

Bird Species Groups to protect in the Ruzizi Delta, Northern End of Lake Tanganyika, in Burundi and the Democratic Republic of Congo

Bashonga Bishobibiri Alexis^{1*}, Eric Sande², Charles Kahindo³, Gaspard Ntakimazi⁴

¹Doctoral School of University of Burundi and Centre for Research in Hydrobiology (CRH) at Uvira, DRC E-mail: bshobisho@gmail.com;

²Makerere University Kampala Uganda, Corresponding Author +256 772 688 55, E-mail: ericsande@cns.mak.ac.ug;

³State University of Bukavu (UOB), DRC ckahindo@yahoo.com

⁴University of Burundi, Gaspard.ntakimazi@ub.edu.bi

ABSTRACT

The groups of bird species to be protected in the Ruzizi Delta in Burundi and the Democratic Republic of Congo (DRC) were investigated from April 2019 until August 2021 in five sites of the Rusizi Burundian Delta (RBD) and five sites of the Ruzizi Congolese Delta (RCD). Each site was visited three times a year during the years 2019, 2020 and 2021. Investigations were conducted by direct observation on transect counts, point counts and on roads bird counting using binoculars and telescopes. Travels were facilitated by the motorized fiberglass boat and the double cabin field vehicle of the Centre for Research in Hydrobiology (CRH) at Uvira, DRC. At the end of our investigations, we drew up the list of 490 species divided into 84 families and 18 orders. The groups of bird species concerned in this publication are resident birds 359 species (70%), migratory birds 131 species (30%), birds with International Union for the Conservation of Nature (IUCN) 21 species (4%) and 238 species (49%) that fulfil six out of seven Ramsar criteria for bird conservation, of which 29 (12%) are reported in the unprotected RCD, 107 (45%) in the RBD protected, and 102 (43%) species are reported in both the RCD and the RBD. For these bird groups to survive in a sustainable way in the Ruzizi Delta, abundant, permanent and diversified vegetation is needed through the RCD wetlands protection.

Keywords: Bird species groups; Ramsar criteria; Resident birds; Migratory birds; IUCN status for birds.

INTRODUCTION

The groups of bird species to protect in the Ruzizi Delta (RD) in Burundi and the Democratic Republic of Congo (DRC) were investigated from April 2019 until August 2021 in five sites of the Rusizi Burundian (RBD) Delta and five sites of the Ruzizi Congolese Delta (RCD). Each site was visited three times a year during the years 2019, 2020 and 2021. Following documents are published about birds for the Ruzizi Delta in the Democratic Republic of Congo (DRC) and in the Republic of Burundi. Ornithological importance of DRC and conservation issues in protected and unprotected areas including

wetland areas, are published by (Demey & Louette, 2001).

How to Cite this Article:

Bashonga Bishobibiri Alexis, Eric Sande, Charles Kahindo, Gaspard Ntakimazi (2023). Bird Species Groups to protect in the Ruzizi Delta, Northern End of Lake Tanganyika, in Burundi and the Democratic Republic of Congo. *Biolife*, 11(3), 1-16.

DOI: <https://dx.doi.org/10.5281/zenodo.8244259>

Received: 2 July 2023; Accepted: 6 August 2023;
Published online: 12 August, 2023.

The Rusizi Burundian Delta is an Important Bird Areas (Nkezabahizi & Manirambona, 2011); (Dowset & Dowset-Lemaire, 1993) and (Gaugris, 1979). Authors (Ntakimazi, Nzigidahera, Nicayenzi, & West, 2000) inventoried 120 bird species and their terrestrial or aquatic biotopes in the Rusizi Burundian Delta. Finally the following authors (Nkezabahizi & Bizimana, 2008) investigated Burundi's Important Bird Areas Status and Trends 2008 listing only two birds, the White-winged Tern (*Chlidonia leucopterus*) and the African Skimmer (*Rynchops flavirostris*) fulfilling the Ramsar Criteria A4i and A1 in the Rusizi Natural Reserve. The very rich ornithological fauna of Rusizi Burundian National Park and Ramsar site includes 350 sedentary and migratory bird species (MEEATU, Ramsar, & WWF, 2014). For his dissertation, the graduate student Apollinaire Ntakiyica (Ntakiyica, 2008) checked the bibliographic State of knowledge on the distribution sites of ornithological fauna in Burundi. He presented 638 bird species for Burundi of which 410 were listed in the Rusizi Burundian Delta.

My doctoral research is unique to investigate bird species groups to protect in the Ruzizi Delta simultaneously in the Ruzizi Congolese Delta (RCD) in DRC and the Rusizi Burundian Delta (RBD) in Burundi. It has updated the list of bird species in the RCD and the RBD (Bashonga, Sande, Kahindo, & Ntakimazi, 2023). It will contribute to the Ruzizi Congolese Delta wetlands protection for bird and biodiversity conservation, strengthening the management of protected areas in Burundi with a view to combating climate change, epidemics and disasters and preventing the extinction of certain species of birds (Chapman A. D., 2009); (Butchart, Stattersfield, & Collar, 2006); (Chapman A. D., 2005); (Deanna, Brunner, Nige, Karr, & Nielsen, 1998). To constitute the bird groups to protect in the Ruzizi Delta we referred essentially to the following authors (Stevenson & Fanshawe, 2002); (Fishpool & Evans, Important Bird Areas in Africa and Associated Islands, Priority Sites for Conservation., 2001); (Demey & Louette, 2001); (Zimmerman, Turner, & Pearson, Zimmerman D. A., Turner D.A. & Pearson D.J. Birds of Kenya and Northern Tanzania, 1999); (Williams & Arlott, 1988); (Guggisberg, 1988) and ; (Guggisberg, 1986).

Study areas characteristics, Study Area and Studied Sites

The Ruzizi delta extends from Vugizo, the point of separation of the small Ruzizi River from the Great Rusizi River with the Vugizo 1 site (Vug 1), S 03° 16' 08.5" E 029° 14' 27.1" 781 m altitude in the Ruzizi Congolese Delta (RCD) and Vugizo 2 (Vug 2), S 03° 16' 04" E 029° 14' 37" 779 m altitude in the Rusizi Burundian Delta (RBD) along the Grande Rusizi River to the Great Rusizi River Bridge (GRRB), S 03° 20' 33" E 029° 16' 25" 777 m altitude up to the Great Rusizi River Mouth (GRRM), S 03° 20' 27.8" E 029° 16' 23.5" 779 m above sea level, then along the shore of Lake Tanganyika towards the west passing through the Small Ruzizi River Mouth (SRRM), S 03° 21' 259" E 029° 12' 746" in the DRC, up to Kilomoni 2 (Kilo 2) Fishing Beach, S 03° 20' 49.2" E 029° 11' 30.7" then, turning north to the Nyangara pond (NyaP), S 03° 20' 22.4" E 029° 11' 42.9" 772 m above sea level, along the Small Ruzizi River towards the northeast as far as Vugizo, junction with the Grande Rusizi River (Figure 1).



