

Chapter 14

The Avifauna of Angola: Richness, Endemism and Rarity



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Abstract Angola has a rich history of ornithological exploration going back to the early 1800s. From the early-1970s to 2002, however, the civil war prevented access to many areas, and very little work on birds was done. From about the early 2000s information on birds in Angola has been gathered at an increasing rate, with new species being added to the list and a steady rise in publications on biogeography and biology of birds. With about 940 species, Angola has an impressive array of bird species, including c. 29 endemic species, and several species that are rare and poorly known. For the future, there are many areas of avian biology to attract studies, not only to gather more data on the rare and endemic species, but also local surveys of bird communities, the identification of major threats to the avifauna from landuse changes (concomitantly with suggestions for remedial action) and more. Understanding the role of birds in ecosystem processes, long term studies on the biology and breeding of individual species, and inferring the evolutionary history of the endemic species and of those species that occur in small isolated populations in Angola are all areas for future research. The future of ornithological research and conservation in Angola is dependent on it being carried out by Angolans – outreach,

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capacity building, and advanced training must all come together in order to find and train the motivated ornithologists that such a biodiversity-rich country deserves.

Keywords Afromontane forests · Angolan escarpment · Conservation · Endemic bird area · Ornithology · Rare birds

Early Ornithological History

The richness, endemism and rarity of the avifauna in Angola has attracted many ornithologists, with the early studies during the late 1800s and first few years of the 1900s being almost entirely simple collections of birds. A chronology of bird collections is given in Table 14.1. Publications and results of many of these collections have been well covered by several authors, including Traylor (1963), Pinto (1983) and Dean (2000). From the 1960s until the early 1970s extensive collections were made at a number of localities in Angola by the *Instituto de Investigação Científica de Angola* (IICA) (Fig. 14.1). Details of some of these collections, and records of special interest, were published in a series of papers by Pinto (see references) providing much needed data on the biogeography and habitats of birds. The bird specimen collection assembled by the IICA, and now held by the *Instituto Superior de Ciências da Educação* (ISCED) in Lubango was catalogued by Mills et al. (2010). This was revised by Fernanda Lages and colleagues in 2016, aided by the discovery of the field notebooks associated with the collections. This database, of what is probably the third largest bird collection in Africa, will be available soon through the Global Biodiversity Information Facility (GBIF) portal.

Although a war for independence in Angola had been going on since 1961, armed conflict escalated with the start of a civil war in 1975, immediately after Angola became independent from Portugal. The war went on to last almost three decades, pre-empting any significant field-based biological research. Many of the reports on the avifauna of Angola that were published during the 1960s, 1970s and 1980s were “desktop” studies of museum specimens, all using data that had been collected before 1974. Despite issues with security and hazards imposed by the localised patches of unexploded ordinances and the extensive use of landmines, some avian studies were done in this period. Two East German biologists, Dr. Rainer Günther and Dr. Alfred Feiler, based at the *Museum für Naturkunde der Humboldt-Universität zu Berlin* and the *Staatliches Museum für Tierkunde*, Dresden, respectively, were commissioned to survey biodiversity, including birds, in Angola (Günther and Feiler 1986a, b). The ICBP (International Council for Bird Preservation, now BirdLife International) attempted a project to gather data on the status of (*inter alia*) the threatened endemic bird species on the Angolan “Scarp”. The subsequent report adds little to what was known about the avifauna of this area, but the report usefully outlines the major threats to the biodiversity in the southernmost patches of Guinea-Congolian forest (Hawkins 1993).

It was only after the war ended definitely in 2002 that ornithologists returned to the country with most expeditions targeting the regions that had been classified as Important Bird Areas (IBAs, Dean 2001) and, in particular, the core habitats of the

Table 14.1 A chronology of the collecting expeditions made in Angola, adapted from Traylor (1963) and Dean (2000), and reproduced, in part, by courtesy of the British Ornithologists' Union

