

# Recent Survey of Birds in Gishwati Forest, Rwanda

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## Summary

We conducted a general avian survey in and around the Gishwati Forest of Rwanda's Gishwati-Mukura National Park between 6 June and 7 August 2019, using stationary point counts and opportunistic observations along approximately 300 km of transects and trails. Of the 155 bird species recorded, one is Critically Endangered (Hooded Vulture *Necrosyrtes monachus*), two are Endangered (Gray Crowned-Crane *Baealica regulorum* and Grauer's Swamp Warbler *Bradypterus graueri*), one is Vulnerable (Tawny Eagle *Aquila rapax*), and two are Near-Threatened (Mountain Buzzard *Buteo oreophilus* and Lagden's Bushshrike *Malaconotus lagdeni*). We recorded three Afrotropical migrants and 20 species endemic to the Albertine Rift (though two of these are only recognized at the subspecies level). Within this avian community, 41 species are forest specialists, 55 are forest generalists, and 25 are forest visitors.

**Keywords** conservation, Gishwati Forest, Gishwati-Mukura National Park, montane forest birds, Rwanda

## Introduction

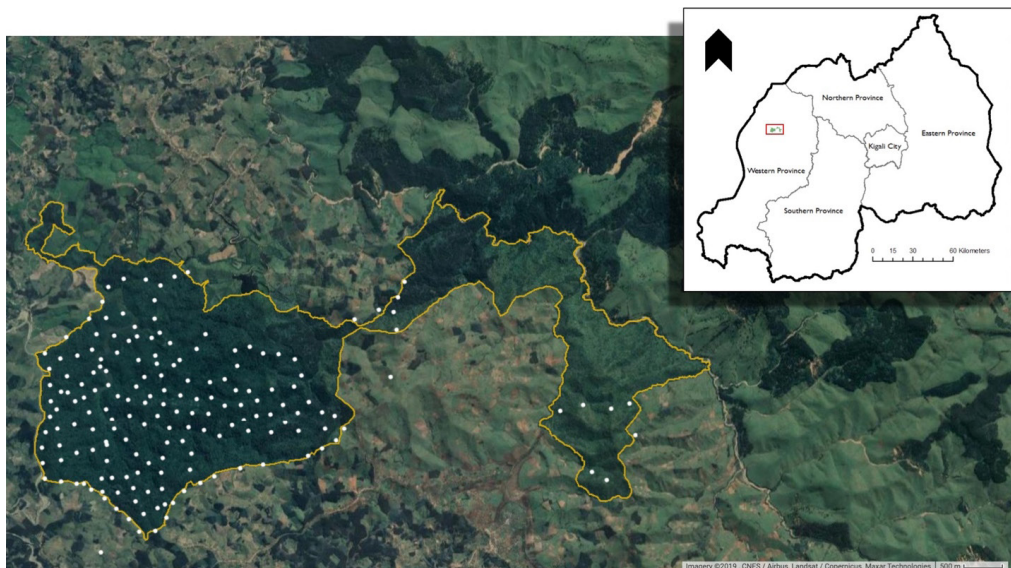
Gishwati Forest (01°49'S, 29°22'E; 2050–2610 m), in northwest Rwanda, is a secondary montane rainforest fragment that lies roughly between Volcanoes National Park to the north and Nyungwe Forest National Park to the south. The forest that included Gishwati in the early 1900s may have been as large as 100 000 ha, although this cannot be confirmed (REMA 2015). In 1984, the protected area that comprised Gishwati was 21 213 ha, but by 2015 it had suffered a 93% reduction in size to 1440 ha (REMA 2015). The majority of forest clearance occurred before 2010. There is now 1570 ha of Gishwati Forest that are gazetted as part of the newly formed Gishwati-Mukura National Park, declared in 2015, after having been a Forest Reserve since 1951 (REMA 2016). Gishwati Forest Reserve was previously an Important Bird Area but was later down-listed by BirdLife International after the area's vast habitat loss (Kanyamibwa 2001).

