



**West African Ornithological Society
Société d'Ornithologie de l'Ouest
Africain**



**Join the WAOS and support
the future availability of free
pdfs on this website.**

<http://malimbus.free.fr/member.htm>

If this link does not work, please copy it to your browser and try again.
If you want to print this pdf, we suggest you begin on the next page (2) to conserve paper.

**Devenez membre de la
SOOA et soutenez la
disponibilité future des pdfs
gratuits sur ce site.**

<http://malimbus.free.fr/adhesion.htm>

Si ce lien ne fonctionne pas, veuillez le copier pour votre navigateur et réessayer.
Si vous souhaitez imprimer ce pdf, nous vous suggérons de commencer par la page suivante
(2) pour économiser du papier.

The Birds of the Waza–Logone Area, Far North Province, Cameroon

by Paul Scholte^{1,2}, Selvino de Kort^{1,3} & Merlijn van Weerd¹

¹Centre of Environmental Science, P.O. Box 9518, 2300 RA Leiden, The Netherlands

²Waza–Logone project, P.O. Box 284 Maroua, Cameroon

³Institute of Evolutionary and Ecological Sciences,
P.O. Box 9516, 2300 RA Leiden, The Netherlands

Received 28 May 1997

Revised 30 December 1998

Summary

Based on extensive observations from 1992 to 1998 and complemented by an extended literature review of observations since 1958, a list of 379 bird species is presented for the sahelio-sudanian Waza–Logone area in N Cameroon. This number includes 26 species that have not been seen since 1980. Eleven species are new for Cameroon, 26 are new for Far North Province and new distributional information is provided for another 12. The variety of habitats and year-round water availability make the area attractive to resident as well as migratory birds, but floodplain degradation, due to upstream dam construction, has reduced waterfowl diversity. Recently, efforts are being made to rehabilitate the hydrological regime of the area. The list presented below forms a base-line for future bird population monitoring.

Résumé

Les auteurs donnent une liste de 379 oiseaux pour la région sahélo-soudanienne de Waza–Logone au nord Cameroun; elle repose sur des observations approfondies de 1992 à 1998 complétées par une revue bibliographique importante des observations depuis 1958. Ce nombre comprend 26 espèces qui n'ont pas été vues depuis 1980. Onze espèces sont nouvelles pour le Cameroun, 26 pour la Province de l'extrême nord et de nouvelles données sur la répartition sont fournies pour 12 autres espèces. La diversité des habitats et la présence d'eau toute l'année rendent la région attirante aussi bien pour les oiseaux résidents que pour les migrateurs; mais la dégradation de la plaine inondable, causée par une digue en amont, a diminué la diversité des oiseaux d'eau. Des efforts ont récemment été faits pour

restaurer le régime hydrique de la région. La liste présentée ci-après constitue une base de départ pour suivre l'évolution des populations d'oiseaux .

Introduction

The Waza–Logone area covers approximately 8000 km² in the Far North Province of Cameroon (Fig. 1). This region is characterised by floodplains of the Logone river, which are used intensively for fishing and dry season grazing (Scholte *et al.* 1996b). The area includes two national parks, Waza and Kalamaloué, which contain a diverse large mammal population. Since 1979, the natural hydrological regime of the Logone floodplain has been affected by the construction of a dam near Maga and an embankment along the Logone river, as part of the irrigated rice scheme SEMRY II. These structures, combined with lower than average rainfall in recent years, have reduced both the depth and extent of flooding, leading to serious ecological degradation of the floodplain (Scholte *et al.* 1996a, b).

The Waza–Logone project started in 1992, with the objective of restoring the zone's biological diversity while sustaining development for its inhabitants (IUCN/CML 1994). Due to the limited success of rice cultivation, water has become available from Lake Maga and, to a lesser extent, directly from the Logone river. However, the necessary infrastructural changes are radical and expensive (IUCN 1996). With the agreement of local communities, a pilot release was performed, to evaluate the impact of re-flooding on the ecosystem and the human population. The former water-course, the "Petit Goroma", blocked by the embankment along the Logone river near Tikélé (see Fig. 1), was re-opened in May 1994. The importance of the area for wildlife was one of the major arguments for the formulation of the Waza–Logone project. Various studies are under way to monitor the impact of re-flooding on large mammals and birds. Based on preliminary results, more large scale re-flooding measures have been planned (IUCN 1996, Scholte *et al.* 1996a, b).

Waza National Park has attracted ornithologists for decades. Several provisional check-lists were produced in the 1970s (Fry 1970, Pettet 1976, Vanpraet 1977), with subsequent more specific raptor and waterfowl surveys (Thiollay 1978, Roux & Jarry 1984, 1986, 1987). More recent Waza–Logone project studies include Wetten & Spierenburg (1993), Kort & van Weerd (1995), Scholte *et al.* (1995, in press, 1996c) and Kadiri *et al.* (1997). The present paper compiles this information into an overview of the avifauna of the Waza–Logone area.

The Study Area

The Waza–Logone area receives a mean annual rainfall of c. 750 mm in the south and c. 550 mm in the north, although there are between-year fluctuations of up to 100%.

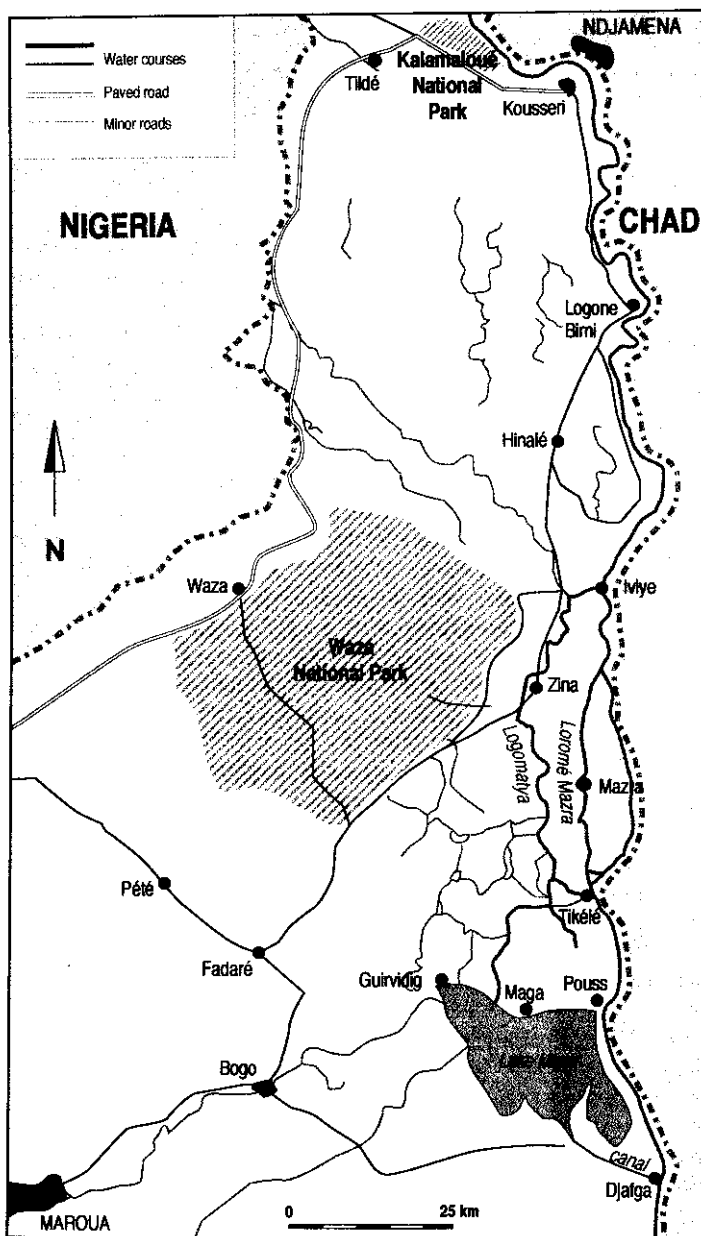


Figure 1. The study area.

There is also some evidence of a decline over the past 20 years. The rainy season is from June to September. In parts of the area, the Logone river and its branches flood during August to November. During the dry season, temperatures rise as high as 45°C during April and May. At this time, the only remaining water sources are a number of waterholes in Waza NP and pools associated with the perennial water courses.

The area falls in the transition zone between sudan and sahel savannas. The sandier soils in and south of Waza NP support a wooded *Sclerocarya birrea* and *Anogeissus leiocarpus* savanna. On the northern floodplain, sandy soils are vegetated with scattered *Hyphaene thebaica* and *Borassus aegyptiaca* palms. Most of the area is dominated by heavy cracking clayey soils, which are, or used to be, subject to flooding. Vegetation types differ in relation to the depth of present and past flooding. In general, the clayey soils above the flood line in the western part of Waza NP, in the southern floodplain, and in large tracts of the northern floodplain, are dominated by *Acacia seyal* shrublands. The areas formerly flooded, which used to be productive perennial grasslands, are now covered by annual grasses, especially *Sorghum arundinaceum*, a large reed-like grass which has invaded the area. In the eastern and northern parts, vast tracts are still subject to annual flooding. Perennial grasses such as *Echinochloa pyramidalis*, *Oryza longistaminata* and, on the slightly elevated parts, *Vetiveria nigritana* and *Hyparrhenia rufa* dominate. The rather monotonous grasslands are broken by dwelling mounds, often inhabited by fishing communities, and wooded levees associated with the rivers. Each year, immediately after the area dries up at the end of December, most parts are burned, leaving a bare landscape. Only some local humid spots remain with vivid green vegetation and concentrations of fishermen, livestock and birdlife.

For this study we have distinguished seven habitats, based on criteria such as physiography and land use.

Lake Maga and adjoining rice schemes

Located in the extreme south east of the study area, Lake Maga is the only open water, with a surface area of about 400 km². On the south it is fringed by a 5-km wide floodplain dominated by *Oryza longistaminata*. On the north, about 5000 ha of rice are cultivated bi-annually, supporting a concentrated human population.

Southern Floodplain

The largest part of the degraded floodplain is situated immediately north of the Maga rice scheme and up to the line passing along the northern edge of Waza NP in the west and to Iyve in the east (confluence of Logomatya with Logone river). This unit is dominated by *Sorghum arundinaceum* and other annual grasses. Due to re-flooding, parts of this area are returning to productive perennial grassland. The areas between the perennial water-courses are still well flooded. The western part of the area is dominated by *Acacia seyal* shrubland. Included are the Logomatya and associated pools, a branch of the Logone river containing water in the dry season from drainage of the rice schemes. It is fringed by dense *Vossia cuspidata* and *Echinochloa stagnina* grassland.

Southern sandy plain

In southern Waza NP and south of it, the wooded savanna of *Sclerocarya birrea* and *Anogeissus leiocarpus* trees and of *Hyperthelia dissoluta* and other *Andropogon*-like perennial grasses, is almost intact. Further south, sorghum cultivation is practised and grazing by livestock is more intensive. Large parts of the area have been transformed into *Guiera senegalensis* shrubland, with scattered *Balanites aegyptiaca* trees and a ground cover of annual grasses like *Schoenefeldia gracilis*.

Waza NP

Waza NP covers 170,000 ha encompassing various physiographical units. In the east there are both degraded and still-inundated parts of the floodplain. In the south and south-west, the park is covered by the southern sandy plain. The centre and north-west are covered by *Acacia seyal* shrubland. Almost no human exploitation occurs.

Logone

This unit encompasses the Logone and Loromé Mazra rivers. It comprises extensive river beds, with sand bars from December to May and *Vetiveria nigritana* grassland in the higher reaches.

Northern Floodplain

The area north of the line running from the north edge of Waza NP in the west to Ivye in the east (confluence of Logomatya and Logone), and northward to Kalamaloué NP. The area is very diverse with extensive *Acacia seyal* shrublands in west and centre and well inundated floodplains in the east, as well as higher sandier parts with *Hyphaene* and *Borassus* palms.