Figure-1. Map showing the study areas and studied sites in Ruzizi Delta

Source: Our fieldwork of 2019-2021

MATERIAL AND METHODS

Research Materials

A meter, a three meters length surveyor and a tape decametre were used to measure length, width, and depth of ponds, rivers, river banks and marshes; A GPS was used to record geographical coordinates, length of sampling areas and sampling sites; A digital camera was used to capture birds and site features; Three binoculars and two telescopes were

used in direct observation technique to distinguish birds (Figure 2); A vehicle and a medium ship were used for displacements; We used bibliography from three institutional libraries including the CRH (Centre for Research in Hydrobiology) at Uvira, DRC; the CRSNE (Centre for Natural Research and Environment) of Burundi University, and the library of the Department of Zoology, Entomology and Fisheries Sciences of Makerere University, Kampala Uganda. Finally we checked Internet literature.



Figure-2. Some Bird sampling materials in the Ruzizi Delta

Source: CRH-Uvira, fieldwork 2019-2021

Research Methods

Regular weekly bird direct observations (Richer, 2018) were made in ten sites of two study areas, the Ruzizi Congolese Delta (RCD) and the Rusizi Burundian Delta (RBD) from April 2019 to August 2021 for the period of 32 months to record all bird species seen or heard in the Ruzizi Delta. Birds were observed by direct observation (Richer, 2018) on transect counts, point counts and on road bird counting using binoculars and telescopes. They were identified using available field guide books: (Stevenson & Fanshawe, 2002); (Zimmerman, Turner, & Pearson, 1999); (Guggisberg, 1986); (Guggisberg, 1988) and (Williams & Arlott, 1988).

A) On transect counts

Birds were counted by transect counts using binoculars and telescopes in terrestrial areas. Total number of birds seen or heard was recorded (Yee, 2022). Bird species identification was done using available above cited field guides. To draw the bird species groups we referred to (Stevenson & Fanshawe, 2002); (Fishpool & Evans, 2001); (Zimmerman, Turner, & Pearson, 1999) and (Williams & Arlott, 1988).

B) From point counts

Birds were sampled on point counts in marshes (Yee, 2022), ponds, bowls, in rivers and flood areas.

C) Bird Road Counting (BRC)

Birds were counted along roads (Yee, 2022) from Kavimvira Customs Station (KCS) to Kavimvira Migration Post Offices (KMPO) in the Ruzizi Congolese Delta (RCD) and from Gatumba City to Gatumba Migration Post Offices (GMPO) in the Rusizi Burundian Delta (RBD).

D) GPS

GPS coordinates were recorded for study areas and studied sites habitats mapping.

RESULTS

Table-1 presents the checklist of 490 bird species distributed into 84 families and 18 orders. 301 (34%) species were recorded in the Ruzizi Congolese Delta (RCD) unprotected area; 387 (44%) species were recorded in the Rusizi Burundian Delta (RBD), 85% protected area; and 197 species were recorded both in the RCD and the RBD.

Further Studies

Bird groups to protect in the Ruzizi Congolese Delta were investigated to draw DRC decision makers to a protected area creation in the Ruzizi Congolese Delta. The studies would be extended on the whole Lake Tanganyika Congolese shoreline from the Small Ruzizi River Mouth up to the limit of the DRC with the Republic of Zambia, to identify most ornithological rich wetlands to protect for potential Ramsar sites. The study may point out the Ngovi River Mouth in the Swima village; the Sanza River Mouth in Nundu village; the Mutambala River Mouth or Burton Bay in Katanga village; the Songoma River Falls in Talama Village, the limit between the South Kivu Province and the Katanga

Table 1 Bird Species Groups to protect in the Ruzizi Delta in DRC (RCD) and in Burundi (RBD)
 (RCD, Ruzizi Congolese Delta; RBD, Rusizi Burundian delta; RB Sp, Resident Bird Species; MB Sp, Migrant Bird Species; IUCN, International Union for Conservation of Nature; 1, Present).

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB	MB	IUCN
				RBD	A1	A2	A3	A4i	A4ii	A4iv	Sp	Sp	Status
Podicipediformes													
Podicipodidae	<i>Tachybaptus ruficollis</i>	1	1	1				1			1		
	<i>Podiceps cristatus</i>		1					1			1		
	<i>Podiceps nigricollis</i>		1					1			1		
Pelecaniformes													
Pelecanidae	<i>Pelecanus onocrotalus</i>	1	1	1				1		1		1	
	<i>Pelecanus rufescens</i>	1	1	1				1				1	
Phalacrocoracidae	<i>Phalacrocorax carbo</i>	1	1	1				1			1		
	<i>Phalacrocorax africanus</i>	1	1	1				1			1		
Anhingidae	<i>Anhinga rufa</i>	1	1	1				1			1		
	<i>Podica senegalensis</i>	1	1	1				1			1		
Ciconiiformes													
Ardeidae	<i>Ixobrychus minutus</i>	1	1	1				1			1		
	<i>Ixobrychus sturmii</i>	1	1	1				1				1	
	<i>Nycticorax nycticorax</i>	1	1	1				1			1		
	<i>Bubulcus ibis</i>	1	1	1				1			1		
	<i>Ardeolla ralloides</i>	1	1	1				1			1		
	<i>Ardeolla idea</i>		1		1			1				1 EN	
	<i>Butorides striatus</i>	1	1	1				1			1		
	<i>Ardeola rufiventris</i>	1						1				1	
	<i>Egretta garzetta</i>	1	1	1				1			1		
	<i>Egretta ardesiaca</i>	1	1	1				1				1	
	<i>Mesophoyx intermedia</i>	1	1	1				1			1		
	<i>Casmerodius albus</i>	1	1	1				1			1		
	<i>Ardea goliath</i>	1	1	1				1			1		
	<i>Ardea purpurea</i>	1	1	1				1			1		
	<i>Ardea cinerea</i>	1	1	1				1			1		
	<i>Ardea melanocephala</i>	1	1	1				1			1		
Scopidae	<i>Scopus umbretta</i>	1	1	1				1		1	1		
Ciconiidae	<i>Ciconia ciconia</i>	1						1				1	
	<i>Mycteria ibis</i>	1	1	1				1			1		
	<i>Ciconia abdimii</i>		1					1		1		1	
	<i>Ciconia episcopus</i>	1	1	1				1				1 VU	
	<i>Anastomus lamelligerinus</i>	1	1	1				1				1	
	<i>Ephippiorhynchus senegalensis</i>	1	1	1				1			1		
	<i>Leptoptilos crumeniferus</i>	1	1	1				1			1		
Threskiornithidae	<i>Threskiornis aethiopicus</i>	1	1	1				1				1	
	<i>Bostrychia hagedash</i>	1	1	1				1			1		
	<i>Plegadis falcinellus</i>	1	1	1				1				1	
	<i>Bostrychia rara</i>	1						1			1		
Phoenicopteriformes													
Phoenicopteridae	<i>Platalea alba</i>	1	1	1				1			1		
	<i>Phoenicopus ruber</i>		1					1				1	

