



Report on the ornithological importance of the
Boé region, Guinea-Bissau.
Fieldwork from January to July 2015.

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Introduction

From January to July 2015, an ornithological survey of the Boé region, Guinea-Bissau took place. This survey showed a very rich bird life in the region. 233 species were listed during the research with 85 new species for the region and 4 new country records. The total of bird species known for the Boé region now is 275. This is over half of all bird species recorded in the country.

This report aims to show the importance of the Boé region for biome-restricted assemblages, for both Sudan-Guinea Savanna and Guinea-Congo Forests biomes, and for globally threatened species. It finds that the Boé region is, based on a comparison with other regions in Guinea-Bissau, suitable to be declared an IBA, Important Bird and Biodiversity Area.

The presented research was organized by Chimbo Foundation, a Dutch NGO that aims to conserve the biodiversity of the region. Chimbo Foundation cooperates since 2007 with local NGO Daridibó to sensitize the local population for environmental issues, to gather information about the region's fauna and flora and to promote eco-tourism ('eco-volunteering') as an alternative way of income.

In the first part of the report, the Boé is presented. The second part gives information about the IBA program in Africa and Guinea-Bissau. Then, the actual research is presented with used methods and results. Finally, a series of appendices give an overview of the avifauna observed in this research.

Study area

Boé: geography, demography and economy.

The Boé is an area in the Southeast of Guinea-Bissau, part of the Gabu region. Its total surface is 3289km² (Wit & Reintjes, 1989). The Boé is separated from the rest of Guinea-Bissau by the Corubal River. The southern and eastern limits of the Boé are formed by the border with Guinea-Conakry (Figure 1). Because of its isolated position, the area is left untouched by large-scale human influences and development.



Figure 1- Boé, Guinea-Bissau (Chimbo Foundation)

The Boé is characterized by a laterite hardpan with shallow soil cover. The main vegetation is that of the Sudan-Guinea Savanna Biome. Only where the laterite hardpan is absent, soil depths are higher and stagnant water remains after the rainy season, forests can develop. The landscape is comprised of a patchwork of dry and semi-dry habitats interspersed by gallery forests on the slopes of valleys of various small, often seasonal, rivers. Characteristic for the region, and the origin of its name, are the 'Bowals': flat and dry grassy plains with limited soil depths (0-10cm) on top of the laterite cap (Wit & Reintjes, 1989).

During the rainy season, with a mean annual rainfall of 1,600–2,100mm, lower marshy parts of the savanna ('Bolanhas') are flooded. Often they can be found along the major rivers (Corubal and Féfiné) where large flood plains ('Vendu') are in some cases even partly permanent lakes (Wit & Reintjes, 1989).



Figure 2- typical Bowal landscape: left on 9/05, right on 24/06

Population density in the Boé area is low but increasing. In the period between 1986 and 2010 the population has doubled from about 6,000 to 12,000 inhabitants (Chimbo Foundation). The main activity of the people is subsistence agriculture; shortages are overcome by hunting and gathering. The agricultural system is based on slash and burn techniques ('pampam') or rain-fed rice cultivation with a return cycle of 4 years in the valleys (Wit & Reintjes, 1989). However, due to population increase, the cycle shortens to 3 or even 2 years (pers. com.). Not yet on a scale comparable to the very fertile rest of Guinea-Bissau, but also in the infertile Boé region more and more cashew is getting cultivated. Increasing parts of the small arable valleys are turned into permanent cashew plantations. Due to the presence of Tsetse flies, cattle were traditionally rare (Wit & Reintjes, 1989). However, nowadays migrants from Guinea-Conakry herd their livestock (sleeping sickness resistant Ndama cattle) on the savannas. Shepherds and hunters are notorious for frequently starting uncontrolled bushfires.

Boé: flora and fauna

The vegetation of the region is determined by climate and geomorphic factors (Wit & Reintjes, 1989). Only in places where the soil profile is deep enough, forests can develop. On the steep slopes of little river valleys belts of forests remain. Typical forest trees for the Boé are *Parkia biglobosa*, *Pterocarpus spp.*, *Ceiba pentandra* and *Azizelia africana*.

Forests on the valley floor are almost completely cut for agricultural reasons. Only at the spring of a stream, little primary forest patches usually remain. These so called sacred forests are protected by cultural regulation (Seck, 2012). They are closed forests of 30-40m height with *Azizelia africana*, *Ceiba pentandra* and *Sterculia tragacantha* as important species. Fallow land gradually returns into secondary forests. Lianas (*Saba senegalensis*, *Landolphia heudelotii*) are important elements in the fallow vegetation (Wit & Reintjes, 1989).

The commonest tree species of the open savanna woodlands include *Pterocarpus erinaceus*, *Crossopteryx febrifuga*, *Parkia biglobosa* and *Terminalia albida*. The most frequently occurring shrub is *Combretum glutinosum* (Guilherme, 2014).

Large parts of the Boé are devoid of large scale human influences. Due to its relatively intact natural habitat, the region is an important refuge for a wide variety of large mammals of which several are of global conservation concern (table 1). Mammals observed during this fieldwork include Western Chimpanzee *Pan troglodytes verus*, Sooty Mangabey *Cercocebus atys*, West-African Savanna Buffalo *Syncerus caffer brachyceros*, Side-striped Jackal *Canis adustus*, Common Warthog *Phacochoerus africanus* and Bushbuck *Tragelaphus scriptus*.

IUCN status	Abundance
Endangered	
Western Chimpanzee (<i>Pan troglodytes verus</i>)	High
Western Red Colobus (<i>Colobus Badius</i>)	Low
Vulnerable	
Sooty Mangabey (<i>Cercocebus atys</i>)	High
Hippopotamus (<i>Hippopotamus amphibious</i>)	High
Western Pied Colobus (<i>Colobus polycomos</i>)	Low
Lion (<i>Panthera Leo</i>)	Low
Near Threatened	
Leopard (<i>Panthera pardus</i>)	High
Western Baboon (<i>Papio papio</i>)	High
Defassa Waterbuck (<i>Kobus defassa</i>)	Low
Giant Pangolin (<i>Manis gigantean</i>)	Low
African Golden Cat (<i>Caracal aurata</i>)	Low

Table 1- Red list mammals of the Boé. (Chimbo Foundation)

Previous research

About birdlife in the Boé little is known. Some studies have been carried out in the process of designating the Vendu Tcham lake as an IBA but Dodman, Barlow, & Sá (2004) state that: “The relatively low site list reflects the need for further study” and “the relatively undisturbed forests of this area no doubt support a high diversity of birds, a subject ripe for further study”. The other areas of the Boé are even less studied. In 1992 Rodwell made a five day trip (28/03-1/04) along the shores of the Corubal River, visiting the villages of Tchétche and Medina Dongo. He reported 70 species (Rodwell, 1996).

In 2013 (Guilherme, 2014) visited the Boé for 3 weeks (16-22/01 and 4-15/02) on invitation of Chimbo Foundation. In this short period he recorded 170 species, of which 3 were new to the country (Chestnut-backed Sparrow Lark *Eremopterix leucotis*, Lesser Striped Swallow *Cecropis abyssinica* and Heuglin’s Wheatear *Oenanthe heuglini*). Both studies were carried out in the dry season.

A third source of information are the observations made by Piet Wit of Chimbo Foundation in the period of 2007-2013 during dry and rainy season. His observations are included in (Guilherme, 2014).

The latter two surveys were carried out around the village of Béli, in the centre of the Boé, as is this one. Due to the difficult accessibility of large parts of the Boé, some areas are not yet studied. For instance, east of Féfiné River, a large part of the Boé is virtually unknown.

IBA program

The Important Bird Areas (IBA) program is a worldwide initiative coordinated by Birdlife International to identify key sites for the conservation of birds. IBAs are important for the protection of birdlife as well as the conservation of other taxa. Because birds are best known in taxonomy, worldwide distribution and habitat requirements, they can be used as indicators for biodiversity in general. Important Bird Areas (IBAs) are thus Key Biodiversity Areas (KBAs) identified by using birds (Birdlife International).

The IBA program was launched in Europe. In 1989 a continent-wide directory of IBAs was published: *Important Bird Areas in Europe* (Grimmet & Jones, 1989). This publication contributed on national and European level in the conservation of important biodiversity sites (Dodman, Barlow, & Sá, 2004).

In 1993 the IBA program was brought to Africa. It led to the publication of a regional directory for the continent: *The Important Bird Areas in Africa and its Associated Islands* (Fishpool & M.I., 2001). In this directory, key sites all over the continent were designated.

In 2004 a national directory for Guinea-Bissau was published: *Important Bird Areas in Guinea-Bissau* (Dodman, Barlow, & Sá, 2004).

IBA categories and criteria

The instruments used to designate a site as an IBA are specific criteria grouped into 4 categories. These criteria enable the use of quantitative and qualitative information for determining priority sites for bird conservation (Dodman, Barlow, & Sá, 2004). Table 2 gives an overview of the 4 categories with their different criteria.

Category	Criterion
A1- Globally threatened species	The site regularly holds significant numbers of globally threatened species, or other species of global conservation concern.
A2- Restricted-range species	The site is known or thought to hold a significant component of the restricted range species whose breeding distributions define an Endemic bird Area (EBA) or Secondary Area (SA)
A3- Biome-restricted assemblages	The site is known or thought to hold a significant component of the group of species whose breeding distributions are largely or wholly confined to one biome.
A4- Globally important congregations	<ul style="list-style-type: none"> (i) The site is known or thought to hold, on a regular basis, 1% of a biogeographic population of a congregatory waterbird species. (ii) The site is known or thought to hold, on a regular basis, 1% of the global population of a congregatory seabird or terrestrial species. (iii) The site is known or thought to hold, on a regular basis, 20.000 waterbirds or 10.000 pairs of seabirds of one or more species. (iv) The site is known or thought to exceed thresholds set for migratory species at bottleneck sites.

Table 2- Important Bird Areas: Summary of Global Categories and Criteria. (Birdlife International)

Globally threatened species, as described in the first criterion, are those species defined by the IUCN as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) (IUCN, 2000). In Africa, there is a population threshold of 10 pairs or 30 individuals for vulnerable species and for near-threatened non-passerines. For near-threatened passerines the threshold is defined

at 30 pairs or 90 individuals (Dodman, Barlow, & Sá, 2004). Appendix 2 gives an overview of the globally threatened species for Guinea-Bissau.