Kalamaloué NP

Despite its limited size of only 4500 ha, this national park is extremely varied. It lies partly in the floodplain of the Chari river and is crossed by several river branches and associated levees. In the lower parts, a dense *Mimosa pigra* scrub dominates, while locally *Echinochloa stagnina* forms productive grasslands. *Tamarindus indicus* and *Celtis africana* form woodland forests on the levees. Most of the higher areas, outside the floodplains, are covered by open *Balanites aegyptiaca* woodland and annual grassland. The southern part of the park is dominated by *Acacia nilotica* woodland.

Ornithological studies in the Waza–Logone area

Bates (1927) was the first ornithologist to record his observations when he visited the Waza–Logone area on his trip to Lake Chad. None of his observations has been included in the present list, due mainly to lack of accuracy on locations. Dragesco (1960, 1961), reported some species (*e.g.* *Rynchops flavirostris*) in 1958, which have not been seen since. In the late 1960s and early 70s, coinciding with the creation of Waza NP and the construction of a lodge, the Waza–Logone area was more frequently visited by ornithologists (Fry 1970, Broadbent 1971, Greling 1972a, b, Mundy 1972, Holmes 1972, 1974, Pettet 1976, Kavanagh 1977). Most of these visits

were limited to the more accessible western part and lasted only a few days. Only Greling (1972a) carried out a longer study of the birds of the *Acacia seyal* shrubland in Waza NP (Feb 1966 to Apr 1967), and of the birds of the wooded savanna of the southern part of Waza NP (Dec 1966 to Jul 1967). In these two habitats, he recorded 61 and 100 species respectively. Apart from a useful species list for these two habitats, he only mentioned the bird biomass per ha throughout the year, making it difficult to use his study for a comparison with present abundance information.

Vanpraet (1977) presented a checklist of 149 species for Waza NP, observed in the period 1973–1977, just before the construction of the Maga dam and thus before the degradation process started. His list is difficult to interpret, in part because of the nomenclature he used. Moreover, many species groups such as sunbirds, wheatears, flycatchers and most warblers are missing.

Thiollay (1978) reported his extensive raptor observations of 1973 and 1975, and quantified presence as numbers per km travelled. Louette (1981) compiled various sources of information for the whole of Cameroon. He visited Waza NP in Dec 1974 and Jan 1976 and documented the following collections from the Waza Logone area, to which we refer when they provide new information: W. Verheyen and F. De Vree (Nov 1970 to Jan 1971), F. Puylaert and P. Elsen (Jul–Sep 1971), F. De Vree, J. Hulselmans and E. Geraert (Sep–Oct 1972). Louette & Prevost (1987) also reported on birds collected by Prevost during March in 1973 or 1974, near Andirni, on the extreme southern point of Waza NP. In a study of warthog *Phacochoerus aethiopicus* ecology, Allo (1994) listed 93 bird species observed in Kalamaloué NP. He did not specify the year of observations, but it was most probably 1981.

Aerial waterfowl counts were conducted by Roux & Jarry (1984, 1986, 1987), on Lake Maga and other parts of N Cameroon. Unfortunately no distinction was made between the Waza–Logone area and the area north of Kalamaloué NP up to Lake Chad. OAG Münster (1991) organised a bird expedition to the Far North Province, to count waders, with special reference to *Philomachus pugnax*. Their check-list includes some interesting observations, but also some doubtful ones. Robertson (1993) visited Waza NP and the northern floodplain in Feb–Mar 1992. Finally, Beirs (1997) reported a spectacular observation when he visited Waza NP in Feb 1993.

Methods

Our own observations cover the period from 1992 onwards. During his study on *Numida meleagris*, P. Edelaar covered mainly the western side of Waza NP from Nov 1992 to Apr 1993. He was followed by A. Schaftenaar, who stayed from Feb to Jun 1993. In the northern floodplain, observations were made by P. Spierenburg during a vegetation study in Mar–Apr 1992. He and Edelaar contributed to the Jan 1993 waterfowl census. Most of the data from the southern floodplain were collected by S. de Kort and M. van Weerd, who studied the impact of (re-)flooding on birds from

May to Dec 1994 and returned for the mid-winter count of Feb 1995, as well as for other studies throughout most of 1998. P. Scholte visited Kalamaloué NP monthly from Dec 1991 to May 1993. He covered the entire area, often only in passing, in Jan and Apr 1992, Feb 1993 and from May 1993 to Nov 1997. He contributed, together with E. Battokok and R. Azombo of the Wildlife School in Garoua, to all four waterfowl censi. In the 1996 and 1997 census Bobo Kadiri and Philippe Kirda, both of the Waza–Logone project, participated as well.

With the exception of the collections made by Louette and his colleagues (Louette 1981, Louette & Prevost 1987), all observations have been based on sight or sound. Observations were often by car in the dry season and by motorized boats and local canoes or on foot in the rainy/flooding season. The study by Kort & van Weerd (1995), the four Jan/Feb waterfowl censi (Wetten & Spierenburg 1993, Scholte *et al.* 1995, Scholte *et al.* 1996a, Kadiri *et al.* 1997) and the current study on Black Crowned Cranes by Scholte and colleagues, have been the only longer lasting studies which were specifically designed to observe and quantify the bird fauna. In this paper we will present only qualitative data. A paper is in preparation on the international importance of the area for waterfowl in which quantitative data will be presented.

Published observations have been noted separately, where they have not been confirmed by us recently. We only include observations which give specific reference to the area concerned. A description such as “occurs in the inundation area” (see Louette 1981) was not sufficient for inclusion in this list. However such birds have been included in Appendix 1, as have records which appeared somewhat questionable after comparing with other observations and the literature. Records of species having distributions otherwise only known far from the study area, and where closely similar and common species were not recorded, have been rejected, as were most unlikely species which were not noted as being of special interest (Appendix 2).

The taxonomy and sequence of species up to Grey-headed Batis follows *The Birds of Africa* (Brown *et al.* 1982, Urban *et al.* 1986, 1997, Fry *et al.* 1988, Keith *et al.* 1992). For the remainder of the passerines, taxonomy and sequence follow Louette (1981), with English names based on Serle & Morel (1977). Subspecies are only mentioned if more than one has been observed, and clearly identified.

Results

A total of 379 species has been observed in the Waza–Logone area (Lists 1 and 2). Twenty-six species seen only before 1980, the year after the construction of the Maga dam and embankments, can be found in List II. Another five species have not been observed with certainty (Appendix 1). Ten species mentioned in the literature have been rejected (Appendix 2). If we consider *Circaetus gallicus beaudouini*, *Aquila rapax belisarius* and *Falco peregrinus pelegrinoides* as full species, as at present proposed (see also Clark 1992), the total number of species observed in the Waza–Logone area would be 382. This list is still far from complete. Several species have

frequently been reported from neighbouring areas and will doubtlessly be found in the area in future. Species listed in Appendix 1 are also likely to be included in future.

For each species the status, abundance and locality of observations are given. The period of presence of migrants, and breeding periods, are given only when sufficient records are available. Previous information is given in brackets at the end of an account, if our observations differ from these.

For species recorded less than five times, no indication of status is given. For all other species the following categories are used: Res: resident whole year; Res?: probably resident; AM: intra-African migrant; PM: Palaearctic migrant. When Res? is used, it means that there is no local evidence in support, but experience and knowledge about the status of the species in surrounding regions would suggest it to be resident. When a species is quoted as "probably resident", we did not observe breeding, but it is known that it breeds in comparable neighbouring regions and it was observed throughout the year.

Localities are abbreviated as follows: Maga: Lake Maga and adjoining rice scheme; SF: southern floodplain; NF: northern floodplain; SNF: southern and northern floodplain; SP: southern sandy plain, south of Waza NP; WNP: Waza National Park; Logone: Logone and Loromé Mazra rivers; KNP: Kalamaloué National Park.

For all species an assesment of abundance has been made, following the system used in *The Birds of Africa* (Brown *et al.* 1982): VA (Very Abundant) >100 may be seen or heard in suitable habitat per day; A (Abundant) 11–100 may be seen or heard in suitable habitat per day; C (Common) 1–10 may be seen or heard in suitable habitat per day; F (Frequent) often seen but not every day; U (Uncommon) several records per year; R (Rare) one record per several years. The estimation applies to all the area units indicated, unless there is a large difference in abundance between the various parts of the area.

Observers other than the authors are only mentioned for striking observations: PE Pim Edelaar; AS Aat Schaftenaar; PS: Peter Spierenburg. L refers to Louette (1981). All other literature sources are quoted completely.

New observations are indicated before the species' name in superscript as follows (mainly based on L): ¹ species not documented before for Cameroon; ² species not documented before in Far North Province, Cameroon; ³ species recorded once before in (Far) North Cameroon or important range extension.

List 1. Birds observed in the Waza–Logone area from 1980 onwards

Struthionidae

Struthio camelus Ostrich. Res. C: WNP; U: SP, SF (up to 30 km from edge of WNP). Hen with three chicks, WNP, 15 Jun 1994; hen with one chick a few days old, WNP, 30 Mar 1996; two females and one male with three chicks, WNP, 14 Apr 1996, one

female with five chicks and one male plus one female with five chicks (size of guineafowl), WNP, 25 Apr 1997. We estimate the numbers of this last remaining "viable" population in Cameroon at no more than 100.

Podicipedidae

Tachybaptus ruficollis Little Grebe. Four, WNP, 11–28 Jun 1993 (AS). One adult in breeding plumage, SF, Jun 1994. [Two collected by L.]

Phalacrocoracidae

Phalacrocorax africanus Reed Cormorant. Res. A: Maga, floodplains, WNP, Logone, KNP. Large groups of adults and juveniles along the Logone, Dec. Breeding Andirni colony (see *Ardea melanocephala*), Aug 1997.

Anhingidae

Anhinga melanogaster Darter. One observation, S edge of Waza–Logone area, 5 Jul 93 (AS). [One record (Vielliard 1971).]

Pelecanidae

Pelecanus onocrotalus White Pelican. Res? & PM. VA: SNF, WNP, Logone, KNP, Dec–Feb; F, Mar–Nov. No recent breeding evidence in Mandara Mts (Dragesco 1960, Mahé 1988, Scholte unpubl.) and it seems doubtful whether Mandara pelicans ever visited our study area, as they more likely depended on the nearby Nigerian Yedseram rivers system, as indicated by villagers interviewed in the Mandara Mts. In the 1980s Mandara pelican numbers were limited to an estimated 30 pairs (Mahé 1988), compared to the hundreds observed in our study area.

P. rufescens Pink-backed Pelican. Res? or migrant. F: Maga, SNF, Logone, KNP. Young about to leave colony in WNP, 30 Mar 96 (Fig. 2). [Contrary to L, not observed during rainy season, and characteristically present in dry season.]



Figure 2. Pink-backed Pelican, breeding in Waza NP, March 1996

Ardeidae

³*Botaurus stellaris* Eurasian Bittern. PM. Six records in SF, perhaps sometimes same individual: 30–31 Oct 1994, 14 Nov 1994, 10 Oct 1995, 21–27 Oct 1997. [One previous Waza record (Wetten & Spierenburg 1993). Only one other Cameroon record (L).]

Ixobrychus m. minutus Little Bittern. (*I. m. payesii* not recorded). PM. F: SF, Aug–Dec. [Earlier than mentioned by L.]

I. sturmii Dwarf Bittern. Four records SF: 16 Sep 1994, 18, 28, 30 Oct 1994. [First Cameroon records outside Jan–Jun (L), during which period we did not see it.]

Nycticorax nycticorax Black-crowned Night Heron. PM. A: SNP, WNP, KNP, Oct–Jun. In May and Jun only juveniles.

Ardeola ralloides Squacco Heron. Res, PM. VA: Jul–Nov; A: rest of year. Maga, SNF, WNP, Logone, KNP. Several in breeding plumage, Oct.

Bubulcus ibis Cattle Egret. Res. VA: entire area. Breeding Jun–Aug. At least 5 colonies in the area.

Butorides striatus Green Heron. Res. F: Maga, SNF, WNP, Logone, KNP. Two newly fledged young 18 Oct 1994. [Contrary to L, present throughout the year.]

