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Biodiversity

Avifauna of The Gbetitapea Village Forest (Central-Western Côte d'Ivoire): A Tool for Reviving Ecotourims

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Abstract **Original Research Article**

The scarcity of arable land means that the forest is often seen as a "land bank" that can be used for agriculture when the need or necessity arises. This practice has led, in one way or another, to the erosion of biodiversity. In Côte d'Ivoire very few studies have been carried out on village forest birds. The objective of this work is to find out the avifaunal richness of Gbetitapea village forest (GVF) with a view to diversifying its tourist potential. To this end, censuses were conducted in this forest using listening points, mist net capture and recapture and fixed-term censuses along line transects with five-minute stopping points at listening stations. This methodology resulted in a total richness of 130 bird species divided into 43 families of 17 orders. Resident species (86.15%) and open habitats (59.23%) were the most abundant. The GVF is characterised by three species endemic to West Africa, 29 species belonging to the Guinean-Congolese forest and four bird species from the Sudano-Guinean savannah biome. This study has therefore made it possible to highlight the richness and avifaunal diversity of the village forest of Gbétitapéa which needs to be monitored.

Keywords: Avifauna, diversity, village forest, Gbétitapéa, Côte d'Ivoire.

INTRODUCTION

The rapid degradation of natural resources and the accelerated erosion of biodiversity is nowadays indisputable [1-4]. In Africa, the future of wild flora and fauna is linked to the implementation of a policy for the protection of major areas, sustainable development and rational use of the resources they generate. This policy can obviously only be implemented on the basis of fundamental ecological knowledge, which is still too often lacking [5, 6].

In Côte d'Ivoire, the galloping degradation of the natural environment has unfortunately led to the disappearance of thousands of hectares of forest, with the result that many animal species dependent on it have become extinct [7-10]. Rural forest reserves in particular have become coveted areas for agriculture and the intensive exploitation of non-timber and timber forest products, due to population growth and the increased market value of products derived from forest species [11, 12]. Indeed, soil impoverishment combined with population growth is leading people to seek new arable land [13, 14]. In this search, forests are sometimes exposed [15]. The scarcity of arable land means that forests are often seen as "land banks" that can be used for agriculture when the need or necessity arises [16]. All this practice has led, in one way or another, to the erosion of biodiversity in general and that of birdlife in particular. Hence the need to develop alternative sources of income in order to reduce the pressure on natural resources.

Present in all environments, from the most artificial to the most natural, birds have conquered a multitude of ecological niches [17, 18]. Their specialisations and spatial requirements make many species sensitive to habitat variations, which gives them a clear bio-indicator value [19-24, 18]. Moreover, as the ecology of many bird species is becoming increasingly well known, changes in their abundance can be better interpreted. These characteristics make avifauna an interesting monitoring indicator for biodiversity conservation [25]. Moreover, birds are of exceptional educational interest for raising awareness of the need to preserve natural resources, for emulating scientific culture and ecology and for raising awareness of the importance of aesthetics [18]. Birds are also of socio-economic interest: exploitation for food, magical-religious practices, not forgetting the problems of possible competition with fishermen, farmers or farmers. Finally, the avifaunistic potential of a country or region is nowadays increasingly used as an important tourist resource [18]. Consequently, exploiting this potential would be of scientific, educational and

economic interest. This could make it possible to constitute an axis for the development of ornithological programmes on a regional scale, which is still lacking. Furthermore, the locality of Gbétitapéa is mainly known for its forest fragments rich in monkey species, notably the Lowe monkey Cercopithecus lowei and the White nose monkey Cercopithecus petaurista [26]. It is one of the most popular tourist destinations in the Upper Sassandra region. However, data on its bird biodiversity are non-existent. To make up for this lack of knowledge, this study aims to determine the avifaunal richness of GVF with a view to diversifying its tourist potential.

MATERIALS AND METHODS

Study site

Gbétitapéa is located in the central-western part of Côte d'Ivoire, in the region of Haut-Sassandra and, more precisely, in the Department of Daloa, whose capital is the town of Daloa (Fig. 1). It is situated 10 km from the town of Daloa on the Daloa-Issia axis and extends between 7°06' and 7°07' north latitude and between 6°73' and 6°72' west longitude. The region which is home to the village of Gbétitapéa is bordered by those of Worodogou to the north, the Fromagers to the south, Marahoué to the east and the Montagnes and Moyen-Cavally to the west.

