlations (if any) between the phenology of moult into breeding plumage, nesting habitat quality and latitude would certainly be interesting. In support of this hypothesis, the BoA states, without reference, that birds in Sudan acquire their breeding plumage as they migrate north in the rains. In the Senegal valley, Morel & Morel (1962: 262) note that this species frequently weaves with *Pancratium trianthum* (but not Gramineae—but Collias & Collias (1970: 476) note they use short grasses) which grows as soon as the first rains fall and thus aids early nesting.

<i>Ploceus cucullatus</i>	Village Weaver												Tisserin Gendarme	<i>marai</i>
Granivore														
MAB+R?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		
2001										2				
2002			1	1	2	13	13		1					

B&M is very much towards the northern limits of the village weaver's distribution in Niger—Giraudoux *et al.* only cite one record from further north (an old record from Bates in Tahoua). From observations in northern Senegal, Collias & Collias (1970: 458) suggest that at the northern edge of its range, the village weaver is water dependent for drinking and bathing, for green vegetation for nest materials and for insect life to feed its nestlings. According to the BoA, this weaver is largely sedentary, but in very dry areas, arrives seasonally when there is adequate rainfall. It is perplexing therefore that my pre-rains records (Earliest: 24-Mar-02), chime with the April arrival time reported for Zinder in Giraudoux *et al.* and by Rousselot, for the Maradi-Tanout region.

I would like to suggest two entwined lines of enquiry to try and explain these early records. Firstly, unless the water dependence for daily drinking and bathing has been overly exaggerated (it is repeated in BoA), where do birds in northern Gobir in the late dry season obtain water? Could they be making use of domestic water resources such as watering troughs, run-off bathing water or uncovered water-jars? I have no observations to confirm this, but then again I wasn't looking.

Secondly, there is the question of the supply of green nest material. In northern Senegal, Collias & Collias (1970) noted that the village weaver nests near water but not villages, whereas in moister country to the south they often nest in villages away from water. In B&M, I most frequently saw this weaver in the village neem trees during my work rounds, but also noted a small colony on the 10-Oct-01 (incidentally my latest date) at Tapkin Dan Mallam, some 250m south of the village (i.e. within transport distance of neem). In Sokoto, Mundy & Cook found it nesting in both wetland and village habitats. Crook (1960:5) makes the following pertinent observation:

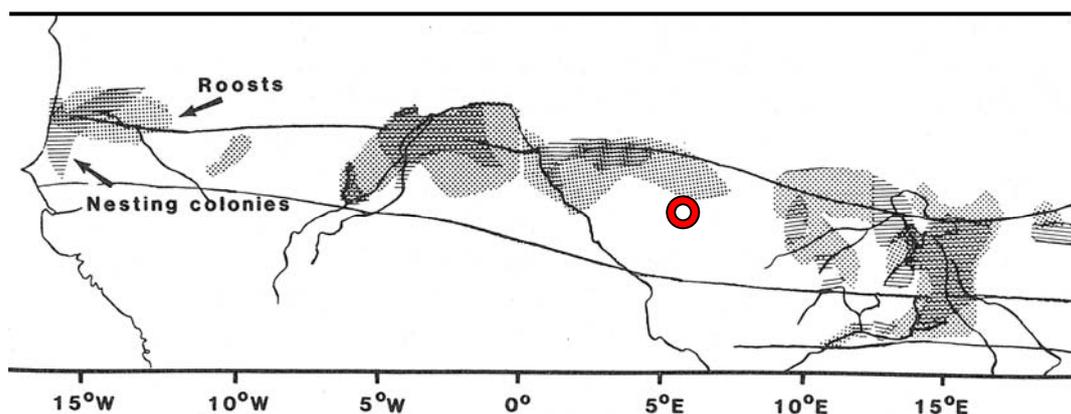
"The Village Weaver shows no variation in nest form throughout its immense range but the materials used differ according to the local vegetation. At one colony the outer layer was formed from the narrow wiry rachises of the leaves of the Nim tree *Azadirachta indica*, from which the leaflets had been plucked before stitching occurred. Grass stems were used in addition, being twined and knotted around the less pliable rachises so binding the structure together."

Collias & Collias have also stated that in arid country, *P. vitellinus* (= *P. velatus*) uses grasses that are too short for *P. cucullatus* (1970: 476). Taken together, the implication is that the availability of specific nest materials can affect the spatial and temporal repartition of suitable nesting habits for these two species. Neem is one of the very few evergreen trees in the northern Gobir landscape and is, as yet, only infrequently found outside villages. Whether it has conferred some early nesting advantage to village weavers depends, presumably, on when any other necessary nesting material, if any, is available. Detailed examination of both nest material and time of construction is required to shed light on any possible entwinement between the neem and the village weaver. It also remains to be seen

whether the neem can provide nesting material for *velatus*, as despite my occasional records of this weaver within my concession at B&M, (which probably relates to the proximity of Tapkin Tawaye), I suspect the pre-eminent user is *cucullatus* and that *velatus* is the non-exclusive wetland weaver in these latitudes.

<i>Quelea quelea</i>		Red-billed Quelea				Travailleur à Bec Rouge				<i>d'an buwa</i>		
Granivore												
MAb?	Dari		Rani		Bazara	Damana			Kaka	Dari		
						breeds						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							3			1	3	2
2002							7		1	1		

The quelea is probably the best-studied African passerine. The Organisation Commune de Lutte Antiaviaire (OCLA) and the Organisation Commune de Lutte Antiacridienne et de Lutte Antiaviaire (OCLALAC) ran a research component from Zinder (Manikowski *et al.* 1989). They may have collected data concerning Gobir, which might be incorporated in the map reproduced below. In this, B&M (approximate location circled in red) appears near the roosting range of breeding colonies fanning out from the upper reaches of the Dallol Bosso into the Asawar.



Distribution of quelea roosts (dotted areas), and nesting colonies (line areas) in western Africa.
 (Source Fig 12.1 p. 150, Manikowski *et al.* 1989)

The map does not show Sokoto quelea reports from two different time periods. Dobbs, reporting on observations from 1945-54, gives its status as occasional but notes the disappearance of large flocks of the 'dioc'h' from the sugar cane plantation roost from approximately the end of July until November. She assumed that they spent the breeding season "...among the dense reed-beds on the banks of the swollen rivers, particularly the Sokoto River, where thousands of weavers of all sorts congregated." Mundy & Cook, (1970-71) found no evidence of breeding, but support for an exodus in July and also in September and October. Whilst these two data should be seen as both having different historical contexts, the B&M data 48 and 31 years later indicate an arrival in the July-December period, which potentially support the idea of dispersion northwards from Sokoto into Gobir in the rains. A health warning for this data is that the drabness of the quelea outside the breeding period renders it difficult to identify among the other "sparrowy" weavers (Bates, 1934: 704, and see also Elliott, 2006: 557).

Elliott (2006) in a reflective essay on quelea at the continental scale, indicates that droughts may have had an important effect in controlling populations which may nonetheless be expanding into new areas, i.e. a distributional change not associated with overall population increase. He argues that the expansion of the surface area affected by man-altered agro-ecosystems has facilitated this spread. It would be fascinating to exam this hypothesis at the scale of Sokoto & Gobir, especially given the hydrological changes in the region. Though known for its great itinerancy, breeding season requirements imposes some key factors influencing its potential distribution. Quelea, at least away from exogenous water sources, are tied to the rains for breeding, as they require fresh grass for nest

construction and insects to feed their young (Morel & Morel, 1978b: 353). It is also seems that drinking water availability is a daily necessity (Erickson, 1989: 232) but birds can range 30 km from sources (Elliott, 2006: 559). The *tapkuna* of Gobir may long have offered quelea their wild rice, nesting material and water.

Though I cannot ascertain the breeding status of this species in the *karkara* it is worth bearing in mind that despite its reputation for vast colonies, it does nest at lower densities when conditions dictate (see Ward (1971: 275) though I have yet to find figures for what is meant be low density). The maximum numbers I saw of this species are certainly very low, being only flocks of about 30 birds on two occasions (at Makyera 30-Jul-01 and B&M 30-Sep-02). I am slightly cautious about the validity of Mai Daji's information since he had earlier used the same name for Dunn's lark (is the point in common between the two bill prominence?). However, in favour of the information shown above being correctly applied to the species at hand (see Dunn's Lark to compare the different information given for that species), there is rough agreement with my records and the period he said it was present. Furthermore, he reported that in breeds in *adoua*, which is a known nesting tree offering good protection (Morel & Morel, 1978b). Though Mai Daji said this *dan buwa* had increased, this needs to be handled with care since numbers are known to fluctuate in localities from year to year.

<i>Euplectes afer</i>	Yellow-crowned Bishop					Euplecte Vorabé				<i>marai mai jan kai</i>			
Granivore													
MAB	Dari	Rani				Bazara	Damana				Kaka		Dari
	breeds												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001							3		1		1		
2002							7		2	5			

Though my research with Mai Daji strangely resulted in this species sharing the same Hausa name as its congener, it is clear that the name at least refers to *E.afre*. **Etymology:** the *marai* of the wild rice. BoA reports that in the waterlogged grasses that it so closely associates with, it nests in small colonies where polygamous males defend territories containing 2-3 nests in a c. 28 m diameter space. Though all the wetlands of B&M might not be suited it to it, it would be curious to know if any are unsuitable not because of their vegetation but because they are too isolated for their colonial habits, yet theoretically adequate for one territory.

Though known to be both regular seasonal migrants and nomadic (BoA), the former is suspected to be more the case in northern Gobir given the availability of suitable habitat, though it is not known what would happen if birds were to arrive to find inadequate wetland vegetation: would they move on and not return for several subsequent years? The stalling of arrival to July more often than not guarantees that suitable vegetation will be there on arrival. However, there is presumably a limit to which they can delay breeding since their habitat becomes increasingly disturbed in October and November as the last waterholes are sought out by men and their herds in a bid to stave off the tiring work of pulling water as long as possible. **Earliest Date:** 04-Jul-02, **Latest Date:** 08-Nov-01.

As to where these bishops go in the dry season, Mundy & Cook's note that they are found in their thousands in the Sokoto ricefields during the non-breeding season, is probably a good indication. Given the increase in irrigation projects in the Sokoto area since then, perhaps this habitat has expanded? Mai Daji thought however that this bird had declined and when asked about its presence before there was much *jan kai* he said that it was found in other herbs and grasses.