Egretta ardesiaca Black Heron. Res? C: Maga, SNF, WNP, KNP, Aug–Feb. [Far more common than concluded by L.]

E. garzetta Little Egret. Res? & PM. A: entire area.

E. intermedia Intermediate Egret. Res. C: Maga, SNF, WNP, Logone, KNP. Breeding Andimi colony, Aug 1997 (cf. *Ardea melanocephala*).

E. alba Great Egret. Res? & PM. A: Nov; C: rest of year. Maga, SNF, Logone, WNP, KNP.

Ardea purpurea Purple Heron. PM. A: Sep–Oct, C: rest of year. Maga, SNF, WNP, KNP.

A. cinerea Grey Heron. Res? & PM. C: Maga, SNF, WNP, Logone, KNP.

A. melanocephala Black-headed Heron. Res. A: entire area. Colony of c. 2000 pairs near Andimi (Fig. 3; see Scholte *et al.* in press). Smaller colony in WNP. Breeding Jun–Sep.

A. goliath Goliath Heron. Five records. 10 May 1992 (KNP), 16 Jan 1993 (Maga) 24 Aug, 10 Sep and 2 Nov 1994 (SF). [All year round; cf. L.]

Scopidae

Scopus umbretta Hamerkop. Res. U: Maga, WNP; C: KNP. Breeding in KNP in *Tamarindus* woodland, 16 Feb 1992. Copulating KNP, 11 Apr 1993 [See also Vanpraet (1977). Now less common than mentioned by L and no longer in large concentrations as described by Dragesco (1961).]

Ciconiidae

Mycteria ibis Yellow-billed Stork. Res. C: Maga, SNF, WNP, Logone, KNP. Flocks up to 60. Breeding Feb–Apr (floodplain, WNP), nest building and mating 10 Oct 1995. [Observed throughout year, *contra* L.]

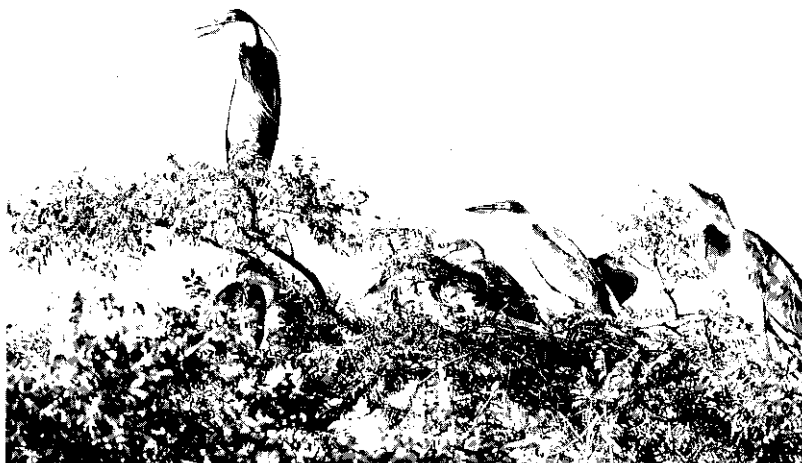


Figure 3. Black-headed Heron colony, Andirni, August 1997

Anastomus lamelligerus African Open-bill Stork. AM. C: Nov–Mar, A: Apr–Jun. Maga, SNF, WNP, Logone. Normally not present during inundation period (*pace* L), however nine observed on 1 Sep 1996 as well as several Oct 1997.

Ciconia abdimii Abdim's Stork. AM. F: entire area, Mar–Jun and Sep–Nov. Flocks up to 500 birds. No breeding observed.

C. episcopus Woolly-necked Stork. Res? C: SNF, WNP, Logone, KNP. Flocks up to 60.

C. ciconia White Stork. PM. F: Maga, SNF, WNP, Logone, KNP, Nov–Mar. Flocks up to 1000. Three immature birds near Maga, Jun 1994. [Not previously observed in “spring” period, L. For more detailed information see Mullié *et al.* (1995).]

³*C. nigra* Black Stork. PM. Four (including 2 juveniles), WNP, 16 Dec 1992 (PE), one WNP, Mar 1997 (J. Culverwell, pers. comm.). [Mentioned by Vanpraet (1977), but not by L, who predicted its presence based on observations in the Benoué valley in Nigeria.]

Ephippiorhynchus senegalensis Saddle-billed Stork. Res? F: SNF, WNP, Maga. Often in couples. Juveniles observed throughout the year. Surprisingly absent from KNP.

Leptoptilus crumeniferus Marabou Stork. Res. A: entire area. Colonies in towns such as Zina, Guirvidig and Pouss, on the NE edge of WNP and in Chad near KNP. Displaying in Oct, breeding Dec–Jan. [Breeding only from Feb according to L.]

Threskiornithidae

Plegadis falcinellus Glossy Ibis. PM. F: Maga, SNF, WNP, Logone, KNP, Sep–Jun. Flocks up to 500.

Bostrychia hagedash Hadada. Res? F-C: SNF, WNP, Logone, KNP. Absent from floodplain during inundation period. Display flight in wooded savanna of WNP, Jul 1994.

Threskiornis aethiopica Sacred Ibis. Res. C: Maga, SNF, WNP, Logone, KNP. Absent from floodplain during inundation period. One pair breeding in Andirni colony, Jul 1994 (see *Ardea melanocephala*).

¹*Platalea leucorodia* Eurasian Spoonbill. PM. One adult present in SF, May–Jun 1994. [Observed near Lake Chad in Nigeria (L).]

P. alba African Spoonbill. Res? F: SNF, WNP, KNP, Oct–Jun. Flocks up to 320 birds.

Phoenicopteridae

²*Phoenicopus ruber* Greater Flamingo. One bird in group of White Pelicans, SF, 6 Feb 1995. [Only in S Cameroon (Brown *et al.* 1982, L).]

Anatidae

Dendrocygna bicolor Fulvous Whistling-Duck. Res? F: Maga, SF, WNP, Logone, KNP.

D. viduata White-faced Whistling-Duck. Res. VA: Maga, SNF, WNP (see Fig. 4), Logone, KNP. Three immatures in SF, 16 Sep 1994, showing breeding during the rainy season. [L mentioned lack of accurate breeding data for Cameroon.]

Thalassornis leuconotus White-backed Duck. AM. Three in WNP, 7 Jul 1994.



Figure 4. White-faced Whistling-Duck, Waza, October 1997

Alopochen aegyptiacus Egyptian Goose. AM. Four in KNP throughout Feb 1996. Three ,SF, 30 Oct 1997. Surprisingly rare in the area compared to the Benoué valley. [Four birds on 21 Jan 1993 (Wetten & Spierenburg 1993); now possibly less common than before (see L).]

Plectropterus gambensis Spur-winged Goose. Res? A: Maga, SNF (see Fig. 5), WNP, Logone, KNP.



Figure 5. Spur-winged Goose, S Floodplain, 1996

Sarkidiornis melanotos Comb Duck. Res? A: Maga, SNF, WNP, Logone, KNP. Flocks up to 200.

Nettapus auritus African Pygmy Goose. Res? 60, two and five respectively 16 Jan 1993, 13 May 1993 and 4 Feb 95, Maga. SF: a pair, 26 Aug 1994; 10, 30 Oct 1997. [Collected at WNP (L), but not observed there lately.]

Anas acuta Northern Pintail. PM. F: SNF, WNP. Mainly present, Oct–Feb. Flocks up to 530. One WNP, 24 Apr 1994; one female SF, May–Jun 1994.

A. querquedula Garganey. PM. VA: Maga, SNF, WNP, Logone, KNP, Sep–Feb. 25 in the floodplain, May–Jun 1994. Flocks up to 15,000 in SF.

¹*A. clypeata* Northern Shoveler. PM. F: SNF, WNP, KNP. [Occurrence unconfirmed (L).]

Pandionidae

Pandion haliaetus Osprey. PM. U: Maga, SNF, Logone. C: KNP, Sep–May. One on 29 Aug. 1994, probably a summering bird. On 16 Jan 1993 seven near Maga. [Almost certainly more than a passage migrant, *contra* L.]

Accipitridae

Pernis apivorus Honey Buzzard. PM. SF: 10, 16, 29 Oct 1994, 24 Nov 1994. NF: one, 2 Nov 1997. [Previously observed by Thiollay (1978) in WNP.]

²*Machaerhamphus alcinus* Bat Hawk. Res? Recorded in Zina town, 16 Oct 1994 and Zimado, 23 Feb 1995. Twice recorded near Waza town, 26 May 1993 (AS), 31 May 1996. One, Andirni, 2 Dec 1998. Probably overlooked in N Cameroon. [Only forest and well-wooded savanna zones (L).]

Elanus caeruleus Black-shouldered Kite. Res? F: SNF, WNP, KNP; A: WNP, rainy season. Pair displaying, 16 Jan 93 (PE). Absent from floodplain during inundation.

Chelictinia riocourii African Swallow-tailed Kite. AM. C: Nov-Jun, SNF, WNP, KNP. Group of 11, 1 Nov 1994.

Milvus migrans Black Kite. Res & PM. A: entire area.

Haliaeetus vocifer River Eagle. Res; F: SNF, WNP, Logone, KNP. One on nest, WNP, 16 Dec 1992 (PE).

Neophron percnopterus Egyptian Vulture. PM, AM. F: Nov-Mar, WNP, Logone, KNP. Breeding recorded near study area (Scholte in press). [More common than previously known (L).]

Necrosyrtes monachus Hooded Vulture. Res; A: entire area. Breeding Feb-Jun. (see Scholte in press).

Gyps africanus African White-backed Vulture. Res. A: entire area. Breeding period Jan-Apr (see Scholte in press).

G. rueppellii Rüppell's Griffon. Res. A: entire area. Nests with young on Waza rock, 15 Feb 93 (PE) in colony of 20–30 pairs; four pairs only in 1997 (see Scholte in press). [More common than previously known, (L).]

Aegypius tracheliotus Lappet-faced Vulture. Res. F: WNP, SNF, KNP (see Scholte in press).

A. occipitalis White-headed Vulture. Res. F: WNP, KNP. (see Scholte in press).

Circaetus gallicus European Snake Eagle. Res & PM. F: entire area, Oct–Apr. Nesting Dec–Feb in WNP. We have often not been able to distinguish the two races *gallicus* and *beaudouini* in the field (see also Elgood *et al.* 1994).

C. cinereus Brown Snake Eagle. Res?. F: SNF, WNP, KNP. [More common than previously known (L).]

C. cinerascens Smaller Banded Snake Eagle. Recorded twice in KNP, 16 Feb 1992, 20 Jun 1994. [Observed by Thiollay and Chappuis near Kousseri (quoted by L).]

Terathopius ecaudatus Bateleur. Res. F: entire area. Juveniles, Oct 1994.

Polyboroides typus African Harrier Hawk. Res? F: SNF, WNP, KNP.

Circus macrourus Pallid Harrier. PM. C: entire area, Nov–May. First arrival date 1994, 18 Sep.

C. pygargus Montagu's Harrier. PM. C: entire area, Oct–Apr. [Confirms L that at least as common as *C. macrourus*.]

C. aeruginosus Marsh Harrier. Res? & PM. C: entire area; A: during Palaearctic winter. [More common than suggested by L.]

Micronisus gabar Gabar Goshawk. Res? F: SNF, WNP; C: KNP. Melanistic form regularly recorded.

Melierax metabates Dark Chanting Goshawk. Res? C: entire area. Probably breeding during the inundation period (Aug–Nov).

Accipiter badius Shikra. Res? F: SNF, WNP; C: KNP.

Buteo rufipennis Grasshopper Buzzard. Res. C: entire area, but during the rainy season not recorded in the floodplains [*contra* L.]

Buteo rufinus Long-legged Buzzard. PM. One record, Maga, 5 Feb 1995. [Previous records by Thiollay (1978).]

Buteo auguralis African Red-tailed Buzzard. Res? U: SNF, WNP. C: KNP.