1850–1892	J. Anchieta collected birds mainly in central Angola. The specimens, many of which were Types, were described and reported on by Bocage in a number of separate papers, summarised up to 1881 (Bocage 1877, 1881).
1858–1868	J. J. Monteiro lived in Angola and collected birds. His collections, together with those made by Charles Hamilton (a visitor), were reported on by Hartlaub and Monteiro (1860), Hartlaub (1865), Sharpe and Monteiro (1869) and Sharpe (1871).
1876–1877	A. Lucan and L. A. Petit collected birds in Cabinda. Some of their specimens were deposited in the Natural History Museum, Tring. The collection was reported on by Sharpe and Bouvier (1876a, b, 1877, 1878).
1880 and 1887	A. W. Eriksson collected in Cunene, between the Cunene and Cubango rivers. His specimens are in the <i>Älvsborgs Länsmuseum</i> , Vänersborg, Sweden (for details see Rudebeck 1955 and Lundevall and Ängermark 1989), and in the Zoological Museum, Uppsala, Sweden.
1884–1888	P. J. van der Kellen collected for the Nationaal Natuurhistorisch Museum, Leiden, in Namibe and Huíla (Büttikofer 1888, 1889a, b).
Early 1900s	Francisco Newton, a Portuguese naturalist, collected in southern Cuanza-Norte and along the coast (Seabra 1905–1907). Some of the material he collected is in the <i>Museu de História Natural – Zoologia</i> , Oporto (Seabra 1905a, b, 1906a, b, c, d, 1907).
1901	C. H. Pemberton collected along the Cunene River and in the area between the Cuanza River and Bailundo for the Rothschild's Museum at Tring, UK.
1903–1906	W. J. Ansorge collected extensively throughout western Angola for the Rothschild's Museum at Tring, UK.
1908–1909	W. J. Ansorge collected in Cuanza-Norte for the British Museum in London.
1910–1911	W. Lowe spent a few days collecting in December 1910 and March 1911 in the Luanda area (Bannerman 1912).
1912–1913	Some birds were collected in Cuando Cubango, Cunene and Huíla by the Mission Rohan-Chabot (Ménégaux and Berlioz 1923).
1920s and 1930s	R. Braun lived and studied birds mainly in Cuanza-Norte, northern Malanje and on the escarpment of Cuanza-Sul (Braun 1930, 1934; Sick 1934; Stresemann 1934, 1937).
1925	R. Boulton collected in Namibe, Huíla and Benguela for the American Museum of Natural History.
1926–1927	H. Lynes and B. B. Osmaston collected cisticolas on the Huambo highlands and along the Benguela coast.
1927	H. & C. Chapman collected on the central plateau for the American Museum of Natural History.
1928	P. Koester collected in the highlands of Huambo and southern Cuanza-Sul and sent the skins to O. Neumann. Some of these skins are now in the Museum of Comparative Zoology, Harvard University.
1928–1929, 1932–1933	A. Monard (1932, 1934) collected in eastern and southern Huíla and in Lunda-Norte. His specimens are in the Musée D'Histoire Naturelle, La-Chaux-de-Fonds, Switzerland.
1929–1930	The gray African expedition of the Academy of Natural Sciences, Philadelphia made two collections in Bié and southern Malanje (Bowen 1931, 1932).

(continued)

Table 14.1 (continued)

1930	L. Fenaroli collected in the northwest and on the north-central plateau (Moltoni 1932).
1930–1931	H. Lynes and J. Vincent collected cisticolas and other species on the plateau and from Dundo, Lunda-Norte, to Vila Luso (now Luena) in Moxico (Lynes and Sclater 1933, 1934).
1931	R. Boulton collected in central and southern Angola for the Carnegie Museum of Natural History (Boulton 1931).
1931–1934	Jean Bodaly made large collections in northern Bié and sent them to the Carnegie Museum and Chicago Natural History Museum (now Field Museum of Natural History).
1931–1934	H. K. Prior collected at Dondi in Huambo and sent skins to the Field Museum of Natural History.
1932–1933	The Phipps-Bradley Expedition made a collection on the plateau for the American Museum of Natural History.
1933–1934	H. Lynes and J. Vincent collected birds (mainly cisticolas) in Benguela, Huambo, southern Lunda-Sul and northern Lunda-Norte (Lynes 1938).
1944–1949	C. M. N. White (1950) collected in areas in the extreme east of Moxico.
1952	H. A. Beatty collected in the northwest and sent skins to the Field Museum of Natural History, Chicago.
1954	W. Serle visited coastal areas for only 1 week but published interesting data (Serle 1955).
1954–1955	G. Heinrich (1958a, b, c) collected extensively in the western half of Angola and sent some skins to the Field Museum of Natural History, Chicago, and the <i>Zoologisches Institut und Zoologisches Museum</i> , Hamburg (Meise 1958).
1956	G. Rudebeck collected for the Visser-Transvaal Museum Expedition in southwestern Angola, but only a few details have been published (Rudebeck 1958).
1957	B. P. Hall led an expedition to central and western Angola which resulted in two major publications on zoogeography and taxonomy (Hall 1960a, b).
1957	R. Boulton collected in northwestern and northeastern Angola, and sent skins to the Field Museum of Natural History, Chicago.
1957–1958	G. Heinrich collected in Cuanza-Norte, Malanje and Lunda-Norte for the Peabody Museum of Natural History, Yale University, and the Smithsonian Institution.
1958–1973	Staff at the <i>Instituto de Investigação Científica de Angola</i> (IICA) collected in Moxico, Bengo, Luanda, Malanje, Cuanza-Sul, Bié, Benguela, Huíla, Namibe and Cuando-Cubango for the IICA collection at Lubango.
1972	W.R.J. Dean collected in Huíla, Malange and Cabinda for the Peabody Museum, New Haven (Dean 1974).
1972	M.E. Ferreira collected in Huíla for the <i>Zoologisches Forschungsinstitut und Museum Alexander Koenig</i> , Bonn.
1973	W.R.J. Dean collected in Huíla, Cuanza-Norte, Cuanza-Sul and Malange for the Peabody Museum, New Haven (Dean 1974).
1982–1983	R. Günther and A. Feiler collected in Luanda, Bengo, Uige, Cuanza-Norte and Lunda-Norte for the Staatliches Museum für Tierkunde, Dresden and the Museum für Naturkunde der Humboldt-Universität zu Berlin (Günther and Feiler 1986a, b)