<i>Euplectes franciscanus</i>	Northern Red Bishop	Euplecte Franciscain										[<i>marai mai jan kai</i>]
Granivore												
MAB?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							2			1		
2002							2					

The scantiness of my observations of this bishop may partly be explained by my lack of observation in the heart of the rainy season—and incidentally both July 2001 records are from outside the *karkara* though no more than 17km away. For Sokoto, where Dobbs found them year round, Mundy & Cook noted that unlike *E. afer* whose breeding is tied to water, this bishop’s breeding is tied to the onset of rainfall, and males attain their vivid breeding plumage a full month beforehand, i.e. from mid-June. Though I have no records in June and my **Earliest Date** (19-Jul-02) is almost a month later this delay partly mirrors the pattern recorded by Jones & Ward (1977) at Molai (near Maidugari) where they were seen to migrate south at the beginning of the rains, remain absent for a month or more before returning to breed as conditions become suitable towards the middle of the rains. The same observers recorded substantial pre-migratory fat levels capable of fuelling a journey of up to 600km, which is remarkable given the presumed rarity of grains at this time of year, though local conditions may be more favourable at Molai. In the far north of their range, they are known to be breeding season visitors (BoA). Giraudoux *et al.* do not list any records further north than their Zone 3 but they overlooked (or discounted?) Bates’s June record near the Tazza wells (in their Zone 5) and would seem to be the most northern record in Niger. I have no breeding evidence for the *karkara* and it is interesting to note that I have only one harvest time record (**Latest Date:** 02-Oct-01). Breeding can nonetheless be expected in terms of suitable habitat, as these bishops are closely associated with tall crops such as millet and sorghum in which they tend to nest 1-2m above the ground (BoA). Indeed they have been reported to nest in densities about ten times higher in millet than wild grasses (*ibid.*) If their nests are distinctive, a good set of photographs shown to farmers at any time of year could quickly ascertain their breeding status in the *karkara* and employed more widely, could be used to map their breeding limits in the northern millet zone. This bishops close association with these crops begs the question as to whether their migrations to the latitudes of northern Gobir is a direct consequence of the northern expansion of agriculture? Interestingly Bates mused over the possibility that some birds wander to the edge of the desert in summer and thereby miss their breeding time: these days at Tazza, conditions for breeding may be more favourable.

Estrildidae: Estrildid Finches

<i>Pytilia melba</i>	Green-winged Pytilia										Beaumarquet Melba		<i>ja kowa</i>
Granivore													
R	<i>Dari</i>	<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>	
	breeds												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2001							2			1	3	2	
2002	1		6	1	1	4	9			1	2		

My records concur with Mai Daji’s observations that this pytilia is resident, which is interesting because the BoA states that it “needs to drink regularly and availability of surface water clearly effects local distribution”. Morel & Morel (1962: 260) note that it in the Senegal valley this pytilia can skip water and also suggest (p 257) that one means that birds in general are able to do this is through the fruits of various trees and shrubs. I regularly encountered this species in the *anza* round the back of my house. Could this abundant *karkara* shrub be a reason why this normally thirsty bird can survive when there is no surface water available? Though its bill structure rules it out as a consumer of *anza* fruits perhaps a few pecks suffice? Elgood et al (1973) report that ringing and observation at

Malamfatori showed it to be a sparsely distributed resident whose numbers increase greatly from mid-September, the beginning of the breeding season. Though my observations don't indicate any comparable influx, the possibility of some in-movement of birds nevertheless remains a possibility. The breeding season indicated by Mai Daji would appear to start later than at Malamfatori, but dates given in the BoA indicates that it has quite an extended breeding season across the Sahel and inferences from its nest host, *Vidua orientalis* (see later), suggest that it may also be more extended in the *karkara*. Mai Daji's note that it prefers nesting in *gao* seemed odd to me for a bird that appears to have a preference for foraging close to the ground as this tree is often (but not always) long boled in the *karkara*. Sheul (1938) however recorded a nest 1.6m above the ground at Kano and up to 3.5m has been recorded in southern Africa (www.biodiversityexplorer.org). **Etymology:** the name literally means 'pulls everyone' presumably because of its flashy colours that pull attention towards it.

<i>Lagonosticta senegala</i>	Red-Billed Firefinch										Amarante du Sénégal	<i>el jakuwa</i>
Granivore												
RR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002										X		

I saw the "animated plum" to borrow Moreau's delightful name for this species (1942: 257) most days during my sojourn in Guidan Dodo, (19 to 26-Oct-02) 27 km to the east of B&M where I never once saw it. This species is a well-known commensal of man but there was nothing to distinguish the village habitats between these two locations. Interestingly though, Mai Daji once said to me that a pair had formerly bred in Maijémo. The available literature on the dispersal of this species is ambivalent. On the one hand Marie- Yvonne Morel's extensive studies at Richard Toll over 10 years in which 7,759 birds were ringed found a maximum distance travelled of 1.1km which led her to state that these 'mauvais voliers': "présente la particularité de nicher dans les lieux mêmes où il passe la reste de sa vie" Morel (1966: 435). On the other hand, the studies of Jones & Ward (1977) at Molai recorded a rainy season disappearance, which they assumed was northwards, and used evidence of clear lipid gain in the early rains as a sign of pre-migratory fattening. More convincingly, in a wetter (830 mm p.a.), but nonetheless markedly seasonal area of Zambia, Payne (1980) provides ringing data to show clear, albeit non-directional local dispersal up to 14km. Some of his ringed birds moved regularly each year between a particular waterhole and a breeding site, whilst others didn't. Overall he calculates that genetically effective dispersal of young from the site of birth to the site of the first breeding season was up to 6.8 km. Perhaps then there is chance that species could be seen again within the *karkara*. **Etymology:** see the notes for Cordon Bleu below.

WAXBILL spp

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001											2	

On the 28-Nov-01 I got very brief views of a waxbill at Tawaye and then two possibles the next day at the same location. The most likely candidate is the Black-rumped Waxbill *Estrilida troglodytes*. This has been recorded as nearby as between Maradi and Konni by FR in November 1979 (Giraudoux et al), even more imprecisely somewhere in Rousselot's périples in the Maradi-Tanout region, but more precisely in Sokoto by Mundy & Cook. The latter observers note that it breeds in the rains but seems to move around, as it is not resident in any one locality continuously. The BoA sums it up as both a resident and wanderer, noting that in the Sahel zone of Chad, Salvan (1968) recorded it as a wet season breeding visitor. Potentially it has this status in northern Gobir. Intriguingly if it does, it would be natural to look out for its parasite, the Pin-tailed whydah, *Vidua macroura*. Though this *vidua* has been recorded in the general region by Rousselot and more specifically in the south by others (see Giraudoux *et al*), the BoA notes that it is absent in some areas where its hosts are common, but also states that is a suspected seasonal migrant in to some drier areas during the rains.

Uraeginthus bengalus **Red-cheeked Cordonbleu** Cordonbleu à Joues Rouges *el jakuwa*

Granivore

R?	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2002										1			

This unmistakable species appears rare in the northern latitudes of its range but its northernmost limit is still a good distance beyond the *karkara*—I encountered one at Akadaney and there are several other Zone 5 records. What is intriguing about my only observation of a single bird at Tapkin Bagarinnaye on the 10-Oct is that the species is widely considered to be resident and fond of cultivation and human habitat (BoA) and the locality was one I frequently visited. The species is not known to be particularly confiding, so how I overlooked it remains a mystery—but perhaps the timings of my visits failed to coincide with its periods of activity. Mai Daji’s recognition of its song suggests however that it is has a greater presence than my sole record suggests, but his information that it is absent between December and April is difficult to support. **Etymology:** tentatively the name is a derivative of *ja kowa* which was given for pytilia due to its attention-pulling colours. Interestingly *El jakuwa* was also given by Mai Daji for the firefinch, which is a similar sized, bright coloured ground hopping bird.

Lonchura cantans **African Silverbill** Capucin Bec-d’argent *ciriri*

Granivore

R	<i>Dari</i>		<i>Rani</i>			<i>Bazara</i>	<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
						breeds							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
1998				2									
2001										1	18	3	
2002	1	4	17	4	2	8	15		3	5	5		

Though I unfortunately neglected to note numbers of this frequently encountered ground-feeding estrildid, I did on one occasion note it at a nest in a bush near Tapkin Tawaye (02-Oct-01). The hanging nest with an upward facing round-necked entrance fits the nest description for this species given by Bates from Taberreshat well on the 23rd September 1931. Though this is a different breeding period to that noted by Mai Daji, it may be the case that, as in northern Senegal (Morel & Morel, 1962), it has an extended breeding period from September to March, though probably not into May (Bates shot birds at Tahoua in May which were not breeding). The interesting point about my nesting observation is not the date, but rather that the bird in question had presumably made its own nest, or at least had not used one made by another species, which is a noted habit of this species in parts of its range (e.g. van Someren & van Someren, 1945 for Kenya). At Sokoto, Mundy & Cook recorded this species nesting in 37 old weavers’ nests (*Ploceus cucullatus*, *P. velatus* & *P. heuglini* and once saw it looking in a deserted nest of *Sporopipes frontalis*) but only twice saw it in self-constructed nests. Perhaps certain localised conditions explain my observation (unless it was the exception). The date is still probably early in the breeding season and weaver nests are only just being vacated at the end of September. Also the site is close to the village where Mai Daji reported it nesting in the thatch of granary roofs (as noted elsewhere—see van Someren & van Someren (1945) who recorded this species using feathers to line their repossessed nests, which concurs with Mai Daji’s observation of them using chicken feathers and Bates who noted the use of bustard feathers). Perhaps there was too much nest space competition in the village at the time or perhaps more likely the disturbance around granaries at harvest was too great. Though I found the silverbill to be among the birds I most frequently encountered, probably as a result of a village bias to my recording, Mai Daji said it used to be more common, but for a species known to be a wide-ranging wanderer/partial migrant (BoA), fluctuations are to be expected.

<i>Amadina fasciata</i>	Cut-throat				Amandine Cou-couqué					<i>tsuyen jada buwa</i>		
Granivore												
R & MA?	Dari		Rani		Bazara	Damana				Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998			2									
2001							2				12	4
2002			4			4	7		2	8	4	

The conspicuous cut-throat is the second most abundant Estrildid in the *karkara* after the preceding species (though the pytelia runs in close in number of bird days), but its status is unclear. Though my March records would seem to cast doubts on Mai Daji’s observation period, the fact that I didn’t see it so often in this period perhaps suggests a mixed resident and migrant population. As there is evidence of southward dry season movements in West Africa in general (B&D, BoA) and it is considered a dry season migrant in Kano (Sharland & Wilkinson, 1981) and would seem to have been more numerous in this period in Sokoto according to Mundy & Cook’s data, this would seem a reasonable hypothesis. Though I generally failed to record numbers—though recall frequently seeing it in pairs— **Max Count:** c20 02-Nov-02, and c12 26-Nov-02, which could potentially relate to these movements.

If part of the cut-throat population is resident, it is curious that no Niger breeding records for such a conspicuous bird are given in Giraudoux et al (though they appear to have discounted Bates’s female ‘about to lay’ that he shot at Taberreshat well in September) and Mundy & Cook likewise recorded no breeding evidence in Sokoto. Sharland’s observation of immature birds in the dry season at Kano and Stickley’s (1966) breeding record in January at Zaria imply, all else being equal, that breeding has been more noticeable in the south. Like the silverbill, this species is also known to expropriate nests of other species, particularly weavers, and Cunningham-van Someren (1971) goes as far as to say it may well not built its own nests, at least in Kenya, Ethiopia and the Sudan, where instead it usurps birds like *Plocues velatus* when they have almost completed nest-building. Stickley’s Zaria pair were using an artificial cavity that had previously been used by other species. Perhaps the rarity of nest building in this species coupled to a preference for the commotion of weaver colonies has hitherto obscured its breeding status in Niger.

The seed preferences of this and the preceding species would be very interesting to know. Schluter (1988) has noted the relatively specialised diets of finches in Kenya and scores similarly the Cut-throat and the Silverbill in the mid-range in terms of diet breadth specialisation. Both these species occupy the ground-feeding niche but their diet overlap is unknown though Schluter generally found it to be low among all his finch species but does not provide specific details. If we assume there is a dietary distinction, it is interesting to note that the Cut-throat has not been recorded in the Aïr despite being the larger, longer-winged and perhaps more mobile of the two. According to the maps in B&D, it would also appear to extend slightly less south as Stickley (1966) suggests that it may have been a recent colonist to Zaria in 1966, it may have a variable southern range limit. High inter-annual variation in the availability of preferred seeds could be a factor. Interestingly Mai Daji considered that it was previously more common. **Etymology:** tsuye means testicle, but the name is otherwise unclear.