Aquila pomarina Lesser Spotted Eagle. PM. One record Maga, 14 Jun 1994. [Many observations in Feb and Apr 1973 (Thiollay 1978).]

A. rapax. A. r. belisarius Tawny Eagle. Res. C: SNF, WNP, KNP. Breeds WNP and KNP, Dec–Apr. *A. r. nipalensis* Steppe Eagle. PM. Two juveniles, 5 Feb 1993 (PE) and 28 May 1994. [Two observed in 1975 (Thiollay 1978).]

A. wahlbergi Wahlberg's Eagle. Res? U: SF, WNP.

Hieraaetus spilogaster African Hawk Eagle. One record, WNP, 26 Sep 1992. [Twice observed by Thiollay (1978).]

H. pennatus Booted Eagle. PM. U: Maga, SF, WNP, KNP, Oct–Feb. Once recorded during Palaearctic summer, 21 Jun 1994.

Lophaelus occipitalis Long-crested Eagle. Res? F: Maga, SNF, WNP, KNP.

Polemaetus bellicosus Martial Eagle. Res. U: SF, WNP, KNP.

Sagittariidae

Sagittarius serpentarius Secretary Bird. Res? F: WNP, KNP.

Falconidae

Falco naumanni Lesser Kestrel. PM. One, WNP, 5 Dec 1997. [One, Jan 1993 (Wetten & Spierenburg 1993). Regularly observed in 1975 by Thiollay (1978).]

F. tinnunculus Common Kestrel. PM, AM. U: SF, WNP. C: KNP. [More than 10 observed in WNP (Pettet 1976).]

F. alopex Fox kestrel. Res? F: WNP.

F. ardosiaceus Grey Kestrel. Recorded three times: Maga, 28 May 1994; WNP, 25 Feb 1995, 10 Nov 1997.

F. chicquera Red-necked Falcon. Res? C: Maga, SNF, WNP, KNP.

F. vespertinus Red-footed Falcon. PM. One record: SF, 28 Sep 1994. [WNP in Apr and once in Feb (L).]

²*F. cuvieri* African Hobby. One observation WNP, 28 Apr 1993 (AS). [Not observed before in savanna in Cameroon (L).]

F. biarmicus Lanner Falcon. Res? C: Maga, SNF, WNP, KNP.

F. peregrinus. F. p. peregrinus Peregrine Falcon. PM. U: WNP, SNF, Nov–Jan. *F. p. pelegrioidus* Barbary Falcon. One KNP, 21 Jan 1993 (Wetten & Spierenburg 1993). [Not mentioned by L.]

Phasianidae

Numida meleagris Helmeted Guineafowl. Res. VA: SNF, WNP, KNP. Average densities in wooded habitats in WNP fluctuated between 38 and 215 birds/km² (H. Njifortii pers. comm.).

¹*Coturnix coturnix* Common Quail. 15 at drinking pool WNP, evening 25 Mar 1993 (AS); six, 7 Feb 1995, flushed several times by moving car on E border of WNP. Identified by pale wings and call when flushed.

³*C. delegorguei* Harlequin Quail. Res? C: SF, WNP. [One previous Cameroon record (L).]

Francolinus clappertoni Clapperton's Francolin. Res? A: SNF, WNP, KNP.

Turnicidae

Ortyxelos meiffrenii Quail plover. Res? U: WNP.

Turnix sylvatica African Button Quail. One record, 25 Mar 1993, WNP (AS). [No previous Cameroon observations but known from Chad and Nigeria (L)]

Rallidae

Crex egregia African Crake. AM? F: SF, Oct–Dec.

C. crex Corncrake. One recorded SF, 11 Oct 1994. [One record (L).]

Aenigmatolimnas marginalis Striped Crake. Recorded SF, 16 Oct 1994. [Only recorded from forest zone (L).]

Amaurornis flavirostris Black Crake. Res? F–C: Maga, SNF, WNP, KNP.

Porphyrio alleni Allen's Gallinule. One recorded SF, 23 Aug 1994. [Mentioned by Vanpraet (1977) for WNP.]

P. porphyrio Purple Swampphen. 25 Lake Maga, Jan 1997. [Not recorded Cameroon, although observed around Lake Chad in Nigeria (L), see also Elgood *et al.* 1994.]

Gallinula chloropus Moorhen. One recorded WNP, 24 Nov 1992 (PE), two at Maga, Jan 1996, five at Maga, Jan. 1997 [Recorded by Dragesco (1961) and Fry (1970) and collected (L).]

G. angulata Lesser Moorhen. Recorded three times SF, 12 Oct 1994, 27 Nov 1997 and 5 Dec 1997 (Andirni). Also observed WNP (AS).

Gruidae

Balearica pavonina Crowned Crane. Res. A: Maga, SNF, WNP, Logone, KNP. Breeding starts Aug. Nest with chick and egg in water 50 cm deep, Oct 1995 (see Scholte 1996).

Otididae

Neotis denhami Denham's Bustard. AM. U: SP, SF, WNP, Jun–Jul. One male, WNP, 21 Nov 1998.

Neotis nuba Nubian Bustard. One male WNP, early May 1998. [Praed & Grant 1970 erroneously mention it from Cameroon (L); once observed Nigeria (Elgood *et al.* 1994), rather rare S Chad (Salvan 1968), one observed Apr 1992 in Chad, 20 km east of Zimado, pers. obs.]

Ardeotis arabs Arabian Bustard. Res. C: SF, WNP; once recorded KNP, 27 Mar 1996. Displaying Apr–May. Breeding starts after the first rains at end of May. A hen with one chick, 29 Jun 1994 and a hen with three chicks, 15 Jul 1994.

Eupodotis ruficrista Crested Bustard. One male on road in wooded savanna WNP, 18 Sep 1994. In floodplain zone of WNP, one 2 Nov 1995 and one female on 26 Feb 1996. [Present in Nigeria and Chad.]

E. senegalensis White-bellied Bustard. Res? U: SNF, WNP. Calling Nov–Jan.

E. melanogaster Black-bellied Bustard. Res? F: SNF, WNP. Display near Zina, 20 Jul 1994.

Jacaniidae

Actophilornis africana African Jacana. Res. A: Maga, SNF, WNP, Logone, KNP. A fledgling, Maga, 4 Feb 1995; male with chicks, Andirni, 21 Nov 1998.

Microparra capensis Lesser Jacana. Res? U: Maga, Feb 1995, Jan 1997; SF in May, Jun 1994, Nov 1996 and Oct 1997. [Two records in N Cameroon (L).]

Rostratulidae

Rostratula benghalensis Painted Snipe. AM. F: SNF, Oct–Jul. [Collected WNP, 1970 (L).]

Recurvirostridae

Himantopus himantopus Black-winged Stilt. PM, Res? A: SNF, WNP, Maga. Numbers increase from Sep to Apr.

Recurvirostra avosetta Eurasian Avocet. R: One KNP, 12 Apr 1992; four, Logone 25 Jan 1996. [Once observed by Dragesco (1961), also mentioned by Vanpraet (1977).]

Burhinidae

Burhinus senegalensis Senegal Thick-knee. Res? F: SNF, WNP, KNP.

B. capensis Spotted Thick-knee. Res? U: SNF, WNP.

Glareolidae

Pluvianus aegyptius Egyptian Plover. Res? A: Maga, SNF, WNP, Logone, KNP. During rainy season also on higher ground.

Cursorius chalcopterus Bronze-wing Courser. Three records in WNP (AS): two, 4 Apr 1993; two, 25 May 1993; one, 10 Jun 1993. [Mentioned for inundation area by L, possibly as transit migrant.]

Glareola pratincola Common Pratincole. PM, Res. Maga, SNF, WNP: VA Nov–May, F Jun–Oct. Breeding Feb 1995.

G. cinerea Grey Pratincole. Three on bank of the Logone, 18 Jul 1994.

Charadriidae

Charadrius dubius Little Ringed Plover. PM. C: SNF, Logone, KNP, Nov–Feb.

C. hiaticula Ringed Plover. PM. C: SNF, Logone, KNP, Oct–Feb. [More common in N Cameroon than suggested by L.]

C. pecuarius Kittlitz's Sand-Plover. Res? F: SNF, Logone.

C. alexandrinus Kentish plover. Three SF, 22 Nov 1992 (PE).

Vanellus senegallus African Wattled Plover. Res? C: SNF, WNP, Logone, KNP.

V. albiceps White-headed Lapwing. Four records: KNP, 14 Nov 1992; SF, 19 Jan 1993 (PE), 12 and 30 Aug 1994.

V. tectus Black-headed Lapwing. Res. A: entire area, especially in denuded areas (locally called “hardé”). On nest under shrub, 3 m from sleeping lions in WNP, 24 Apr 1994.

V. spinosus Spur-winged Plover. Res. A: SNF, WNP, Logone, Maga. Chicks Feb 1995, May and Sep 1994.

³*V. lugubris* Senegal Plover. Two records SF, 18 and 20 Jul 1994, possibly same bird. [Not mentioned by L, although Vanpraet (1977) mentioned it for WNP.]

V. crassirostris Long-toed Lapwing. U: SF, Aug–Dec 1994, one 30 Oct 1997. Maga: three, 1 Apr 1994; 15 couples, 4 Feb 1995; 40 in Jan 1996. Logone: two, 1 Apr 1994. [Two previous records; a straggler (L).]

Scolopacidae

Calidris minuta Little Stint. PM. F: SNF, Logone, KNP, Nov–Apr.

³*C. temminckii* Temminck's Stint. One, SF, 24 Sep 1994. [Collected once in Cameroon: WNP, Dec 1970 (L).]

C. ferruginea Curlew Sandpiper. Three records: Maga, 24 Jan 1993 (PE), 6 Oct 1994; SF, 1 Nov 1994. [Only in "autumn" (L).]

C. alpina Dunlin. Twice recorded on 20 Feb 1992 by Robertson (1993). [Mentioned by Dragesco (1961), considered an error by L.]

Philomachus pugnax Ruff. PM. VA: Maga, SNF, Logone, WNP, KNP, Oct–Apr. Also present in small numbers May–Sep. [For more details see OAG Münster (1991).]

²*Lymnocyrtus minimus* Jack Snipe. Recorded SF: one 1 and 5 Nov 1994; one, 9 Oct 1995. [Common in Chad (L).]

Gallinago gallinago Common Snipe. PM. F: SF, KNP, Oct–Feb, one in WNP May 1975 (pers.comm. A.Green) [Not recorded in Palaearctic winter (L).]

G. media Great Snipe. PM. U: SF, Oct–Feb. [Not recorded in Palaearctic winter (L).]

Limosa limosa Black-tailed Godwit. PM. C: SNF, WNP, KNP, Oct–Feb (Mar). F: Apr–Sep.

Numenius arquata Eurasian Curlew. PM. U (c. 10 records): SNF KNP, Nov–Feb. [Not mentioned by L; see Dragesco (1961), Robertson (1993).]

Tringa erythropus Spotted Redshank. Seven records: 60, SF, 5 Apr 1991 (PS); one, SF, 15 Jul 1994; one, SF, 7 Feb 1995; 60, SF, 9 Oct 1995; two, WNP, 30 Jan 1997; one, SF, 24 Nov 1997; one, SF, 5 Dec 1997.

T. totanus Common Redshank. PM. U: SNF, WNP, KNP, Oct–Feb.

T. stagnatilis Marsh Sandpiper. PM & Res? C: SNF, WNP, Nov–Apr, F: May–Oct. [More common than suggested by L.]

T. nebularia Common Greenshank. PM. C: Maga, SNF, WNP, KNP, Oct–Apr. F: May–Sep.

T. ochropus Green Sandpiper. PM. C: Maga, SNF, WNP, Logone, KNP, Nov–Apr. F: May–Oct.

T. glareola Wood Sandpiper. PM, Res? A: SNF, WNP, KNP, Sept–May. C: Jun–Aug.

Actitis hypoleucos Common Sandpiper. PM, Res? C: SNF, WNP, Logone, throughout year. [Normally not wintering in N Cameroon (L).]