The population of Gbétitapéa is predominantly Bete. The village has a dense semi-deciduous forest which is home to sacred monkeys. This forest owes its survival to the sacredness of the monkeys. The Haut-Sassandra region is marked by a humid tropical climate and is characterised by two seasons of unequal length. The average annual rainfall is between 1200 mm and 1600 mm per year [8, 27-29]. Hydrographically, the region is under the influence of the Sassandra rivé and its tributaries (the Lobo and Davo rivers) and the lake of the Buyo dam. The shape of the region is monotonous and the landscape is made up of peneplains, which are large, gently undulating surfaces. The Upper Sassandra region benefits from favourable natural conditions for good agricultural development. Thus this region benefits from numerous assets not only for the production of food crops but also for its tourist potential.

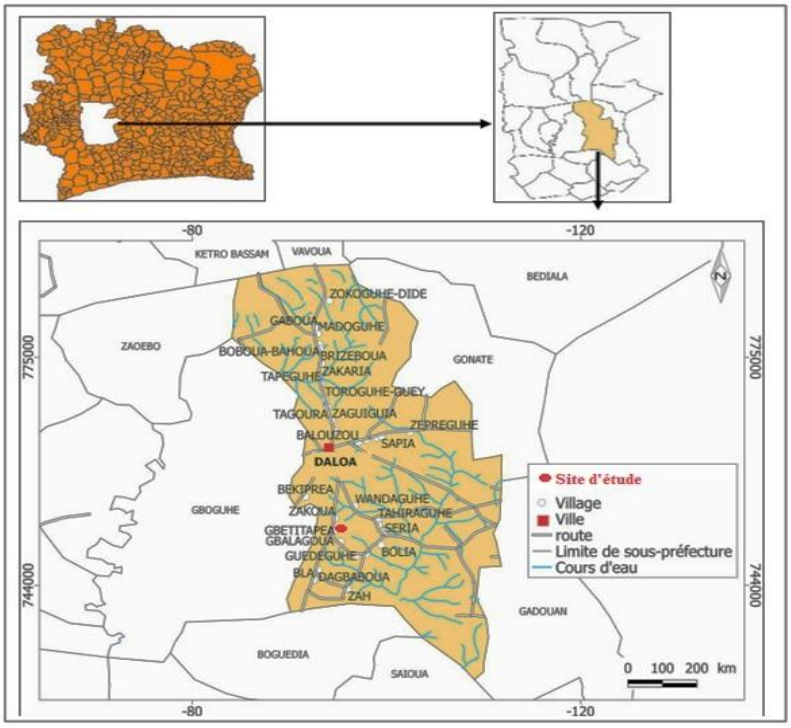

Fig-1: Location of the study site in the Daloa Department [30]

Material

Observations were made through pairs of binoculars (Bushnell, 10 x 50 mm). The recording equipment consisted of a digital camera (Panasonic Lumix DMC-TZ61) for taking pictures and a GPS (Global Positioning System) (Garmin 60 CSx) to record geographical coordinates, altitude, route layout and to mark the various observation points. The West African Bird Guide [31] was used to identify the birds at this site.

Sampling devices

The study took place from January to May 2018. In order to cover the entire site, to take into account the heterogeneity of the environment and above all the diversity of the different biotopes, the GVF was subdivided into four sectors. In each sector a 2 km line transect was carried out, making a total of four transects. A fixed observation and counting point or station was also identified for study in a place offering a beautiful view of the entire landscape of this sector. Five listening

stations approximately 500 m apart were observed on each transect (a total of 20 stations in all four sectors). In order to identify discrete and silent species that can easily go unnoticed during visual or auditory observations, a fixed mist net capture and recapture point was identified and carried out throughout the study area for daytime observations. For night observations, inventories were carried out on the transects used for sampling diurnal species. However, three listening stations 1km apart were identified on each transect (a total of 12 stations in all four sectors). The main methodology was the vocalization replay technique. The songs of all the nocturnal bird species likely to be encountered in the site were reviewed (10 in total). The vocalisation of a given species was listened to for 1 minute, followed by a 1-minute wait before moving on to another species.