Endemic Bird Areas and Secondary Areas as described in the second category do not exist in Guinea Bissau. Thus this criterion is not applicable for Guinea-Bissau.

The country holds 2 biomes: Sudan-Guinea Savanna Biome (A04) and Guinea-Congo Forests Biome (A05). For the first biome, 35 species are known for the country. For the latter, 58 species are registered (Dodman, Barlow, & Sá, 2004). Appendix 3 shows a list of all biome-restricted species of Guinea-Bissau.

IBAs of Guinea-Bissau

In 2000, Wetland International, with the support of the Trilateral Wadden Sea Cooperation, started a program for wetland conservation in Guinea-Bissau. One of the objectives of this program was to provide an inventory of the IBAs in Guinea-Bissau. In 2001-2002 extensive field surveys and a literature study have been carried out, leading to the publication of a national directory: *Important Bird Areas in Guinea-Bissau* (Dodman, Barlow, & Sá, 2004).

The specific objectives of this directory are adopted from the Important Bird Areas in Kenya directory and are described in (Dodman, Barlow, & Sá, 2004) as follows:

- Contribute to the development of biodiversity planning in Guinea-Bissau, and eventually to the implementation of a national biodiversity strategy.
- Assist Guinea-Bissau to meet its obligations under the Convention on Biological Diversity and other relevant international agreements, especially the Convention on Wetlands (Ramsar, Iran, 1971), the Convention on the Conservation of Migratory Species (CMS) and the UNESCO Man and Biosphere Programme (MAB).
- Inform decision-makers and technicians at local, national and international levels of the existence and importance of these sites, and to encourage steps towards their conservation.
- Identify priorities for conservation action and encourage national and international partners to take these into account in the management of natural resources in Guinea-Bissau.
- Identify research needs and gaps in knowledge that should be addressed in order to better understand the biodiversity functioning of Guinea-Bissau.
- Provide information that can be used in training and education.
- Provide information to encourage visitors to visit and explore these magnificent sites.

In this national directory, 10 Important Bird Areas are identified and evaluated: 8 coastal and 2 inland sites (Dulombi and Vendu Tcham). The concentration of IBAs in the coastal zone can be explained by the international importance of this coast for waterbirds, especially waders. However, examples of all major habitats are represented in this list of 10 IBAs (Dodman, Barlow, & Sá, 2004). Table 3 gives an overview of these 10 designated IBAs for Guinea-Bissau.

Site name	Administrative region	Area [ha]
Rio Cacheu	Cacheu	80.000
Rio Mansôa and Gêba estuary	Biombo, Cacheu	203.300
Dulombi	Bafatá, Tombali, Gabú	177.000
Lagoas de Cufada	Quinara	89.000
Ilha de Bolama – Rio Grande de Buba	Bolama, Quinara	69.500
Rio Tombali, Rio Combijã & Ilha de Melo	Tombali, Quinara	119.350
Arquipélago dos Bijagós	Bolam	190.000
Cantanhez forests	Tombali	96.350
Cacine	Tombali	91.000
Vendu Tcham	Gabú	74.500

Table 3- IBAs of Guinea-Bissau. (Dodman, Barlow, & Sá, 2004)

In total 1.190.000ha or 33% of the surface of the country is designated as in IBA. Table 4 gives an overview of the IBA criteria fulfilled per site. 7 out of 10 IBAs submit to the A1 criterion: they regularly hold significant numbers of species with global conservation concern. Dodman, Barlow & Sá (2004) show those species for every site. Since the IUCN red list has been updated since 2004, this data may be outdated. Table 4 gives an overview of the A1 species per IBA as registered in Dodman, Barlow & Sá (2004). 9 IBAs fulfil the A3 criterion for either or both, Sudan-Guinea Savanna (A04) and Guinea-Congo Forests (A05) biomes (see appendix 3). At last, five out of ten sites submit to the A4 (A4i and/or A4iii) criterion, holding globally important congregations.

Site name	Criteria					A1 species
	A1	A3		A4		
		A04	A05	A4i	A4iii	
Rio Cacheu	x	x	x			Lesser Flamingo
Rio Mansôa and Gêba estuary	x	x		x	x	Lesser Flamingo Black Crowned Crane
Dulombi		x				
Lagoas de Cufada	x	x	x	x		Black-crowned Crane Yellow-casqued Hornbill
Ilha de Bolama – Rio Grande de Buba				x	x	
Rio Tombali, Rio Combijã & Ilha de Melo	x	x	x	x	x	Black-crowned Crane Yellow-casqued Hornbill
Arquipélago dos Bijagós	x		x	x	x	Lesser Flamingo
Cantanhez forests	x		x			Black-crowned Crane Yellow-casqued Hornbill
Cacine	x		x	x	(x)	Yellow-casqued Hornbill
Vendu Tcham		x				

Table 4- Summary of IBA criteria and A1 species per site. (Dodman, Barlow, & Sá, 2004)

Guinea-Bissau holds an exceptionally large area of its land protected as a National Park managed by the governmental organisation IBAP. Most of the National Parks are situated around the coastal zone. At this moment, a large inland area is designated to gain a protected status with the foundation of a complex of two National parks, Dulombi and Boé, and 3 wildlife corridors. However, this complex is yet to be legalized and its borders are to be

defined. Figure 3 shows the relation between the identified IBAs for Guinea-Bissau and its national Protected Area Network (Birdlife International). Large parts of the proposed IBA's fall within the protected area network (orange). Still, large areas remain unprotected. Note that the Boé and Dulombi National Park and its corridors are already implemented on this map.

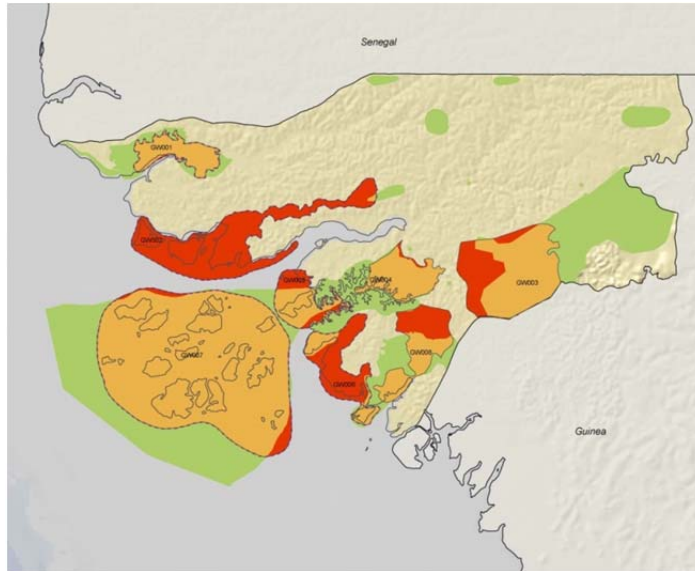


Figure 3- Relationship between current protected area network and important sites for biodiversity. Green: Protected Area Network (PAN); orange: protected IBA as part of the PAN; red: unprotected IBA. (Birdlife International)

IBA of Vendu Tcham

In the West of the Boé region, Vendu Tcham, a large freshwater lake, supports a variety of waterbirds. It is the largest fresh water zone in Guinea-Bissau after the Cufada Lagoon. The area of the lake differs year round. The water reaches its lowest depth of less than 0.5m at around the beginning of June. From then on, fed by rainfall, the lake expands until it reaches a length of up to 5km, comprising an area of about 500ha (Dodman, Barlow, & Sá, 2004). In the national directory for IBAs in Guinea Bissau, Vendu Tcham is described as the 10th IBA. It is stated however that “the exact delimitation of the IBA is not yet established, pending further surveys” (Dodman, Barlow, & Sá, 2004). The proposed site in the directory includes a vast area of surrounding woodland up to the villages of Béli and Lugajole in the East. The Southern edge of the IBA is formed by the border with Guinea, expanding westwards to the river of Mael Bane. Up to today, these limits are not confirmed and the area is not included in the countries IBA list on the website of Birdlife International (Birdlife International). In 2015 the lake has been declared a RAMSAR site (RAMSAR, 2015).



Figure 4- Vendu Tcham. L.: Grey zone: permanent water; dotted zone: seasonal water. R.: Vendu Tcham in the Boé area (Chimbo Foundation)

Methods

Fieldwork was undertaken over a period of 6 months, from January 8th until May 21st and June 14th until July 4th 2015. The research included the second half of the dry season and the start of the rainy season.

First rainfall happened in the night of 2nd to 3rd of May. The period from June 14th until July 4th was characterized by regular rainfalls every couple of days with intensification towards the end.

The study area is situated around the village of Béli, the biggest village ('Tabanca') in the Boé, located in the centre of the region (Figure 5). During the 6 months of research, accommodation was provided in this village. Other Tabancas visited during the research are Vendu Tcham, Pataqui, Capebonde, Lugajole and Dinguirai.