Vande weghe & Vande weghe (2011) recorded 190 resident species in this forest during observations that were made before 1986 (G. Vande weghe, pers. comm.), which provides the historical baseline for the Gishwati avifauna. This publication has since been updated by Vande weghe (2018), which lists the total avifauna recorded in Gishwati Forest, including migrants, as about 150. There have been other surveys of the birds of Gishwati in the last two decades, though most have never been published or were of short duration (see Nsabagasani & Nsengimana 2009, WCS unpub., Valle unpub., Tuyisingize unpub., REMA unpub.).

Our goal was to conduct a survey of the current avifauna of Gishwati Forest, to provide a much-needed contribution to our understanding of this forest under its present state, as well as the distribution of some endemic, rare, and poorly-known species. It is therefore not historically comprehensive. For example, there were 42 species documented in Vande weghe & Vande weghe (2011) that we did not find during our survey. Some of these may have been missed in the field, but others were likely extirpated by the profound habitat changes and fragmentation of this forest in the 1980s and 1990s. This work was part of a larger project to measure changes in species composition and to conduct a spatial analysis of the remnant avian diversity as it relates to distance from the edge of the park boundaries.

## Methods

Over the course of 40 field days, between 6 June and 7 August 2019, we conducted 180 point counts along approximately 300 km of transects and trails in Gishwati Forest, or within 1 km of its boundary (Fig. 1). This represented over 400h of direct and opportunistic observations while walking between points. After giving birds 60s to settle after our arrival at each point, we documented every individual bird heard or seen for 10min using binoculars and referencing Stevenson & Fanshawe (2002) as necessary. Points were spaced at least 200m apart. Over 86% of the points were surveyed more than once, and 54% of the points were surveyed thrice. We allocated more effort to the core area of relict forest than to the relatively newer and much more degraded habitat to the east, which is a much narrower band of protected area where impacts of edge effects would be more difficult to determine. Surveys were conducted between 06:00 (sunrise) and 12:30, and we delayed surveying during active rain, which rarely occurred.



**Figure 1.** Map of Gishwati forest showing surveyed points and the official Park boundary.

## Results

We detected a total of 155 species (Table 1), 20 of which are endemic to the Albertine Rift (BirdLife International 2019a). Signs of breeding (immature birds or nesting behaviour) were found for 15 species, and three species were intra-African migrants. Four species are on the IUCN Red List, and 2 other species are considered Near-Threatened (BirdLife International 2019b). According to the categorizations established by Bennun *et al.* (1996), 41 were forest specialists, 55 were forest generalists, and 25 were forest visitors, leaving 34 uncategorized species that typically were non-forest species—or were species not included in Bennun *et al.* (1996). In Table 1 we include a very rudimentary proxy of abundance based on how many days a given species was detected, which was of course biased by a given species' behaviour and habitat, as well as our sampling distribution, and as such these values should be considered a rough estimate.

**Table 1.** Bird species recorded in and around Gishwati Forest of Gishwati-Mukura National Park. The list follows Clements *et al.* (2019). R=resident, AM=Afrotropical migrant; B=signs of breeding recorded in this survey; ARE=Albertine Rift endemic; CR=Critically Endangered, E=Endangered, V=Vulnerable, NT=Near-Threatened; Abundance categories: Once=1, Rare<5, Uncommon<10, Common>10, Frequent>20, Abundant>30.