DATA COLLECTION AND ANALYSIS

The methods used are respectively the listening point method [32, 4], mist net capture and recapture [33], time-dependent census along line transects [33, 34], with five-minute stopping points at listening stations [4]. Daytime observations (from 06 h 30 min to 18 h 30 min) were carried out on each 2 km line transect (sample route). The inventories were based on a systematic count of all bird species identified, seen or heard along the 12 2-km transects (i.e. three line transects 1 km apart in each sector), during a slow (0.5 to 1 km/h) and silent walk. Observations from fixed listening points and mist net captures and recaptures (excluding transects) were used for a whole day between 06 h 30 min and 18 h 30 min (i.e. 12 hours of daily observation per study sector). For night observations, inventories were carried out on the sample routes used for sampling daytime species. The main methodology used was the vocalization replay technique. The songs of all nocturnal bird species such as Nighthawks, some lapwings and birds of prey likely to be encountered in the site were reviewed (10 in total). The vocalisation of a given species was listened to (from the smallest to the largest species) for 1 minute, followed by a 1-minute wait before moving on to another species. Observations were made during the full moon, from 19:00 to 23:00 on the outward journey and from 04:00 to 06:00 on the return journey. For each of the species recorded, the conservation status is [35], the biogeographical status, the preferred habitat and the endemism in West Africa (WA) according to [31]. The indications for biomes are [36, 37]. Nomenclature, taxonomy and species order have been established according to the Handbook of the Birds of the Word and BirdLife International as published by [38].

RESULTS

Overall specific composition

The total number of bird species in GVF is 130, divided into 43 families of 17 orders (Table 1). Non-passeriformes dominate the stand with 73 species (56.15%) from 22 families. The order passeriformes represent 43.85% of the stand with 57 species belonging to 21 families. The most diversified families are the Accipitridae and Ploceidae with 11 species each. They are followed by the family Lybiidae with nine species. Next are the families Nectariniidae and Pycnonotidae with seven species each. Then, the families Cisticolidae, Columbidae and Cuculidae with six species each. These eight main species alone account for 48.46% of the total population. Figure 2 shows photographs of some of the bird species identified in the GVF.

Table-1: List of bird species observed in the GVF

Scientific name	Common name	CS	BS	PH	End.	Biome
GALLIFORMES						
PHASIANIDAE						
Peliperdix lathami (Hartlaub, 1854)	Latham's Forest Francolin	LC	R	FF		GC
Pternistis ahantensis (Temminck, 1854)	Francolin d'Ahanta	LC	R	F		GC
Pternistis bicalcaratus (Linnaeus, 1766)	Double-spurred Francolin	LC	R	f		
ANSERIFORMES						
ANATIDAE						
Dendrocygna viduata (Linnaeus, 1766)	White-faced Whistling Duck	LC	R/M	Ea		
COLUMBIFORMES						
COLUMBIDAE						
Treron calvus (Temminck, 1811)	African Green Pigeon	LC	R	F		
Turtur brehmeri (Hartlaub, 1865)	Blue-headed Wood Dove	LC	R	F		GC
Turtur tympanistria (Temminck, 1809)	Tambourine Dove	LC	R	F		
Turtur afer (Linnaeus, 1766)	Blue-spotted Wood Dove	LC	R	f		
Streptopelia semitorquata (Rüppell, 1837)	Red-eyed Dove	LC	R	f		
Spilopelia senegalensis (Linné , 1766)	Laughing Dove	LC	R	f		
CAPRIMULGIFORMES						
CAPRIMULGIDAE						
Caprimulgus tristigma (Rüppell, 1840)	Freckled Nightjar	LC	R	f		
Caprimulgus europaeus (Linnaeus, 1758)	European Nightjar	LC	P	f		
Caprimulgus longipennis (Shaw , 1796)	Standard-winged Nightjar	LC	M	f		
CUCULIFORMES						
CUCULIDAE						
Chrysococcyx cupreus (Shaw, 1792)	African Emerald Cuckoo	LC	R	F		