Vidua: Indigobirds & Whydahs

<i>Vidua chalybeata</i>		Village Indigobird					Combassou du Sénégal					
Granivore												
RR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002										1		

As a species-specific brood parasite of *Lagonosticta senegala* this vidua is found in close association with its host, and was thus only recorded at Guidan Dodo. Ringing studies have shown no long-term population at the local level (Payne 1977: 16 and refs therein), which implies some degree of dispersal capacity. Host-parasite population interactions, dynamics and biogeography are likely to be fascinating in the northern Gobir setting where host populations appear scattered among occasional villages: how likely is it that an errant pair of firefinches could disperse to a new village and breed un-parasitised? Marie-Yvonne Morel's studies off host-parasite interactions in Richard Toll, actually found little effect of parasitism on host young survival (Morel, 1973, cited in Payne, 1977: 5-6) and interestingly the parasites do not usually remove host eggs. As the village indigobird tends to have traditional call-sites often held by a male through a breeding season and in successive years (*ibid.*) it is unlikely to have escaped the attention of villagers, so I presume it has a local name.

<i>Vidua orientalis</i>		Sahel Paradise Whydah					Veuve à Collier d'Or			<i>dan buwa zagalito</i>		
Granivore*												
R	Dari		Rani			Bazara	Damana			Kaka		Dari
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001							1		1	4	11	4
2002	1	1	3			1	8		2	6	7	

As the Sahel paradise-whydah only parasitises the green-winged pytilia—reports of other species are considered questionable (Lowther, 2010b)—it is interesting to ask whether the more conspicuous parasite can tell us anything about its more retiring host. Male whydahs are only distinguishable when they have their long central tail feathers in breeding plumage and though I didn't routinely note the sex of birds I saw, the months in which I noted male birds are underlined in the table above. Mundy & Cook give the period of observations of breeding males at Sokoto from July to early December and Sharland & Wilkinson give June to February for Kano. It can perhaps be deduced from this that whydahs in breeding plumage are unlikely in April, May and early June (my sole observation being at the end of the month). To correlate this period with the pytilia breeding period however requires information about the moulting patterns of the males and the relationships between breeding plumage duration, sexual activity and egg-laying (they are however known to be polygamous—B&D). Interestingly though Mai Daji indicated a *rani* breeding period for the pytilia and Morel (1968: 157) indicates that this Estrildid (and others) have extended breeding periods comparable to the mid July to early April period of *Lagonosticta senegala*. Though my observations suggest that this species is found year round—and if Mai Daji's period of absence relates to breeding plumage males only and the *rani* months are possibly later—migration through of other populations that may move north with the rains cannot be discounted. Mai Daji said that it was formerly more common (he said the same about its host). **Etymology:** as a *dan buwa* composite, a name used variably for weavers, quelea and sparrows suggests that the *zagalito* part has to refer to something distinctive about it: the male's tail and/or display flight?

Emberizidae: Buntings

<i>Emberiza tahapisi</i>	Cinnamon-breasted Rock Bunting				Bruant Cannelle				<i>el sala</i>						
Omnivore															
MAnb?	<i>Dari</i>		<i>Rani</i>				<i>Bazara</i>		<i>Damana</i>				<i>Kaka</i>		<i>Dari</i>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec			
2002							10		2	3					

The timing of my first observation (**Earliest Date:** 04-Jul-02) of this rather charming bunting was I believe linked to the progression of the unfolding rainy season. The first rains had fallen 30 days previously and there were an additional seven intervening rainfall events of various intensity and extent. In subsequent days I saw these birds almost daily in small groups (**Max Count:** 5, 05-Jul-02, but often seen in groups of about 4). What resources had attracted them? Even the Poaceae with the shortest life cycle in Niger (about 68 days), some of which are found in the *karkara*, would still be two months or more away from seed setting (Poilecot, 1999: 64). With the general vegetative flush, the soil seed supply is rapidly transforming into seedlings and emerging invertebrates presumably assume an important dietary role. Without observations in August and early September I do not know whether these buntings stay around. Mai Daji's observations indicate that they might, but he had not noted nesting, which is interesting as Gartshore indicates that at Zaria it was a conspicuous breeding bird (1975) nesting on the ground (Gartshore, 1978) though elsewhere it may use trees. If however any do nest, their arrival dates would suggest that they would have the two months required to rear a brood (Gartshore, 1975), which would fledge at the onset of the new seed crop. However, Gartshore (ibid.) notes that in Zaria most nests were constructed after the rains, though at Sokoto, where it was present year round, Mundy & Cook noted juveniles (with red bills) in August—according to Gartshore's ageing technique, recently fledged birds (within about four weeks) had solid grey bills, whereas older juveniles develop flesh coloured lower mandibles. Bates thought his June birds taken in the Tahoua region were first-year males (with the stripes less distinct). Given that the **Latest Date:** 13-Oct-02 was followed by regular recording, suggests that a marked departure occurs at this time. Elgood et al (1973) report that this bunting was present at Malamfatori from June to October, with a strong autumn passage in September and the first week of October, which is a similar pattern to my records. Mai Daji's *rani* observations require confirmation, but as it may be resident in parts of Giraudoux's Zone 3, year round, as it seems to have been in Sokoto, they are a possibility (see also the unidentified bunting records below). Mai Daji said that *el sala* is now more common is interesting but difficult to assess.

BUNTING spp.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2001										1		
2002			1									

On two occasions I had inadequate views of single buntings around the hand-dug wells at Tawaye near the village that I considered either a female or juvenile *Emberiza tahapisi* or *E. striolata*. The one in October fits the date pattern with my records of the former, but the one in March is more unusual. The nearest *E. striolata* I am aware of is an old record given in Giraudoux et al of a male captured at Zinder, 2nd February 1920, where it was considered local.

Emberiza flaviventris

African Golden-breasted Bunting

Bruant à Poitrine Dorée

Omnivore*

RR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1998				1								
2001							1					

On the 21-Apr-97 I had good views of this showy bunting in the well-wooded Tarka valley about 16 km north of the *karkara*. This is seemingly the most northern record in Niger, as well as new for Zone 3 according to Giraudoux et al. On a brief visit there on 28-07-01, I again saw a single bird.

On two other occasions in 2001, I retrospectively have doubts about my observations of this species within and around the *karkara* (one at Gachatchi 30-Jul and two in the *karkara* 02-Oct) so have discounted these records. The main reasons for my doubts are that I struggle to recall the observations (both were at hectic times) and oddly, I did not come across it again in all my subsequent hours of observation. Having had definite observations in a more wooded habitat, I suspect that the *karkara* may not be suitable, though it is interesting that the BoA refers to its Sokoto habitat (thin open bushland) as different from elsewhere, where it is woodier. At Sokoto, Mundy & Cook considered them resident (with juveniles seen in August) and though this seems to be the general impression (e.g. B&D), Hanmer (1995) has produced evidence of movements in droughts to more favourable areas in Zimbabwe. Though the rains were considered late in 2001, I am not convinced that conditions were distinctly different in 2002 when I failed to see this species but curiously did see *Emberiza tahapisi* regularly.

Appendix A: Species Summary Lists

Resident Species

(n=50 or 51)

Whether three species have this status remains unclear (marked with a question mark). Species marked * (n=8) are thought to have nomadic tendencies. In the species marked with two asterisks (n=4) their residential status may not apply to all birds encountered as some of the population may be locally migratory. In one species (marked ***) this problem is compounded further by the possibility that a Palearctic subspecies may also be present at times. Species underlined (n=7) were found to have restricted distributions in northern Gobir and were not found in the B&M karkara. All these species can be assumed to breed.

African Swallow-tailed Kite*	<i>Chelictinia riocourii</i>
Gabar Goshawk?	<i>Micronisus gabar</i>
Francolin spp	<i>F.bicalcaratus</i> and/or <i>F. clappertoni</i>
Quail-plover	<i>Ortyxelos meiffrenii</i>
Black-headed Lapwing	<i>Vanellus tectus</i>
Namaqua Dove**	<i>Oena capensis</i>
Speckled Pigeon	<i>Columba guinea</i>
Laughing Dove	<i>Streptopelia senegalensis</i>
<u>Ring-necked Parakeet</u>	<u><i>Psittacula krameri</i></u>
Senegal Coucal	<i>Centropus senegalensis</i>
Barn Owl	<i>Tyto alba</i>
White-faced Owl	<i>Ptilopsis leucotis</i>
Spotted Eagle Owl	<i>Bubo africanus</i>
<u>African Palm Swift</u>	<u><i>Cypsiurus parvus</i></u>
Little Swift*	<i>Apus affinis</i>
Abyssinian Roller	<i>Coracias abyssinica</i>
<u>Green Wood-Hoopoe</u>	<u><i>Phoeniculus purpureus</i></u>
Red-billed Hornbill*	<i>Tockus erythrorhynchus</i>
Yellow-breasted Barbet	<i>Trachyphonus margaritatus</i>
<u>Grey Woodpecker</u>	<u><i>Dendropicos goertae</i></u>
Singing Bushlark	<i>Mirafra cantillans</i>
Dunn's Lark*	<i>Eremalauda dunni</i>
Crested Lark	<i>Galerida cristata</i>
Chestnut-backed Sparrow Lark*	<i>Eremopterix leucotis</i>
Black-crowned Sparrow Lark*	<i>Eremopterix nigriceps</i>
Rufous Scrub Robin***	<i>Cercotrichas galactotes</i>
Black Scrub Robin	<i>Cercotrichas podobe</i>
Northern Anteater Chat	<i>Myrmecocichla aethiops</i>
Zitting Cisticola?	<i>Cisticola juncidis</i>
Desert Cisticola	<i>Cisticola aridulus</i>
Tawny-flanked Prinia	<i>Prinia subflava</i>
Cricket Longtail	<i>Spiloptila clamans</i>
Fulvous Chatterer	<i>Turdoides fulvus</i>
Southern Grey Shrike	<i>Lanius meridionalis</i>
Black-crowned Tchagra	<i>Tchagra senegala</i>
Brown-necked Raven*	<i>Corvus ruficollis</i>
Pied Crow*	<i>Corvus albus</i>

Greater Blue-eared Starling**	<i>Lamprotornis chalybaeus</i>
Chestnut-bellied Starling	<i>Lamprotornis pulcher</i>
Northern Grey-headed Sparrow	<i>Passer griseus</i>
Sudan Golden Sparrow**	<i>Passer luteus</i>
White-billed Buffalo Weaver	<i>Bubalornis albirostris</i>
Green-winged Pytilia	<i>Pytilia melba</i>
<u>Red-billed Firefinch</u>	<u><i>Lagonosticta senegala</i></u>
Red-cheeked Cordonbleu?	<i>Uraeginthus bengalus</i>
African Silverbill	<i>Lonchura cantans</i>
Cut-throat**	<i>Amadina fasciata</i>
<u>Village Indigobird</u>	<u><i>Vidua chalybeata</i></u>
Sahel Paradise Whydah	<i>Vidua orientalis</i>
<u>African Golden-breasted Bunting</u>	<u><i>Emberiza flaviventris</i></u>

Intra African Migrant Species Visit northern Gobir to Breed (n=20)

Of these three may have a resident population as well (marked with an asterisk) and the breeding status of six is still uncertain, though seems likely. All of these species visit during the rainy season.