Common Name	Species Name	Status	Abundance
Handsome Francolin	<i>Pternistis nobilis</i>	R, B, ARE	Common
Scaly Francolin	<i>Pternistis squamatus</i>	R	Once
Rameron Pigeon	<i>Columba arquatrix</i>	R, B	Uncommon
Dusky Turtle-Dove	<i>Streptopelia lugens</i>	R	Rare
Red-eyed Dove	<i>Streptopelia semitorquata</i>	R	Uncommon
Blue-spotted Wood-Dove	<i>Turtur afer</i>	R	Once
Tambourine Dove	<i>Turtur tympanistria</i>	R	Rare
African Green-Pigeon	<i>Treron calvus</i>	R	Uncommon
Great Blue Turaco	<i>Corythaeola cristata</i>	R	Uncommon
Black-billed Turaco	<i>Tauraco schuettii</i>	R	Frequent
Rwenzori Turaco	<i>Ruwenzorornis johnstoni johnstoni</i>	R, ARE	Once
Blue-headed Coucal	<i>Centropus monachus</i>	R	Common
Blue Malkoha	<i>Ceuthmochares aereus</i>	R	Rare
Klaas's Cuckoo	<i>Chrysococcyx klaas</i>	R	Rare
African Emerald Cuckoo	<i>Chrysococcyx cupreus</i>	R	Uncommon
Barred Long-tailed Cuckoo	<i>Cercococcyx montanus</i>	R	Rare
Black Cuckoo	<i>Cuculus clamosus</i>	AM	Uncommon
Red-chested Cuckoo	<i>Cuculus solitarius</i>	AM	Abundant
Rwenzori Nightjar	<i>Caprimulgus ruwenzorii</i>	R, ARE subspecies	Rare
Square-tailed Nightjar	<i>Caprimulgus fossii</i>	R	Once
Little Swift	<i>Apus affinis</i>	R	Once
Red-chested Flufftail	<i>Sarothrura rufa</i>	R	Uncommon
Black Crane	<i>Zapornia flavirostra</i>	R, B	Rare
Gray Crowned-Crane	<i>Balearica regulorum</i>	R, E	Once
Black-headed Heron	<i>Ardea melanocephala</i>	R	Rare
Hadada Ibis	<i>Bostrychia hagedash</i>	R	Frequent
African Harrier-Hawk	<i>Polyboroides typus</i>	R	Once
Hooded Vulture	<i>Necrosyrtes monachus</i>	R, CE	Common
Tawny Eagle	<i>Aquila rapax</i>	R, V	Rare

Common Name	Species Name	Status	Abundance
African Goshawk	<i>Accipiter tachiro</i>	R	Rare
Black Goshawk	<i>Accipiter melanoleucus</i>	R	Rare
Black Kite (Yellow-billed)	<i>Milvus migrans parasitus</i>	R	Rare
Mountain Buzzard	<i>Buteo oreophilus</i>	R, NT	Uncommon
Augur Buzzard	<i>Buteo augur</i>	R	Common
Verreaux's Eagle-Owl	<i>Bubo lacteus</i>	R	Rare
Red-chested Owllet	<i>Glaucidium tephronotum</i>	R	Rare
African Wood-Owl	<i>Strix woodfordii</i>	R	Rare
Speckled Mousebird	<i>Colius striatus</i>	R	Rare
Narina Trogon	<i>Apaloderma narina</i>	R	Rare
Bar-tailed Trogon	<i>Apaloderma vittatum</i>	R	Once
White-headed Woodhoopoe	<i>Phoeniculus bollei</i>	R	Common
Crowned Hornbill	<i>Lophoceros alboterminatus</i>	R	Uncommon
Gray-headed Kingfisher	<i>Halcyon leucocephala</i>	R	Rare
Cinnamon-chested Bee-eater	<i>Merops oreobates</i>	R	Common
Yellow-rumped Tinkerbird	<i>Pogoniulus bilineatus</i>	R	Common
Lesser Honeyguide	<i>Indicator minor</i>	R	Rare
Scaly-throated Honeyguide	<i>Indicator variegatus</i>	R	Common
Elliot's Woodpecker	<i>Chloropicus elliotii</i>	R	Rare
Cardinal Woodpecker	<i>Chloropicus fuscescens</i>	R	Rare
Bearded Woodpecker	<i>Chloropicus namaquus</i>	R	Once
Olive Woodpecker	<i>Chloropicus griseocephalus</i>	R	Common
Tullberg's Woodpecker	<i>Campethera tullbergi taeniolaema</i>	R	Rare
Eurasian Kestrel	<i>Falco tinnunculus</i>	R	Once
Rwenzori Batis	<i>Batis diops</i>	R, ARE	Abundant
Chinspot Batis	<i>Batis molitor</i>	R	Abundant
Northern Puffback	<i>Dryoscopus gambensis</i>	R	Abundant
Lüdher's Bushshrike	<i>Laniarius luehderi</i>	R	Rare
Tropical Boubou	<i>Laniarius major</i>	R	Common
Willard's Sooty Boubou	<i>Laniarius willardi</i>	R	Once
Albertine Boubou	<i>Laniarius holomelas</i>	R	Abundant
Many-colored Bushshrike	<i>Telophorus multicolor</i>	R	Rare
Doherty's Bushshrike	<i>Telophorus dohertyi</i>	R	Abundant
Lagden's Bushshrike	<i>Malaconotus lagdeni</i>	R, NT	Rare
Gray Cuckooshrike	<i>Coracina caesia</i>	R	Common
Black Cuckooshrike	<i>Campephaga flava</i>	R	Rare
Mackinnon's Shrike	<i>Lanius mackinnoni</i>	R	Common
Northern Fiscal	<i>Lanius humeralis</i>	R	Rare
African Golden Oriole	<i>Oriolus auratus</i>	AM, B	Rare
Black-tailed Oriole	<i>Oriolus percivali</i>	R, B	Abundant
African Paradise-Flycatcher	<i>Terpsiphone viridis</i>	R	Abundant
Pied Crow	<i>Corvus albus</i>	R	Common
White-necked Raven	<i>Corvus albicollis</i>	R	Common
Rock Martin	<i>Ptyonoprogne fuligula</i>	R	Rare
Angola Swallow	<i>Hirundo angolensis</i>	R	Common
Red-rumped Swallow	<i>Cecropis daurica</i>	R	Uncommon
White-headed Sawwing	<i>Psolidoprocne albiceps</i>	R	Common
Black Sawwing	<i>Psolidoprocne pristoptera</i>	R	Frequent
White-tailed Blue Flycatcher	<i>Elminia albicauda</i>	R	Rare