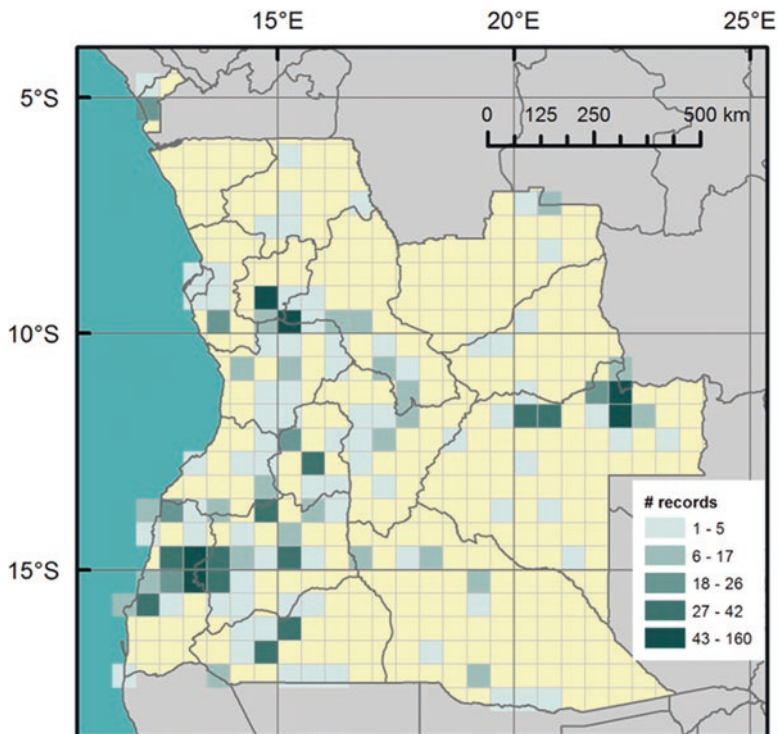


Fig. 14.1 Localities where bird specimens were collected by the *Instituto de Investigação Científica de Angola* (IICA) with duplicates held by the *Instituto de Investigação Científica Tropical* (IICT), shown as the number of specimens collected in each 30-minute square. (Figure extracted from Monteiro et al. (2014) and reproduced by permission of the authors)

endemic birds: the forests of the Western Escarpment and the highlands. Over the last 15 years the knowledge of avian diversity, distribution and biogeography for the country has steadily increased, with several species new to the Angola list being recorded from areas that had never been previously explored.

Recent History and the Exponential Increase in Information on Birds

One of the first “post war” studies was the publication of field notes on the Grey-striped Francolin *Francolinus griseostriatus* that provided some information on the biology of this endemic and rare species (Vaz Pinto 2002). Studies of individual species and surveys of areas of particular interest gained momentum during the early 2000s, with notes on the Gabela Akalat *Sheppardia gabela* (Mills et al. 2004), and more general reports on the conservation status and vocalisations of endemic and threatened bird species from the forests of the western escarpment (‘Scarp forests’) of Angola (Ryan et al. 2004; Mills 2010) and a survey of the birds in Cumbira