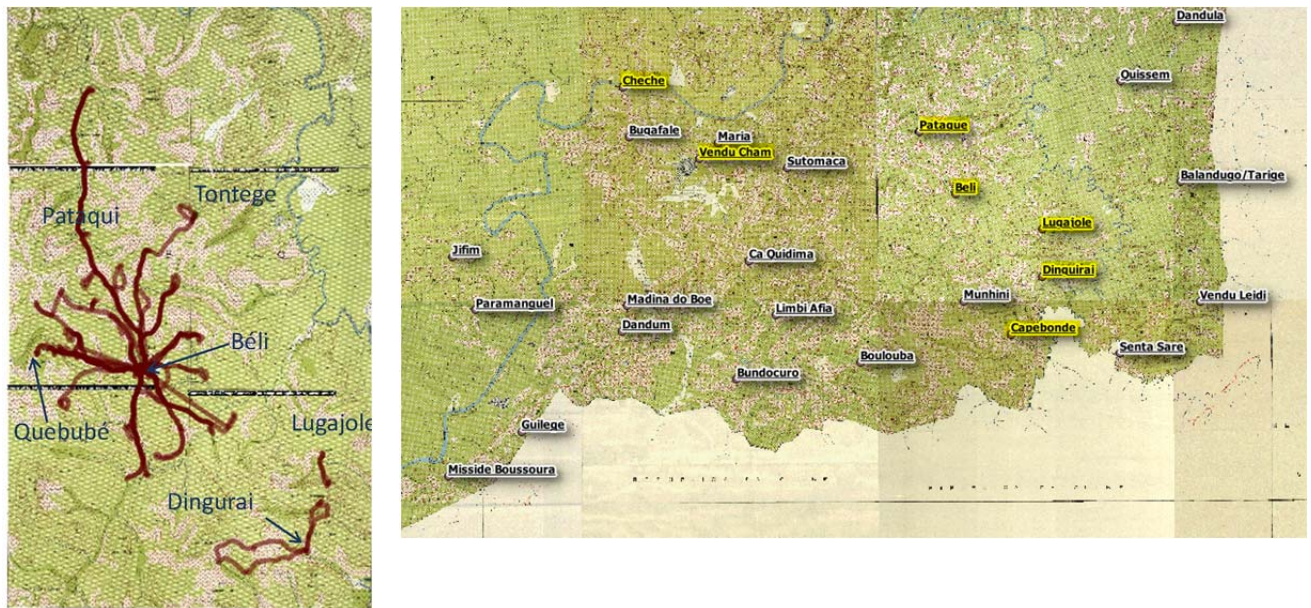


Figure 5-Study area. L: transects in the study area. R: Visited villages in the Boé (Chimbo.)

From Béli, surveys were conducted on foot. Most of the time however a bike was used to go to a starting point from where a transect was walked. The surveys were undertaken in presence of a local guide. During walked transects, sometimes point counts were held. Most surveys were conducted starting at dusk, from 6h30. A minority of the surveys were held in the evening, finishing at dawn. Bird observations were also made on trips by motorbike. These rides were part of a maintenance program for trap cameras installed in the study area. They started at 8h00. At last, three phenology routes were walked on a monthly basis. On those transects fruiting trees were studied and, when possible, bird observations were made. All birds identified, acoustically and visually, were recorded and habitats registered. For some species like Common Bulbul, *Pycnonotus barbatus*, or Village Weaver, *Ploceus cucullatus*, exact numbers were not registered because of the common nature of their appearance and the little relevance of their presence in the IBA designation.

Every month a transect by car was undertaken on the road from Béli to Tchétche. During this transects, observations were made where possible. Counts of raptor species were conducted. Also, three waterbird counts on the lake of Vendu Tcham were executed: on April 7th, on May 16th and July 4th. These counts were conducted from pirogues steered by local fishermen.

For five days, from April 3th until April 7th, Miguel Lecoq, a Portuguese, Bissau based ornithologist, joined intensely in the fieldwork. He also led the water bird count on Aril 7th. Other assistance came from Katharina Kühnert, a German biology student who conducted a

bird research in the same area during 4 months of this survey, from March 7th onwards. Her species list is added in this report.

The main guide used for identification was (Borrow & Demey, Birds of Western Africa, 2008) but for some species the drawings of (Borrow & Demey, Birds of Senegal and the Gambia, 2011) were consulted. For more information on raptors (Kemp & Kemp, 1998) was used. For bird vocalizations (Barlow, Hammick, & Sellar, 2002) was consulted.

Results

In total, 462 hours were spent in the field of which 320 hours were spent on specific bird surveys (transects and point counts). The division of the total time of fieldwork over the different activities, as those are explained in the paragraph 'Method', is given in Table 5.

Activity	Hours spent
Trap camera maintenance on motorbike	62h00
Phenology of fruiting trees	44h00
Transects by car	29h00
Transects on foot / by bike	320h00
Other	7h00

Table 5- division of time over different activities

Appendix 1 shows a list of all bird species identified in the Boé region during this research. Species recorded by Katharina Kühnert and Miguel Lecoq during the research period are added. Additional species recorded during a 3 week research conducted by João Guilherme in January/February 2013 or recorded by Piet Wit in 2007 – 2013 are also included (Guilherme, 2014). Sequence and taxonomy follow Borrow & Demey, 2008. An encounter rate is added based on the number of individuals recorded per 50 hours of survey.

During this research, 233 bird species were recorded. If data collected by Katharina Kühnert and species observed exclusively by Miguel Lecoq are added, a total of 256 species is observed over the period of January 8th until July 4th 2015. With the data previously collected by João Guilherme and Piet Wit (Guilherme, 2014) included, a total of 275 species is known to occur in the Boé area. This is 53% of the 518 bird species listed for the country (Dodman, Barlow, & Sá, 2004).

Common species for the region's savanna habitats include Sun Lark *Galerida modesta*, Blue-bellied Roller *Coracias cyanogaster*, several doves (*Streptopelia vinacea*, *Turtur afer*, *Turtur abyssinicus*), Striped Kingfisher, White Helmet-shrike *Prionops plumatus* and African Wattled Lapwing *Vanellus senegallus*. After first rainfall, Hamerkop *Scopus umbretta* was commonly observed at temporary pools. Also, mixed flocks of mostly village weaver *Ploceus cucullatus*, Red-billed Quelea *Quelea quelea* and several bishop species *Euplectes* were a common sight. Cultivated and fallow lands have proven to be very rich in bird diversity. African Grey Hornbill *Tockus nasutus*, African Palm Swift *Cypsiurus parvus*, Northern Black Fly-catcher *Melaenornis edolioides*, Blue-breasted Kingfisher *Halcyon malimbica* and several Estrildid finches (*Estrildae*) are common in this habitat.

In the region's villages, Common Bulbul *Pycnonotus barbatus*, Red-billed Firefinch *Lagonosticta senegala* and Laughing Dove *Streptopelia senegalensis* are common.

Finally, common species to inhabit the gallery forests, or gallery vegetation, alongside the many (temporary) rivers in the Boé are Tawny-flanked Prinia *Prinia subflava*, Common Wattle-eye *Platysteira cyanea*, Green Turaco *Tauraco persa*, Fork-tailed Drongo *Dicrurus adsimilis*, Snowy-crowned Robin Chat *Cossypha niveicapilla* and Grey-backed Camaroptera *Camaroptera brachyura*.

The Boé supports 30 species of diurnal raptors, of which 26 were observed in this study. This is 58% of all diurnal raptors recorded for the country (Dodman, Barlow, & Sá, 2004). Common raptors are African Harrier Hawk *Polyboroides typus*, Palm-nut Vulture *Gypohierax angolensis*, Lizard Buzzard *Kaupifalco monogrammicus* and Dark Chanting Goshawk *Melierax metabates*. The region holds three *Circaetus* species, in order of abundance: Western Banded Snake Eagle *Circaetus cinerascens* (13 sightings), Beaudoin's Snake Eagle *Circaetus beaudouini* (10 sightings) and Brown Snake Eagle *Circaetus cinereus* (6 sightings).

Three species of Vultures (Hooded Vulture *Necrosyrtes monachus*, African White-backed Vulture *Gyps africanus* and Rüppell's Griffon Vulture *Gyps rueppellii*) were observed.

Other big raptor species include African Hawk Eagle *Hieraaetus spilogaster*, Bateleur *Terathopius ecaudatus* and a couple of African Fish Eagles *Haliaeetus vocifer* at the lake of Vendu Tcham. Red-thighed Sparrowhawk *Accipiter erythropus* was observed quite regularly (see appendix 1). The sacred forest of Béli held a couple of breeding African Goshawks *Accipiter tachiro*, observed by Katharina Kühnert, and on June 18th a Black Sparrowhawk *Accipiter melanoleucus* was seen in the sacred forest of Tontege.

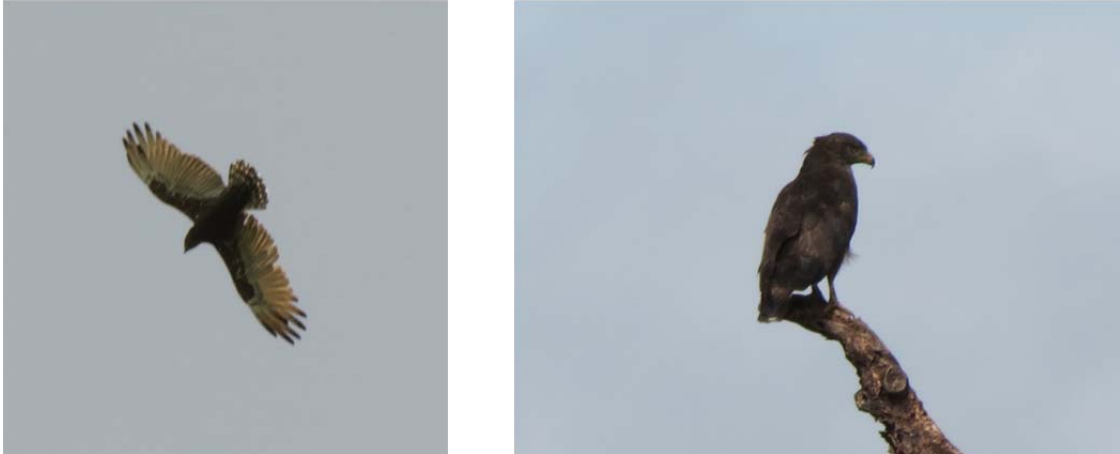


Figure 6- Left: Brown Snake Eagle *Circaetus cinereus* over savanna near Dinguirai 24/06.
Right: Western Banded Snake Eagle *Circaetus cinerascens*, near Dinguirai 24/06

Next page, Figure 7-Common birds in the Boé area, Guinea-Bissau: (top left down) Abyssinian Roller-*Coracias abyssinicus*, African Grey Hornbill – *Tockus nasutus*, Beautiful Sunbird – *Cinnyris pulchellus*, Western Grey Plantain-eater – *Crinifer piscator*, Striped Kingfisher – *Halcyon chelicuti*, African Harrier Hawk – *Polyboroides typus*, Broad-billed Roller – *Eurystomus glaucurus*, White Helmet-shrike – *Prionops plumatus*.