Common Name	Species Name	Status	Abundance
Stripe-breasted Tit	<i>Melaniparus fasciiventer</i>	R, ARE	Uncommon
Eastern Mountain-Greenbul	<i>Arzelocichla nigriceps kikuyuensis</i>	R	Frequent
Yellow-whiskered Greenbul	<i>Eurillas latirostris</i>	R, B	Abundant
Yellow-streaked Greenbul	<i>Phyllastrephus flavostriatus</i>	R	Frequent
Common Bulbul (Dark-capped)	<i>Pycnonotus barbatus tricolor</i>	R	Abundant
White-browed Crombec	<i>Sylvietta leucophrys</i>	R	Frequent
Grauer's Warbler	<i>Graueria vittata</i>	R, ARE	Rare
Red-faced Woodland-Warbler	<i>Phylloscopus laetus</i>	R, ARE	Uncommon
African Yellow-Warbler	<i>Iduna natalensis</i>	R	Rare
Mountain Yellow-Warbler	<i>Iduna similis</i>	R	Frequent
African Reed Warbler	<i>Acrocephalus baeticatus</i>	R	Rare
Evergreen-Forest Warbler	<i>Bradypterus lopezi</i>	R	Frequent
Cinnamon Bracken-Warbler	<i>Bradypterus cinnamomeus</i>	R	Abundant
Grauer's Swamp Warbler	<i>Bradypterus graueri</i>	R, ARE, E	Uncommon
Rwenzori Apalis	<i>Oreolais ruwenzorii</i>	R, ARE	Abundant
Green-backed Camaroptera	<i>Camaroptera brachyura aschani</i>	R	Uncommon
Black-throated Apalis	<i>Apalis jacksoni</i>	R	Abundant
Black-faced Apalis	<i>Apalis personata</i>	R, B, ARE	Abundant
Chestnut-throated Apalis	<i>Apalis porphyrolaema</i>	R	Frequent
Banded Prinia	<i>Prinia bairdii</i>	R	Frequent
Black-faced Rufous-Warbler	<i>Bathmocercus rufus</i>	R, B	Abundant
Gray-capped Warbler	<i>Eminia lepida</i>	R	Uncommon
Chubb's Cisticola	<i>Cisticola chubbi</i>	R	Abundant
African Yellow White-eye	<i>Zosterops senegalensis</i>	R	Abundant
Rwenzori Hill Babbler	<i>Sylvia atriceps</i>	R	Abundant
Mountain Illadopsis	<i>Illadopsis pyrroptera</i>	R	Abundant
Gray-chested Babbler	<i>Kakamega poliothorax</i>	R	Frequent
Dusky-brown Flycatcher	<i>Muscicapa adusta</i>	R	Common
Yellow-eyed Black-Flycatcher	<i>Melaenornis ardesiacus</i>	R, ARE	Once
White-eyed Slaty-Flycatcher	<i>Melaenornis fischeri</i>	R, B	Common
Archer's Robin-Chat	<i>Cossypha archeri</i>	R, ARE	Abundant
Cape Robin-Chat	<i>Cossypha caffra</i>	R	Rare
White-browed Robin-Chat	<i>Cossypha heuglini</i>	R	Rare
Red-capped Robin-Chat	<i>Cossypha natalensis</i>	R	Rare
White-starred Robin	<i>Pogonocichla stellata</i>	R, B	Abundant
Red-throated Alethe	<i>Chamaetylas poliophrys</i>	R, ARE	Frequent
Equatorial Akalat	<i>Sheppardia aequatorialis</i>	R	Rare
African Stonechat	<i>Saxicola torquatus</i>	R	Common
Abyssinian Ground-Thrush	<i>Geokichla piaggiae tanganjicae</i>	R, ARE subspecies	Once
Abyssinian Thrush	<i>Turdus abyssinicus</i>	R	Common
Slender-billed Starling	<i>Onychognathus tenuirostris</i>	R	Common
Waller's Starling	<i>Onychognathus walleri</i>	R	Uncommon
Sharpe's Starling	<i>Pholia sharpii</i>	R	Rare
Stuhlmann's Starling	<i>Poeoptera stuhlmanni</i>	R	Uncommon
Collared Sunbird	<i>Hedydipna collaris</i>	R, B	Frequent
Green-headed Sunbird	<i>Cyanomitra verticalis</i>	R, B	Common
Blue-headed Sunbird	<i>Cyanomitra alinae</i>	R, B, ARE	Frequent
Olive Sunbird	<i>Cyanomitra olivacea</i>	R	Common
Scarlet-chested Sunbird	<i>Chalcomitra senegalensis</i>	R	Once