Cattle Egret	<i>Ardea ibis</i>
Striated Heron?	<i>Butorides striatus</i>
Abdim's Stork	<i>Ciconia abdimii</i>
White-faced Whistling Duck	<i>Dendrocygna viduata</i>
Egyptian Goose?	<i>Alopochen aegyptiacus</i>
Knob-billed Duck?	<i>Sarkidiornis melanotos</i>
Common Moorhen	<i>Gallinula chloropus</i>
Greater Painted Snipe	<i>Rostratula benghalensis</i>
Temminck's Courser	<i>Cursorius temminckii</i>
Jacobin Cuckoo	<i>Oxylophus jacobinus</i>
Didric Cuckoo	<i>Chrysococcyx caprius</i>
Ethiopian Swallow	<i>Hirundo aethiopica</i>
Beautiful Sunbird	<i>Nectarinia pulchella</i>
Long-tailed Glossy Starling?	<i>Lamprotornis caudatus</i>
Speckle-fronted Weaver*	<i>Sporopipes frontalis</i>
African Masked Weaver*	<i>Ploceus velatus</i>
Village Weaver*	<i>Ploceus cucullatus</i>
Red-billed Quelea?	<i>Quelea quelea</i>
Yellow-crowned Bishop	<i>Euplectes afer</i>
Northern Red Bishop?	<i>Euplectes orix</i>

Non-Breeding Intra-African Migrant Visitors (n=15)

All these species are essentially rainy season visitors to northern Gobir, though there is a possibility that some may breed in particular places within the region (e.g. at unusually large wetlands) or may head into the pastoral zone to do so. At least two species (marked with an

asterix) are only to be seen on the northward and then return passages. The rest may best be described as summering visitors.

Hamerkop	<i>Scopus umbretta</i>
Sacred Ibis	<i>Threskiornis aethiopicus</i>
Spur-winged Goose	<i>Plectropterus gambensis</i>
Black-shouldered Kite	<i>Elanus caeruleus</i>
Black Kite	<i>Milvus migrans</i>
Shikra	<i>Accipiter badius</i>
Red-necked Buzzard	<i>Buteo auguralis</i>
Four-banded Sandgrouse	<i>Pterocles quadricinctus</i>
Grey-headed Kingfisher	<i>Halcyon leucocephala</i>
White-throated Bee-eater*	<i>Merops albicollis</i>
African Grey Hornbill	<i>Tockus nasutus</i>
Rufous-rumped Lark	<i>Pinarocorys erythropygia</i>
Heuglin's Wheatear	<i>Oenanthe heuglini</i>
Pygmy Sunbird*	<i>Anthreptes platurus</i>
Cinnamon-breasted Rock Bunting	<i>Emberiza tahapisi</i>

Probable Intra-African Migrants with Uncertain Breeding Status (n=12 or 13)

The status of these 12 species is unclear as they have all been recorded when breeding might be expected and sometimes beyond. The status of one of these species, the Hoopoe is additionally confused by the fact that the birds encountered may be from either Palaeartic or African populations.

Hooded Vulture	<i>Necrosyrtes monachus</i>
Grasshopper Buzzard	<i>Butastur rufipennis</i>
Lanner Falcon	<i>Falco biarmicus</i>
Harelquin Quail	<i>Coturnix delagorguei</i>
Denham's Bustard	<i>Neotis denhami</i>
Arabian Bustard	<i>Ardeotis arabs</i>
Thick-knee spp.	<i>Burhinus capensis and/or senegalensis</i>
African Collared-Dove	<i>Streptopelia roseogrisea</i>
Standard winged Nightjar	<i>Macrodipteryx longipennis</i>
Woodland Kingfisher	<i>Halcyon senegalensis</i>
Hoopoe	<i>Upupa epops</i>
Yellow-billed Oxpecker	<i>Buphagus africanus</i>

Wintering Palaeartic Migrants (n=12)

One has an uncertain status (?) and another (*) is rather nomadic.

Short-toed Eagle?	<i>Circaetus gallicus</i>
Pallid Harrier	<i>Circus macrourus</i>
Montagu's Harrier	<i>Circus pygargus</i>
Lesser Kestrel*	<i>Falco naumanni</i>
Eurasian Kestrel	<i>Falco tinnunculus</i>

Common Quail	<i>Coturnix coturnix</i>
Greater Short-toed Lark	<i>Calandrella brachydactyla</i>
Tawny Pipit	<i>Anthus campestris</i>
Northern Wheatear	<i>Oenanthe oenanthe</i>
Greater Whitethroat	<i>Sylvia communis</i>
Subalpine Warbler	<i>Sylvia cantillans</i>
Woodchat Shrike	<i>Lanius senator</i>

Palearctic Migrants seen only on Passage (n=42)

The six underlined species may or may not include birds from Palearctic populations. Those marked with a single asterisk have an extended autumn passage period, which commences in early July (though these 'early' birds could possibly involve some over-summering birds). Those species marked with two asterisks (n=4) appear on both autumn and spring passage. All others, with the sole exception of the Whinchat which was only seen on spring passage, have so far only been seen in autumn. It should be added however, that two wheatears on this list, (Black-eared and Isabelline) may yet turn out to winter.

Squacco Heron	<i>Ardeola ralloides</i>
<u>Little Egret</u>	<u><i>Egretta garzetta</i></u>
Purple Heron	<i>Ardea purpurea</i>
Grey Heron	<i>Ardea cinerea</i>
White Stork**	<i>Ciconia ciconia</i>
<u>Glossy Ibis</u>	<u><i>Plegadis falcinellus</i></u>
Northern Pintail	<i>Anas acuta</i>
Garganey	<i>Anas querquedula</i>
Northern Shoveler	<i>Anas clypeata</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Eurasian Marsh Harrier	<i>Circus aeruginosus</i>
Booted Eagle	<i>Hieraaetus pennatus</i>
Black-winged Stilt	<i>Himantopus himantopus</i>
Ruff	<i>Philomachus pugnax</i>
Common Snipe	<i>Gallinago gallinago</i>
Spotted Redshank	<i>Tringa erythropus</i>
[Marsh Sandpiper]	<i>Tringa stagnatilis</i>
Common Greenshank*	<i>Tringa nebularia</i>
Green Sandpiper*	<i>Tringa ochropus</i>
Wood Sandpiper*	<i>Tringa glareola</i>
Common Sandpiper*	<i>Actitis hypoleucos</i>
European Turtle Dove	<i>Streptopelia turtur</i>
<u>Great Spotted Cuckoo</u>	<u><i>Clamator glandarius</i></u>
<u>Pallid Swift</u>	<u><i>Apus pallidus</i></u>
Common Swift*	<i>Apus apus</i>
<u>Hoopoe</u>	<u><i>Upupa epops</i></u>
Eurasian Wryneck	<i>Jynx torquilla</i>
Common Sand Martin	<i>Riparia riparia</i>
Barn Swallow**	<i>Hirundo rustica</i>
Common House Martin	<i>Delichon urbica</i>
Yellow Wagtail	<i>Motacilla flava</i>
[Grey Wagtail]	<i>Motacilla cinerea</i>
White Wagtail	<i>Motacilla alba</i>

Red-throated Pipit	<i>Anthus cervinus</i>
Common Redstart**	<i>Phoenicurus phoenicurus</i>
Whinchat	<i>Saxicola rubetra</i>
Black-eared Wheatear	<i>Oenanthe hispanica</i>
[Isabelline Wheatear]	<i>Oenanthe isabellina</i>
[Olivaceous warbler]	<i>Hippolais pallida</i>
Lesser Whitethroat	<i>Sylvia curruca</i>
Spotted Flycatcher**	<i>Muscicapa striata</i>
Eurasian Golden Oriole	<i>Oriolus oriolus</i>

Uncertain Status

(n=13)

Too few records and/or uncertainty in the literature and/or Mai Daji's or my observations make it difficult to determine the status of these 12 species with any certainty.

Dark Chanting-Goshawk	<i>Melierax metabates</i>
Little Button-quail	<i>Turnix sylvatica</i>
Nubian Bustard	<i>Neotis nuba</i>
Savile's Bustard	<i>Eupodotis ruficrista</i>
White-bellied Bustard	<i>Eupodotis senegalensis</i>
Black-bellied Bustard	<i>Eupodotis melanogaster</i>
Cream-coloured Courser	<i>Cursorius cursor</i>
Bronze-winged Courser	<i>Rhinoptilus chalcopterus</i>
Forbe's Plover	<i>Charadrius forbesi</i>
Chestnut-bellied Sandgrouse	<i>Pterocles exustus</i>
Vinaceous dove	<i>Streptopelia vinacea</i>
Plain Nightjar	<i>Caprimulgus inornatus</i>
[Grey-Backed Camaroptera]	<i>Camaroptera brachyura</i>

Appendix B: Historical Records from Northern Gobir

The following three species were last seen in the 20th century in northern Gobir but may not be recorded again.

<i>Struthio camelus camelus</i>	Ostrich	Autruche d’Afrique	<i>jimina</i>
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Oral history and colonial records (Vilmin, 1955) show that the ostrich persisted in northern Gobir into the second half of the 20th century. Dan Amma Ibrahim (a.k.a. Dan Amma Anne), an elderly resident of Maijémo, once recounted to me how he had discovered an ostrich nest when he first cleared the Madamba tapki. This would probably have been around the early 1940s. Twenty kilometres south of Birnin Lallé is a village called Toudoun Jimina, “the dune of the ostrich”. How long the ostrich persisted in the agricultural zone is unknown, but presumably it would have been prone to hunting and trapping, though it may have wandered south in search of food during droughts. Sharland (1989) reported a few observations at Gadebéji (see location in Figure 14) over Christmas 1956, including 20 on Boxing day and he very kindly sent me the image below from his trip. Sadly this bird has very probably been extirpated in the wild from its last redoubt in Niger, the Aïr (Ostrowski et al. 2001), though there are plans afoot for a reintroduction scheme implemented by the Sahara Conservation Fund: see http://www.saharaconservation.org/spip.php?page=project&id_article=36



<i>Sagittarius serpentarius</i>	Secretary Bird	Messenger Serpenteaire	
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Rousselot, (1947) gives only one record for the Circonscription d’Elevage de Maradi, a sole bird in January near Birnin Lallé (he does not give the year). Sharland (1989) saw one on Christmas day 1956 at Gadebéji. Unfortunately I did not enquire after this species with the elders in the village. Thiollay (2006: 249) states “The Secretary Bird, already rare 30 years ago, has not been seen recently anywhere in West Africa”. Though I heard reports of this species north of N’guigmi in 2006, it is unlikely re-occur in northern Gobir again, except by accident in the very north if its outlook improves.

<i>Numida meleagris</i>	Helmeted Guineafowl	Pintade Commune	<i>zabo</i>
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According to Buda, the last wild guinea fowl were seen around the *karkara* in 1954, a year after the *Mai Korare* drought. In 1998, in other Dakoro villages, some just to the east of northern Gobir, I heard reports of more recent dates, with 1978 being the latest (at Danzabo, (14.255 °N, 7.1672°E), which is also perhaps a toponym derived from this species). In Guidan Dodo I was told about a race of domesticated guinea fowl called ‘local’ which originated from the wild population found when village was established (circa 1930s). It was also reported here that some wild birds are still found in the Gadebéji forest and perhaps even closer. Tim Wacher (*pers comm* June 2010) has confirmed recent sightings and footprints at Gadebéji, so perhaps it still holds on at the very limits of northern Gobir.