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB Sp	MB Sp	IUCN Status
					A1	A2	A3	A4i	A4ii	A4iv			
Phoenicopteridae	<i>Phoenicopus minor</i>		1		1			1				1	NT
	<i>Alopochen aegyptiacus</i>	1	1	1				1			1		
	<i>Plectropterus gambensis</i>	1	1	1				1			1		
Anseriformes													
Anatidae	<i>Sarkidiornis melanotos</i>	1	1	1				1				1	
	<i>Nettapus auritus</i>	1	1	1				1			1		
	<i>Dendrocygna viduata</i>	1	1	1				1				1	
	<i>Dendrocygna bicolor</i>	1	1	1				1				1	
	<i>Pteronetta hartlaubii</i>	1						1			1		
	<i>Anas erythroryncha</i>	1	1	1				1			1		
	<i>Anas hottentota</i>	1	1	1				1			1		
	<i>Anas capensis</i>		1					1			1		
	<i>Thalassornis leuconotus</i>	1	1	1				1			1		
	<i>Anas undulata</i>	1	1	1				1			1		
	<i>Anas sparsa</i>		1					1			1		
	<i>Anas clypeata</i>		1					1			1		
	<i>Anas acuta</i>		1					1			1		
	<i>Anas querquedula</i>	1	1	1				1				1	
	<i>Anas crecca</i>		1					1			1		
	<i>Anas penelope</i>		1					1			1		
	<i>Netta erythrophtalma</i>	1	1	1				1				1	
Falconiformes													
Accipitridae	<i>Milvus migrans</i>	1	1	1						1		1	
	<i>Elanus caeruleus</i>	1	1	1							1		
	<i>Haliaeetus vocifer</i>	1	1	1							1		
	<i>Gypohierax angolensis</i>	1	1	1							1		
	<i>Pandion haliaetus</i>	1	1	1								1	
	<i>Necrosyrtes monachus</i>		1								1		CR
	<i>Trigonoceps occipitalis</i>	1	1	1							1		CR
	<i>Torgos tracheliotus</i>		1								1		EN
	<i>Circus ranivorus</i>	1	1	1								1	
	<i>Circus aeruginosus</i>		1									1	
	<i>Circus pygargus</i>		1								1		
	<i>Circus macrourus</i>		1								1		NT
	<i>Accipiter badius</i>	1									1		
	<i>Accipiter ovampensis</i>		1									1	
	<i>Accipiter minullus</i>		1								1		
	<i>Polyboroides typus</i>	1									1		
	<i>Polyboroides radiatus</i>		1								1		
	<i>Buteo oreophilus</i>		1				1				1		
	<i>Buteo rufofuscus</i>		1								1		
	<i>Aquila nipalensis</i>		1							1		1	EN
<i>Aquila wahlbergi</i>		1									1		
<i>Hieraetus spilogaster</i>		1								1			
<i>Hieraetus pennatus</i>		1							1		1		

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB	MB	IUCN	
				RBD	A1	A2	A3	A4i	A4ii	A4iv	Sp	Sp	Status	
Accipitridae	<i>Aquila verreauxii</i>		1								1			
	<i>Polemaetus bellicosus</i>		1								1		VU	
	<i>Stephanoaetus coronatus</i>	1	1	1							1		NT	
Falconidae	<i>Falco tinnunculus</i>	1	1	1						1		1		
	<i>Falco naumanni</i>		1						1	1		1		
	<i>Falco ardosiaceus</i>		1								1			
	<i>Polihierax semitorquatus</i>		1								1			
	<i>Falco subbuteo</i>		1							1	1			
	<i>Falco concolor</i>		1				1			1	1		NT	
	<i>Falco amurensis</i>		1						1	1		1		
	<i>Falco vespertinus</i>		1						1	1		1	NT	
	<i>Falco chicquera</i>		1								1		NT	
	<i>Falco biarmicus</i>		1								1			
	<i>Falco peregrinus</i>		1							1	1			
	Galliformes													
Numididae	<i>Numida meleagris</i>	1									1			
Phasianidae	<i>Francolinus squamatus</i>		1								1			
	<i>Francolinus nobilis</i>		1			1	1				1			
	<i>Francolinus levaillantii</i>	1									1			
	<i>Francolinus streptophorus</i>		1				1				1			
	<i>Francolinus coqui</i>	1									1			
	<i>Francolinus hildebrandti</i>		1								1			
	<i>Francolinus afer</i>	1	1	1							1			
	<i>Coturnix coturnix</i>		1									1		
Gruiformes														
Rallidae	<i>Sarothrura pulchra</i>		1				1	1			1			
	<i>Sarothrura rufa</i>		1					1			1			
	<i>Sarothrura boehmi</i>		1					1				1		
	<i>Crecopsis egregia</i>	1	1	1				1				1		
	<i>Crex crex</i>	1	1	1	1			1				1		
	<i>Porzana porzana</i>	1						1				1		
	<i>Porzana pusilla</i>		1					1				1		
	<i>Amauromis flavirostris</i>	1	1	1				1			1			
	<i>Porphyrio porphyrio</i>	1	1	1				1			1			
	<i>Porphyrio alleni</i>	1						1				1		
	<i>Rallus caerulescens</i>	1	1	1				1			1			
	<i>Fulica cristata</i>		1					1			1			
	<i>Gallinula chloropus</i>	1	1	1				1			1			
	<i>Gallinula angulata</i>	1	1	1				1				1		
	Gruidae	<i>Neotis denhami</i>	1	1	1								1	NT
		<i>Balearica regulorum</i>		1					1				1	EN
<i>Bugeranus carunculatus</i>			1									1	VU	
Otididae	<i>Eupodotis melanogaster</i>	1									1			
Charadriiformes														
Jacaniidae	<i>Actophilornis africanus</i>	1	1	1				1			1			