IBA trigger species

Appendices 2 and 3 sum up the different IBA trigger species for Guinea-Bissau in the IBA categories A1 – globally threatened species and A3 – biome restricted assemblages as published in Dodman, Barlow & Sá (2004). All bird species encountered in this research are marked. For the biome restricted species, also occurrence in the other IBAs of Guinea-Bissau is given (Dodman, Barlow, & Sá, 2004).

Category A1: globally threatened species

For Guinea-Bissau, three species of vultures are marked as vulnerable (IUCN, 2015.2). All three species were observed during this research.

The commonest vulture is Hooded Vulture *Necrosyrtes monachus*, mostly seen around human settlements. The highest concentration of 14 individuals is observed over Tchétche on May 18th. In Béli, some 2 or 3 individuals reside. The highest concentration seen in Béli is 7 individuals on March 19th.

White-backed Vulture (*Trigonoceps occipitalis*) was observed 2 times. One adult flying over savanna near Tchétche on May 16th and one adult soaring high in the sky in the environs of Béli on June 21st. On April 29th a third observation was made by Katharina Kühnert.

Also on April 29th, an older juvenile of Rüppell's Griffon Vulture *Gyps rueppellii* was seen flying low over the village of Tchétche. The bird was clearly identifiable by its size, wing shape and hints of white lines on coverts. Also noteworthy is the appearance of 8 big vultures on June 30th, flying high over the road from Lugajole to Béli. The size and wing shape pointed towards Rüppell's Griffon Vulture but unfortunately this remains an uncertain record.

Bateleur *Terathopius ecaudatus* is marked as 'Low Risk, near threatened' by (Dodman, Barlow, & Sá, 2004). This beautiful species was observed 7 times. On April 3th, 2 individuals were seen over the Corubal River by Miguel Lecoq. All other observations were single birds flying over. On April 30th, a bateleur was seen in close proximity of a bushfire, soaring over low in company of a Woolly-necked Stork *Ciconia episcopus*.

Category A3: biome-restricted assemblages

In Guinea-Bissau two biomes are present: the Sudan-Guinea Savanna biome and the Guinea-Congo Forests biome.

35 species restricted to the Sudan-Guinea Savanna biome are registered for the country. Of these 35 species, 25 species were recorded in this survey. If records made in the same period by Katharina Kühnert and previous records for the region by João Guilherme are included, the total amount of Sudan-Guinea Savanna biome-restricted birds add up to 30 out of 35 species listed for the country (see Appendix 4). This is more than any other IBA in the country according to Dodman, Barlow, & Sá, 2004.

For the Guinea-Congo Forests biome, (Dodman, Barlow, & Sá, 2004) lists 58 species for Guinea-Bissau. For this subcategory 14 species were observed in this survey with a total regional record of 20 species for this biome (see Appendix 4 for a species list). This is slightly below the average 20.5 species for all existing IBAs in the country (Dodman, Barlow, & Sá, 2004).

Two species, recorded in this survey and new for Guinea-Bissau, are restricted to the Guinea-Congo Forests biome: Cassin's Honeybird *Prodotiscus insignis* and Little Green Sunbird *Anthreptes seimundi*. These two species included, 22 out of 60 species restricted to this biome were registered.



Figure 8- Blue-bellied Roller- *Coracias cyanogaster* (l) and Red-Bellied Paradise Flycatcher-*Terpsiphone rufiventer* on its nest in the village of Dinguirai.

Species new to Guinea-Bissau

Little Green Sunbird – *Anthreptes seimundi*

On April 5th, a transect was walked at Tontege sacred forest. This sacred forest contains a little valley with primary forest vegetation. It is known to be rich in fauna. During this transect, close sightings of West-African Chimpanzees *Pan troglodytes verus* and Guinea Baboons *Papio papio* confirmed this richness. For Avifauna, the site is particularly important for forest species like Red-bellied Paradise Flycatcher *Terpsiphone rufiventer*, Red-Thighed Sparrowhawk *Accipiter erythropus*, Collared Sunbird *Hedydipna collaris*, Leaflove *Pyrrhurus scandens* and Black-winged Oriole *Oriolus nigripennis*, which were all observed that day.

On a spot, with a little less dense canopy than its surroundings, a mixed flock of sunbirds was seen on a flowering tree. Amongst several Beautiful Sunbirds *Cinnyris pulchellus*, Green-headed Sunbirds *Cyanomitra verticalis* and 2 Splendid Sunbirds *Cinnyris coccinigastrus*, Miguel Lecoq made the observation of 2 Little Green Sunbirds *Anthreptes seimundi*, an adult and a juvenile.

Little Green Sunbird is a biome-restricted species for the Guinea-Congo Forests Biome, listed in 15 of 26 range states for this biome (Birdlife International).

Cassin's Honeybird – *Prodotiscus insignis*

On April 4th, Cassin's Honeybird *Prodotiscus insignis* was spotted by Miguel Lecoq. Other observers were Katharina Kühnert, Balu Sera (local Daridibó staff) and I. One single bird was seen as part of a mixed flock in a small primary forest remnant on Dongol Quebubé, a hill near Béli. The all-white outer tail feathers were clearly seen. Together with the overall coloration and the fine bill, this characteristic led to identification.

On June 18th another individual was observed by me in the primary sacred forest of Tontege. Its position on the bark of a large stem and the green back of the bird resembled a small woodpecker at first sight. Closer inspection showed the white tail feathers, grey belly and fine bill, undoubtedly determining this bird as Cassin's Honeybird.

Cassin's Honeybird is listed as a biome-restricted species for the Guinea-Congo Forests Biome. It is registered for 16 of 26 range states (Birdlife International)

Marsh Tchagra – *Bocagia minuta*

Marsh Tchagra *Bocagia minuta* is recorded a first time on June 27th at a fallow agricultural valley next to Rio Quebubé near Béli. That day, a male was observed carrying nesting material. The posture, heavy bill, coloration and specific mask resembling a miniature Senegal Coucal, determined the bird unmistakably. Later that day, at the way back of the transect, a female was observed in the same valley but on the other side of the river. At first, it was thought to be Black-crowned Tchagra *Tchagra senegalus* but the brownish colour of the belly pointed towards Marsh Tchagra.

On July 3rd a female was observed at the same site. Several pictures were taken (Figure 9). On this picture the brownish colour of the belly is clearly visible. Also, the white supercilium not reaching until the end of the black cap is typical for Marsh Tchagra *Bocagia minuta*. Both characteristics exclude the possibility of Black-crowned Tchagra *Tchagra senegalus*.



Figure 9- Marsh Tchagra *Bocagia minuta* female

Black-bellied seedcracker – *Pyrenestes ostrinus*

Also on April 4th, in the same fallow agricultural valley as described above, a female Seedcracker was spotted by Miguel Lecoq and later by Katharina Kühnert and me. The red-and-brown bird with typical heavy bill was observed in the dense shrubs alongside Quebubé River. Since the brown at the hindneck went all the way up to the nape of the head, a male Crimson Seedcracker was excluded. With females of Crimson and Black-bellied Seedcracker being identical, it is the sound that suggests a female Black-bellied Seedcracker. "A soft repeated 'tak'" as described in (Borrow & Demey, Birds of Western Africa, 2008) was heard clearly. Since this observation would mean a considerable westward expansion of the species range, confirmation of this record is desirable. Appendix 5 shows a selection of species observed by Katharina Kühnert. This selection includes a second observation of Black-bellied Seedcracker in the same valley on June 14th.

Waterbird counts

During this research, three waterbird counts on the lake of Vendu Tcham were executed. The first one, on April 7th, was executed by Miguel Lecoq, Katharina Kühnert and me. The waterbird count was conducted from two pirogues steered by fisherman, representatives of local NGO Daridibó. For 2 hours, from 9:00 to 11:00, the lake was surveyed on a tour along the shores of the central open water near the village of Vendu Tcham. The grassy wetlands beyond this central open water were not accessed. An entire list of the waterbird counts can be found in appendix 4.

Noteworthy is the presence of Lesser Jacana *Microparra capensis*, of which at least 2 individuals were counted. The count for the common African Jacana *Actophilornis africanus* totalled 123 birds. The lake was populated by a great number of African Pygmy Goose *Nettapus auritus* (151 individuals) and also Spur-winged Goose *Plectropterus gambensis* was observed (17 individuals). 3 Collared Pratincoles *Glareola pratincola* were seen, flying over the lake at high altitude. At last, the observation of 4 Sedge Warblers *Acrocephalus schoenobaenus* in the reed beds on the shores has to be mentioned.

A second and third count was conducted on May 16th and July 4th, both lists can be found in appendix 4. These bird counts were held with 3 pirogues over a period of 1 hour. Participants on May 16th were Katharina Kühnert and Hannah Jacobs, program manager for Chimbo Foundation. On July 4th, Gerco Niezing, also of Chimbo Foundation took pictures. On both trips, a juvenile Pink-backed Pelican *Pelecanus rufescens* (Figure 10) and 2 Saddle-billed

Storks *Ephippiorhynchus senegalensis* were observed. On May 16th the total count of African Pygmy Goose had risen to 216 individuals accompanied by 32 White-faced Whistling Ducks *Dendrocygna viduata*. Also on that day, 6 Lesser Jacana and 446 African Jacanas were counted. Unfortunately it was not possible to count Jacanas and Ducks on the last count of July 4th due to a lack of capable participants.



Figure 10 – Pink-backed Pelican juv. on Vendu Tcham (photo by Gerco Niezing)



Figure 11- Malachite Kingfisher on Vendu Tcham (photo by Gerco Niezing)

Notes on selected species

African Hawk Eagle – *Hieraaetus spilogaster*

One adult of this rare raptor species was observed on the first survey of this research on January 11th. It flew over low at a Bowal next to Rio Béli. A return to the same Bowal on January 16th revealed an adult bird sitting on its nest in a big tree near the first observation point.

Another observation was made on the 8th of May. Two adults soared over high above the road Béli – Tchétche, near Béli. A last observation was made on June 13th, during a transect by car on the road from Tchétche heading to Béli (Figure 12).

This raptor species was already recorded for the region based on an observation by Piet Wit in October 2013 (Guilherme, 2014).