Forest, Gabela (Sekercioglu and Riley 2005). Cumbira Forest, a representative of Central Scarp forests, is rich in endemic bird species, and has since been the focus of one of the most detailed studies of birds in Angola (Cáceres et al. 2015, 2016, 2017). Most recent publications on birds in Angola, however, deal with extensions of distributional range, vocalisations and lists of birds from specific areas, all providing data towards an atlas of Angolan birds (Table 14.2). Reports on the birds of particular areas, such as Cangandala National Park (Mills et al. 2008) and the Soyo area (Dean and le Maitre 2008; Stavrou and Mills 2013) are valuable in that there is a large gap in time between when the places were last surveyed for birds and now. The avifauna of many areas is known only from collections of specimens during the 1950s and there have been significant and rapid changes in landuse in many areas after the war, such as with the conversion of old-growth miombo woodland for charcoal making, or the replacement of secondary forest and shade-forest coffee plantations by slash-and-burn agriculture in the Scarp (Leite et al. 2018), the most important area of bird endemism (Cáceres et al. 2017). Reports on the avifauna of Mount Moco (Mills et al. 2011a, b), the Namba Mountains (Mills et al. 2013a, b), and Lagoa Carumbo (Mills and Dean 2013) have highlighted the bird species richness of these areas and, *inter alia*, noted threats to the local ecosystems and their

Table 14.2 New species on the Angolan bird list recorded since 1975

Common name	Species	References
Northern Royal Albatross	<i>Diomedea (epomorpha) sanfordi</i>	Lambert (2001)
Spectacled Petrel	<i>Procellaria conspicillata</i>	Lambert (2001)
Red-billed Tropicbird	<i>Phaethon aethereus</i>	Lambert (2001)
White-tailed Tropicbird	<i>Phaethon lepturus</i>	Lambert (2001)
Cape Vulture	<i>Gyps coprotheres</i>	Bamford et al. (2007) ^a
Lesser Spotted Eagle	<i>Aquila pomarina</i>	Meyburg et al. (2001)
Booted Eagle	<i>Hieraaetus pennatus</i>	Sinclair (1981)
Red-necked Falcon	<i>Falco chicquera</i>	Mills et al. (2016)
Pacific Golden Plover	<i>Pluvialis fulva</i>	Mills (2015)
Red Phalarope	<i>Phalaropus fulicarius</i>	Lambert (2001)
European Oystercatcher	<i>Haematopus ostralegus</i>	Simmons et al. 2009
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Lambert (2001)
Little Tern	<i>Sternula albifrons</i>	Lambert (2001)
Greater Crested Tern	<i>Thalasseus bergii</i>	Dean et al. (2002)
Lemon Dove	<i>Columba larvata</i>	Mills and Dowd (2007)
Yellow-throated Cuckoo	<i>Chrysococcyx flavigularis</i>	Mills et al. (2013a, b)
Pink-billed Lark	<i>Spizocorys conirostris</i>	Mills (2006)
Red-tailed Leaflove	<i>Phyllastrephus scandens</i>	Mills et al. (2013a, b)
Forest Swallow	<i>Petrochelidon fuliginosa</i>	Mills and Tebb (2015)
South African Cliff Swallow	<i>Petrochelidon spilodera</i>	Mills et al. (2013a, b)
Singing Cisticola	<i>Cisticola cantans</i>	Dean et al. (2003)
White-collared Oliveback	<i>Nesocharis ansorgei</i>	Mills and Vaz Pinto (2015)

The list does not include unconfirmed records

^aRecord based on satellite tracking

importance for conservation. Notes on rare and little known species, such as Brazza's Martin *Phedina brazzae* (Mills and Cohen 2007), Black-tailed Cisticola *Cisticola melanurus* (Mills et al. 2011a, b), Bocage's Sunbird *Nectarinia bocagii* (Mills 2013), and the Red-necked Falcon *Falco chicquera* (Mills et al. 2016), have provided some insights into the biology of these species. Breeding data for all species in Angola are few, but MSLM and co-workers (see references) have recently published several notes on the biology and first descriptions of nests and eggs and some useful notes on brood parasitism and nests of a number of species.

The creation of the Internet group *Angola Birders* by MSLM in 2012 has greatly facilitated and promoted the acquisition and sharing of data on bird distributions. This has led to a large number of records of the occurrence of species, some of which have cleared up distributional anomalies. For example, records of Black Bishop *Euplectes gierowii* by Pedro Vaz Pinto (2 June 2015), together with earlier records by MSLM, provide some evidence that the species is not as rare as previously thought (see Dean 2000). The *Angola Birders* Group has proved very useful, not only for new distribution records, but also for new breeding records. More importantly, it has generated interest in birds in many people, including diplomats and executives of companies now trading in Angola, who now spend their spare time "off the beaten track". Their contributions towards a national database (at present held by MSLM) of bird records are valuable. The facebook group "*Angola Ambiente*" has completely overtaken *Angola Birders* and is currently providing a lot of useful information.