Order & Family	Species Name	RCD	RBD	RCD RBD	Ramsar Criteria						RB Sp	MB Sp	IUCN Status
					A1	A2	A3	A4i	A4ii	A4iv			
Jacaniidae	<i>Microparra capensis</i>		1					1			1		
Recurvirostridae	<i>Himantopus himantopus</i>	1	1	1				1			1		
	<i>Recurvirostra avosetta</i>	1	1	1				1				1	
Dromatidae	<i>Dromas ardeola</i>	1	1	1				1			1		
Rostratulidae	<i>Rostratula benghalensis</i>	1	1	1				1			1		
Burhinidae	<i>Burhinus capensis</i>	1						1			1		
	<i>Burhinus vermiculatus</i>	1	1	1				1			1		
Glareolidae	<i>Cursorius temminckii</i>		1					1			1		
	<i>Glareola pratincola</i>	1	1	1				1				1	
	<i>Glareola nordmanni</i>	1	1	1	1			1				1	
	<i>Glareola nuchalis</i>		1					1				1	
	<i>Glareola cinerea</i>		1					1				1	
Charadriidae	<i>Charadrius pecuarius</i>	1	1	1				1			1		
	<i>Charadrius marginatus</i>	1	1	1				1			1		
	<i>Charadrius tricollaris</i>	1	1	1				1			1		
	<i>Charadrius forbesi</i>	1						1				1	
	<i>Charadrius hiaticula</i>	1	1					1				1	
	<i>Charadrius dubius</i>	1						1				1	
	<i>Charadrius alexandrinus</i>	1	1	1				1				1	
	<i>Charadrius mongolus</i>		1					1				1	
	<i>Charadrius leschenaultii</i>		1					1				1	
	<i>Charadrius asiaticus</i>	1	1	1				1				1	
	<i>Vanellus spinosus</i>	1	1	1				1			1		
	<i>Vanellus crassirostris</i>	1	1	1				1			1		
	<i>Vanellus senegallus</i>	1	1	1				1			1		
	<i>Vanellus coronatus</i>	1	1	1				1				1	
	<i>Vanellus lugubris</i>	1	1	1				1				1	
	<i>Vanellus superciliosus</i>		1				1	1				1	
	<i>Pluvialis squatarola</i>	1	1	1				1				1	
	<i>Pluvialis fulva</i>	1						1				1	
	<i>Philomachus pugnax</i>	1	1	1				1				1	
	Scolopacidae	<i>Tryngites subrificollis</i>	1						1				1
<i>Phalaropus lobatus</i>			1					1				1	
<i>Phalaropus fulicarius</i>			1					1				1	
<i>Actitis hypoleucos</i>		1	1	1				1				1	
<i>Tringa glareola</i>		1						1				1	
<i>Tringa ochropus</i>			1					1				1	
<i>Xenus (Tringa) cinereus</i>		1	1	1				1				1	
<i>Tringa nebularia</i>		1	1	1				1				1	
<i>Tringa stagnatilis</i>		1	1	1				1				1	
<i>Tringa erythropus</i>		1	1	1				1				1	
<i>Tringa totanus</i>		1	1	1				1				1	
<i>Calidris minuta</i>		1	1	1				1				1	
<i>Calidris temminckii</i>		1						1				1	
<i>Calidris ferruginea</i>		1	1	1				1				1	

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB Sp	MB Sp	IUCN Status
				RBD	A1	A2	A3	A4i	A4ii	A4iv			
Scolopacidae	<i>Calidris alpina</i>	1						1				1	
	<i>Limosa limosa</i>	1						1				1	NT
	<i>Numenius phaeopus</i>	1	1	1				1				1	
	<i>Numenius arquata</i>	1	1	1				1				1	NT
	<i>Gallinago gallinago</i>		1						1			1	
	<i>Gallinago nigripennis</i>	1	1	1					1		1		
	<i>Gallinago media</i>	1	1	1	1				1			1	NT
Stercorariidae	<i>Stercorarius parasiticus</i>		1						1		1		
	<i>Stercorarius pomarinus</i>		1						1		1		
Laridae	<i>Larus cirrocephalus</i>		1					1			1		
	<i>Larus ridibundus</i>	1	1	1				1				1	
	<i>Larus fuscus</i>		1					1				1	
	<i>Larus ichthyaetus</i>		1					1				1	
Sternidae	<i>Sterna bengalensis</i>		1					1				1	
	<i>Sterna caspia</i>		1					1				1	
	<i>Sterna nilotica</i>		1					1				1	
	<i>Sterna Hirundo</i>	1	1	1				1				1	
	<i>Sternula albifrons</i>	1						1				1	
	<i>Chlidonias leucopterus</i>	1	1	1				1				1	
	<i>Chlidonias hybridus</i>	1	1	1				1				1	
Rynchopidae	<i>Rynchops flavirostris</i>	1	1	1				1				1	NT
Columbiformes													
Columbidae	<i>Treron calva</i>	1										1	
	<i>Columba guinea</i>	1										1	
	<i>Columba uncinata</i>		1				1					1	
	<i>Turtur chalcospilos</i>		1									1	
	<i>Turtur afer</i>	1	1	1								1	
	<i>Turtur tympanistris</i>	1	1	1								1	
	<i>Oena capensis</i>		1										1
	<i>Streptopelia capicola</i>	1	1	1								1	
	<i>Streptopelia semitorquata</i>	1	1	1								1	
	<i>Streptopelia senegalensis</i>	1	1	1								1	
	<i>Streptopelia lugens</i>	1						1				1	
	<i>Columba larvata</i>		1									1	
	Psittaciformes												
Psittacidae	<i>Poicephalus suahelicus</i>		1									1	
Cuculiformes													
Musophagidae	<i>Musophaga rossae</i>		1									1	
	<i>Corythaixoides leucogaster</i>		1				1					1	
Cuculidae	<i>Clamator glandarius</i>		1									1	
	<i>Oxylophus levaillantii</i>	1											1
	<i>Oxylophus jacobinus</i>	1											1
	<i>Cuculus rochii</i>		1										1
	<i>Chrysococcyx klaas</i>	1										1	
<i>Chrysococcyx cupreus</i>		1									1		