Chrysococcyx klaas (Stephens, 1815)	Klaas's Cuckoo	LC	R/M	f		
Chrysococcyx caprius (Boddaert, 1783)	Didric Cuckoo	LC	R/M	f		
Ceuthmochares aereus (Vieillot, 1817)	Yellowbill	LC	R	f		
Centropus grillii (Hartlaub, 1861)	Black Coucal	LC	M/R	f		
Centropus senegalensis (Linnaeus, 1766)	Senegal Coucal	LC	R	f		
Table 1 (Continued 1)						
Scientific name	**Common name**	**CS**	**BS**	**PH**	**End.**	**Biome**
GRUIFORMES						
RALLIDAE						
Zapornia flavirostra (Swainson, 1837)	Black Crake	LC	R	Ea		
Porphyrio alleni (Thomson, 1842)	Allen's Gallinule	LC	R	Ea		
Gallinula chloropus (Linnaeus, 1758)	Common Moorhen	LC	R	Ea		
MUSOPHAGIFORMES						
MUSOPHAGIDAE						
Tauraco persa (Linnaeus, 1758)	Green Turaco	LC	R	FF		GC
Musophaga violacea (Isert, 1788)	Violet Turaco	LC	R	f	WA	SG
Crinifer piscator (Boddaert, 1783)	Western Grey Plantain-eater	LC	R	f		
PELECANIFORMES						
ARDEIDAE						
Nycticorax nycticorax (Linnaeus, 1758)	Black-crowned Night Heron	LC	R	Ea		
Ardeola ralloides (Scopoli, 1769)	Squacco Heron	LC	R/P	Ea		
Butorides striata (Linnaeus, 1758)	Green-backed Heron	LC	R	Ea		
Egretta intermedia (Wagler, 1829)	Intermediate Egret	LC	R	Ea		
SULIFORMES						
PHALACROCORACIDAE						
Microcarbo africanus (Gmelin, 1789)	Great Cormorant	LC	R	Ea		
CHARADRIIFORMES						
CHARADRIIDAE						
Vanellus senegallus (Linnaeus, 1766)	African Wattled Lapwing	LC	R	Ea		
JACANIDAE						
Actophilornis africanus (Gmelin, 1789)	African Jacana	LC	R	Ea		
STRIGIFORMES						
TYTONIDAE						
Tyto alba (Scopoli, 1769)	Barn Owl	LC	R	f		
STRIGIDAE						
Otus icterorhynchus (Shelley, 1873)	Sandy Scops Owl	LC	R	F		GC
Ptilopsis leucotis (Temminck, 1820)	White-faced Owl	LC	R	f		
Jubula lettii (Büttikofer, 1889)	Maned Owl	DD	R	FF		GC
Strix woodfordii (Smith, 1834)	African Wood Owl	LC	R	F		
ACCIPITRIFORMES						
ACCIPITRIDAE						
Pernis apivorus (Linnaeus, 1758)	European Honey Buzzard	LC	P	f		
Elanus caeruleus (Desfontaines, 1789)	Black-shouldered Kite	LC	R	f		
Milvus migrans (Boddaert, 1783)	Black Kite	LC	M	f		
Polyboroides typus (Smith, 1829)	African Harrier Hawk	LC	R	F		
Circus pygargus (Linnaeus, 1758)	Montagu's Harrier	LC	P	f		
Micronisus gabar (Daudin, 1800)	Gabar Goshawk	LC	R	f		
Accipiter tachiro (Daudin, 1800)	African Goshawk	LC	R	FF		
Accipiter badius (Gmelin, 1788)	Shikra	LC	R	f		
Kaupifalco monogrammicus (Temminck, 1824)	Lizard Buzzard	LC	R	f		
Buteo auguralis (Salvadori, 1865)	Red-necked Buzzard	LC	R/M	f		
Aquila rapax (Temminck, 1828)	Tawny Eagle	LC	R	f		
BUCEROTIFORMES						
BUCEROTIDAE						
Lophoceros semifasciatus (Hartlaub, 1855)	African Pied Hornbill	LC	R	F		GC
Lophoceros nasutus (Linnaeus, 1766)	African Grey Hornbill	LC	R	f		
CORACIIFORMES						
MEROPIDAE						
Merops pusillus (Müller, 1776)	Little Bee-eater	LC	R	f		
Merops albicollis (Vieillot, 1817)	White-throated Bee-eater	LC	M	f		
Merops apiaster (Linnaeus, 1758)	European Bee-eater	LC	P	f		
CORACIIDAE						
Coracias cyanogaster (Cuvier, 1817)	Blue-bellied Roller	LC	R	f		SG
Coracias abyssinicus (Hermann, 1783)	Abyssinian Roller	LC	M	F		
Eurystomus gularis (Vieillot, 1819)	Blue-throated Roller	LC	R	F		GC
Table 1 (Continued 2)						