Common Name	Species Name	Status	Abundance
Purple-breasted Sunbird	<i>Nectarinia purpureiventris</i>	R, B, ARE	Common
Bronze Sunbird	<i>Nectarinia kilimensis</i>	R	Uncommon
Malachite Sunbird	<i>Nectarinia famosa</i>	R	Once
Stuhlmann's Sunbird	<i>Cinnyris stuhlmanni</i>	R, ARE	Uncommon
Northern Double-collared Sunbird	<i>Cinnyris reichenowi</i>	R	Frequent
Regal Sunbird	<i>Cinnyris regius</i>	R, ARE	Frequent
Variable Sunbird	<i>Cinnyris venustus</i>	R, B	Common
Cape Wagtail	<i>Motacilla capensis</i>	R	Uncommon
Mountain Wagtail	<i>Motacilla clara</i>	R	Once
African Pied Wagtail	<i>Motacilla aguimp</i>	R	Rare
African Pipit	<i>Anthus cinnamomeus</i>	R	Uncommon
Yellow-fronted Canary	<i>Crithagra mozambica</i>	R	Rare
Western Citril	<i>Crithagra frontalis</i>	R	Rare
Streaky Seedeater	<i>Crithagra striolata</i>	R	Common
Thick-billed Seedeater	<i>Crithagra burtoni</i>	R	Uncommon
Yellow-crowned Canary	<i>Serinus flavivertex</i>	R	Uncommon
Golden-breasted Bunting	<i>Emberiza flaviventris</i>	R	Rare
Baglafaecht Weaver	<i>Ploceus baglafaecht</i>	R	Common
Strange Weaver	<i>Ploceus alienus</i>	R, B, ARE	Frequent
Holub's Golden Weaver	<i>Ploceus xanthops</i>	R	Once
Brown-capped Weaver	<i>Ploceus insignis</i>	R	Once
Yellow-bellied Waxbill	<i>Coccyzygia quartinia</i>	R	Uncommon
Dusky Crimsonwing	<i>Cryptospiza jacksoni</i>	R, ARE	Uncommon
Fawn-breasted Waxbill	<i>Estrilda paludicola</i>	R	Rare
Crimson-rumped Waxbill	<i>Estrilda rhodopyga</i>	R	Once
Common Waxbill	<i>Estrilda astrild</i>	R	Uncommon
Black-crowned Waxbill	<i>Estrilda nonnula</i>	R	Uncommon
Kandt's Waxbill	<i>Estrilda kandti</i>	R, B	Common

## Discussion

We are fairly confident that we detected a significant majority of the birds that were present during our limited field season. It is possible that certain species were consistently silent or cryptic during our field season, which had aberrant rainfall. Anecdotal-ly, the rainy season appeared to be delayed for much of Rwanda in 2019; Shinehouse Gishwati Research Station recorded only about 5680 mm of rain between 1 January and 31 May 2019, compared to the previous 3-year average of 9050 mm (R. Chancellor & A. Rundus, pers. comm.).