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB Sp	MB Sp	IUCN Status
					RBD	A1	A2	A3	A4i	A4ii			
Cuculidae	<i>Centropus superciliosus</i>	1	1	1							1		
	<i>Centropus monachus</i>	1									1		
	<i>Centropus senegalensis</i>	1	1	1							1		
	<i>Centropus cupreicaudus</i>	1					1				1		
	<i>Centropus grillii</i>	1	1	1								1	
	<i>Centropus anselii</i>	1					1				1		
	<i>Centropus leucogaster</i>	1					1				1		
	Strigiformes												
Stringidae	<i>Strix woodfordii</i>	1									1		
	<i>Asio capensis</i>	1									1		
	<i>Otus leucotis</i>	1	1	1							1		
	<i>Otus senegalensis</i>		1								1		
	<i>Bubo lacteus</i>	1									1		
	<i>Bubo africanus</i>	1									1		
Caprimulgiformes													
Caprimulgidae	<i>Caprimulgus fossii</i>	1									1		
	<i>Caprimulgus ruwenzorii</i>		1			1	1				1		
	<i>Caprimulgus pectoralis</i>	1									1		
	<i>Caprimulgus inornatus</i>		1								1		
Apodiformes													
Apodidae	<i>Apus affinis</i>	1	1	1							1		
	<i>Apus caffer</i>	1	1	1							1		
	<i>Apus horus</i>		1								1		
	<i>Apus melba</i>		1								1		
	<i>Apus barbatus</i>	1									1		
	<i>Apus apus</i>	1										1	
	<i>Cypsiurus parvus</i>	1	1	1							1		
Coliidae	<i>Colius striatus</i>	1	1	1							1		
	<i>Colius leucocephalus</i>		1				1				1		
	<i>Urocolius macrourus</i>		1								1		
Trogonidae	<i>Apaloderma vittatum</i>		1				1				1		
Coraciiformes													
Alcedinidae	<i>Ceryle rudis</i>	1	1	1							1		
	<i>Halcyon chelicuti</i>		1								1		
	<i>Halcyon leucocephala</i>		1									1	
	<i>Halcyon albiventris</i>	1									1		
	<i>Megaceryle maxima</i>	1	1	1							1		
	<i>Halcyon senegalensis</i>	1	1	1								1	
	<i>Alcedo cristata</i>	1	1	1							1		
	<i>Ispidina (Ceyx) picta</i>	1	1	1								1	
	<i>Alcedo quadribrachys</i>	1									1		
Meropidae	<i>Merops pusillus</i>	1	1	1							1		
	<i>Merops oreobates</i>		1				1				1		
	<i>Merops variegatus</i>	1	1	1							1		
	<i>Merops albicollis</i>	1	1	1								1	

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB	MB	IUCN
				RBD	A1	A2	A3	A4i	A4ii	A4iv	Sp	Sp	Status
Meropidae	<i>Merops apiaster</i>	1							1			1	
	<i>Merops persicus</i>	1	1	1								1	
	<i>Merops supeciliosus</i>	1	1	1								1	
	<i>Merops bullockoides</i>		1								1		
	<i>Merops nubicoides</i>	1	1	1					1			1	
Coraciidae	<i>Eurystomus glaucurus</i>	1	1	1								1	
	<i>Coracias caudata</i>		1								1		
	<i>Coracias garrulus</i>		1									1	
Phoeniculidae	<i>Phoeniculus purpureus</i>	1	1	1							1		
	<i>Rhinopomastus cyannomelas</i>	1	1	1							1		
Upupidae	<i>Upupa africana</i>		1								1		
	<i>Upupa epops</i>		1								1		
Lybiidae	<i>Lybius minor</i>		1				1				1		
	<i>Lybius rubrifacies</i>		1		1	1	1				1		
Piciformes													
Indicatoridae	<i>Indicator indicator</i>	1	1	1							1		
	<i>Indicator variegatus</i>	1	1	1							1		
	<i>Indicator minor</i>		1								1		
	<i>Indicator pumilio</i>		1		1	1	1				1	NT	
Picidae	<i>Campethera tullbergi</i>		1				1				1		
	<i>Campethera abingoni</i>		1								1		
	<i>Campethera cailliautii</i>		1								1		
Eurylaimidae	<i>Pseudocalyptomena graueri</i>	1	1	1	1	1	1				1		
Pittidae	<i>Pitta angolensis</i>		1									1	
Passeriformes													
Alaudidae	<i>Mirafraga africana</i>	1	1	1							1		
	<i>Calandrella cinerea</i>		1								1		
	<i>Eremoptrix leucopareia</i>	1									1		
	<i>Eremophila alpestris</i>		1								1		
Hirundinidae	<i>Hirundo fuligula</i>	1									1		
	<i>Riparia riparia</i>	1	1	1								1	
	<i>Riparia cincta</i>		1									1	
	<i>Delichon urbica</i>	1	1	1								1	
	<i>Hirundo daurica</i>	1	1	1								1	
	<i>Hirundo abyssinica</i>		1								1		
	<i>Hirundo rustica</i>	1	1	1					1			1	
	<i>Hirundo angolensis</i>	1	1	1							1		
	<i>Hirundo aethiopica</i>	1	1	1							1		
	<i>Hirundo smithii</i>	1	1	1							1		
	<i>Psalidoprocne albiceps</i>	1										1	
Motacillidae	<i>Motacilla aguimp</i>	1	1	1							1		
	<i>Motacilla capensis</i>	1									1		
	<i>Motacilla cinerea</i>	1										1	
	<i>Motacilla flava</i>	1	1	1					1			1	
	<i>Macronyx croceus</i>	1	1	1							1		