Scientific name	Common name	CS	BS	PH	End.	Biome
Eurystomus glaucurus (Müller, 1776)	Broad-billed Roller	LC	R/M	f		
ALCEDINIDAE						
Halcyon leucocephala (Müller, 1776)	Grey-headed Kingfisher	LC	M	f		
Halcyon malimbica (Shaw, 1811)	Blue-breasted Kingfisher	LC	R	F		
Halcyon senegalensis (Linnaeus, 1766)	Woodland Kingfisher	LC	R	f		
Ispidina lecontei (Cassin, 1856)	African Dwarf Kingfisher	LC	R	f		GC
Ispidina pictus (Boddaert, 1783)	African Pygmy Kingfisher	LC	R	f		
PICIFORMES						
LYBIIDAE						
Gymnobucco calvus (Lafresnaye, 1841)	Naked-faced Barbet	LC	R	F		GC
Pogoniulus scolopaceus (Bonaparte, 1850)	Speckled Tinkerbird	LC	R	F		GC
Pogoniulus subsulphureus (Fraser, 1843)	Yellow-throated Tinkerbird	LC	R	FF		GC
Pogoniulus bilineatus (Sundevall, 1850)	Yellow-rumped Tinkerbird	LC	R	F		
Pogoniulus chrysoconus (Temminck, 1832)	Yellow-fronted Tinkerbird	LC	R	f		
Tricholaema hirsuta (Swainson, 1821)	Hairy-breasted Barbet	LC	R	F		GC
Lybius vieilloti (Leach, 1815)	Vieillot's Barbet	LC	R	f		
Pogonornis bidentatus (Shaw, 1798)	Double-toothed Barbet	LC	R	f		
INDICATORIDAE						
Indicator indicator (Sparrman, 1777)	Greater Honeyguide	LC	R	f		
PICIDAE						
Dendropicos pyrrhogaster (Malherbe, 1845)	Fire-bellied Woodpecker	LC	R	F		GC
FALCONIFORMES						
FALCONIDAE						
Falco ardosiaceus (Vieillot, 1823)	Grey Kestrel	LC	R	f		
PASSERIFORMES						
ORIOLIDAE						
Oriolus brachyrhynchus (Swainson, 1837)	Western Black-headed Oriole	LC	R	F		GC
VANGIDAE						
Bias musicus (Vieillot, 1818)	Black-and-white Flycatcher	LC	R	f		
PLATYSTEIRIDAE						
Platysteira cyanea (Müller, 1776)	Common Wattle-eye	LC	R	f		
MALACONOTIDAE						
Tchagra australis (Smith, 1836)	Brown-crowned Tchagra	LC	R	F		
Tchagra senegalus (Linnaeus, 1766)	Black-crowned Tchagra	LC	R	f		
Nilaus afer (Latham, 1801)	Brubru	LC	R	f		
DICRURIDAE						
Dicrurus atripennis (Swainson, 1837	Shining Drongo	LC	R	FF		GC
Dicrurus modestus (Hartlaub, 1849)	Velvet-mantled Drongo	LC	R	F		
MONARCHIDAE						
Terpsiphone rufiventer (Swainson, 1837)	Red-bellied Paradise Flycatcher	LC	R	F		GC
LANIIDAE						
Lanius collaris (Linnaeus, 1766)	Common Fiscal	LC	R	f		
CORVIDAE						
Corvus albus (Müller, 1776)	Pied Crow	LC	R	f		
MACROSPHENIDAE						
Sylvietta virens (Cassin, 1859)	Green Crombec	LC	R	F		GC
CISTICOLIDAE						
Camaroptera brachyura (Vieillot, 1820)	Grey-backed Camaroptera	LC	R	f		
Hypergerus atriceps (Lesson, 1831)	Oriole Warbler	LC	R	F	WA	SG
Cisticola erythrops (Hartlaub, 1857)	Red-faced Cisticola	LC	R	f		
Cisticola lateralis (Fraser, 1843)	Whistling Cisticola	LC	R	f		
Cisticola brachypterus (Sharpe, 1870)	Short-winged Cisticola	LC	R	f		
Prinia subflava (Gmelin, 1789)	Tawny-flanked Prinia	LC	R	f		
HIRUNDINIDAE						
Psalidoprocne nitens (Cassin, 1857)	Square-tailed Saw-wing	LC	R	F		GC
Cecropis abyssinica (Guérin-Méneville, 1843)	Lesser Striped Swallow	LC	R	f		
Hirundo rustica (Linnaeus, 1758)	Barn Swallow	LC	P	f		
PYCNONOTIDAE						
Table 1 (Continued 3)						
Scientific name	**Common name**	**CS**	**BS**	**PH**	**End.**	**Biome**
Stelgidillas gracilirostris (Strickland, 1844)	Slender-billed Greenbul	LC	R	FF		
Bleda canicapillus (Hartlaub, 1854)	Grey-headed Bristlebill	LC	R	FF		GC
Thescelocichla leucopleura (Cassin, 1856)	Swamp Palm Bulbul	LC	R	F		GC
Chlorocichla simplex (Hartlaub, 1855)	Simple Leaflove	LC	R	F		GC
Eurillas latirostris (Strickland, 1844)	Yellow-whiskered Greenbul	LC	R	F		