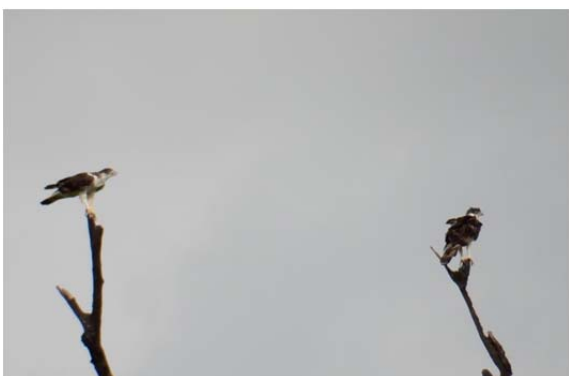


Figure 12 – African Hawk Eagle (picture by Gerco Niezing)



Figure 13 – Black Stork (picture by Menno Breider)

Black stork – *Ciconia nigra*

On the morning of May 3rd, after the first night of heavy rainfall, a one year old Black Stork (Miguel Lecoq, personal comment) was observed on grassland near Béli. It is known that some immature afro-paleartic migrants don't participate in the annual migration towards Europe but stay in Africa.

Lesser Striped Swallow – *Cecropis abyssinica*

Lesser Striped Swallow was recorded for the first time in Guinea-Bissau by João Guilherme (Guilherme, 2014). He observed 6 individuals on February 13th 2013 above Lugajole. During this research, Lesser Striped Swallow was frequently observed. A first observation was made on March 18th. Five birds were spotted in a big tree at the border of Béli. In total, 15 observations were made with 75 individuals calculated. Evidence of breeding was found on the road from Béli to Lugajole, under the bridge at Rio Quinhiqué (9 nests) and on the school building in Béli (2 nests, Figure 15).



Figure 14 – Lesser Striped Swallow observed on top of Fulacundèum (Lugajole) on April 6th



Figure 15-two nests of Lesser Striped Swallow at the school building of Béli

Dwarf Bittern – *Ixobrychus sturmii*

Dwarf Bittern is not included in the ABC checklist of Guinea-Bissau. However, in (Dodman, Barlow, & Sá, 2004) the species is listed based on an observation in Buba in 1997. Piet Wit has observed three single individuals in July 2011 along the Béli-Tchétche road (Guilherme, 2014).

Figure 16 shows an individual, seen on multiple occasions near a temporary pool in Béli village. The same pool was also frequented by a Great Egret *Egretta alba*, a Hamerkop *Scopus umbretta*, Squacco Heron *Ardeola ralloides* and up to 34 Cattle Egrets *Bubulcus ibis*.

Egyptian Plover – *Pluvianus aegyptius*

On March 26th, two Egyptian Plovers were observed on the shores of the Corubal near the little ferry in Tchétche. The birds were not disturbed by the presence of women doing their laundry in the Corubal, neither by our car and the ferry.



Figure 16 – Dwarf Bittern on a temporary pool in Béli



Figure 17 – Egyptian Plovers on the shore of the Corubal

Conclusion

This report of an ornithological survey of the Boé region, Guinea-Bissau from January to July 2015 shows the rich biodiversity of this remote area. With 275 bird species recorded for the region, it is shown that Guinea-Bissau's avifaunal importance is not limited to the coastal zone.

This research shows that, based on a comparison with other IBAs in the country, the region is suitable to be declared an IBA. IBA criterion A1 applies to the Boé with 4 species of global conservation concern. Also IBA criterion A3 is matched for both occurring biomes in the country. For the Sudan-Guinea Savanna biome, the region is more diverse than all countries existing IBA's with 30 out of 35 species recorded. For the Guinea-Congo Forest biome, more research is needed. The existence of culturally protected primary sacred forest patches and an agricultural system that allows secondary forests to develop, the region surely has a large potential for these forest-bound species. This survey registered 20 of the 58 species listed for this biome in Guinea-Bissau. Also, Cassin's Honeybird and Little Green Sunbird, both recorded in this survey and new species for Guinea-Bissau are restricted to the Guinea-Congo Forest Biome.

The region, with its relatively intact natural habitats, its large fresh-water lake, presence of diverse large mammal species and abundance of bird species should be protected. The increasing population, introduction of cashew plantations and initialisation of mining activities are putting pressure on the ecosystem. Therefore it is important that the region's protected status, as suggested in the national IBA directory, is put into practice. IBA designation will be of great importance to succeed in the conservation of the rich biodiversity of the region.

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Appendix 1- List of bird species recorded in January –July 2015 in the Boé region ,South-East Guinea-Bissau

species English name	species scientific name	remarks	encounter rate
long-tailed cormorant	<i>Phalacrocorax africanus</i>		3,1
pink-backed pelican	<i>Pelecanus rufescens</i>		0,4
grey heron	<i>Ardea cinerea</i>		0,6
black-headed heron	<i>Ardea melanocephala</i>		0,3
purple heron	<i>Ardea purpurea</i>		4,2
squacco heron	<i>Ardeola ralloides</i>		4,7
cattle egret	<i>Bubulcus ibis</i>		10,0
intermediate egret	<i>Egretta intermedia</i>		0,8
great egret	<i>Egretta alba</i>		4,0
hamerkop	<i>Scopus umbretta</i>		3,7
dwarf bittern	<i>Ixobrychus sturmii</i>		0,1
green-backed heron	<i>Butorides striata</i>		0,2
black stork	<i>Ciconia nigra</i>		0,1
woolly-necked stork	<i>Ciconia episcopus</i>		0,1
saddle-billed stork	<i>Ephippiorhynchus senegalensis</i>		0,4
(hadada ibis)	<i>(Bostrychia hagedash)</i>		0,0
white-faced whistling duck	<i>Dendrocygna viduata</i>		3,5
african pygmy goose	<i>Nettapus auritus</i>		44,5
spur-winged goose	<i>Plectropterus gambensis</i>		1,9
african fish eagle	<i>Haliaeetus vocifer</i>		0,5
osprey	<i>Pandion haliaetus</i>		0,1
palm-nut vulture	<i>Gypohierax angolensis</i>		4,1
bateleur	<i>Terathopius ecaudatus</i>		1,0
african harrier hawk	<i>Polyboroides typus</i>		6,4
hooded vulture	<i>Necrosyrtes monachus</i>		5,8
african white-backed vulture	<i>Gyps africanus</i>		0,2
Rüppell's griffon vulture	<i>Gyps rueppellii</i>		0,1
black kite	<i>Milvus migrans</i>		0,1
eurasian marsh harrier	<i>Circus aeruginosus</i>		0,5
(short-toed snake eagle)	<i>(Circaetus gallicus)</i>		0,0
beaudouin's snake eagle	<i>Circaetus beaudouini</i>		1,1
brown snake eagle	<i>Circaetus cinereus</i>		0,6
western banded snake eagle	<i>Circaetus cinerascens</i>		1,4
black-shouldered kite	<i>Elanus caeruleus</i>		0,2
(african swallow-tailed kite)	<i>(Chelictinia riocourii)</i>		0,0

shikra	<i>Accipiter badius</i>		1,3
gabar goshawk	<i>Micronisus gabar</i>		0,6
lizard buzzard	<i>Kaupifalco monogrammicus</i>		1,8
dark chanting goshawk	<i>Melierax metabates</i>		2,1
red-thighed sparrowhawk	<i>Accipiter erythropus</i>		0,4
african goshawk	<i>Accipiter tachiro</i>		0,3
black sparrowhawk	<i>Accipiter melanoleucus</i>		0,1
grasshopper buzzard	<i>Butastur rufipennis</i>		0,4
(long-crested eagle)	<i>(Lophaetus occipitalis)</i>		0,0
african hawk eagle	<i>Hieraetus spilogaster</i>		0,6
(common kestrel)	<i>(Falco tinnunculus)</i>		0,0
lanner falcon	<i>Falco biarmicus</i>		0,4
grey kestrel	<i>Falco ardosiaceus</i>		0,4
african hobby	<i>Falco cuvierii</i>		0,1
helmeted guineafowl	<i>Numida meleagris</i>		0,8
ahanta francolin	<i>Francolinus achantensis</i>	A	0,6
double-spurred francolin	<i>Francolinus bicalcaratus</i>		4,9
stone partridge	<i>Ptilopachus petrosus</i>		0,6
black crane	<i>Amaurornis flavirostra</i>		0,9
lesser jacana	<i>Microparra capensis</i>		1,4
african jacana	<i>Actophilornis africanus</i>		62,9
(african finfoot)	<i>(Podica senegalensis)</i>		0,0
black-bellied bustard	<i>Lissotis melanogaster</i>		1,5
spotted thick-knee	<i>Burhinus capensis</i>		0,4
egyptian plover	<i>Pluvianus aegyptius</i>		0,2
greater painted snipe	<i>Rostratula benghalensis</i>		0,3
collared pratincole	<i>Glareola pratincola</i>		0,1
(bronze-winged courser)	<i>(Rhinoptilus chalcopterus)</i>		0,0
spur-winged lapwing	<i>Vanellus spinosus</i>		0,6
white-headed lapwing	<i>Vanellus albiceps</i>		0,2
african wattled lapwing	<i>Vanellus senegallus</i>		8,8
forbes's plover	<i>Charadrius forbesi</i>		1,8
common ringed plover	<i>Charadrius hiaticula</i>		0,1
(green sandpiper)	<i>(Tringa ochropus)</i>		0,1
four-banded sandgrouse	<i>Pterocles quadricinctus</i>		0,4
african green pigeon	<i>Treron calvus</i>		12,4
red-eyed dove	<i>Streptopelia semitorquata</i>		5,5
vinaceous dove	<i>Streptopelia vinacea</i>		2,6
laughing dove	<i>Streptopelia senegalensis</i>		0,2
namaqua dove	<i>Oena capensis</i>		0,6
blue-spotted wood dove	<i>Turtur afer</i>		3,6
black-billed wood dove	<i>Turtur abyssinicus</i>		1,9
(rose-ringed parakeet)	<i>(Psittacula krameri)</i>		0,0
senegal parrot	<i>Poicephalus senegalus</i>		0,1
green turaco	<i>Tauraco persa</i>		3,1