We identified ten species that had never previously been reported in Gishwati: African Reed Warbler *Acrocephalus baeticatus*, Crimson-rumped Waxbill *Estrilda rhodopyga*, Yellow-fronted Canary *Crithagra mozambica*, Grauer's Swamp Warbler *Bradypterus graueri*, Gray-headed Kingfisher *Halcyon leucocephala*, Many-colored Bushshrike *Telophorus multicolor*, Olive Sunbird *Cyanomitra olivacea*, Red-chested Flufftail *Sarothrura rufa*, Verreaux's Eagle-Owl *Bubo lacteus*, and Willard's Sooty Boubou *Laniarius willardi*—CN saw this species briefly once, and G. Vande weghe may have seen it in 2017 (REMA unpub.), but efforts should be made to photograph the species in Gishwati given its range restrictions in the Albertine Rift (see Voelker *et al.* 2010).

In contrast, we failed to find over 30 resident species previously reported during the last twenty years. This could be due to birds' behaviour or movements that are impossible to quantify, as well as to potential transcription or identification errors by previous surveys. As our survey dates did not include the Palearctic migration, we undoubtedly missed species that are frequent visitors to Gishwati at other times of the year. Nevertheless, it is surprising that one species reported for the first time, Grauer's Swamp Warbler, is both endangered and an Albertine Rift endemic, which makes it a target species sought by expert birders and ornithologists alike (for some history on this species in Rwanda, see Vandeweghe 1983). We recorded four individuals by sight on two occasions and detected this species on five different days during the course of our survey. All observations were in the swampy section of the park where the Pfunda River flows out to the northwest (roughly 2050 m asl), which is also where Willard's Sooty Boubou was observed. Perhaps these few individuals are new visitors to Gishwati Forest given habitat loss elsewhere; this swampy section should be monitored more closely. Another Albertine Rift endemic with the same namesake, Grauer's Warbler (*Graueria vittata*), had only been reported twice previously, once in 1990 by Robert Dowsett (R. Dowsett, pers. comm.), and again in 2004 by WCS surveyors (WCS unpub.); we heard it on four separate days. Similarly, our four observations of Elliot's Woodpecker *Chloropicus elliotii* are only matched by the 2004 WCS survey (unpub.), and our four observations of Lüdher's Bushshrike *Laniarius luehderi* are only matched by Dowsett's 1990 visit to Gishwati (pers. comm.), indicating that there may be fluctuations in species presence, and more methodical visits to the Forest will be valuable.

## Conclusion

While we conducted our research at a time suitable to assess resident species of Gishwati Forest, the brevity of our effort leaves other important times of the calendar year unsurveyed. It is imperative to survey at all times to document passage migrants that may use this habitat, as well as other seasonal visitors from elsewhere in Africa or further afield. We encourage further study during the winter months of the northern hemisphere, as well as more targeted and published ornithological surveys in Rwanda. In particular, monitoring the arm of the Park that bends out to the east, known as Nduruma and Kinyenkanda, would be worthwhile, as this includes both the highest elevation of the protected area, as well as the narrowest band of the contiguous forest cover. This region is being actively restored and reforested (World Bank 2019), and therefore might come to host a different suite of bird species in the future. We believe that reassessing the Gishwati Forest component of Gishwati-Mukura National Park under the criteria for the newer IUCN Key Biodiversity Area system might be worthwhile, given the number of endemic and Red-listed species found here. In addition to the birds above, Gishwati Forest is also home to chimpanzees *Pan troglodytes*, Endangered, golden monkeys *Cercopithecus mitis kandti*, Endangered, Great Lakes bush vipers *Atheris nitschei*, Albertine Rift endemic, and other species that display the conservation utility of this protected area as an island of biodiversity in the middle of a heavily human-altered landscape of cattle pasture and agriculture (REMA unpub.).

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