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB Sp	MB Sp	IUCN Status
					RBD	A1	A2	A3	A4i	A4ii			
Motacillidae	<i>Anthus cinnamomeus</i>	1									1		
	<i>Anthus leucophrys</i>	1									1		
	<i>Anthus richardi</i>		1								1		
Campephagidae	<i>Campephaga flava</i>		1									1	
	<i>Coracina caesia</i>		1			1					1		
Pycnonotidae	<i>Nicator chloris</i>		1			1					1		
	<i>Pycnonotus barbatus</i>	1	1	1							1		
	<i>Andropadus latirostris</i>	1									1		
	<i>Chlorocichla flavicollis</i>	1									1		
	<i>Andropadus nigriceps</i>		1			1					1		
	<i>Andropadus masukuensis</i>		1			1					1		
Turdidae	<i>Sheppardia sharpei</i>	1				1	1				1		
	<i>Sheppardia bocagei</i>	1									1		
	<i>Cossypha heuglini</i>	1	1	1							1		
	<i>Cossypha semirufa</i>		1			1					1		
	<i>Cossypha cyanocampter</i>		1			1					1		
	<i>Cossypha natalensis</i>	1										1	
	<i>Myrmecocichla nigra</i>	1									1		
	<i>Cercotrichas quadrivirgata</i>		1								1		
	<i>Cichladusa arquata</i>	1									1		
	<i>Zoothera piaggiae</i>	1	1	1			1				1		
	<i>Zoothera tanganjicae</i>		1			1	1	1			1		
	<i>Monticola angolensis</i>	1	1	1			1				1		
	Acrocephalidae	<i>Acrocephalus gracilirostris</i>	1									1	
<i>Acrocephalus rufescens</i>		1	1	1							1		
<i>Acrocephalus baeticatus</i>		1									1		
<i>Acrocephalus scirpaceus</i>		1										1	
<i>Acrocephalus arundinaceus</i>		1										1	
<i>Acrocephalus shoenoaenus</i>		1										1	
<i>Chloropeta similis</i>		1	1	1			1				1		
<i>Hippolais icterina</i>			1								1		
Locustellidae	<i>Bradypterus cinnamomeus</i>		1				1				1		
	<i>Bradypterus baboecala</i>	1									1		
Sylviidae	<i>Sylvia borin</i>	1									1		
	<i>Sylvia communis</i>	1									1		
	<i>Graueria vittata</i>	1	1	1		1	1				1		
Scotocercidae	<i>Hemitesia neumanni</i>	1				1	1				1		
Phylloscopidae	<i>Phylloscopus trochilus</i>		1									1	
	<i>Phylloscopus laetus</i>		1			1	1				1		
	<i>Melocichla mentalis</i>		1								1		
Macrosphenidae	<i>Sylvietta leucophrys</i>		1				1				1		
Hylotiidae	<i>Hyliota flavigaster</i>		1								1		
Cisticolidae	<i>Cisticola brunnescens</i>		1								1		
	<i>Cisticola juncidis</i>	1									1		
	<i>Cisticola ayresii</i>	1									1		

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB	MB	IUCN
				RBD	A1	A2	A3	A4i	A4ii	A4iv	Sp	Sp	Status
Cisticolidae	<i>Cisticola nanus</i>		1				1				1		
	<i>Cisticola natalensis</i>	1									1		
	<i>Cisticola chiniana</i>		1								1		
	<i>Cisticola galactotes</i>	1	1	1							1		
	<i>Cisticola carruthersi</i>		1				1				1		
	<i>Cisticola pipiens</i>		1				1				1		
	<i>Cisticola cantans</i>		1								1		
	<i>Cisticola erythrops</i>	1									1		
	<i>Cisticola chubbi</i>		1				1				1		
	<i>Prinia subflava</i>	1	1	1							1		
	<i>Prinia bairdii</i>	1	1	1							1		
	<i>Camaroptera brachyura</i>	1									1		
	<i>Calamonastes simplex</i>		1				1				1		
	<i>Apalis flavida</i>	1									1		
	<i>Apalis rufifrons</i>	1	1	1							1		
	<i>Apalis argentea</i>		1		1	1	1				1		
	<i>Apalis porphyrolaema</i>		1				1				1		
	<i>Apalis ruwenzorii</i>		1			1	1				1		
	<i>Apalis personata</i>		1			1	1				1		
<i>Eminia lepida</i>	1									1			
Muscicapidae	<i>Melaenornis fischeri</i>		1								1		
	<i>Muscicapa adusta</i>	1									1		
	<i>Muscicapa cassini</i>	1					1				1		
	<i>Sheppardia aequatorialis</i>		1				1				1		
	<i>Muscicapa aquatica</i>	1									1		
	<i>Chamaetylas poliophrys</i>	1	1	1							1		
	<i>Cossyphicula roberti</i>	1	1								1		
	<i>Myrmecocichla cinnamomeiventris</i>		1								1		
	<i>Myrmecocichla arnoti</i>		1				1				1		
	<i>Oenanthe oenanthe</i>		1								1		
	<i>Muscicapa boehmi</i>		1				1				1		
	<i>Muscicapa lendu</i>		1		1	1	1				1		
	<i>Melaenornis ardesiacus</i>					1	1				1		
Platysteiridae	<i>Batis diops</i>		1			1	1				1		
Monarchidae	<i>Terpsiphone viridis</i>	1	1	1								1	
	<i>Terpsiphone rufiventer</i>	1	1	1			1				1		
	<i>Trochocercus albiventer</i>		1				1				1		
Pellorneidae	<i>Illadopsis pyrrhoptera</i>		1				1				1		
	<i>Kakamega poliothorax</i>		1				1				1		
Leiothrichidae	<i>Pseudoalcippe abyssinica</i>		1				1				1		
	<i>Turdoides sharpei</i>		1				1				1		
	<i>Kupeornis rufocinctus</i>		1		1	1	1				1		
	<i>Turdoides hartlaubii</i>		1				1				1		
Paridae	<i>Melaniparus fasciiventer</i>		1			1	1				1		
Timaliidae	<i>Turdoides jardineii</i>		1								1		