Appendix C: Potential Species for Northern Gobir

Giraudoux *et al.* (1988) list some 314 species for Zone 3 “la zone sud-sahélienne des cultivateurs” made up of 214 Afro-tropical species, 76 Palaearctic birds and 24 with a double status. Several species on this Zone 3 list have Sudanian affinities and are thus very unlikely to occur in northern Gobir. Likewise several wetland species are equally unlikely to be found as I do not believe there are any perennial wetlands in the degree grid square. The two largest northern Gobir wetlands, Koro (estimated to be about 90 ha) and Jirga Mahamadou (an estimated 85ha), both just northeast of the Douthin Zana uplands, probably lack the necessary food resources, water depth and fringing vegetation for many wetland species but require surveying as do all wetlands over 10 ha (which probably number less than 20). By removing these unlikely species, the list of 116 potential species is shown below. This list includes three species subsequently recorded in Zone 3, one by Holyoak & Seddon (1991) marked by * and two by Sauvage (1993) marked by **. Vagrant or very occasional species have been excluded. Species not positively identified but mentioned in the systematic list have not been included as it is assumed they will eventually be confirmed.

As can be seen I have retained several wetland species, mainly Palaearctic migrants which are likely to pass through the region in the autumn. Severally rocky habitat specialists have been included in the believe that this area will prove an interesting habitat. Also several woodland specialists are retained because the Tarka valley remains to be explored and in particular the Korofane Forêt Classé which looks from satellite imagery to be still largely preserved, which can not be said of all such areas in Niger (Tarchiani *et al.* 2008). One species on this list it should be noted may already have been recorded; a Flappet Lark (*Mirafra rufocinnamomea*) was noted in September 1980 near Madoua by Francis Reeb (Giraudoux *et al.* 1986). Hopefully the new era of recording being ushered in by the Niger Bird DataBase (NiBDaB <http://www.bromus.net/nibdab/>) will lead to be more precise recording in the future.

Little Grebe	Grèbe Castagneux	<i>Tachybaptus ruficollis</i>
Little Bittern	Blongios Nain	<i>Ixobrychus minutus</i>
Black-crowned Night Heron	Bihoreau Gris	<i>Nycticorax nycticorax</i>
Intermediate Egret	Aigrette Intermédiaire	<i>Ardea intermedia</i>
Great Egret	Grande Aigrette	<i>Ardea alba</i>
Black-headed Heron	Héron Mélanocéphale	<i>Ardea melanocephala</i>
Marabou Stork	Marabout d'Afrique	<i>Leptoptilos crumeniferus</i>
Fulvous Whistling Duck	Dendrocygne Fauve	<i>Dendrocygna bicolor</i>
Eurasian Wigeon	Canard Siffleur	<i>Anas penelope</i>
Common Teal	Sarcelle d'Hiver	<i>Anas crecca</i>
Common Pochard	Fuligule Milouin	<i>Aythya ferina</i>
Tufted Duck	Fuligule Morillon	<i>Aythya fuligula</i>
Osprey	Balbusard Pêcheur	<i>Pandion haliaetus</i>
European Honey Buzzard	Bondrée Apivore	<i>Pernis apivorus</i>
Egyptian Vulture	Vautour Percnoptère	<i>Neophron percnopterus</i>
African White-backed Vulture	Vautour Africain	<i>Gyps africanus</i>
Rüppell's Griffon Vulture	Vautour de Rüppell	<i>Gyps rueppellii</i>
Lappet-faced Vulture	Vautour Oricou	<i>Torgos tracheliotus</i>
White-headed Vulture	Vautour à Tête Blanche	<i>Trigonoceps occipitalis</i>
Bateleur	Bateleur des Savanes	<i>Terathopius ecaudatus</i>
Long-legged Buzzard	Buse Féroce	<i>Buteo rufinus</i>
Tawny Eagle	Aigle Ravisneur	<i>Aquila rapax</i>

Fox Kestrel	Faucon Renard	<i>Falco alopex</i>
Grey Kestrel	Faucon Ardoisé	<i>Falco ardosiaceus</i>
Red-necked Falcon	Faucon Chicquera	<i>Falco chicquera</i>
Red-footed Falcon	Faucon Kobez	<i>Falco vespertinus</i>
African Hobby	Faucon de Cuvier	<i>Falco cuvierii</i>
Peregrine Falcon	Faucon Pèlerin	<i>Falco peregrinus</i>
Stone Partridge	Poule de Roche	<i>Ptilopachus petrosus</i>
Corn Crake**	Râle de Genêts	<i>Crex crex</i>
Little Crake	Marouette Poussin	<i>Porzana parva</i>
Spotted Crake**	Marouette Ponctué	<i>Porzana porzana</i>
Black Crake	Râle à Bec Jaune	<i>Amaurornis flavirostra</i>
Allen's Gallinule	Talève d'Allen	<i>Porphyrio alleni</i>
Purple Gallinule	Talève Sultane	<i>Porphyrio martinicus</i>
Eurasian Coot	Foulque Macroule	<i>Fulica atra</i>
Pied Avocet	Avocette Éléante	<i>Recurvirostra avosetta</i>
Collared Pratincole	Glaréole à Collier	<i>Glareola pratincola</i>
Little Ringed Plover	Pluvier Petit-gravelot	<i>Charadrius dubius</i>
Common Ringed Plover	Pluvier Grand-gravelot	<i>Charadrius hiaticula</i>
Kentish Plover	Pluvier à Collier Interrompu	<i>Charadrius alexandrinus</i>
Sanderling	Bécasseau Sanderling	<i>Calidris alba</i>
Little Stint	Bécasseau Minute	<i>Calidris minuta</i>
Temminck's Stint	Bécasseau de Temminck	<i>Calidris temminckii</i>
Curlew Sandpiper	Bécasseau Cocorli	<i>Calidris ferruginea</i>
Jack Snipe	Bécassine Sourde	<i>Lymnocyptes minimus</i>
Black-tailed Godwit	Barge à Queue Noire	<i>Limosa limosa</i>
Eurasian Curlew	Courlis Cendré	<i>Numenius arquata</i>
Black-headed Gull	Mouette Rieuse	<i>Larus ridibundus</i>
Gull-billed Tern	Sterne Hansel	<i>Sterna nilotica</i>
Whiskered Tern	Guifette Moustac	<i>Chlidonias hybridus</i>
Black Tern	Guifette Noire	<i>Chlidonias niger</i>
White-winged Black Tern	Guifette Leucoptère	<i>Chlidonias leucopterus</i>
African Mourning Dove	Tourterelle Pleureuse	<i>Streptopelia decipiens</i>
Western Grey Plantain-eater	Touraco Gris	<i>Crinifer piscator</i>
Common Cuckoo	Coucou Gris	<i>Cuculus canorus</i>
African Cuckoo*	Coucou Africain	<i>Cuculus gularis</i>
Eurasian Eagle Owl	Grand-duc d'Europe	<i>Bubo bubo ascalaphus</i>
Long-tailed Nightjar	Engoulevent à Longue Queue	<i>Caprimulgus climacurus</i>
Golden Nightjar	Engoulevent Doré	<i>Caprimulgus eximius</i>
Egyptian Nightjar	Engoulevent du Désert	<i>Caprimulgus aegyptius</i>
European Nightjar	Engoulevent d'Europe	<i>Caprimulgus europeus</i>
White-rumped Swift	Martinet Cafre	<i>Apus caffer</i>
Blue-naped Mousebird	Coliou Huppé	<i>Urocolius macrourus</i>
Little Bee-eater	Guêpier Nain	<i>Merops pusillus</i>
Little Green Bee-eater	Guêpier d'Orient	<i>Merops orientalis</i>
European Bee-eater	Guêpier d'Europe	<i>Merops apiaster</i>
Northern Carmine Bee-eater	Guêpier Écarlate	<i>Merops nubicus</i>
Rufous-crowned Roller	Rollier Varié	<i>Coracias noevia</i>

Broad-billed Roller
Black Wood-hoopoe
Yellow-fronted Tinkerbird
Vieillot's Barbet
Little Grey Woodpecker
Flappet Lark
Rusty Bush Lark
Greater Hoopoe Lark
Desert Lark
Red-rumped Swallow
Tree Pipit
Common Bulbul
Common Nightingale
Common Stonechat
Blackstart
Sedge Warbler
Eurapian Reed Warbler
Melodious Warbler
Winding Cisticola
Yellow-bellied Eremomela
Northern Crombec
Willow Warbler
Chiffchaff
Wood Warbler
Western Bonelli's Warbler
Orphean Warbler
Garden Warbler
Blackcap
Pied Flycatcher
Senegal Batis
Sennar Penduline Tit
Masked Shrike
Lesser Grey Shrike
Yellow-billed Shrike
Yellow-crowned Gonolek
Brubru
Fork-tailed Drongo
Piapiac
Neumann's Starling
Yellow-spotted Petronia
Bush Petronia
Little Weaver
Black-rumped Waxbill
Pin-tailed Whydah
White-rumped Seedeater
Streaky-headed Seedeater
House Bunting

Rolle Violet
Irrisor Noire
Barbion à Front Jaune
Barbican de Vieillot
Pic Gris
Alouette Bourdonnante
Alouette Rousse
Sirli du Désert
Ammomane Isabelline
Hirondelle Rousseline
Pipit des Arbres
Bulbul des Jardins
Rossignol Philomèle
Trarier Pâtre
Traquet à Queue Noire
Phragmite des Joncs
Rousserolle Effarvette
Hypolaïs Polyglotte
Cisticole Roussâtre
Érémomèle à Croupion Jaune
Crombec sittelle
Pouillot Fitis
Pouillot Véloce
Pouillot Siffleur
Pouillot de Bonelli
Fauvette Orphée
Fauvette des Jardins
Fauvette à Tête Noire
Gobemouche Noir
Pririt du Sénégal
Rémiz du Soudan
Pie-grièche Masquée
Pie-grièche à Poitrine Rose
Corvinelle à Bec Jaune
Gonolek de Barbarie
Pie-grièche Bru-bru
Drongo Brillant
Piapiac Africain
Rufipenne de Neumann
Moineau à Point Jaune
Petit Moineau
Tisserin Minule
Astrilid Cendré
Veuve Dominicaine
Serin à Croupion Blanc
Serin Gris
Bruant Striolé

Eurystomus glaucurus
Rhinopomastus aterrimus
Pogoniulus chrysoconus
Lybius vieilloti
Dendropicos elachus
Mirafraga rufocinnamomea
Mirafraga rufa
Alaemon alaudipes
Ammomanes deserti
Hirundo daurica
Anthus trivialis
Pycnonotus barbatus
Luscinia megarhynchos
Saxicola torquata
Cercomela melanura
Acrocephalus schoenobaenus
Acrocephalus scirpaceus
Hippolais polyglotta
Cisticola galactotes
Eremomela icteropygialis
Sylvietta brachyura
Phylloscopus trochilus
Phylloscopus collybita
Phylloscopus sibilatrix
Phylloscopus bonelli
Sylvia hortensis
Sylvia borin
Sylvia atricapilla
Ficedula hypoleuca
Batis senegalensis
Anthoscopus punctifrons
Lanius nubicus
Lanius minor
Corvinella corvina
Laniarius barbarus
Nilaus afer
Dicrurus adsimilis
Ptilostomus afer
Onychognathus neumanni
Petronia pyrgita
Petronia dentata
Ploceus luteolus
Estrilda troglodytes
Vidua macroura
Serinus leucopygius
Serinus gularis
Emberiza striolata

REFERENCES

NB. All issues of *Malimbus* more than five years old and all issues of its predecessor, the *Bulletin of the Nigerian Ornithologists' Society*, can be freely accessed at <http://malimbus.free.fr/ftguidee.htm>

Arroyo, B. E. García J. T. & Bretagnolle V. (2004) "*Circus pygargus* Montagu's Harrier." *BWP Update* **6**(1/2): 41-55.