violet turaco	<i>Musophaga violacea</i>		3,2
western grey plantain-eater	<i>Crinifer piscator</i>		3,7
Klaas's cuckoo	<i>Chrysococcyx klaas</i>		0,4
Didric cuckoo	<i>Chrysococcyx caprius</i>		0,2
Levaillant's cuckoo	<i>Oxylophus levaillantii</i>		0,2
african cuckoo	<i>Cuculus gularis</i>		0,3
red-chested cuckoo	<i>Cuculus solitarius</i>		0,3
yellowbill	<i>Ceuthmochares aereus</i>		0,9
(black couckal)	<i>(Centropus grillii)</i>		0,0
senegal couckal	<i>Centropus senegalensis</i>		0,9
(black-throated couckal)	<i>(Centropus leucogaster)</i>		0,0
barn owl	<i>Tyto alba</i>		0,1
african scops owl	<i>Otus senegalensis</i>	A	0,3
(greyish eagle owl)	<i>(Bubo (africanus) cinerascen)</i>		0,0
(spotted eagle owl)	<i>(Bubo africanus)</i>		0,0
(long-tailed nightjar)	<i>(Caprimulgus climacurus)</i>		0,0
standard-winged nightjar	<i>Macrodipteryx longipennis</i>		0,6
mottled spinetail	<i>Telacanthura ussheri</i>		0,2
pallid swift	<i>Apus pallidus</i>		0,1
common swift	<i>Apus apus</i>		0,3
little swift	<i>Apus affinis</i>		3,1
african palm swift	<i>Cypsiurus parvus</i>		7,4
african pygmy kingfisher	<i>Ceyx pictus</i>		1,1
malachite kingfisher	<i>Alcedo cristata</i>		0,2
(shining-blue kingfisher)	<i>(Alcedo quadribrachys)</i>		0,0
pied kingfisher	<i>Ceryle rudis</i>		1,3
woodland kingfisher	<i>Halcyon senegalensis</i>		0,5
grey-headed kingfisher	<i>Halcyon leucocephala</i>		1,0
blue-breasted kingfisher	<i>Halcyon malimbica</i>		3,5
striped kingfisher	<i>Halcyon chelicuti</i>		3,5
(giant kingfisher)	<i>(Megaceryle maxima)</i>		0,0
european bee-eater	<i>Merops apiaster</i>		7,9
little bee-eater	<i>Merops pusillus</i>		0,6
swallow-tailed bee-eater	<i>Merops hirundineus</i>		0,9
(blue-cheeked bee-eater)	<i>(Merops persicus)</i>		0,0
broad-billed roller	<i>Eurystomus glaucurus</i>		2,8
rufous-crowned roller	<i>Coracias naevius</i>		0,3
blue-bellied roller	<i>Coracias cyanogaster</i>		6,7
abyssinian roller	<i>Coracias abyssinicus</i>		2,1
green wood-hopoe	<i>Phoeniculus purpureus</i>		5,3
black wood-hopoe	<i>Rhinopomastus aterrimus</i>		1,2
hoopoe	<i>Upupa epops</i>		0,2
african pied hornbill	<i>Tockus fasciatus</i>		6,1
african grey hornbill	<i>Tockus nasutus</i>		8,7
yellow-fronted tinkerbird	<i>Pogoniulus chrysoconus</i>		1,8

yellow-rumped tinkerbird	<i>Pogoniulus bilineatus</i>		0,3
viellot's barbet	<i>Lybius vieilloti</i>		0,5
bearded barbet	<i>Lybius dubius</i>		0,2
greater honeyguide	<i>Indicator indicator</i>		0,6
cassin's honeybird	<i>Prodotiscus insignis</i>		0,2
golden-tailed woodpecker	<i>Campethera abingoni</i>		0,3
fine-spotted woodpecker	<i>Campethera punctuligera</i>		0,6
buff-spotted woodpecker	<i>Campethera nivosa</i>		0,2
brown-backed woodpecker	<i>Picoides obsoletus</i>		0,2
grey woodpecker	<i>Dendropicus goertae</i>		1,3
cardinal woodpecker	<i>Dendropicus fuscescens</i>		1,8
(eurosian wryneck)	<i>(Jynx torquilla)</i>		0,0
(african broadbill)	<i>(Smithornis capensis)</i>		0,0
flappet lark	<i>Mirafra rufocinnamomea</i>		1,8
sun lark	<i>Galerida modesta</i>		9,5
(chestnut-backed sparrow lark)	<i>(Eremopterix leucotis)</i>		0,0
barn swallow	<i>Hirundo rustica</i>		3,1
grey-rumped swallow	<i>Pseudhirundo griseopyga</i>		3,9
red-chested swallow	<i>Hirundo lucida</i>		4,0
lesser striped swallow	<i>Cecropis abyssinica</i>		8,4
mosque swallow	<i>Cecropis senegalensis</i>	?	0,0
red-rumped swallow	<i>Cecropis daurica</i>		0,5
rufous-chested swallow	<i>Hirundo semirufa</i>		2,1
pie-winged swallow	<i>Hirundo leucosoma</i>		6,4
common house martin	<i>Delichon urbicum</i>		3,5
fanti saw-wing	<i>Psalidoprocne obscura</i>		3,6
tree pipit	<i>Anthus trivialis</i>		0,3
yellow wagtail	<i>Motacilla flava</i>		0,2
yellow-throated longclaw	<i>Macronyx croceus</i>		0,6
white-breasted cuckooshrike	<i>Coracina pectoralis</i>		0,2
red-shouldered cuckooshrike	<i>Campephaga phoenicea</i>		1,7
common bulbul	<i>Pycnonotus barbatus</i>		c
(simple leaflove)	<i>(Chlorocichla simplex)</i>		0,0
yellow-throated leaflove	<i>Chlorocichla flavicollis</i>		1,8
leaflove	<i>Pyrrhurus scandens</i>		2,1
(little greenbul)	<i>(Andropadus virens)</i>		0,0
grey-headed bristlebill	<i>Bleda canicapillus</i>		0,1
(spotted greenbul)	<i>(Ixonotus guttatus)</i>		0,0
african trush	<i>Turdus pelios</i>		1,6
snowy-crowned robin chat	<i>Cossypha niveicapilla</i>		0,9
white-crowned robin chat	<i>Cossypha albicapillus</i>		0,1
common redstart	<i>Phoenicurus phoenicurus</i>		0,1
(heuglin's wheatear)	<i>(Oenanthe heuglini)</i>		0,0
whinchat	<i>Saxicola rubetra</i>		0,2
(white-fronted black chat)	<i>Myrmecocichla albifrons</i>		0,0

african moustached warbler	<i>Melocichla mentalis</i>		1,0
sedge warbler	<i>Acrocephalus schoenobaenus</i>		0,4
(melodious warbler)	<i>(Hippolais polyglotta)</i>		0,0
garden warbler	<i>Sylvia borin</i>		0,3
willow warbler	<i>Phylloscopus trochilus</i>		0,5
senegal eremomela	<i>Eremomela pusilla</i>		3,7
northern crombec	<i>Sylvietta brachyura</i>		0,1
oriole warbler	<i>Hypergerus atriceps</i>		0,6
yellow-bellied hyliota	<i>Hyliota flavigaster</i>		0,5
grey-backed camaroptera	<i>Camaroptera brachyura</i>		2,1
tawny-flanked prinia	<i>Prinia subflava</i>		4,3
red-winged warbler	<i>Heliolais erythropterus</i>		2,1
yellow-breasted apalis	<i>Apalis flavida</i>		1,0
(rufous cisticola)	<i>(Cisticola rufus)</i>		0,0
red-faced cisticola	<i>Cisticola erythrops</i>		0,9
singing cisticola	<i>Cisticola cantans</i>		0,6
(red-pate cisticola)	<i>(Cisticola ruficeps)</i>		0,0
northern black flycatcher	<i>Melaenornis edolioides</i>		7,0
spotted flycatcher	<i>Muscicapa striata</i>	?	0,0
pale flycatcher	<i>Bradornis pallidus</i>		0,1
pie flycatcher	<i>Ficedula hypoleuca</i>		0,2
lead-coloured flycatcher	<i>Myioparus plumbeus</i>		0,3
african paradise flycatcher	<i>Terpsiphone viridis</i>		1,0
red-bellied paradise flycatcher	<i>Terpsiphone rufiventer</i>		2,8
african blue flycatcher	<i>Elminia longicauda</i>		0,5
senegal batis	<i>Batis senegalensis</i>		2,4
common wattle-eye	<i>Platysteira cyanea</i>		4,7
(brown illadopsis)	<i>(Illadopsis fulvescens)</i>		0,0
capuchin babbler	<i>Phyllanthus atripennis</i>		0,5
blackcap babbler	<i>Turdoides reinwardtii</i>		2,7
brown babbler	<i>Turdoides plebejus</i>		2,3
white-shouldered black tit	<i>Parus guineensis</i>		0,6
(spotted creeper)	<i>(Salpornis spilonotus)</i>		0,0
yellow white-eye	<i>Zosterops senegalensis</i>		6,0
pygmy sunbird	<i>Hedydipna platura</i>		1,3
olive sunbird	<i>Cyanomitra olivacea</i>		0,1
collared sunbird	<i>Hedydipna collaris</i>		1,2
(little green sunbird)	<i>(Anthreptes seimundi)</i>		0,0
green-headed sunbird	<i>Cyanomitra verticalis</i>		2,4
scarlet-chested sunbird	<i>Chalcomitra senegalensis</i>		0,5
variable sunbird	<i>Cinnyris venustus</i>		1,2
(olive-bellied sunbird)	<i>(Cinnyris chloropygius)</i>		0,1
copper sunbird	<i>Cinnyris cupreus</i>		2,3
splendid sunbird	<i>Cinnyris coccinigastrus</i>		2,9
beautiful sunbird	<i>Cinnyris pulchellus</i>		2,8