Laridae

Larus cirrocephalus Grey-headed Gull. Res. A: Maga, SNF, WNP, Logone, KNP.

³*L. ridibundus* Black-headed Gull. PM. U: Maga, NF, KNP, 17 Jan 1993 (PE), 23 Mar 1993, 12 Aug 1994. [Two, 20 Feb 1992, (Robertson 1993); not recorded (L).]

²*L. fuscus* Lesser Black-backed Gull. PM. U: Logone, Maga, Dec–Feb. Group of 31 along Logone, 5 Feb 1995.

Gelochelidon nilotica Gull-billed Tern. C: Maga, SNF, Logone, KNP, Nov–Apr. [Few records (L).]

²*Sterna caspia* Caspian Tern. R: Logone, KNP. Two 17 Jan 1993, five, 5 Feb 1995.

²*S. hirundo* Common Tern. PM. U: SF, Logone, KNP, Nov–Jan. [Only coast (L).]

S. albifrons Little Tern. PM. C: SNF, Logone, KNP, throughout year.

¹*Chlidonias hybridus* Whiskered Tern. PM. F: SF, Oct–Nov.

³*C. nigra* Black Tern. PM. A group of 20 SF, 21 Oct 1994. [Reaches Chari according to Bannerman (1931), but this contested by Vielliard (1971).]

C. leucoptera White-winged Black Tern. PM. C: Maga, SNF, WNP, Logone, KNP, Sep–Jan. Present in smaller numbers Jun–Aug. [L. suspected its presence all year.]

Pteroclididae

Pterocles exustus Chestnut-bellied Sandgrouse. Res? F: SNF, WNP, KNP. Pair with small chicks, WNP, Apr 1998. [More common than indicated by L.]

P. quadricinctus Four-banded Sandgrouse. Res. A: SNF, WNP, KNP, dry season; F: rainy season. Pair with chick, WNP, 16 Apr 1996. [Breeding only till January in Benoué area (L.)]

Columbidae

Treron waalia Bruce's Green Pigeon. Res? C: SP. [Collected WNP, Dec 1970 (L); see also Holmes (1972).]

Turtur abyssinicus Black-billed Wood-dove. Res. C: Maga, SNF, WNP, KNP.

Oena capensis Namaqua Dove. Res. VA: entire area. Nest with two eggs, 28 Nov 1992 (PE).

Columba guinea Speckled Pigeon. Res. A: entire area. Breeding Apr–Aug.

Streptopelia decipiens Mourning Dove. Res. A: entire area. Breeding mainly Feb–Aug but nest-building also in Nov 1997.

S. vinacea Vinaceous Dove. Res. A: entire area. Mainly breeding Feb–Aug, but nest with eggs, WNP, 29 Oct 1993.

S. roseogrisea African Collared Dove. Res? F: SNF, WNP.

S. turtur European Turtle Dove. PM. A: WNP, Nov, Dec and Feb. [According to Pettet (1976), passage in Oct–Nov and Feb–Mar, Fry (1970) estimated that more than 60,000 passed through the study area, a large proportion of the W Palaearctic population.]

S. senegalensis Laughing Dove. Res? C: entire area.

Psittacidae

Poicephalus senegalus Senegal Parrot. Recorded twice: one, KNP, 23 Feb 1992; five, WNP, 4 Jun 1996. [Expected, but not confirmed WNP (L).]

Psittacula krameri Rose-ringed Parakeet. Res? C: KNP, WNP. Recorded once near Zimado, 24 Feb 1995. [Mentioned for WNP by Broadbent (1971).]

Musophagidae

Crinifer piscator Western Grey Plantain-eater. Res. C: in KNP. Recorded WNP, 18 Sep 1994. [Mentioned by Vanpraet (1977). Collecting twigs in Aug 1975 in KNP (Kavanagh 1977).]

Cuculidae

Oxylophus jacobinus. *O. j. serratus* Black Crested Cuckoo. Recorded twice in SF, 22 Sep 1994, 16 Oct 1994. [No proof of occurrence (L).] *O. j. pica* Black and White Cuckoo. AM. C: entire area, Jul–Dec. Seen being chased by *Ploceus melanocephalus*, Sep 1994.

O. levaillantii Levaillant's Cuckoo. One, WNP, 29 Oct 1993, 9 Aug 1994; one, NF, 23 Jun 1994.

Clamator glandarius Great Spotted Cuckoo. PM, AM. U: SNF, WNP. F: KNP.

²*Cuculus clamosus* Black Cuckoo. One, WNP, 19 Jan 1996.

C. canorus Common Cuckoo. PM. U: WNP: 31 Mar 1993, 17 Apr 1993 (AS).

C. gularis African Cuckoo. Res? F: Maga, WNP, KNP.

C. klaas Klaas's Cuckoo. AM. R: WNP, Mar 1993 (AS).

Chrysococcyx caprius Diederik Cuckoo. AM. C: SF, WNP, Jun–Nov. A chick hosted by *Ploceus luteolus*, 29 Oct 1994.

Centropus senegalensis Senegal Coucal. Res? C: entire area.

Strigidae

Tyto alba Barn Owl. Res. F: entire area.

Otus scops Common Scops Owl. Res? F: SF, KNP.

O. leucotis White-faced Scops Owl. Res? U: WNP. [Mentioned by Vanpraet (1977).]

Bubo africanus Spotted Eagle-Owl. Res. U: SNF, WNP, KNP. Nest with two eggs, Zina, Feb 1995. Downy young, WNP, 9 Apr 1996.

B. lacteus Verreaux's Eagle-Owl. KNP in *Tamarindus indicus* woodland: pair, 14 Mar 1993 and 17 Apr 1993; one with *B. africanus*, 20 May 1996. One on bridge near Pété, 2 Dec 1998. [Observed Jul 1975 (Kavanagh 1977).]

Asio capensis African Marsh Owl. AM. U: SF, one, Apr–May 1994, 9 Oct 1995; WNP, one, Oct 1997.

Caprimulgidae

Caprimulgus climacurus Long-tailed Nightjar. Res? C: entire area. Observed all months but especially common during rainy and flood season. [Only in rainy season (L).]

C. inornatus Plain Nightjar. Res? Three observations. KNP: one, 7 Dec 1991; one, 15 Nov 1994. WNP: 26 Nov 1997.

Macrodipteryx longipennis Standard-winged Nightjar. Res? U: WNP, KNP. [KNP: mentioned by Kavanagh (1977), collected Dec 1970 (L). Mentioned by Vanpraet (1977).]

Apodidae

Cypsiurus parvus African Palm Swift. Res. VA: WNP, SNF. A: elsewhere. Breeding throughout the year.

¹*Apus pallidus* Pallid Swift. Ten, WNP, 8 Jun 1993 (AS).

A. apus European Swift. Recorded twice WNP, 14 May 1994, and in 1993 (AS). [Previously recorded Dec–Apr (L).]

²*A. caffer* White-rumped Swift. SF: 9 Jun 1993 (AS) and 21 Jul 1994. [Only once observed in Cameroon, at Ngaoundéré (L).]

A. affinis Little Swift. Res. VA: SNF, WNP, Maga. Breeding Jun–Dec.

²*Tachymarptis aequatorialis* Mottled Swift. One, WNP, 9 Jun 1993 (AS).

²*T. melba* Alpine Swift. Two, WNP, 8 Jun 1993 (AS); group of c. 100 drinking at waterhole, SP, 21 Dec 1997. [Only recorded in S Cameroon (Rodewald *et al.* 1994); not mentioned by L].

Coliidae

Urocolius macrourus Blue-naped Mousebird. Res? C: entire area.

Alcedinidae

Halcyon leucocephala Grey-headed Kingfisher. Res. C: entire area. One nest in bank of the Logomatya river, late Jul 1994.

H. senegalensis Woodland Kingfisher. AM. C: entire area, May–Dec. One nest in a tree, Jul 1994.

H. helicuti Striped Kingfisher. Res? U: SF, Jul–Sep.

Ceyx picta Pygmy Kingfisher. AM. R: WNP, Mar–Apr 1993 (AS). [Collected WNP, Dec 1970 (L).]

Corythornis cristata Malachite Kingfisher. Res? F: SNF, WNP, Logone; C: KNP. [Observed throughout the year, *contra* L.]

Megaceryle maxima Giant Kingfisher. Res? F: KNP. [Observed 1958 along Logone (Dragesco 1961).]

Ceryle rudis Pied Kingfisher. Res. A: Maga, SNF, Logone, KNP; F: WNP Breeding Jun–Aug.

Meropidae

Merops pusillus Little Bee-eater. Res? A: Maga, SNF, WNP, Logone, KNP.

M. bullocki Red-throated Bee-eater. Res? C: KNP. [WNP (Vanpraet 1977).]

M. albicollis White-throated Bee-eater. Res. F: WNP, KNP. One breeding colony near Andirni, late Jun 1994.

M. orientalis Little Green Bee-eater. Res? F: SNF, WNP, KNP.

M. persicus Blue-cheeked Bee-eater. One observation: 25 at Zina, 28 May 1994.

M. nubicus Carmine Bee-eater. Res. A: SNF, WNP, KNP. KNP: two colonies with c. 100 and 400 individuals, 1992; three colonies along (dry) riverbanks, Apr 1993 (Fig. 6). Especially common around bushfires.

Coraciidae

Coracias abyssinica Abyssinian Roller. Res? A: entire area.

Eurystomus glaucurus Broad-billed Roller. One record, WNP, 8 Aug 1993.

Upupidae

Phoeniculus purpureus Green Wood-Hoopoe. Res? C: WNP, KNP.

P. aterrimus Black Wood-Hoopoe. Res? F: WNP, KNP.

Upupa epops Hoopoe. *U. e. senegalensis*. Res? C: WNP, SP, SNF, KNP. *U. e. epops*. PM. U: WNP. Several observations May–Jun 1994.

Bucerotidae

Bucorvus abyssinicus Abyssinian Ground Hornbill. Res? F: Maga, WNP. Less common than in Benoué valley (pers. obs).

Tockus erythrorhynchus Red-billed Hornbill. Res? C: entire area.

T. nasutus African Grey Hornbill. Res? C: entire area.

Capitonidae

Pogoniulus chrysoconus Yellow-fronted Tinkerbird. Res? U: WNP [Collected L.]

Lybys vieillotii Vieillot's Barbet. Res? C: entire area.



Figure 6. Carmine Bee-eater, Kalamaloué NP, April 1993

L. guifsobalito Black-billed Barbet. R: WNP [Recorded once, WNP, 11 Feb 1993 (Beirs 1997).]

Indicatoridae

Indicator indicator Greater Honeyguide. Recorded once, WNP, 13 Feb 1995. [Less common than described by L.]

Picidae

Campethera punctuligera Fine-spotted Woodpecker. Res? U: WNP, SNF, KNP.

Dendropicos elachus Little Grey Woodpecker. One, SF 24 Feb 1995. [WNP (Greling 1972b).]

²*D. fuscescens* Cardinal Woodpecker. Recorded once, KNP, 11 Apr 1993.

D. goertae Grey Woodpecker. Res? F: entire area.

²*Picoides obsoletus* Brown-backed Woodpecker. Res? U: SF, WNP.

Alaudidae

Mirafrja rufocinnamomea Flappet Lark. Recorded once, SF, 12 Dec 1994.

Galerida cristata Crested Lark. Res? C: SNF, WNP.

Eremopterix leucotis Chestnut-backed Sparrow-lark. AM. VA: entire area, Nov–Jun.

Hirundinidae

Riparia paludicola Brown-throated Sand Martin. AM. F: SF, May–Feb.

R. riparia Sand Martin. PM. U: SNF, WNP, May–Jun. [Considerable numbers Dec (Pettet 1976).]

R. cincta Banded Martin. AM. SF: 20, 14 Jun 1994; SP, hundreds, 22–27 Nov 1997.

Hirundo semirufa Rufous-breasted Swallow. One observation, WNP, 14 Jun 1993 (AS).