ASCLEPOL (2010) The ASCLEPOL database. Accessed, 21st June, 2010
http://www.old.uni-bayreuth.de/departments/planta2/research/pollina/as_pol_t.html

Azafaf, H. (2002) "Statut actuel de la population de la Cigogne blanche *Ciconia ciconia* en Tunisie." *Alauda* **70**(3): 387-392.

Baker, P. E. & Baker H. (2002) "Spotted Flycatcher *Muscicapa striata*." Pages 581-583 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.

Barlow, C. , Wacher T. & Disley, T. (1997) *A Field Guide to Birds of The Gambia and Senegal*. Robertsbridge, UK: Pica Press.

Beaver, D. L. (1993) "Notes on the nest-building behaviour of the Buffalo Weaver *Bubalornis albirostris* in Senegal." *Malimbus* **14**(2): 48-51.

Berthold, P. Van Den Bossche W. Fiedler W. Kaatz C. Kaatz M. Leshem Y. Nowak E. & Querner U. (2001) "Detection of a new important staging and wintering area of the White Stork *Ciconia ciconia* by satellite tracking." *Ibis* **143**(4): 450-455.

Boddy, M. (2002) "Common Whitethroat (Whitethroat) *Sylvia communis*." Pages 555-558 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.

Borrow, N. & Demey, R. (2001) *Birds of Western Africa*. London: Helm and Black.

Boulet, R. (1964) *Etude pédologique du Niger central*. Dakar: ORSTOM.

Boyd, J. (1982) "The pre-Jihad States of the Sokoto-Rima basin." Pages 16-17 in *Sokoto State in Maps. An Atlas of Physical and Human Resources*. Edited by Abdu, P. S. Bode J. Boyd J. Davis G. Main H. McCarthy M. Swindell K. Ibadan: University Press Limited (in association with Oxford University Press).

Brambilla, M. Florenzano G. T. Sorace A. & Guidali F. (2006) "Geographical distribution of Subalpine Warbler *Sylvia cantillans* subspecies in mainland Italy." *Ibis* **148**(3): 568-571.

Breman H.B. & Kessler, J. J. (1995) *Woody Plants in Agro-Ecosystems of Semi-Arid Regions with an emphasis on the Sahelian Countries*. Berlin: Springer-Verlag.

Brouwer, J. Codjo S. F. & Mullié W. C. (2001) "Niger" Pages 661-672 in *Important Bird Areas in Africa and Associated Islands: priority sites for conservation*. Edited by L.D.C. fishpool & M.I. Evans. Pisces Publications & Bird Life International.

- Brouwer, J. Mullié J. W. & Souvairan P. (2000) "Colour of the downy young and notes on breeding and food of the Grasshopper Buzzard *Butastur rufipennis* in Niger." *Malimbus* **22**(1): 34-37.
- Bundy, G. (1976) *The Birds of Libya*. London: British Ornithological Union.
- Béchet, A. Isenmann P. & Gaudin R. (1998) "Nest predation, temporal and spatial breeding strategy in the Woodchat Shrike *Lanius senator* in Mediterranean France." *Acta Oecologica* **19**: 81-87.
- Catry, P. Encarnaçao V. Araújo A. Fearon P. Fearon A. Armelin M. & Delaloye P. (2004) "Are long-distance migrant passerines faithful to their stopover sites?" *Journal of Avian Biology* **35**(2): 170-181.
- Chappuis, C. (2000) *African Bird Sounds: Birds of North, West and Central Africa and Neighbouring Atlantic Islands. 15 CDs*. Paris & London: Société d'Études Ornithologiques de France & The British Library.
- Cheke R.A., Walsh J. F. & Fishpool L. D. C. (1985) "Bird records from the Republic of Niger." *Malimbus* **7**: 73-90.
- Collias, N. E. & Collias E. C. (1970) "The Behaviour of the West African Village Weaverbird." *Ibis* **112**(4): 457-480.
- Corso, A. & Cardelli C. (2004) "The migration of Pallid Harrier across the central Mediterranean with particular reference to the Strait of Messina." *British Birds* **97** (May): 238-246.
- Crook, H. (1958) "Études sur le comportement social de *Bubalornis a. albirostris* (Vieillot)." *Alauda* **26**(3): 116-195.
- Crook, J. H. (1960) "Nest form and construction in certain West African weaverbirds." *Ibis* **102**: 1-25.
- Cunningham-van Someren, G. R. (1971) "*Amadina fasciata* (Gmelin) as a "nest-parasite"." *Bulletin of The British Ornithologists' Club* **91**: 135-137.
- Dean, W. F. J. & MacDonald I. A. W. (1981) "A review of African birds feeding in association with mammals." *Ostrich* **52**: 135-155.
- Dean, W. R. J. (2004) *Nomadic Desert Birds*. Berlin: Springer.
- Dejonghe, J-F. (1989) "Importance, structure, origines, biométrie et dynamique de population des faucons crécerelles en migration pré-nuptiale au Cap Bon (Tunisie)." *Alauda* **57**(1): 17-45.
- Delaporte, P. & Dubois P. J. (2000) "Les déplacements de l'Échasse blanche *Himantopus himantopus* au cours du cycle annuel. Données acquises par le baguage, de l'Europe à l'Afrique." *Ornithos* **7**(3): 101-115.
- Dobbs, K. A. (1959) "Some birds of Sokoto, Northern Nigeria, with brief notes on their status." *Nigerian Field* **24**: 103-119.
- Donaint, P. (1975) *Les Cadres Géographique à Travers les Langues du Niger. Contribution à la Pédagogie de l'Étude du Milieu*. Études Nigériennes N° 37.
- Dowsett, R. J. (2005) "Does the Didric Cuckoo *Chrysococcyx caprius* parasitize Cricket Warbler *Spiloptila clamans* in Nigeria?" *Malimbus* **27**(1): 41-42.
- Dubois, P. J. (1992) "Migration et hivernage de l'Echasse blanche (*Himantopus himantopus*)

- dans l'Ouest du Paléarctique et de l'Afrique." *Nos Oiseaux* **41**: 347-366.
- Elliott, C. C. H. (2006) "Bird population explosions in agroecosystems: the quelea *Quelea quelea*, case history." *Acta Zoologica Sinica* **52**(Supplement): 554–560.
- Elgood, J.H., Fry C.H. & Dowsett R.J. (1973) "African migrants in Nigeria." *Ibis* **115** (1 & 3): 1-45 & 375-411.
- Elgood, J. H. Heigham J. B. Moore A. M. Nason A. M. Sharland R. E. Skinner N. J. (1994) *The Birds of Nigeria*. 2nd ed. London: British Ornithologists' Union.
- Erickson, W. A. (1989) "Feeding ecology of quelea." Pages 230-247 in *Quelea quelea: Africa's Bird Pest*. Edited by Bruggers, R. L. & Elliot C. C. H. Oxford: Oxford University Press.
- Fishpool L.D.C., Oueda G. & Compaoré P. (2000) "Kordofan Bush Lark *Mirafrja cordofanica* and Desert Lark *Ammomanes deserti*, additions to the avifauna of Burkina Faso." *Malimbus* **22**(2): 49-54.
- Fransson, T. Jakobsson S. & Kullberg C. (2005) "Non-random distribution of ring recoveries from trans-Saharan migrants indicates species-specific stopover areas." *Journal of Avian Biology* **36**(1): 6-11.
- Fry, C. H. (1964) "Bird notes from north-eastern Sokoto Province." *Bulletin of the Nigerian Ornithologists' Society* **1**(4): 2-4.
- Fry, C. H. Ash J. S. & Ferguson-Lees I. J. (1970) "Spring Weights of some Palaearctic Migrants at Lake Chad." *Ibis* **112**(1): 58-82.
- Fussell, L. K. (1992) "Semi-arid cereal and grazing systems of West Africa" Pages 485-518 in *Field Crop Ecosystems*. Edited by C.J. Pearson . Amsterdam: Elsevier.
- Gartshore, M. (1975) "Some aspects of the breeding biology of the Cinammon-breasted Rock Bunting *Emberizia tahapisi*." *Bulletin of the Nigerian Ornithologists' Society* **11**(39): 27-33.
- Gartshore, M. (1978) "A noose trap for catching nesting birds." *North American Bird Bander* **3**: 1-2.
- Ghazanfar, S. A. (1989) *Savanna Plants of Africa: an Illustrated Guide*. London : Macmillan.
- Giraudoux, P. Degauquier R. Jones P. J. Weigel J. & Isenmann P. (1988) "Avifaune du Niger: état des connaissances en 1986." *Malimbus* **10**(1): 1-140.
- Gordo, O. Brotons L. Ferrer X. & Comas P. (2005) "Do changes in climate patterns in wintering areas affect the timing of the spring arrival of trans-Saharan migrant birds?" *Global Change Biology* **11**(1): 12-21.
- Grégoire, E. & C. Raynaut. (1980) *Présentation Générale du Département du Maradi*. Bordeaux: Université de Bordeaux II.
- Gueye, A. Camicas J. L. Diouf A. & Mbengue M. (1987) "Tiques et hémoparasitoses du bétail au Sénégal. II. La zone sahélienne." *Revue d'Elevage et de Médecine Vétérinaire des Pays Tropicaux* **40**(2): 119-125.
- Gueye, A. Mbengue M. & Diouf A. (1994) "Tiques et hémoparasitoses du bétail au Sénégal. VI. La zone soudano-sahélienne." *Revue d'Elevage et de Médecine Vétérinaire des Pays Tropicaux* **47**(1): 39-46.
- Gustafsson, R. Hjort C. Ottosson U. & Hall P. (2003) *Birds at Lake Chad and in the Sahel of NE Nigeria 1997-2000*. Degerhamn, Sweden: Ottenby Bird Observatory.