Eurillas virens (Cassin, 1858)	Little Greenbul	LC	R	F		
Pycnonotus barbatus (Desfontaine, 1789)	Common Bulbul	LC	R	f		
SCOTOCERCIDAE						
Hylia prasina (Cassin, 1855)	Green Hylia	LC	R	f		GC
STURNIDAE						
Lamprotornis splendidus (Vieillot, 1822)	Splendid Glossy Starling	LC	R	F		
MUSCICAPIDAE						
Muscicapa cassini (Heine, 1859)	Cassin's Flycatcher	LC	R	F		GC
Agricola pallidus (von Müller, 1851)	Pale Flycatcher	LC	R	f		
NECTARINIIDAE						
Hedydipna collaris (Vieillot, 1819)	Collared Sunbird	LC	R	f		
Cyanomitra olivacea (Smith, 1840)	Olive Sunbird	LC	R	FF		
Chalcomitra adelberti (Gervais, 1833)	Buff-throated Sunbird	LC	R	F	WA	GC
Chalcomitra senegalensis (Linnaeus, 1766)	Scarlet-chested Sunbird	LC	R	FF		
Cinnyris chloropygius (Jardine, 1842)	Olive-bellied Sunbird	LC	R	f		
Cinnyris coccinigastrus (Latham, 1801)	Splendid Sunbird	LC	R	f		SG
Cinnyris cupreus (Shaw, 1811)	Copper Sunbird	LC	R	f		
PLOCEIDAE						
Quelea erythrops (Hartlaub, 1848)	Red-headed Quelea	LC	R/M	f		
Quelea quelea (Linnaeus, 1758)	Red-billed Quelea	LC	O	f		
Euplectes hordeaceus (Linnaeus, 1758)	Black-winged Red Bishop	LC	R	f		
Euplectes macroura (Gmelin, 1789)	Yellow-mantled Widowbird	LC	R	f		
Ploceus nigricollis (Vieillot, 1805)	Black-necked Weaver	LC	R	f		
Ploceus cucullatus (Müller, 1776)	Village Weaver	LC	R	f		
Ploceus tricolor (Hartlaub, 1854)	Yellow-mantled Weaver	LC	R	FF		GC
Ploceus superciliosus (Shelley, 1873)	Compact Weaver	LC	R	f		
Ploceus nigerrimus (Vieillot, 1819)	Vieillot's Black Weaver	LC	R	f		GC
Malimbus rubricollis (Swainson, 1838)	Red-headed Malimbe	LC	R	f		GC
Malimbus malimbicus (Daudin, 1802)	Crested Malimbe	LC	R	F		GC
ESTRILDIDAE						
Estrilda melpoda (Vieillot, 1817)	Orange-cheeked Waxbill	LC	R	f		
Spermestes cucullatus (Swainson, 1837)	Bronze Mannikin	LC	R	f		
Spermestes bicolor (Fraser, 1843)	Black-and-white Mannikin	LC	R	f		
VIDUIDAE						
Vidua macroura (Pallas, 1764)	Pin-tailed Whydah	LC	R	f		
PASSERIDAE						
Passer griseus (Vieillot, 1817)	Northern Grey-headed Sparrow	LC	R	f		
MOTACILLIDAE						
Anthus leucophrys (Vieillot, 1818)	Plain-backed Pipit	LC	R	f		
Motacilla aguimp (Dumont, 1821)	African Pied Wagtail	LC	R	f		

End. ; WA : Endemic to West Africa ; BS: Biogeographic Status; Biomes; GC: Guinean-Congolese forest; SG: Sudano-Guinean savannah; PH: Preferred Habitat; CS : Conservation status; LC: Least Concern; M: Intra-African migratory; P: Palaearctic migratory; R: Resident; O: Occasional; E: Wetland; FF: Primary forest; F: Secondary forest; f: Open area.