²*H. senegalensis* Mosque Swallow. Maga, 12 Aug 1994; WNP, 7 May 1998.

H. daurica Red-rumped Swallow. PM. U: WNP, KNP, Nov–Apr.

²*H. smithii* Wire-tailed Swallow. Observed once, WNP, 18 May 1994.

H. aethiopica Ethiopian Swallow. Res. VA: Maga, SNF, WNP, KNP. Breeding Jun–Dec.

H. rustica Barn Swallow. PM. C: SNF, Oct–Feb, first arrival date in 1994, 9 Oct.

Delichon urbica Common House Martin. PM. U: Maga, WNP. Only record: several WNP, 13 May 1993. [Common at Maga, 1991 (OAG Münster 1991).]

Motacillidae

Motacilla flava Yellow Wagtail. PM. A: Maga, SNF, WNP, Logone, KNP, Oct–Apr. First arrival date in 1994, 5 Oct. Ssp. *thunbergi*, *flava* (Greling 1972, L) and *feldegg* observed. [“Tens of thousands” in rice field at Maga (OAG 1991).]

M. alba White Wagtail. PM. U: SNF, WNP, Nov–Feb. [Rare (L).]

²*Anthus novaeseelandiae* Richard’s Pipit. AM. C: SNF, Dec–Jun. [Restricted to montane district (L).]

¹*A. campestris* Tawny Pipit. SF, group of five, 18 Oct 1994. [Not mentioned for Cameroon (L), but area included in map of Keith *et al.* (1992).]

²*A. trivialis* Tree Pipit. PM. R: WNP. Only a few observations, Apr 1994.

A. cervinus Red-throated Pipit. PM. F: SF, WNP, Oct–Apr. Earliest in 1994: 1 Oct.

Macronyx croceus Yellow-throated Longclaw. One observation WNP, 9 Dec 1995. [Mentioned by Vanpraet (1977).]

Campephagidae

Campephaga phoenicea Red-shouldered Cuckoo-shrike. Couple, WNP, 23 Jun 1994. [Less common than indicated by L.]

Pycnonotidae

Pycnonotus barbatus Common Bulbul. Res. A: entire area. Restricted to human settlements.

Turdidae

Luscinia megarhynchos Nightingale. PM. R: SF 26 Mar 1993; NF 14 Feb 1995.

Cercotrichas galactotes Rufous Scrub-Robin. Res? F: SNF, WNP.

C. podobe Black Scrub-Robin. Res? F: SNF, WNP, KNP.

Phoenicurus phoenicurus Common Redstart. PM. U: SNF, KNP, Oct–Feb. Earliest in 1994: 18 Oct.

Saxicola rubetra Whinchat. PM. A: SNF, KNP. Observed Nov–Apr. Earliest in 1994: 15 Sep.

Oenanthe oenanthe Northern Wheatear. PM. C: SNF, WNP, KNP, Nov–Jun. Earliest in 1994: 1 Nov.

³*O. hispanica* Spanish Wheatear. R: Maga, WNP, 3 Mar 1996 [No Cameroon records (L), but included on map in Keith *et al.* 1992. One observation Maga (OAG Münster 1991).]

O. bottae Red-breasted Wheatear. Res. U: SNF, WNP. Breeding starts Apr (PS).

¹*O. isabellina* Isabelline Wheatear. PM. U: WNP, Feb–Apr. [Not mentioned for Cameroon (L).]

Myrmecocichla aethiops Northern Anteater Chat. Res? F: Maga, SP; U: WNP. [Three collected in 1971–2 (L).]

M. solitaria Blue Rock-Trush. Only observation WNP, 25 Feb 1993 (AS). [Several Nov–Mar (Greling 1972b); possibly regular (L).]

Sylviidae

Acrocephalus schoenobaenus Sedge Warbler. PM. VA: SF, Oct–Dec 1994.

A. scirpaceus Reed Warbler. PM. F: SF, Nov–Dec 1994. Earliest in 1994: 16 Nov.

A. arundinaceus Great Reed Warbler. Three records SF: one, 13 Oct 1994; eight, 16 Nov 1994; two, 12 Oct 1995. [Recorded by Vanpraet (1977).]

²*A. rufescens* Greater Swamp Warbler. Res? F: SF. [Presence Cameroon side of Lake Chad, predicted by L, is hereby confirmed.]

Hippolais pallida laeneni Olivaceous Warbler. Res? A: SF, WNP. *H. p. opaca* not observed with certainty.

H. polyglotta Melodious Warbler. PM. Recorded once, SF, 22 Sep 1994.

Cisticola galactotes Winding Cisticola. Res. A: SF.

C. ruficeps Red-pate Cisticola. Res? C: SF. Rufous nape and mottled back; often heard singing. No indication of *C. dorsti*, which occurs nearby, though in different montane habitat (Urban *et al.* 1997).

C. brachypterus Shortwing Cisticola. Recorded once, singing in grassy area bordering wooded savanna, SF, 14 Oct 1994. [Mentioned by Greling (1972a). L doubted its presence and attributed Greling's observation to *C. rufa*.]

C. juncidis Fan-tailed Cisticola. Res. VA: SF, WNP. Breeding Jul–Dec 1994.

Prinia subflava Tawny-flanked Prinia. Res. VA: SF, WNP. Breeding Jul–Dec 1994. Found in virtually all habitat types in the region. Identification mainly based on song. We have not observed River Prinia *P. fluviatilis*, although it occurs nearby (Urban *et al.* 1997).

Camaroptera brachyura Bleating Warbler. Res? F: WNP.

Eremomela pusilla Senegal Eremomela. Res? U: WNP.

Sylvietta brachyura Northern Crombec. Res. F: SF, WNP. Juveniles, Feb 1993 (PE).

Phylloscopus trochilus Willow Warbler. PM. C: SF, WNP, Sep–Dec. Earliest in 1994: 17 Sep. [Only on passage in N Cameroon (L).]

³*P. collybita* Chiffchaff. Recorded once, singing male in tree next to waterhole, WNP, 14 Oct 1994. [One previous Cameroon record, WNP (Pettet 1976).]

P. sibilatrix Wood Warbler. PM. C: SF, WNP, Sep–Dec. Earliest in 1994: 17 Sep.

P. bonelli Bonelli's Warbler. PM. U: WNP, Nov–Apr.

Sylvia borin Garden Warbler. PM. U: WNP, Feb–Apr. [Not common (L).]

¹*S. atricapilla* Blackcap. One male, WNP, 9 Mar 1993 (AS). [One Cameroon record (L).]

S. communis Common Whitethroat. PM. U: SF, WNP. [Common in the north (L).]

S. curruca Lesser Whitethroat. PM. U: WNP, Nov–Apr.

S. cantillans Subalpine Warbler. PM. U: WNP, Dec–Mar.

Hyliota flavigaster Yellow-bellied Hyliota. Recorded once, SP, one male, first week Apr 1998.

Muscicapidae

Melaenornis pallidus Pale Flycatcher. Recorded once, SF, 16 Oct 1994.

Muscicapa striata Spotted Flycatcher. PM. F: SF, Sep–Feb. Earliest in 1994: 22 Sep.

M. aquatica Swamp Flycatcher. Res? U: SF.

Ficedula hypoleuca European Pied Flycatcher. One female, SF, 10 Oct to 7 Nov 1994. [Observed WNP by Greling (1972a).]

Monarchidae

Terpsiphone viridis Paradise Flycatcher. Res? U: Maga, WNP, KNP. Normally brown-red phase, only once one pair of white phase, WNP, 8 Aug 1993. [Further south the white phase seems to be more common, confirming L.]

Platysteiridae

Batis orientalis Grey-headed Batis. One, KNP, 15 Nov 1992. [Earlier collected in Logone Birni; said to be allopatric with *B. senegalensis* (L).]

Laniidae

Nilaus afer Brubru Shrike. Res? U: SNF, WNP. [Recorded WNP (Greling 1972a, Vanpraet 1977), collected WNP (L).]

Tchagra senegala Black-crowned Tchagra. Res? F: SNF; C: KNP.

Laniarius barbarus Barbary Shrike. Res? U: WNP. [See next species.]

L. erythrogaster Black-headed Barbary Shrike. Res? F: SNF; A: KNP. [L suggested that it replaces *L. barbarus* from the inundation area southward and eastward. Our observations confirm this.]

Lanius collurio Red-backed Shrike. Recorded twice in SF: 13 and 16 Oct 1994.

L. isabellinus Isabelline Shrike. PM. F: SNF, Oct–Mar. Earliest in 1994: 10 Oct.

L. minor Lesser Grey Shrike. Recorded once SF, 14 Oct 1994. [Mentioned for WNP by Greling (1972b), not regular *pace* L.]

L. excubitor Great Grey Shrike. Res? F: entire area. Juvenile, Sep 1994. [More common than indicated by L.]

L. excubitorius Grey-backed Shrike. U. SF, several, 30 Nov 1997.

²*L. collaris* Fiscal Shrike. Two observations: KNP, 25 Oct 1992; Maga, 13 Oct 1995.

L. senator Woodchat Shrike. PM. Recorded twice: WNP, 28 Feb 1995; NF, 28 Jan 1996.

L. nubicus Masked Shrike. Recorded SNF: 18 Feb to 26 Mar 1993 (AS); 24 Sep 1994; 26 Feb 1995; 8 Jan 1998. [Observed in WNP by Greling (1972b), not regular *pace* L.]

Timaliidae

Turdoides plebejus Brown Babbler. Res? F: SP. U: WNP. Several, 3 Mar 1996. Also observed 1992 (PE). [Recorded by Fry (1970).]

Remizidae

Remiz punctifrons Sudan Penduline tit. Res? F: WNP.

Nectariniidae

Anthreptes platura Pygmy Long-tailed Sunbird. Res? C: WNP, KNP.

Nectarinia senegalensis Scarlet-breasted Sunbird. Res? U: WNP. [Three collected WNP (L).]

N. pulchella Beautiful Long-tailed Sunbird. Res? C: Maga, SNF, WNP, KNP.

Zosteropidae

Zosterops senegalensis Yellow White-Eye. Res? F: WNP.

Emberizidae

Emberiza tahapisi Rock Bunting. Res? F: SF, WNP.

Fringillidae

Serinus leucopygius Grey Canary. Res. C: SF, WNP. Breeding Sep 1994.

Estrildidae

Amadina fasciata Cut-throat Weaver. Res? U: SNF, WNP. [Common in the inundation area (L).]

Pytilia melba Melba Finch. Res? U: SNF, WNP. Several in Waza town, 2 Nov 1995. [Mentioned by Greling (1972a); ten collected WNP (L).]

Estrilda troglodytes Black-rumped Waxbill. Res? C: SNF, Maga. [Collected WNP (L).]

E. caerulea Lavender Fire-Finch. Res? F: SNF.

E. bengala Red-cheeked Cordon-blue. Res. A: entire area.

Lagonosticta senegala Senegal Fire Finch. Res. A: entire area.

Amandava subflava Zebra Waxbill Res? F: SNF.

Ortygospiza atricollis Quail-Finch. Res? U: SF, WNP. [Observed in WNP (Greling 1972a).]

Lonchura malabarica Warbling Silverbill. Res. A: entire area. Breeding Aug–Nov 1994 (–Feb 1995). Concentrations of hundreds around water holes at the end of the dry season.

L. cucullata Bronze Mannikin. One Maga, 17 Apr 1994. [Not in N Cameroon (L). Collected by Greling (1972b) in Logone Birni.]

Ploceidae

Ploceus luteolus Slender-billed Weaver. Res. C: SNF.

P. velatus Vitelline Masked Weaver. Res. C: entire area. [Further north than suggested by Hall & Moreau (1970), confirming L.]

P. heuglini Heuglin's Masked Weaver. Group of 15, SF, 24 Sep 1994.

P. cucullatus Village Weaver. Res. VA entire area.

P. melanocephalus Black-headed Weaver. Res. VA: Maga, SNF, KNP. Breeding in reedbeds along Logomatya, Sep–Oct. [Collected WNP, 1970 and 1972 (L).]