- Hamidou, S. A. (1980) "Population." Pages 30-33 in *Atlas du Niger*. Edited by Bernus, E. & Hamidou S. A. Paris: Editions Jeune Afrique.
- Hanmer, D. B. (1995) "Golden-breasted Buntings in Fern Valley, Mutare." *Honeyguide* **41**: 113-115.
- Harris, T. & Franklin K. (2000) *Shrikes and Bush-Shrikes: Including Wood-Shrikes, Helmet-Shrikes, Flycatcher-Shrikes, Philentomas, Batises, and Wattle-Eyes*. London : Christopher Helm.
- Hartert, E. (1921) "Birds collected by Capt. Angus Buchanan during his journey from Kano to Air or Asben." *Novitates Zoologicae* **XXVIII**: 78-141.
- Hiernaux, P. Mougin E. Diarra L. Soumaguel N. Lavenu F. Tracol Y. & Diawara M. (2009) "Sahelian rangeland response to changes in rainfall over two decades in the Gourma region, Mali." *Journal of Hydrology* **375**(1-2): 114-127.
- Hill, L. A. (2002) "House Martin *Delichon urbica*" Pages 465-467 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.
- Holmes, D. A. (1972) "Bird notes from the plains south of Lake Chad winter 1971-1972. Part 3." *Bulletin of the Nigerian Ornithologists' Society* **10**: 28-37.
- Holyoak, D. T. & Seddon M. B. (1991) "Notes sur la répartition des oiseaux du Niger (2ème partie)." *Alauda* **59**(2): 116-120.
- Isenmann P. & Fradet G. (1998) "Nest site, laying period, and breeding success of the Woodchat Shrike (*Lanius senator*) in Mediterranean France." *Journal für Ornithologie* **139**: 49-54.
- Isenmann, P. & Moali A. (2000) *Oiseaux D'Algérie / Birds of Algeria*. Paris: Société d'Etudes Ornithologiques de France, Muséum National d'Histoire Naturelle.
- Jones, P. J. & Ward P. (1977) "Evidence of pre-migratory fattening in three tropical granivorous birds." *Ibis* **119**: 200-203.
- Jones, P. Vickery J Holt S. & Cresswell W. (1996) "A preliminary assessment of some factors influencing the density and distribution of palearctic passerine migrants wintering in the Sahel zone of West Africa." *Bird Study* **43**(1): 73-84.
- Kemp, A. & Kemp M. (1998) *SASOL Birds of Prey of Africa and its Islands*. London: New Holland Publishers.
- King, J. M. B. & Hutchinson J. M. C. (2001) "Site fidelity and recurrence of some migrant bird species in The Gambia." *Ringling & Migration* **20**(4): 292-302.
- Klein, R. (1991) "Land use and bird pests in the Sahelian region of the Republic of Niger." Pages 139-149 in *Tropical ecosystems: systems characteristics, utilization patterns, and conservation issues. Proceedings of the International and Interdisciplinary Symposium*. Edited by Erdelen, W. Ishwaran N. & Muller P. Weikersheim: Verlag Josef Margraf.
- Koechlin, J. (1997) "Ecological conditions and degradation factors in the Sahel." Pages 12-36 in *Societies and Nature in the Sahel*. Edited by Raynaut, C. London: Routledge.
- Koechlin, J. & Cheung C. (1988) Carte Écologique de Département de Maradi (sud de la vallée de Tarka) Scale 1/500 000. Bordeaux: G.R.I.D, Université de Bordeaux II & Projet de Développement Rural de Maradi.

- Koenig, W. D. (1997) "Host preferences and behaviour of oxpeckers: co-existence of similar species in a fragmented landscape." *Evolutionary Ecology* **11**(1): 91-104.
- Krul, J. M. & Breman H. (1991) "L'influence du feu." Pages 346-352 in *La Productivité des Pâturages Sahéliens. Une Étude des Sols, des Végétations et de l'Exploitation de cette Ressource Naturelle*. Edited by Penning de Vries, F. W. T. & Djitçye M. A. Wageningen: PUDOC-DLO.
- Kunstmann, J. G. (1938) "The Hoopoe: A Study in European Folklore" Chicago University, Unpublished PhD Thesis. <http://www.archive.org/details/hoopoestudyineur00kunsuoft>
- Lamarche B. (1981) "Liste commentée des oiseaux du Mali. 2^{ème} partie: Passereaux." *Malimbus* **3**: 73-102.
- Laya, D. (1992) "The Hausa states." Pages 453-491 in *General History of Africa. 5: Africa from the Sixteenth to the Eighteenth Century*. Edited by Ogot, B. A. London: Heinemann.
- Levy-Luxereau, A. (1972) *Étude Ethno-Zoologique du Pays Hausa en République du Niger*. Paris: Société d'Études Ethno-zoologiques et Ethno-Botaniques.
- Lowther, P. E. (2010a) Host List of Avian Brood Parasites - 2 - CUCULIFORMES; Cuculidae. (version 15 Jun 2010) fm1.fieldmuseum.org/aa/Files/lowther/OWcList.pdf. Accessed 21 June, 2010.
- Lowther, P. E. (2010b) Host List of Avian Brood Parasites - 5 - PASSERIFORMES; Viduidae. (version 02 April 2010): fm1.fieldmuseum.org/aa/Files/lowther/VList.pdf. Accessed 21 June, 2010.
- Luxereau, A. & Roussel B. (1997) *Changements Écologiques et Sociaux au Niger*. Paris: L'Harmattan.
- Maclean, G. L. (1970) "The biology of the larks (Alaudidae) of the Kalahari sandveld." *Zoologica Africana* **5**(1): 7-39.
- Manguet, M. Canon-Cossut L. & Chemin M. C. (1979) "Dégradation dans les régions centrales de la république du Niger: degré de responsabilité de la nature du milieu, de la dynamique externe et de le mise en valeur par l'homme." *Travaux de l'Institut de Géographie de Reims* **39-40**: 61-73.
- Manguet, M. Vimeuxricheux M. & Chemin M. C. (1983) "Autochtonie et allochtonie des sables de la zone saharo-sahélienne du Niger." *Revue de Géologie Dynamique et de Géographie Physique* **24**(2): 167-175.
- Manikowski, S. (1984) "Birds injurious to crops in West Africa." *Tropical Pest Management* **30**(4): 379-387.
- Manikowski, S Bortoli L & N diaye A. (1989) "Distribution, populations, and migration patterns of quelea in western Africa." Pages 144-157 in *Quelea quelea: Africa's Bird Pest*. Edited by Bruggers, R. L. & Elliot C. C. H. Oxford: Oxford University Press.
- Manvell, A. (199) Data on the Past and Present Status of the Woody Element in the Dakoro Region, Niger with Accompanying Notes on the Reported Causes of Change as Well as the various Uses of the Species. Unpublished.
- Manvell, A. (2005) "Action Spaces, Differentiation and the Dryland Farm: A Case Study from the Dakoro Region of Niger. " School of Development Studies, University of East Anglia, UK., Unpublished PhD thesis.
- Marchant, J. H. (2002a) "Common Quail (Quail) *Coturnix coturnix*.." Pages 696-697 in *The*

Migration Atlas: Movements of the Birds of Britain and Ireland. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.

Marchant, J. H. (2002b) "Rose-ringed Parakeet *Psittacula krameri*." Pages 715 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.

Marchant, J. H. (2002c) "Hoopoe *Upupa epops*." Pages 715-716 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.

Mead, C. (2002) "Sand Martin *Riparia riparia*" Pages 458-451 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.

Moali-Grine, N. Moali A. & Isenmann P. (2004) "L'essor démographique entre 1995 et 2001 de la Cigogne blanche *Ciconia ciconia* en Algérie." *Alauda* **72**(1): 47-52.

Moreau, R. E. (1972) *The Palaearctic-African Bird Migration Systems*. London: Academic Press.

Morel, G. (1968) "Contribution à la Synécologie des Oiseaux du Sahel Sénégalais." *Mémoires O.R.S.T.O.M.* **29**: 1-179.

Morel, G. J. & Morel. M-Y. (1984) "*Eremopterix nigriceps albifrons* et *Eremopterix leucotis melanocephala* (Alauda) au Sénégal." Pages 309-322 in *Proceedings of the 5th Pan African Ornithological Congress*. Edited by Ledger, J.A. Johannesburg: Southern African Ornithological Society.

Morel, G. & Morel M-Y. (1962) "La reproduction des oiseaux dans une région semi-aride: la vallée du Sénégal." *Alauda* **30**(4): 161-203.

Morel, G. & Morel M. Y. (1972) "Etude comparative du régime alimentaire de cinq espèces de tourtelles dans une savane semi-aride du Sénégal : premiers résultats." Pages 351-355 in *Productivity, Population Dynamics and Systematics of Granivorous Birds: Proceedings of General Meeting of the Working Group on Granivorous Birds, IBP, PT Section*. Edited by S. C. Deigh, & J. Pinowski Warszawa.

Morel, G. & Morel M-Y. (1974) "Recherches écologiques sur une savane sahéenne du Ferlo septentrional, Sénégal: influence de la sécheresse de l'année 1972-1973 sur l'avifaune." *Review d'Ecologie (La Terre et la Vie)* **28**: 95-123.

Morel, G. & Morel M-Y. (1978a) "Recherches écologiques sur une savane sahéenne du Ferlo septentrional, Sénégal : Etude d'une communauté avienne. " *Cahiers ORSTOM. Série Biologie : Entomologie Agricole* **13**(1): 3-34.

Morel, G. & Morel M-Y. (1978b) "Eléments de comparaison entre *Quelea qu. quelea* (L.) et *Passer luteus* (Lichtenstein) dans les savanes tropicales de l'ouest africain." *Cahiers ORSTOM. Série Biologie : Entomologie Agricole* **13**(4): 347-358.

Morel, M-Y. (1973) *Contribution à l'étude dynamique de la population de Lagonosticta senegala L. (estrildides) à Richard-Toll, (Sénégal): interrelations avec le parasite Hypochhera chalybeata (Müller) (viduines)*. Mém. Mus. Nat. d'Hist. Nat. Ser. A Zool. 78: 1-156. Paris: Editions du Museum.

Mundy, P. J. & Cook A. W. (1971) "Sokoto Province." *Bulletin of the Nigerian Ornithologists' Society* **8 & 9**(30 & 31/2 & 34): 21-24, 42-5, 46-7 & 18-21.

- Mundy, P. J. & Cook A. W. (1972) "The Birds of Sokoto." *Bulletin of the Nigerian Ornithologists' Society* **9 & 10**(35, 36 & 37): 26-46, 61-75 & 1-27.
- Mundy, P. J. & Cook A. W. (1977) "Observations on the breeding of the Pied Crow and Great Spotted Cuckoo in northern Nigeria." *Ostrich* **48**(3-4): 72-84.
- Newby, J. Grettenberger J. & Watkins J. (1987) "The birds of the northern Air, Niger." *Malimbus* **9**(1): 4-16.
- Nicolas, Francis. (1950) *Tamesna : les loullemmeden de l'est ou Touâreg "Kel Dinnik", cercle de Tâwa, colonie de Niger : Notes de linguistique et d'ethnographic berbères, dialectes de la Tamâzeq-Taullemmêt*. Paris: Imprimerie Nationale.
- Ostrowski, S. Massalatchi M. S. & Mamane M. (2001) "Evidence of a dramatic decline of the red-necked ostrich *Struthio camelus camelus* in the Adr and Ténéré National Nature Reserve, Niger." *Oryx* **35**(4): 349-352.
- Ottoson U., Bengtsson D. Gustafsson R. Hall P. Hjort C. Leventis A. P. Neumann R. Pettersson J. Rhönnstad P. Rumsey S. Waldenström J. & Velmala W. (2002) "New birds for Nigeria observed during the Lake Chad Bird Migration Project." *Bulletin of the African Bird Club* **9**: 52-55.
- Paludan, K. (1936) "Report on the birds collected during Professor O. Olufsen's expedition to French Sudan and Nigeria in the year 1927; with field notes by the collector Mr Harry Madsen." *Vidensk Medd fra Dansk naturh Foren* **100**: 247-346.
- Payevsky, V. A. (2006) "Mechanisms of population dynamics in trans-Saharan migrant birds: A review." *Entomological Review* **86**(Supplement 1): S82-S94.
- Payne, R. B. (1977) "The ecology of brood parasitism in birds." *Annual Review of Ecology and Systematics* **8**: 1-28.
- Payne, R. B. (1980) "Seasonal incidence of breeding, moult and local dispersal of Red-billed Firefinches *Lagonosticta senegala* in Zambia." *Ibis* **122**: 43-56.
- Peltier, R. Duhem C. S. & Ichaou A. (2008) "Valoriser les produits du palmier doum pour gérer durablement le système agroforestier d'une vallée sahéenne du Niger et éviter sa désertification." *VertigO* **8**(1)
- Perrins, C. (2002) "Common Swift (Swift) *Apus apus*." Pages 443-445 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.
- Poilecot P. (1999) *Les Poaceae du Niger*. Montpellier/Genève/Cambridge: Cirad/Conservatoire et jardin botaniques de la ville de Genève/UICN.
- Raynaut, C. Koechlin J. Brassat P. Cheung C. & Stigliano M. (1988) *Le Développement Rural de la Région au Village - analyser et comprendre la diversité*. Bordeaux: G.R.I.D, Université de Bordeaux II & Projet de Développement Rural de Maradi.
- Remsen, J. V. (1994) "Use and misuse of bird lists in community ecology and conservation." *Auk* **111**: 225-227.
- Rey, M-C. (1989) "Limite Nord des Culture Pluviales: occupation et dégradation d'un environnement sahéen marginal (Dakoro, Niger)" Institut de Géographie, Faculte des Lettres, Université de Lausanne, Mémoire.
- Riddington. (2002) "Common Redstart (Redstart) *Phoenicurus phoenicurus*." Pages 507-509 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham

C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.