Fig-2: Photographs of some bird species identified in the VGF

Stand characterization

Characterisation of bird species on the basis of biogeographical status reveals that the stand is dominated by 86.15% of resident species (R), 5.38% of species with mixed status (R/M, M/R and/or R/P), 3.85% of intra-African migratory species (M), 3.85% of Palearctic migratory species (P) and 0.77% of occasional species (O).

As for the preferred habitat, 8.46% of the species that prefer well-conserved forests (FF); 23.85% of general forest species (F); 59.23% of species that preferentially occur in open environments (f) and 8.46% of species that have wetlands as their habitat (Ea).

Species of conservation interest

In terms of vulnerability, no endangered species were observed. Scientific data are insufficient (DD) for the Maned Owl Jubula lettii. The other species are of minor concern. However, the GVF is home to three species endemic to West Africa including the Violet Turaco Musophaga violacea (Isert, 1788), the Oriole Warbler Hypergerus atriceps (Lesson, 1831) and the Buff-throated Sunbird Chalcomitra adelberti (Gervais, 1833). At biome level, 29 species belonging to the Guinean-Congolese forest (GC) and four bird species from the Sudano-Guinean savannah (SG) biome are present in the study site (Table 1)**.**

DISCUSSION

There are a total of 130 species of birds in the GVF. This species richness represents 17.15% of the 758 bird species present in Côte d'Ivoire. This number is quite remarkable and indicative compared to the classified forests of Téné [39] and N'ganda N'ganda [40] which respectively record 103 and 132 species. This could highlight the good local management of the forests. In addition, the GVF shares 63 and 73 bird species with the classified forests of Téné and N'ganda N'ganda respectively. This would justify the similarity of habitats (swampy areas, islands of secondary forest, plantations, fallow land). Thus, several authors have referred to the need to draw certain lessons from these local management systems [41, 42]. Contrary to the studies carried out in the classified forests of Besso [43] and Téné [39], the order of non-Passériformes is best represented. The Accipitridae family with 11 species is the most diversified. Our results corroborate those of [44] in the forest of the Tanoé-Ehy marshes (20 species). On the other hand, in the classified forests of Besso [43] and Téné [39] the families Pycnonotidae (17 species) and Nectariniidae (11 species) are the most represented respectively.

The stand is dominated by 86.15% of the resident species. One of the reasons for this sedentary lifestyle is linked to the availability of sufficient trophic resources for their survival, as well as the appropriate climatic conditions, as highlighted by [40]. Species from open environments predominate in the stands, given the gradual transformation of forest areas into plantations and built-up areas. Indeed, the degradation of the forest plant cover by agricultural activities leads to the appearance of fallow land [45, 46]. These observations were also made by [47, 39] respectively in the Ehotilé Islands National Park (south-eastern Côte d'Ivoire) and in the classified forest of Téné (central-western Côte d'Ivoire). This forest could be the subject of ornithological monitoring because three species endemic to West Africa, namely the Violet Turaco Musophaga violacea (Isert, 1788), the Oriole Warbler Hypergerus atriceps (Lesson, 1831) and the Buff-throated Sunbird Chalcomitra adelberti (Gervais, 1833), 29 bird species from the Guinean-Congolese forest biome and four species from the Sudano-Guinean savannah known in Côte d'Ivoire are present. This database on the diversity of the avifauna of the GVF is important for making a decision on the drafting of conservation measures for species with a special status and which could constitute an ecotourism attraction for the site, and finally proposals for management guidelines for this site to integrate the avifauna as a revival asset.

CONCLUSION

A study of the avifauna of the Gbetitapea village forest has made it possible to identify 130 species of birds divided into 43 families of 17 orders. Globally, the order Non-Passeriformes and the family Accipitridae with 11 species are the most diverse. Resident species (86.15%) and open habitats (59.23%) were the most abundant. GVF requires special attention as it contains three species endemic to West Africa, 29 species belonging to the Guinean-Congolese forest (GC) and four bird species from the Sudano-Guinean savannah biome (SG). The avifauna of this forest relic is rich and diverse. Further studies will certainly be necessary and will give much more arguments regarding the importance of this site for ecotourism activities.

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