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB	MB	IUCN
				RBD	A1	A2	A3	A4i	A4ii	A4iv	Sp	Sp	Status
Timaliidae	<i>Turdoides melanops</i>		1				1				1		
Zosteropidae	<i>Zosterops senegalensis</i>	1									1		
Nectarinidae	<i>Nectarinia kilimensis</i>	1					1				1		
	<i>Nectarinia purpureiventris</i>		1			1	1				1		
	<i>Nectarinia tacazze</i>		1				1				1		
	<i>Nectarinia johnstoni</i>		1				1				1		
	<i>Cyanomitra alinae</i>	1	1	1		1	1				1		
	<i>Cinnyris preussi</i>		1				1				1		
	<i>Cinnyris regia</i>		1			1	1				1		
	<i>Cinnyris erythrocerus</i>		1				1				1		
	<i>Cinnyris cuprea</i>	1	1	1							1		
	<i>Cinnyris mariquensis</i>	1									1		
	<i>Cinnyris bifasciata</i>	1									1		
	<i>Chalcomitra senegalensis</i>	1	1	1							1		
	<i>Chalcomitra hunteri</i>		1				1				1		
	<i>Cinnyris erythrocerca</i>	1	1	1							1		
Oriolidae	<i>Oriolus oriolus</i>		1									1	
	<i>Oriolus oratus</i>		1									1	
Laniidae	<i>Lanius collaris</i>	1	1	1							1		
	<i>Lanius dorsalis</i>	1	1	1			1				1		
	<i>Lanius cabanisi</i>	1					1				1		
	<i>Lanius excubitoroides</i>	1									1		
	<i>Lanius minor</i>	1										1	
	<i>Lanius collurio</i>		1									1	
	<i>Corvinella corvina</i>		1				1				1		
Malaconotidae	<i>Laniarius poensis</i>		1				1					1	
	<i>Laniarius erythrogaster</i>	1	1	1							1		
	<i>Laniarius ferrugineus</i>	1	1	1							1		
	<i>Tchagra senegala</i>	1	1	1							1		
	<i>Tchagra australis</i>		1								1		
	<i>Telophorus dohertyi</i>	1	1	1			1				1		
	<i>Malachonotus blanchoti</i>		1								1		
Vangidae	<i>Megabias flammulatus</i>	1	1	1							1		
Dicruridae	<i>Dicrurus adsimilis</i>	1									1		
Corvidae	<i>Corvus albus</i>	1	1	1							1		
	<i>Corvus albicollis</i>	1	1	1							1		
Oriolidae	<i>Oriolus percivali</i>		1				1				1		
Sturnidae	<i>Poeoptera stuhlmanni</i>	1	1	1			1				1		
	<i>Onychognathus morio</i>		1								1		
	<i>Onychognathus walleri</i>		1				1				1		
	<i>Onychognathus tenuirostris</i>		1				1				1		
	<i>Buphagus africanus</i>		1								1		
	<i>Lamprotornis purpureus</i>	1	1	1			1				1		
	<i>Lamprotornis splendidus</i>		1									1	
	<i>Cinnyricinclus leucogaster</i>	1	1	1								1	

Order & Family	Species Name	RCD	RBD	RCD	Ramsar Criteria						RB	MB	IUCN
				RBD	A1	A2	A3	A4i	A4ii	A4iv	Sp	Sp	Status
Sturnidae	<i>Cinnyricinclus sharpii</i>		1				1				1		
Passeridae	<i>Passer domesticus</i>	1									1		
	<i>Passer griseus</i>	1	1	1							1		
Ploceidae	<i>Ploceus cucullatus</i>	1	1	1							1		
	<i>Ploceus intermedius</i>	1	1	1							1		
	<i>Ploceus taeniopterus</i>	1									1		
	<i>Ploceus reichardi</i>	1				1	1				1		
	<i>Ploceus ocularis</i>	1	1	1							1		
	<i>Ploceus spekei</i>	1	1	1			1				1		
	<i>Ploceus baglafecht</i>	1	1	1							1		
	<i>Amblyospiza albifrons</i>	1	1	1							1		
	<i>Ploceus luteolus</i>	1	1	1							1		
	<i>Ploceus pelzelni</i>	1	1	1							1		
	<i>Ploceus melanocephalus</i>		1								1		
	<i>Ploceus castanops</i>		1								1		
	<i>Ploceus superciliosus</i>	1									1		
	<i>Ploceus xanthops</i>	1	1	1							1		
	<i>Ploceus alienus</i>	1	1	1		1	1				1		
	<i>Ploceus melanogaster</i>		1				1				1		
	<i>Ploceus insignis</i>		1				1				1		
	<i>Quelea quelea</i>	1	1	1									1
	<i>Quelea cardinalis</i>	1	1	1							1		
	<i>Euplectes axillaris</i>	1									1		
	<i>Euplectes capensis</i>	1									1		
	<i>Euplectes macrourous</i>	1									1		
	<i>Euplectes afer</i>	1									1		
<i>Euplectes albonotatus</i>	1									1			
<i>Euplectes orix</i>	1	1	1							1			
<i>Euplectes nigroventris</i>	1					1				1			
<i>Euplectes franciscanus</i>	1									1			
<i>Euplectes hordeaceus</i>	1									1			
Estrildidae	<i>Lagonosticta senegala</i>	1	1	1							1		
	<i>Lagonosticta rubricata</i>	1	1	1							1		
	<i>Pytilia afra</i>	1	1	1							1		
	<i>Nesocharis ansorgei</i>		1				1				1		
	<i>Pytilia melba</i>		1								1		
	<i>Euschistospiza cinereovinacea</i>	1	1	1			1				1		
	<i>Cryptospiza salvadorii</i>		1				1				1		
	<i>Cryptospiza reichenovii</i>		1				1				1		
	<i>Cryptospiza jacksoni</i>		1			1	1				1		
	<i>Hypargos niveoguttatus</i>	1									1		
	<i>Uraeginthus bengalus</i>		1								1		
	<i>Estrilda melanotis</i>		1				1				1		
	<i>Estrilda astrild</i>	1									1		
<i>Estrilda rhodopyga</i>	1									1			

Order & Family	Species Name	RCD	RBD	RCD/RBD	Ramsar Criteria						RB Sp	MB Sp	IUCN Status
					A1	A2	A3	A4i	A4ii	A4iv			
Estrildidae	<i>Estrilda nonnula</i>	1	1	1							1		
	<i>Estrida charmaosyna</i>		1				1				1		
	<i>Amandava subflava</i>	1	1	1							1		
	<i>Lonchura cucullata</i>	1	1	1							1		
	<i>Lonchura bicolor</i>	1	1	1							1		
Viduidae	<i>Vidua macroura</i>	1	1	1							1		
	<i>Vidua chalybeata</i>	1	1	1							1		
Fringillidae	<i>Crithagra burtoni</i>		1				1				1		
	<i>Crithagra striolatus</i>	1	1	1			1				1		
	<i>Serinus frontalis</i>		1				1				1		
	<i>Serinus sulphuratus</i>	1									1		
	<i>Serinus mozambicus</i>	1	1	1							1		
	<i>Serinus citrinelloides</i>	1					1				1		
	<i>Serinus leucopygius</i>	1	1	1							1		
	<i>Serinus striolatus</i>	1	1	1			1				1		
Ord. 18; Fa. 84	490 Species	301	387	197	12	24	101	139	9	13	359	131	21
Percentages		34	44	22	4	8	34	46	3	4	73	27	4

Legend: RCD, Ruzizi Congolese Delta; RBD, Rusizi Burundian Delta; RCD/RBD, Ruzizi Congolese Delta & Rusizi Burundian Delta; RB Sp, Resident Bird Species; MB Sp, Migrant Bird Species; A1, RC (Ramsar Criteria) A1 for species of global conservation concern; A2, RC A2, for Assemblage of restricted-range species conservation concern; A3, RC A3 for Assemblage of biome-restricted species (Afro-tropical Highlands Biome); A4i, RC A4i for Congregatory water bird species conservation concern; A4ii, RC A4ii for Congregatory Seabird or terrestrial bird species conservation concern; A4iv, RC A4iv for Migratory species at a bottleneck site conservation concern; 1, present.