woodchat shrike	<i>Lanius senator</i>		0,1
yellow-billed shrike	<i>Corvinella corvina</i>		2,4
white helmet-shrike	<i>Prionops plumatus</i>		8,5
sulphur-breasted bushshrike	<i>Telophorus sulfureopectus</i>		1,7
grey-headed bushshrike	<i>Malaconotus blanchoti</i>		1,2
northern puffback	<i>Dryoscopus gambensis</i>		3,7
turati's boubou	<i>Laniarius turatii</i>		2,8
yellow-crowned gonolek	<i>Laniarius barbarus</i>		1,3
brubru	<i>Nilaus afer</i>		0,3
marsh tchagra	<i>Bocagia minuta</i>		0,3
black-crowned tchagra	<i>Tchagra senegalus</i>		1,0
(eurasian golden oriole)	<i>(Oriolus oriolus)</i>		0,0
african golden oriole	<i>Oriolus auratus</i>		2,5
black-winged oriole	<i>Oriolus nigripennis</i>		1,1
fork-tailed drongo	<i>Dicrurus adsimilis</i>		10,7
square-tailed drongo	<i>Dicrurus ludwigii</i>		0,4
piapiac	<i>Ptilostomus afer</i>		1,7
pie crow	<i>Corvus albus</i>		0,2
(forest chestnut-winged starling)	<i>(Onychoghathus fulgidus)</i>		0,0
purple glossy starling	<i>Lamprotornis purpureus</i>		9,6
yellow-billed oxpecker	<i>Buphagus africanus</i>		0,2
violet-backed starling	<i>Cinnyricinclus leucogaster</i>		15,9
bronze-tailed glossy starling	<i>Lamprotornis chalcurus</i>		5,2
long-tailed glossy starling	<i>Lamprotornis caudatus</i>		0,6
(lesser blue-eared starling)	<i>(Lamprotornis chloropterus)</i>		0,0
northern grey-headed sparrow	<i>Passer griseus</i>		1,6
bush petronia	<i>Petronia dentata</i>		0,9
chestnut-crowned sparrow weaver	<i>Plocepasser superciliosus</i>		0,6
(little weaver)	<i>(Ploceus luteolus)</i>		0,0
vitelline masked weaver	<i>Ploceus vitellinus</i>		0,4
heuglin's masked weaver	<i>Ploceus heuglini</i>		0,2
village weaver	<i>Ploceus cucullatus</i>		c
black-headed weaver	<i>Ploceus melanocephalus</i>		0,2
black-necked weaver	<i>Ploceus nigricollis</i>		1,8
blue-billed malimbe	<i>Malimbus nitens</i>		0,1
red-billed quelea	<i>Quelea quelea</i>		12,4
red-headed quelea	<i>Quelea erythrops</i>	?	0,0
(black-winged bishop)	<i>(Euplectes hordeaceus)</i>		0,0
(northern red bishop)	<i>(Euplectes franciscanus)</i>		0,0
yellow-mantled widowbird	<i>Euplectes macroura</i>		1,7
dybowski's twispot	<i>Euschistospiza dybowskii</i>		4,2
red-winged pytilia	<i>Pytilia phoenicoptera</i>		1,4
chestnut-breasted negrofinch	<i>Nigrita bicolor</i>		0,1
white-cheeked oliveback	<i>Nesocharis capistrata</i>		0,1

(crimson seedcracker)	<i>(Pyrenestes sanguineus)</i>		0,0
black-bellied seedcracker	<i>Pyrenestes ostrinus</i>	?	0,0
orange-cheeked waxbill	<i>Estrilda melpoda</i>		10,1
lavender waxbill	<i>Estrilda caerulescens</i>		4,5
red-cheeked cordon-bleu	<i>Uraeginthus bengalus</i>		12,7
bar-breasted firefinch	<i>Lagonosticta rufopicta</i>		0,1
red-billed firefinch	<i>Lagonosticta senegala</i>		1,9
blue-billed firefinch	<i>Lagonosticta rubricata</i>		1,1
black-bellied firefinch	<i>Lagonosticta rara</i>		0,9
(black-faced firefinch)	<i>(Lagonosticta larvata)</i>		0,0
bronze mannikin	<i>Lonchura cucullata</i>		18,6
(sahel paradise whydah)	<i>(Vidua orientalis)</i>		0,0
exclamatory paradise whydah	<i>Vidua interjecta</i>	?	0,0
pin-tailed whydah	<i>Vidua macroura</i>		1,7
village indigobird	<i>Vidua chalybeata</i>		0,4
yellow-fronted canary	<i>Serinus mozambicus</i>		4,5
(brown-rumped bunting)	<i>(Emberiza affinis)</i>		0,0

Summary and legenda	
Total of species registered in this research	223
(not observed by the author)	42
Total of species registered for the Boé (2007-2015)	275
Total of species registered for Guinea-Bissau (Dodman et al., 2004)	520
Coverage of species registered by Dodman et al. (2004) found in the Boé [%]	53
Number of new species for the Boé in 2015	85
Number of species recorded in the Boé but not observed in 2015	19
New country records registered in this research	4
New country records earlier Boé research	3
A: only vocal	
?: uncertain record, confirmation needed	

Appendix 2- IBA trigger species for Guinea Bissau: A1 – Globally Threatened Species

English name	Scientific name	IUCN status	Boé survey
Hooded Vulture	<i>Necrosyrtes monachus</i>	Endangered	x
White-backed Vulture	<i>Gyps africanus</i>	Endangered	x
Rüppell's Griffon Vulture	<i>Gyps rueppellii</i>	Endangered	x
Yellow-casqued Hornbill	<i>Ceratogymna atrata</i>	Vulnerable	
Black Crowned-crane	<i>Balearica pavonina</i>	Vulnerable	
White-headed Vulture	<i>Trigonoceps occipitalis</i>	Vulnerable	
Martial Eagle	<i>Polemaetus bellicosus</i>	Vulnerable	
Timneh Parrot	<i>Psittacus erithacus timneh</i>	Vulnerable	

List of threatened species from (IUCN, 2015.2).

The occurrence of globally threatened species in the Boé area, Guinea-Bissau.

Appendix 3- IBA trigger species for Guinea Bissau: A3 – Biome Restricted Assemblages

A04: Sudan-Guinea Savanna Biome

English name	Scientific name	Rio Cacheu	Rio Mansôa and Gêba estuary	Dulombi	Lagoas de Cufada	Ilha de Bolama – Rio Grande de Buba	Rio Tombali, Rio Combijã & Ilha de Melo	Arquipélago dos Bijagós	Cantanhez forests	Cacine	Vendu Tcham	Boé survey	number of IBAs recorded in
Adamawa Turtle Dove	<i>Streptopelia hypopyrrha</i>											x	0
Senegal Parrot	<i>Poicephalus senegalus</i>	x	x	x	x	x	x	x	x			x	8
Violet Turaco	<i>Musophaga violacea</i>	x		x	x		x				x	x	5
Red-Throated Bee-eater	<i>Merops bulocki</i>	x	x	x			x		x				5
Blue-bellied Roller	<i>Coracias cyanogaster</i>	x	x	x	x	x		x			x	x	7
Bearded Barbet	<i>Lybius dubius</i>	x		x	x							x	3
Sun Lark	<i>Galerida modesta</i>			x							x	x	2
Pied-winged Swallow	<i>Hirundo leucosoma</i>			x							x	x	2
White-crowned Robin Chat	<i>Cossypha albicapilla</i>	x	x	x	x		x	x	x			x	7
White-fronted Black Chat	<i>Myrmecocichla albifrons</i>		x	x	x		x		x		x	(x)	6
Red-pate Cisticola	<i>Cisticola ruficeps</i>											(x)	0
Rufous Cisticola	<i>Cisticola rufus</i>											(x)	0
Senegal Eremomela	<i>Eremomela pusilla</i>	x	x	x	x	x	x	x			x	x	8
Oriole Warbler	<i>Hypergerus atriceps</i>		x	x	x		x		x		x	x	6
Blackcap Babbler	<i>Turdoides rienwardtii</i>	x	x	x	x		x				x	x	6
Splendid Sunbird	<i>Cinnyris coccinigaster</i>	x	x	x	x	x		x			x	x	7
Emin's Shrike	<i>Lanius gubernator</i>												0
Yellow-billed Shrike	<i>Corvinella corvine</i>	x	x	x	x	x	x		x		x	x	8
Piapiac	<i>Ptilostomus afer</i>	x	x	x			x	x				x	5
Purple Glossy Starling	<i>Lamprotornis purpureus</i>	x	x	x	x	x		x	x		x	x	8
Bronze-tailed Glossy Starling	<i>Lamprotornis chalcurus</i>	x	x	x	x		x	x				x	6
Bush Petronia	<i>Petronia dentata</i>		x	x	x		x				x	x	5
Chestnut-crowned Sparrow-weaver	<i>Plocepasser superciliosus</i>			x	x						x	x	3
Heuglin's Masked Weaver	<i>Ploceus heuglini</i>		x					x				x	2
White-cheeked Oliveback	<i>Nesocharis capistrata</i>		x	x					x			x	3
Red-winged Pytilia	<i>Pytilia phoenicoptera</i>		x	x	x						x	x	4
Yellow-winged Pytilia	<i>Pytilia hypogrammica</i>		x										1
Dybowski's Twinspot	<i>Euschistospiza dybowskii</i>										x	x	1
Bar-breasted Firefinch	<i>Lagonosticta rufopicta</i>	x		x								x	2
Black-bellied Firefinch	<i>Lagonosticta rara</i>				x		x					x	2
Black-faced Firefinch	<i>Lagonosticta larvata</i>		x	x					x		x	(x)	4
Lavender Waxbill	<i>Estrilda caerulescens</i>	x	x	x	x		x			x	x	x	7
Black-rumped Waxbill	<i>Estrilda troglodytes</i>										x		1
Exclamatory Paradise Wydah	<i>Vidua interjecta</i>		x	x							x	x	3
Brown-rumped Bunting	<i>Emberiza affinis</i>											(x)	0
TOTAL		15	21	25	18	6	14	9	9	1	19	30	

From (Dodman, Barlow, & Sá, 2004) – The occurrence of biome-restricted species at Important Bird Areas in Guinea-Bissau, A04: Guinea-Sudan Savanna Biome. x: observed by the author during this research; (x): observed by Katharina Kühnert or Miguel Lecoq during this research or by João Guilherme in 2013 (Guilherme, 2014).