Quelea quelea Black-faced Dioch. Res. VA: entire area. The largest numbrs observed in the floodplain coincided with the ripening of seeds of *Echinochloa pyramidalis* and *Sorghum arundinaceum*. Thousands gather during the ripening of dry season crops (sorghum, rice) and towards the end of the dry season around waterholes in WNP and KNP.

Euplectes afer Yellow-crowned Bishop. Res. VA: entire area. Breeding plumage appeared in Jul 1994.

²*E. axillaris* Red-shouldered Whydah. Res. A: SNF. Breeding plumage appeared end Jun, 1994. [Not in N Cameroon, but in similar habitats in neighbouring countries (L).]

²*E. macrourus* Yellow-mantled Whydah. R: KNP, several observed 30 Jul 1994.

E. orix Red Bishop. Res. VA: entire area. Breeding plumage appeared end of Jun, 1994.

Bubalornis albirostris Buffalo Weaver. Res. A: entire area.

Plocepasser superciliosus Sparrow-weaver. Res? U: WNP. [Rather frequent (Dragesco (1961)).]

Passer griseus Grey-headed Sparrow. Res. A: entire area.

P. luteus Golden Sparrow. AM. U: in KNP: 23 Feb 1992 (hundreds); 17 May 1992 (several with *P. melanocephalus*); 8 Nov 1992 (one male, seven females/juveniles); 14 Nov 1992 (several). [Mentioned by Greling (1972b) for WNP.]

Petronia dentata Bush Sparrow. Res? U: SF, WNP. [Breeding in WNP (Pettet 1976).]

Sporopipes frontalis Scaly-fronted Weaver. Res. C: SF, WNP. Nest in SF, 27 Oct 1994.

Vidua macroura Pin-tailed Whydah. Res. F: entire area. Male displaying, Jul 1994 [Not in WNP according to L., although mentioned as rather common by Dragesco (1961).]

V. chalybeata Senegal Indigobird. Res? C: entire area.

V. orientalis Broad-tailed Paradise Whydah. Res. F: entire area. Breeding plumage and display appeared Sep 1994 and observed Feb 1995.

Sturnidae

Lamprotornis purpureus Purple Glossy Starling. Res? C: entire area.

L. chalybaeus Greater Blue-eared Glossy Starling. Res? C: entire area.

L. caudatus Long-tailed Glossy Starling. Res. A: entire area.

Cinnyricinclus leucogaster Amethyst Starling. Several juveniles/females, KNP, 14 Nov 1992.

Spreo pulcher Chestnut-bellied Starling. Res. A: SP; C: elsewhere.

Craetophora cinerea Wattled Startling. AM. SP: one in group of *Lamprotornis chalybaeus*, near Andirni, 22 Nov 1998. [No Cameroon records (L). Observed WNP, Feb 1992, including a flock of 60 (Robertson 1993); elsewhere in N Cameroon (Wetten & Spierenburg 1993).]

Buphagus africanus Yellow-billed Oxpecker. Res? C: SNF, WNP, KNP.

Oriolidae

Oriolus oriolus Golden Oriole. PM. F: SNF, WNP, KNP, Sept–May. Earliest in 1994: 24 Sep. More than 30, 14 Apr to 2 May 1993 (AS).

³*O. auratus* African Golden Oriole. Observed twice in KNP, 11 Apr 1993 and 8 Aug 1993. [Not north of Yagoua (L).]

Dicruridae

Dicrurus adsimilis Fork-tailed Drongo. Res? C: WNP, KNP.

Corvidae

²Ptilostomus afer Black Magpie. Res? A: entire area. [Absent from Far North (L).]

Corvus albus Pied Crow. Res. C: entire area.

List 2. Species observed in the Waza–Logone Area only prior to 1980**Phalacrocoracidae**

Phalacrocorax carbo Great Cormorant. Observed once in 1940 near Logone Birmi, NF (Salvan 1967).

Anatidae

Anas penelope Wigeon. Observed in WNP, Jan–Feb 1958 (Dragesco 1961).

A. strepera Gadwall. One observed in WNP, Dec 1958 (Dragesco 1961).

A. crecca Green-winged Teal. Mentioned for WNP by Dragesco (1961) and Vanpraet (1977); 15 observed in WNP by Fry (1970).

A. capensis Cape Teal. Mentioned for WNP without further details by Vanpraet (1977).

A. hottentota Hottentot Teal. Large flock in WNP, Jan 1976 (L).

Marmaronetta angustirostris Marbled Teal. One flock in WNP, Jan 1976 (L).

Aythya nyroca Ferruginous Duck. Hundreds in WNP, Jan 1976 (L), also in Mar 1967 (Greling 1972b).

Accipitridae

Gypohierax angolensis Palmnut Vulture. Observed in WNP, Mar 1969 (Broadbent 1971); P. Mundy (pers.comm. 1996) confirmed its presence in N Nigeria in the same period (see Scholte in press).

Aquila clanga Spotted Eagle. Two observed, WNP and/or NSF, Feb and/or Apr 1973 (Thiollay 1978).

Falco subbuteo Hobby. One adult observed in WNP, Feb (Thiollay 1978)

F. cherrug Saker. Mentioned for WNP by Vielliard (1971), and three by Thiollay (1978). This unusual observation is accepted because the latter author also observed *F. biarmicus*.

Charadriidae

Limosa lapponica Bar-tailed Godwit. Mentioned without further details for WNP by Vanpraet (1977); no details other than “for the inundation area” (L).

Rynchopidae

Rynchops flavirostris African Skimmer. Common along the Logone in 1958–9 (Dragesco 1961).

Meropidae

Merops apiaster European Bee-eater. Mentioned for WNP without details (Vanpraet 1977).

Coraciidae

Coracias garrulus European Roller. Fairly common in WNP, Dec 1958 to Jan 1959 (Dragesco 1961).

Capitonidae

Lybius dubius Bearded Barbet. One observed in Logone Birni, 16 Jan 1967 (Greling 1972b). L. stated not observed in WNP.

L. leucocephalus White-headed Barbet. One observed KNP, March 1975 (Kavanagh 1977). Common in neighbouring Mandara Mts (pers. obs.).

Motacillidae

Motacilla aguimp African Pied Wagtail. Occured along the Logone 1958–9 (Dragesco 1961). Common in the Benoué valley (pers. obs.).

Turdidae

Cercomela melanura Black-tailed Rock-Chat. Once observed in WNP, 10 Apr 1966 (Greling 1972b).

Cossypha heuglini White-browed Robin-Chat. Several near Logone-Birni, NF 1965–7 (Greling 1972b)

Monticola saxatilis Rock-Thrush. Regular at Waza (L), but no recent observations.

Laniidae

Prionops plumata Long-crested Helmet-shrike. Mentioned for WNP without further details (Vanpraet 1977).

Sylviidae

Locustella luscinioides Savi's Warbler. Two well documented records for WNP, Nov 1969 (Fry 1970).

Estrildidae

Estrilda melpoda Orange-cheeked Waxbill. Collected in Pouss, without further details, specimen in Paris (L).

Ploceidae

Anomalospiza imberbis Parasitic Weaver. Collected in WNP, 1971 (L).

Discussion

The present checklist contains eleven species which appear not to have been documented in Cameroon before. Twenty-six species had not been observed before in the Far North Province, of which most were previously thought not to occur north of the Adamawa plateau. Another 12 species had as yet not been observed as far north in Far North Province Cameroon, or had only once been observed there before (see List 1).

In terms of species richness, the Waza–Logone area is only surpassed in West and central Africa, by a few well-studied rainforest areas, such as Korup National Park and environs (approximately 5000 km² with 407 species, Rodewald *et al.* 1994, Green & Rodewald 1996). In the Jonglei area, a huge floodplain of 68,000 km² in S Sudan, only 270 species have been observed, although the area is less well studied (Howell *et al.* 1988). In contrast, in the well studied, but much smaller, Djoudj National Park (160 km²), 316 species have been recorded (Rodwell *et al.* 1996).

Compared with savanna areas such as Bamingui-Bangoran NP of 11,000 km² with 278 species (Green 1983, 1984, 1990) and a steppe zone such as Ouadi Rimé-Ouadi Achim of 78,000 km² with 267 species (Newby 1979), the Waza–Logone area harbours an unsurpassed number of species. Reasons for the high diversity include the variety of habitats and year-round water availability, which attract an important number of Palaearctic migrants. The observation intensity, relatively well distributed in space as well as in a time span of 40 years, has also contributed.

Although this is the first detailed checklist for the Waza–Logone area, some general trends can be detected by comparing it with previous records. Most striking are the seven duck species which have not been recorded recently, a change probably caused by the desiccation of the area from 1979 onwards. Changes elsewhere in the Lake Chad Basin may, however, have caused a more general decrease in species diversity and abundance. *Balearica pavonina*, a typical floodplain resident, has decreased from an estimated 10,000 west of the Waza camp in 1971 (Holmes 1972) to an estimated 2500 for the whole area at present (Scholte 1996). It is most likely that degradation of the area started prior to the Maga dam construction, most probably influenced by increasing human exploitation, construction of the Waza–Kousseri road in 1972 (which blocked several water courses), and the general Sahelian drought in 1973–5. Species typical of wooded savanna, such as *Poicephalus senegalus*, *Psittacula krameri*, *Crinifer piscator* and *Lybius dubius*, although already restricted in 1972, seem to have been far more common in the past. Several species, most notably *Coturnix delegorguei*, seem to be more common than suggested by Louette (1981). Various species (e.g. *Ixobrychus minutus*, *I. sturmi*) have recently been recorded much earlier in the season than before, probably due to our presence in the area during inundation, which prevented access to previous ornithologists.

Acknowledgments

The Waza–Logone project is carried out by the Government of Cameroon and IUCN - The World Conservation Union, in cooperation with the Centre of Environmental Science of Leiden University, the Netherlands Development Organisation and WWF-Cameroon, with financial support from the Dutch Ministry of Foreign Affairs and WWF-Netherlands; the authors remain, however, responsible for possible errors and the views expressed in this paper. We should like to thank Pim Edelaar, Aat Schaftenaar and Peter Spierenburg for providing their unpublished checklists. Jeroen van Wetten was involved with the organisation of the early ornithological research. We should also like to thank our colleagues Emmanuel Battokok and Rigobert Azombo of the Wildlife School in Garoua, and Bobo Kadiri and Philippe Kirda of the Waza–Logone Project, as well as Stephany Kersten, for their collaboration in the annual waterfowl census and other bird counts. Arthur Green and Alan Tye commented in detail the manuscript.