Source: Our fieldwork of 20219-2021

Province; the Lukuga outlet River from Lake Tanganyika in Kalemie City; and finally the Moba river mouths, up to the limit with the Republic of Zambia. Those areas are the main Fish Breeding Areas (FBA) for the whole Lake Tanganyika bird, fish and biodiversity sustainable conservation.

Acknowledgements

I acknowledge the supervisors of my doctoral thesis, Professors Eric Sande Corresponding author of this paper from Makerere University Kampala Uganda and Gaspard Ntakimazi from the University of Burundi, and the members of my thesis Committee including Professors Majaliwa Mwanjololo, from the Makerere University Kampala Uganda, Charles Kahindo from the State University of Bukavu (UOB) and Claver Sibomana from the University of Burundi, for their useful comments.

Conflicts of Interest

Authors declare that there is no conflict of interests regarding the publication of this paper.

References

- [1] Bashonga, A. B., Sande, E., Kahindo, C., & Ntakimazi, G. (2023). Checklist of the Bird Species from the Ruzizi Delta, Northern End of lake Tanganyika, in Burundi and the Democratic Republic of Congo. *Biolife* 11 (2);115-129. ISSN (online):2320-4257. www.biolifejournals.com, 15 pages.
- [2] Butchart, S., Stattersfield, A., & Collar, N. (2006). How many bird extinctions have we prevented? . *Oryx*, vol. 40, no 3,, 266-279.
- [3] Chapman, A. D. (2005). *Numbers of Species Living in Australia and in the World. Report for the Department of the Environment and Heritage Canberra, Australia.* Canberra Australia:

- Australian Biodiversity Information Services Toowoomba Australia. Pp 64.
- [4] Chapman, A. D. (2009). *Numbers of Living Species in Australia and the World*. Canberra: Australian Biological Resources Study. pp. 1-80. ISBN 978-0-642-56861-8.
- [5] Deanna, W. M., Brunner, J., Nige, I. S., Karr, C. J., & Nielsen, D. (1998). *Forests and the Democratic Republic of Congo Opportunity in a Time Crisis: A Contribution to the Forest Frontiers Initiative*. New York: World Resources Institute, pp 30.
- [6] Demey, R., & Louette, M. (2001). Democratic Republic of Congo. In Fishpool L.D.C. & Evans M.I eds *Important Bird Areas in Africa: Priority Sites for Conservation*. Pisces Publications and BirdLife International, 199-218.
- [7] Dowset, & Dowset-Lemaire. (1993). *A contribution to the Distribution and Taxonomy of Afrotropical and Malagasy birds Tauraco Research Report*. Liège, Belgium.: Tauraco Press, Jupille No. 5 pp195-204.
- [8] Fishpool, L., & Evans, M. (2001). *Important Bird Areas in Africa and Associated Islands, Priority Sites for Conservation*. Newbury and Cambridge, UK: BirdLife International, 1144 pages. www.birdlife.net.
- [9] Gaugris, Y. (1979). *Les oiseaux aquatiques de la plaine de la basse Rusizi (Burundi) (1973-1978)*. Belgium: l'Oiseau et la Revue française d'ornithologie, volume 49 n° 21:33-153.
- [10] Guggisberg, C. (1986). *Birds of East Africa. Supra Safari Guide No 6 Volume II*. Nairobi: Mount Kenya Sundries, 196 pages.
- [11] Guggisberg, C. (1988). *Birds of East Africa. Supra Safari Guide No 6 Volum I*. Nairobi: Mount Kenya Sundries, 198 pages .
- [12] MEEATU, Ramsar, C., & WWF. (2014). *Atlas of Burundi's four Ramsar sites: Location and Resources*. Bujumbura, Burundi: Ministry of Water, Environment, Land Use Planning and Town Planning (MEEATU), 44p.
- [13] Nkezabahizi, L., & Bizimana, D. (2008). *Burundi's Important Bird Areas, Status and Trends*. Bujumbura-Burundi: Association Burundaise pour la protection des Oiseaux, 58 pages. http://datazone.birdlife.org/2008_Burundi_monitoring_report.pdf 20/06/2022.
- [14] Nkezabahizi, L., & Manirambona, A. (2011). *Burundi's Important Bird Areas Status and Trend 2010*. London: BirdLife International & RSPB (Royal Society for the Protection of Birds (UK), 36 pages.
- [15] Ntakimazi, G., Nzigidahera, B., Nicayenzi, F., & West, K. (2000). *Étude Spéciale Biodiversité (ESBio) Rapport: État de la diversité biologique dans les milieux aquatiques et terrestres du Delta de La Rusizi*. New York: LBP/PBLT/UNDP/GEF/UNOPS, 70 pages.
- [16] Ntakiyica, A. (2008). *State of knowledge on the distribution sites of ornithological fauna in Burundi*. Bujumbura Burundi: Departement of Biology, Faculty of Sciences, University of Burundi, 76 pages.
- [17] Richer, J. (2018). Direct Observation: Impediments and Approaches. *Human Ethology Bulletin 32 (2017)4: Special Issue- Why Behaviour Observation? 6-14 Theoretical Review*. <https://www.researchgate.net/publication/322108181>, 10.
- [18] Stevenson, T., & Fanshawe, J. (2002). *Field Guide to the Birds of East Africa: Kenya, Tanzania, Uganda, Rwanda and Burundi*. London: T. & A. D. Poyser, 606 pages.
- [19] Williams, J., & Arlott, N. (1988). *A Field Guide to the Birds of East Africa*. London: Collins, Grafton Street, 415 pages. ISBN 0 00 219179 2.
- [20] Yee, T. S. (2022). Bird species richness and abundance: The effects of structural attributes, habitat complexity and three diameters. *The ANU Undergraduate Research Journal*, 16 pages.
- [21] Zimmerman, D., Turner, D., & Pearson, D. (1999). *Hem Field Guides Birds of Kenya & Northern Tanzania*. London UK: Christopher Helm A & C Black (Publishers) ltd, 35 Bedford Row, WC1R 4JH 0-7136-5079-6, 578 pages.



Author: Bashonga Bishobibiri Alexis