A05: Guinea-Congo Forests Biome

English name	Scientific name	Rio Cacheu	Rio Mansôa and Gêba estuary	Dulombi	Lagoas de Cufada	Ilha de Bolama – Rio Grande de Buba	Rio Tombali, Rio Combijã & Ilha de Melo	Arquipélago dos Bijagós	Cantanhez forests	Cacine	Vendu Tcham	Boé survey	number of IBAs recorded in
White-crested Tiger Heron	<i>Tigriornis leucolophus</i>			x									1
Red-thighed Sparrowhawk	<i>Accipiter erythropus</i>		x		x			x		x		x	4
Ahanta Francolin	<i>Francolinus Achantensis</i>	x	x		x				x	x		x	5
White-spotted Fluftail	<i>Sarothrura pulchra</i>		x		x		x	x	x	x			6
Grey Parrot	<i>Psittacus erithacus timneh</i>							x					1
Green Turaco	<i>Tauraco persa</i>	x	x	x	x	x	x		x	x	x	x	9
Black-throated Coucal	<i>Centropus leucogaster</i>	x		x			x		x	x	x	(x)	6
Black-shouldered Nightjar	<i>Caprimulgus nigriscapularis</i>	x			x								2
White-bellied Kingfisher	<i>Alcedo leucogaster</i>	x			x				x				3
Black Bee-eater	<i>Merops gularis</i>		x					x					2
Blue-throated Roller	<i>Eurystomus gularis</i>				x								1
White-crested Hornbill	<i>Tropicanus albocristatus</i>				x								1
African Pied Hornbill	<i>Tockus fasciatus</i>	x	x	x	x	x	x	x	x	x	x	x	10
Piping Hornbill	<i>Bycanistes fistulator</i>	x	x		x	x	x	x		x			7
Black-and-White-casqued Hornbill	<i>Bycanistes subcylindricus</i>				x								1
Yellow-casqued Hornbill	<i>Ceratogymna elata</i>				x		x		x	x			4
Spotted Honeyguide	<i>Indicator maculatus</i>				x		x	x		x			4
Willcocks's Honeyguide	<i>Indicator Willcocksi</i>			x									1
Little Green Woodpecker	<i>Campethera maculosa</i>		x		x		x	x	x	x			6
Buff-spotted Woodpecker	<i>Campethera nivosa</i>				x		x		x	x		x	4
Gabon Woodpecker	<i>Dendropicos gabonensis</i>				x								1
Fanti Saw-wing	<i>Psalidoprocne obscura</i>			x	x	x	x	x			x	x	6
White-throated Blue Swallow	<i>Hirundo nigrita</i>			x									1
Ansonge's Greenbull	<i>Andropadus ansorgei</i>	x											1
Honeyguide Greenbull	<i>Baeopogon indicator</i>				x		x		x	x			4
Spotted Greenbull	<i>Ixonotus guttatus</i>						x		x	x		(x)	3
Simple Leaflove	<i>Chlorocichla simplex</i>			x	x				x	x		(x)	4
Swamp Palm Bulbul	<i>Thescelocichla leucopleura</i>	x		x	x				x	x			5
Leaflove	<i>Pyrrhurus scandens</i>		x	x	x				x	x		x	5
Grey-headed Bristlebill	<i>Bleda canicapilla</i>	x	x		x		x		x	x		x	6
Western Bearded Greenbull	<i>Criniger barbatus</i>			x			x		x	x			4
Red-tailed Greenbull	<i>Criniger calurus</i>						x		x	x			3
Western Nicator	<i>Nicator chloris</i>	x			x		x		x	x	x		6
Fire-crested Alethe	<i>Alethe diademata</i>	x			x		x			x			4
White-tailed Ant Thrush	<i>Neocossyphus poensis</i>				x								1
Green Crombec	<i>Sylvietta virens</i>				x		x						2
Green Hylia	<i>Hylia prasina</i>	x		x	x		x	x	x	x			7
White-browed Forest Flycatcher	<i>Fraseria cinerascens</i>				x					x			2
Ussher's Flycatcher	<i>Muscicapa ussheri</i>				x								1
Red-bellied Paradise Flycatcher	<i>Terpsiphone rufiventer</i>	x	x	x	x	x	x	x		x	x	x	9
Brown Illadopsis	<i>Illadopsis fulvescens</i>			x						x		(x)	2
Puvel's Illadopsis	<i>Illadopsis puveli</i>	x		x	x		x		x	x			6
Capucin Babbler	<i>Phyllanthus atripennis</i>	x			x		x			x		x	4
Brown Sunbird	<i>Anthreptes gabonicus</i>		x		x	x	x	x					5
Green Sunbird	<i>Anthreptes rectirostris</i>						x		x	x			3
Buff-throated Sunbird	<i>Chalcomitra adelberti</i>							x					1
Superb Sunbird	<i>Cinnyris superbus</i>						x	x			x		3
Sooty Boubou	<i>Laniarius leucorhynchus</i>						x						1
Turati's Boubou	<i>Laniarius turatii</i>	x		x	x		x		x			x	5
Black-winged Oriole	<i>Oriolus nigripennis</i>							x				x	1
Western Black-headed Oriole	<i>Oriolus brachurhynchus</i>				x								1
Forest Chestnut-winged Starling	<i>Onychognathus fulgidus</i>				x							(x)	1
Vieillot's Black Weaver	<i>Ploceus nigerrimus</i>	x					x						2
Blue-billed Malimbe	<i>Malimbus nitens</i>				x		x	x				x	3

Red-headed Malimbe	<i>Malimbus rubricollis</i>				x			x		x					3
Chestnut-breasted Negrofinch	<i>Nigrita bicolor</i>		x					x		x	x			x	4
Crimson Seedcracker	<i>Pyrenestes sanguineus</i>				x	x			x					(x)	3
Western Bluebill	<i>Spermophaga haematina</i>	x		x	x							x			4
TOTAL		19	13	17	40	7	31	17	24	30	7			20	

From (Dodman, Barlow, & Sá, 2004) – The occurrence of biome-restricted species at Important Bird Areas in Guinea-Bissau, A05: Guinea-Congo Forests Biome. x: observed by the author during this research; (x): observed by Katharina Kühnert or Miguel Lecoq during this research or by João Guilherme in 2013 (Guilherme, 2014).

Appendix 4- Waterbird counts on Vendu Tcham

date	English Name	number
7/04	collared pratincole	3
	lanner falcon	2
	palm-nut vulture	8
	african jacana	123
	broad-billed roller	2
	purple heron	12
	great egret	20
	squacco heron	19
	little egret	0
	african fish eagle	2
	african pygmy goose	151
	long-tailed cormorant	8
	lesser jacana	2
	cattle egret	11
	intermediate egret	5
	pie kingfisher	3
	spur-winged goose	17
	green sandpiper	1
	eurasian marsh harrier	1
	african harrier hawk	1
yellow wagtail	2	
sedge warbler	4	

date	English Name	number
16/05	pink-backed pelican	1
	african jacana	446
	lesser jacana	6
	great egret	13
	saddle-billed stork	2
	purple heron	14
	squacco heron	13
	grey heron	2
	cattle egret	1
	african pygmy goose	216
	white-faced whistling duck	32
	malachite kingfisher	1
	pie kingfisher	3
	long-tailed cormorant	8
	palm-nut vulture	5
	african fish eagle	1
	red-chested swallow	2
	pie-winged swallow	2
	collared pratincole	1
	eurasian marsh harrier	2
spur-winged lapwing	4	

date	English Name	number
4/07	squacco heron	7
	great egret	1
	purple heron	7
	grey heron	1
	long-tailed cormorant	6
	palm-nut vulture	9
	african fish eagle	2
	african jacana	8+
	lesser jacana	5
	pie kingfisher	2
	pink-backed pelican	1
	african pygmy goose	42+
	red-breasted swallow	2
	malachite kingfisher	1
	blue-breasted kingfisher	1
saddle-billed stork	2	

Appendix 5: Descriptions of observations made by Katharina Kühnert

Katharina Kühnert

Descriptions of observation

Description of observation 14.06.2015, Quebube, morning; Black-bellied Seedcracker *Pyrenestes astrinus*

- Seen twice in flight; very rounded wings like Crimson Seedcracker.
- Bright red head, clear contrast between clearly black wings and extended red from breast.
- Separation from Crimson Seedcracker by song difficult, but as the bird was clearly black/red the only possibility for confusion is with Western Bluebill *Spermophaga haematina*. However, as the bird was singing, the song could be used to verify separation from Western Bluebill (still in the field, verified by both observers).
- Brecht Coppens agreed on that the bird was black/red, not brown/red. None of the black/red Malimbe species has a similar song.
- Coordinates: N11° 50.759' W13° 58.370'

Description of observation 24.06.2015, 09:18; Red-necked Buzzard *Buteo auguralis* (new for Boé)

- Bird soaring above Savanna study point, flapping rarely.
- Broad round wings, buzzard-like appearance.
- Rufous tail from above and below, dark edges of light remiges clearly seen.
- From below underparts appear white, with dark spots on underwings. Black "commas" on inner wings. Brown chest band, darker than tail, but not black. Tail appearing rufous from below too, with dark subterminal bar.
- Other observers: Mussa Sané, Alfa Iai Keita
- No picture taken.
- Coordinates: N11° 51.321' W13° 55.802'

Description of observation 28.05.2015, afternoon; Swallow-tailed Kite *Chelictinia riocourii*

- Bird flying straight north, flapping light.
- Falcon-like appearance.
- Completely white below, tail deeply forked. Two dark dots on shoulders were seen, but with difficulty, as light was fading already.
- Other observers: Balu Séra.
- No picture taken.
- Coordinates: N11° 86.324' W13° 92.195'

Description of observation 25.05. 2015, 11:02; Wahlberg's Honeybird *Prodotiscus regulus*

- Flying from direction of river, sitting down on twig
- Appears like Bulbul on first glance, but smaller and different movement.
- Flicks tail a little bit sideways. Posture not as upright as Bulbul, more "horizontal".
- Completely dark mousebrown, but very light belly and breast. Slight contrast between shoulders and lighter throat/neck.
- Outer tail feathers are white, but white doesn't extend to end of tail.