References

- ALLO, A.A. (1993) *Ecology of the warthog Phacochoerus aethiopicus (Pallas) in Kalamaloué National Park, Cameroon*. U.M.I. Michigan.
- BANNERMAN, D.A. (1931) *The Birds of Tropical West Africa*, vol. 2. Crown Agents, London.
- BATES, G.L. (1927) Notes on some birds of Cameroon and the Lake Chad Region: their status and breeding-times. *Ibis* 3: 1–65.
- BEIRS, M. VAN (1997) Black-billed Barbet *Lybius guifsobalito*, new to Cameroon and West Africa. *Malimbus* 19: 32.
- BROADBENT, J.A. (1971) Additions to the avifaunas of Waza (Cameroun) and Lake Natu (Sokoto). *Bull. Niger. Orn. Soc.* 8: 58–61.
- BROWN, L., URBAN, E.K. & NEWMAN, K. (1982) *The Birds of Africa*, vol. 1. Academic Press, London.
- CLARK, W.S. (1992) The taxonomy of Steppe and Tawny eagles, with criteria for separation of museum species and live eagles. *Bull. Brit. Orn. Club* 12: 150–157.
- DRAGESCO, J. (1960) Notes biologiques sur quelques oiseaux d'Afrique Equatoriale. *Alauda* 28: 81–92, 262–273.
- DRAGESCO, J. (1961) Oiseaux des savanes d'Afrique équatoriale. *Oiseau Rev. fr. Orn.* 31: 179–192, 261–271.
- FRY, C.H. (1970) Birds in Waza National Park, Cameroon. *Bull. Niger. Orn. Soc.* 7: 1–5.
- FRY, C.H., KEITH, S. & URBAN, E.K. (1988) *The Birds of Africa*, vol 3. Academic Press, London.
- GREEN, A.A. (1983) The birds of the Bamingui-Bangoran National park, Central African Republic. *Malimbus* 5: 17–30.
- GREEN, A.A. (1984) Additional bird records from Bamingui-Bangoran National Park, Central African Republic. *Malimbus* 6: 70–72.
- GREEN, A.A. (1990) Corrections to the list of birds of Bamingui-Bangoran National Park, Central African Republic. *Malimbus* 12: 53–54.
- GREEN, A.A. & RODEWALD, P.G. (1996) New bird records from Korup National Park and environs, Cameroon. *Malimbus* 18: 122–133.
- GRELING, C. DE (1972a) Sur les migrations et mouvements migratoires de l'avifaune Ethiopienne, d'après les fluctuations saisonnières des densités de peuplements en savane Soudanienne au Nord Cameroun. *Oiseau Rev. fr. Orn.* 42: 1–27.
- GRELING, C. DE (1972b) New records from northern Cameroon. *Bull. Brit. Orn. Club* 92: 24–27.
- HALL, B.P. & MOREAU, R.E. (1970) *An Atlas of Speciation in African Passerine Birds*. British Museum (Natural History), London.
- HOLMES, D.A. (1972) Bird notes from the plains south of Lake Chad, winter 1971–1972. *Bull. Niger. Orn. Soc.* 9: 47–55, 76–84.
- HOLMES, D.A. (1974) Bird notes from the plains south of Lake Chad, winter 1971–1972. Part 3 *Bull. Niger. Orn. Soc.* 10: 28–37.

- HOWELL, P., LOCK, M. & COBB, S. (1988) *The Jonglei Canal. Impact and Opportunity*. Cambridge University Press, Cambridge.
- IUCN/CML (1994) *Annual Report, Waza-Logone Project*. Unpubl. rep., Waza-Logone Project, Maroua.
- IUCN. (1996) *Reflooding of the Logone Floodplain*. Unpubl. rep., Waza-Logone Project, Maroua, Cameroon.
- KADIRI, B., AZOMBO, R., BATTOKOK, E. & SCHOLTE, P. (1997) *Rapport sur le Dénombrement des Oiseaux d'Eau dans la Zone de Waza-Logone*. Unpubl. rep., Waza-Logone Project, Maroua.
- KAVANAGH, M. (1977) Some birds in Cameroon. *Bull. Niger. Orn. Soc.* 13: 133–138.
- KEITH, S., URBAN, E.K. & FRY, C.H. (1992) *The Birds of Africa*, vol. 4. Academic Press, London.
- KORT, S. DE & WEERD, M. VAN (1995) *Birds of the Logone Floodplain*. Unpubl. rep., CML/Waza-Logone Project, Leiden.
- LOUETTE, M. (1981) The birds of Cameroon, an annotated check-list. *Verhandel. Kon. Acad. Wetensch. Lett. Schone Kunst. Belg., Kl. Wetensch.* 43(163): 1–295.
- LOUETTE, M. & PRÉVOST, J. (1987) Passereaux collectés par J. Prévost au Cameroun. *Malimbus* 9: 83–96.
- MAHÉ, E. (1988) Sur la nidification du Pélican blanc *Pelecanus onocrotalus* à Mogodé (Nord Cameroun). *Alauda* 56: 180–81.
- MULLIÉ, W.C., BROUWER, J. & SCHOLTE, P. (1995) Numbers, distribution and habitat of wintering White Storks *Ciconia ciconia* in the east-central Sahel in relation to rainfall, food and anthropogenic influences. In: BIVER, O., ENGGIST, P., MARTI, C. & SALATHÉ T. (eds). *Proceedings of the International Symposium on the White Stork (Western Population), Basel 1994*. Schweizerische Vogelwarte Sempach, Basel.
- MUNDY, P.J. (1972) Waza, Cameroun — access and avifauna. *Bull. Niger. Orn. Soc.* 9: 16–18.
- NEWBY, J. (1979) The birds of Ouadi Rime-Ouadi Achim Faunal Reserve. A contribution to the study of the Chadian avifauna. *Malimbus* 1: 90–109.
- OAG MÜNSTER (1991) *Report of the Ornithological Expedition to Northern Cameroon*. Unpubl. rep., Biologische Station Münster, Germany.
- PETTET, A. (1976) The avifauna of Waza National Park, Cameroon, in December. *Bull. Niger. Orn. Soc.* 12: 18–24.
- ROBERTSON, I. (1993) Unusual records from Cameroon. *Malimbus* 14: 62–63.
- RODEWALD, P.G., DEJAIFVE, P. & GREEN, A. (1994) The birds of Korup National Park and Korup Project Area, Southwest Province, Cameroon. *Bird Conserv. Internat.* 4: 1–68.
- RODWELL, S.P., SAUVAGE, A.G., RUMSEY, S.J.R. & BRAUNLICH, A. (1996) An annotated check-list of birds occurring at the Parc National des Oiseaux du Djoudj in Senegal, 1984–1994. *Malimbus* 18: 74–111.

- ROUX, F. & JARRY, G. (1984) *Importance, Composition et Distribution des Populations d'Anatidés Hivernant en Afrique de l'Ouest*. Muséum National d'Histoire Naturelle, Paris.
- ROUX, F. & JARRY, G. (1986) *Denombrements d'Anatidés Hivernant dans le Bassin Tchadien, Janvier 1986*. Muséum National d'Histoire Naturelle, Paris.
- ROUX, F. & JARRY, G. (1987) *Denombrements d'Anatidés Hivernant dans le Bassin Tchadien, Janvier 1987*. Muséum National d'Histoire Naturelle, Paris.
- SALVAN, J. (1967) Contributions à l'étude des oiseaux du Tchad. *Oiseau Rev. fr. Orn.* 37: 225–284; 38: 53–86, 127–174, 249–273.
- SCHOLTE, P.T. 1996. Conservation status of cranes in north Cameroon and western Chad. Pp. 153–156 in: BELFUS, R.D., TARBOTON, W.R. & GICHUKI, N.N. (eds). *Proceedings of the 1993 African Crane and Wetland Training Workshop*. International Crane Foundation, Baraboo.
- SCHOLTE, P. (in press). Status of vultures in the Lake Chad Basin, with special reference to northern Cameroon and western Chad. *Vulture News*.
- SCHOLTE, P.T., AZOMBO, R., BATTOKOK, E., KORT, S. DE & WEERD, M. VAN (1995) *Waterfowl Census Waza–Logone Area, Far North Cameroon, February 1995*. Unpubl. rep., Waza–Logone Project, Maroua.
- SCHOLTE, P., PAMO, E., KARI, S., KERSTEN, S. & KIRDA, P. (1996a) Floodplain rehabilitation in N. Cameroon: expected impact on vegetation, pastoralists and wildlife. Pp. 492–493 in: WEST, N. (ed.), *Proceedings of the Fifth International Rangeland Congress*. Society of Range Management, Colorado.
- SCHOLTE, P., KARI, S. & MORITZ, M. (1996b) *The Involvement of Nomadic and Transhumant Pastoralists in the Rehabilitation and Management of the Logone Flood Plain, North Cameroon*. Issues paper 66, IIED Drylands Programme, London.
- SCHOLTE, P.T., BATTOKOK, E., AZOMBO, R., KADIRI, B. & KIRDA, P. (1996c) *Waterfowl Census Waza–Logone area, Far North Cameroon, January 1996*. Unpubl. rep., Waza–Logone Project, Maroua.
- SCHOLTE, P.T., KORT, S. DE & WEERD, M. VAN (in press) Floodplain rehabilitation in North Cameroon: expected impact of bird life. *Proc. 9 Pan-Afr. Orn. Congr.*
- SERLE, W. & MOREL, G. 1977. *A Field Guide to the Birds of West Africa*. Collins, London.
- THIOLLAY, J.M. 1978. Les plaines du Nord Cameroun. Centre d'hivernage de rapaces paléarctiques. *Alauda* 46: 314–326.
- URBAN, E.K., FRY, C.H. & KEITH, S. 1986. *The Birds of Africa*, vol. 2. Academic Press, London.
- URBAN, E.K., FRY, C.H. & KEITH, S. 1997. *The Birds of Africa*, vol. 5. Academic Press, London.
- VANPRAET, C.L. 1977. *L'écologie et l'aménagement du Parc National de Waza. Annexe 1. Oiseaux observés au Parc National de Waza*. PNUD/FAO, Rome.

VIELLIARD, J. 1971. Données biogéographiques sur l'avifaune de l'Afrique Centrale. *Alauda*, 39: 227–248.

WETTEN, J. VAN & SPIERENBURG, P. 1993. *Wader and Waterfowl in the Floodplain of the Logone, January 1993*. Ecole de Faune, Garoua.

Appendix 1

Observations excluded because of doubtful identification or location

Accipiter ovampensis Ovampo Sparrowhawk. Dark phase with clear yellow legs observed KNP, 28 Apr 1992 and 17 May 1992. [Only once recorded before in Cameroon (L).]

Podica senegalensis Finfoot. Mentioned for the inundation area, without further details (L).

Glareola nordmanii Black-winged Pratincole. Present according to Urban *et al.* (1986) but not according to L.

Mirafra javanica Singing Bush-Lark. Mentioned for “the inundation area near L. Chad” (L).

Cisticola cantans Singing Cisticola. WNP, possible observation (Fry 1970). Included on distribution map in Urban *et al.* (1997).

Appendix 2

Rejected records from the Waza–Logone area

Egretta gularis Western Reef Heron. One observed in NF, 23 Mar 1966 (Greling 1972b). Observation earlier questioned by L.

Milvus milvus Red Kite. Mentioned without further comments by Vanpraet (1977).

Rallus aquaticus Water Rail. Reported by Wetten & Spierenburg (1993) at Maga, without any remark on this exceptional observation, far from its normal range (Urban *et al.* 1986).

Turtur afer Red-billed Wood Dove. Reported by OAG Münster (1991); possibly confused with *T. abyssinicus*, a vicariant that they did not mention.

Caprimulgus europaeus European Nightjar. Very common in WNP late 1958 and early 1959 according to Dragesco (1961). Most probably confused with *C. inornatus*.

Nectarina chloropygia Olive-bellied Sunbird. Several observations by OAG Münster (1991), but according to L only once observed outside the forest and forest galleries,

in the Benoué valley. Together with *N. rubescens* (below) this is the only sunbird observed by OAG Münster (1991).

N. rubescens Green-throated Sunbird. Some observations mentioned by OAG Münster (1991), but this is a species of the equatorial forest block and forest galleries (L).

Euplectis ardens Long-tailed Black Whydah. Said to be common in lightly wooded savanna, according to Dragesco (1961), who does not mention *Vidua orientalis*. L rejected this observation.

E. hordeacea Fire-Crowned Bishop. Questionable observation in WNP by Dragesco (1961) who does not note *E. orix*.

Vidua camerunensis Cameroon Indigo Finch. One report by OAG Münster (1991). Given that they did not report the common *V. chalybeata*, we assume they made an identification error.

Appendix 3 Gazetteer

	N	E
Andirni	11° 4'	14° 42'
Fadaré	10° 55'	14° 36'
Guirvidig	10° 53'	14° 50'
Ivye	11° 25'	15° 3'
Kousseri	12° 5'	15° 2'
Logone Birni	11° 47'	15° 6'
Maga	10° 50'	14° 57'
Maroua	10° 36'	14° 20'
Mora	11° 3'	14° 9'
N'djamena	12° 8'	15° 2'
Ngodeuni	11° 24'	15° 1'
Pété	10° 58'	14° 30'
Pouss	10° 51'	15° 3'
Tikélé	11° 0'	15° 3'
Waza	11° 24'	14° 34'
Zimado	11° 39'	15° 4'
Zina	11° 16'	14° 58'