Robertson, A. & Jarvis A. M. (2000) "Oxpeckers in north-eastern Namibia: recent population trends and possible negative impacts of drought and fire." *Biological Conservation* **92**(2): 241-247.

Rousselot, R. (1947) "Notes sur la faune ornithologique des Cercles de Maradi et de Tanout (Niger Français)." *Bulletin d'Institut Français d'Afrique Noire*: **9** (1-4): 99-137.

Rubolini, D. Gardiazabal Pastor A. Pilastro A. & Spina F. (2002) "Ecological barriers shaping fuel stores in barn swallows *Hirundo rustica* following the central and western Mediterranean flyways." *Journal of Avian Biology* **33**: 15-22.

Ruelle, P. J. & Semaille R. (1982) "Note sur l'envahissement du nord du Sénégal par le Moineau doré *Passer luteus* (Lichtenstein) en période de reproduction." *Malimbus* **4**(1): 27-32

Salewski V., Bairlein F. & Leisler B. (2002) "Remige moult in Spotted Flycatcher (*Muscicapa striata*) on its West African wintering grounds." *Die Vogelwarte* **41**(4): 301-303.

Salvan, J. (1968) "Contribution à l'étude des oiseaux du Tchad." *L'Oiseau* **38**: 53-85,127-150, 249-273.

Samish, M & Rehacek J. (1999) "Pathogens and predators of ticks and their potential in biological control." *Annual Review of Entomology* **44**: 159-182.

Samraoui, B. & Houhamdi M. (2002) "L'hivernage de la Cigogne blanche *Ciconia ciconia* en Algérie." *Alauda* **70**(1): 221-223.

Sangster, G. Knox A. G. Helbig A. J. & Parkin D. T. (2002) "Taxonomic recommendations for European birds." *Ibis* **144**(1): 153-159.

Sauvage, A. (1993) "Notes complémentaires sur l'avifaune du Niger." *Malimbus* **14**(1): 44-47.

Sauvage, A. Rumsey S. & Rodwell S. (1998) "Recurrence of Palaeartic birds in the lower Senegal river valley." *Malimbus* **20**(1): 33-53.

Schluter, D. (1988) "The Evolution of Finch Communities on Islands and Continents: Kenya vs. Galapagos." *Ecological Monographs* **58**(4): 230-249 .

Schulz, H. (1995) "Zur Situation des Weißstorchs (*Ciconia ciconia*) auf den Zugrouten und in den Überwinterungsgebieten." Pages 27-48 in *Proceedings of the International Symposium on the White Stork (Western Population)*. Edited by Biber, O. Enggist P Marti C. & Salathé T. Sempach, Switzerland: Swiss Ornithological Institute .

Scott, D. A. & Rose P. M. (1996) *Atlas of Anatidae Populations in Africa and Western Eurasia*. Wetlands International Publication No.41. Wageningen, The Netherlands. Wetlands International.

Serle, W. (1943) "Further field observations on northern Nigerian birds." *Ibis* **85**(3 & 4): 264-300 & 413-436.

Sharland, R. E. (1964) "Seasonal movements of birds in Northern Nigeria." *Bulletin of the Nigerian Ornithologists' Society* **1**(4): 5-7.

Sharland R E (1989) "Birds of Niger." *Malimbus* **11**(1): 99.

Sharland, R. E. & Wilkinson R. (1981) "The birds of Kano State, Nigeria." *Malimbus* **3**(1): 7-30

- Shaw, D. N. (2002) "Northern Wheatear (Wheatear) *Oenanthe oenanthe*." Pages 515-517 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.
- Sheul, R. (1938) "Further notes on the eggs and nesting habits of birds in Northern Nigeria (Kano Province)." *Ibis* **80**(3): 463-479.
- Shirihai, H. (1994) "Field identification of Dunn's, Bar-tailed Desert and Desert Larks. " *Dutch Birding* **16**(1-9)
- Shirihai, H. Gargallo G. and Helbig A. J. (2001) *Sylvia Warblers*. Princeton: Princeton University Press.
- Skilleter, M. (1995) "Winter site fidelity of Redstart *Phoenicurus phoenicurus* in N. Nigeria." *Malimbus* **17**(2): 101-102.
- Smith, V. W. (1966) "Autumn and spring weights of some Palaearctic migrants in Central Nigeria." *Ibis* **108**(4): 492-512.
- Stickley, J. (1966) "Nesting of the cut-throat weaver." *Bulletin of the Nigerian Ornithologists' Society* **3**(10): 34-36.
- Stoate, C. & Moreby S. J. (1995) "Premigratory diet of trans-Saharan migrant passerines in the western Sahel." *Bird Study* **42**(2): 101-106.
- Stoate, C. Morris R. M. & Wilson J. D. (2001) "Cultural ecology of Whitethroat *Sylvia communis* habitat management by farmers: trees and shrubs in Senegambia in winter. " *Journal of Environmental Management* **62**(4): 343-356.
- Stone. G.N., Raine N. E. Prescott M. & Willmer P. G. (2003) "Pollination ecology of acacias (Fabaceae, Mimosoideae)." *Australian Systematic Botany* **16**: 103-118.
- Sutton, J. E. G. (1979) "Towards a less orthodox history of Hausaland" *Journal of African History* **20**(2): 179-201.
- Svensson, L. (1992) *Identification Guide to European Passerines*. 4th ed. Thetford, Uk: BTO.
- Svensson, L., Grant P., J. Mullarney K. & Zetterström D. (2001) *Collins Bird Guide*. 1st Edition (Paperback). London: Harper Collins.
- Tarchiani, V. Vecchia A. D. Pini G. Laminou A. M. Toudjani Z. & Maman G. (2008) "Approches méthodologiques et outils opérationnels pour la gestion des forêts classées en Afrique de l'Ouest : le cas du Niger." *Sécheresse* **19**(4): 261-267.
- Thiollay, J-M. (1973) "Arrivée de migrateurs paléarctiques au Sud du Sahara." *Nos Oiseaux* **32**: 168-171.
- Thiollay, J-M. (2006) "The decline of raptors in West Africa: long-term assessment and the role of protected areas." *Ibis* **148**(2): 240-254.
- Tremearne, A. J. N. (1970) *Hausa Superstitions and Customs: An Introduction to the Folk-Lore and the Folk*. London: Frank Cass & Co. Ltd.
- Tréca, B. & Tamba S. (1997) "Rôle des oiseaux sur la régénération du ligneux *Boscia senegalensis* (Pers.) Lam. en savane sahélienne au nord Sénégal." *Review d'Ecologie (La Terre et la Vie)* **52**(3): 239-260.
- Tsi, E. A. Peschel T. & Wieg G. (2005) "Use of flowering trees by birds in savanna in Nigeria

- during the dry season." *Journal of the Cameroon Academy of Sciences* **5**(1): 21-28.
- Underhill-Day, J. (2002) "Montagu's Harrier *Circus pygargus*." Pages 230-231 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.
- Urban, E. K. Fry C. H. & Keith S. (1986) *The Birds of Africa, Volume II: Game Birds to Pigeons*. London: Academic Press.
- van Someren, V. G. L & van Someren, G. R. C., (1945) "Evacuated weaver colonies and notes on the breeding ecology of *Euodice cantans* Gmelin and *Amadina fasciata* Gmelin." *Ibis* **87**(1): 33-34.
- Vickery, J. Rowcliffe M. Cresswell W. Jones P. & Holt S. (1999) "Habitat selection by whitethroats *Sylvia communis* during spring passage in the Sahel zone of northern Nigeria." *Bird Study* **46**(3): 348-355.
- Vilmin, M. (1955) *Monographie géographique humaine et économique de la Subdivision de Dakoro*. Unpublished report, copy in the library of the author and also available at the library of the Institut de Recherches en Science Humaine (I.R.S.H) in Niamey.
- von Maydell, H-J. (1990) *Trees and Shrubs of the Sahel: their characteristics and uses*. Weikersheim: Margraf.
- Waldenström, J. & Ottosson U. (2002) "Moult strategies in the Common Whitethroat *Sylvia c. communis* in northern Nigeria." *Ibis* **144**(1): E11–E18.
- Walker, B. H. (1987) *Determinants of Tropical Savannas*. Oxford: IRL Press.
- Ward, P. (1971) "The migration patterns of *Quelea quelea* in Africa." *Ibis* **113**(3): 275–297.
- Weeks, P. (2000) "Red-billed oxpeckers: vampires or tickbirds?" *Behavioral Ecology* **11**(2): 154-160.
- Wetlands International. (2006) *Response on the outbreak of HPAI H5N1 in poultry in northern Nigeria. Facts about the outbreak and the risks*. Wageningen, The Netherlands: Wetlands International. Available at: wetlands.org/LinkClick.aspx?fileticket=SfKXwv%2FumZU%3D
- Wilkinson, R. (1982) "Social organization and communal breeding in the chestnut-bellied starling (*Spreo pulcher*)." *Animal Behaviour* **30**(4): 1118-1128.
- Wilkinson, R. (1983) "Biannual breeding and moult-breeding overlap of the chestnut-bellied starling *Spreo pulcher*." *Ibis* **125**(3): 353-361.
- Winstanley, D. Spencer R. & Williamson K. (1974) "Where have all the Whitethroats gone?" *Bird Study* **21**(1): 1-14.
- Wood, B (1992) "Yellow wagtail *Motacilla flava* migration from West Africa to Europe: Pointers towards a conservation strategy for migrants on passage." *Ibis* **134**(S1): 66-76.
- Wood, B. (2002) "Yellow Wagtail *Motacilla flava*." Pages 477-479 in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Edited by Wernham C.V., Toms M. P. Marchant J. H. Clark J. A. Siriwardena G. M. & Baillie S. R. London: T. & A.D. Poyser.
- Yosef, R. (1993) "Influence of observation posts on territory size of Northern Shrikes." *Wilson Bulletin* **105**: 180-183.
- Yosef, R. (1994a) "Evaluation of the Global Decline in the True Shrikes (Family Laniidae)."

The Auk **111**(1): 228-233.

Yosef, R. & Grubb T. C. (1994b) "Resource dependence and territory size in Loggerhead Shrikes (*Lanius ludovicianus*)." *The Auk* **111**(2): 465-469.

Yossi H, Kaya B Traoré CO Niang A Butare I Levasseur V Sanogo D. (2006) *Les haies vives au Sahel. Etat des connaissances et recommandations pour la recherche et le développement*. ICRAF Occasional Paper no. 6. Nairobi : World Agroforestry Centre.