One of the useful products from the national database of bird records is the bilingual annotated checklist published by Mills and Melo (2013), based on the catalogue of the specimen collection at Lubango (Mills et al. 2010) and sight records. This updates earlier lists, and includes some notes on unconfirmed and doubtful records of species unlikely to occur in Angola. These records vary from (probably) confusion with known species or sightings of species well outside their distribution range.

The Richness of the Angolan Avifauna

About 940 species of birds have been recorded in Angola (Mills and Melo 2013). This increases the number of species recorded for the country; a total of 915 species were listed by Dean (2000), and 12 additional species were added by Mills and Dean (2007), of which seven marine species, mostly pelagic, were recorded by Lambert (2001). Some specimens thought to be of Red-faced Cisticola proved to be those of an isolated population of Singing Cisticola *Cisticola cantans* (Dean et al. 2003), and the occurrence of the Lesser Spotted Eagle *Aquila pomarina* (Meyburg et al. 2001) and the Swift Tern *Sterna bergii* (Dean et al. 2002) have been verified. One additional species, Slaty Egret *Egretta vinaceigula*, has been added as a result of cataloguing the bird collection at Lubango (Mills et al. 2010). Observations made in poorly known areas of Angola by MSLM and co-workers have added additional

species to the list, including the Yellow-throated Cuckoo *Chrysococcyx flavigularis*, [Red-tailed] Leaf-love *Phyllastrephus scandens* and South African Cliff Swallow *Petrochelidon spilodera* (Mills et al. 2013a, b). Developments in assessing species boundaries using molecular methods, have added another 16 species (Mills and Dean 2007). One example of this is the Common Fiscal *Lanius collaris* that has now been split into two species, the Northern Fiscal *L. humeralis* and Southern Fiscal *L. collaris* (Fuchs et al. 2011). There have also been some corrections to the list, such as specimens of the White-bellied Sunbird *Cinnyrus talatala* from Mount Moco and Mount Soque listed by Dean (2000) that were found to be miscatalogued Oustalet's Sunbirds *Cinnyrus oustaleti* (Mills and Dean 2007). There are also a number of avian taxa that require further investigation, either in the field or using molecular analyses to establish species boundaries (Mills and Dean 2007).

The list for Angola does not include 88 species for which there are sight records and that, in many cases, and for various reasons, are unlikely to occur in Angola (Mills and Melo 2013). Some species are simply misidentifications of similar, related species. Others, however, particularly migrant waders (shorebirds) from the Northern Hemisphere, may have been correctly identified, but require more records, photographs or specimens for verification. Unconfirmed species are dealt with by Mills and Dean (2007) and more fully by Mills and Melo (2013) and will not be listed here.

Endemism in the Angolan Avifauna

There are about 29 species of birds endemic to Angola, the number depending on the taxonomic authority that is followed (Table 14.3). Most occur in the forests of the Western Escarpment and in the last remnants of Afromontane forest of the highlands, the two core habitats of the Western Angola Endemic Bird Area (BirdLife International 2017). Two species, Red-backed Mousebird *Colius castanotus* and Bubbling Cisticola *Cisticola bulliens*, are widely distributed in Angola, including the Western Escarpment and associated coastal plains and in a range of woodlands and forest patches modified for the cultivation of coffee (Dean 2000).

The semi-evergreen humid forests of the Angolan Escarpment ('the Scarp Forests') are impoverished outliers of the Congolian rainforest (Huntley and Matos 1994). They have been the major speciation hotspot for birds in Angola by: (i) creating a barrier between arid-adapted species of the coastal plains and of the miombo woodlands of the plateau, (ii) creating a steep ecological gradient, and (iii) functioning as a refuge for moist forest specialists that were isolated here during the dry periods of the glacial cycles (Hall 1960a) – 75% of the endemic bird species are associated with this region.

The Afromontane forests of west-central Angola make the most isolated representatives of all the Afromontane centres of endemism, separated by >2000 km from other similar habitats. This isolation has allowed the development of plant and animal communities that are quite distinct from those of other montane centres. The

Table 14.3 Provisional list of bird species endemic or near endemic to Angola, with their IUCN Red List Category, and main area of occurrence

Scientific name	English name	I	S	M	O	N
<i>Pternistis griseostriatus</i>	Grey-striped Francolin	VU	•			
<i>Pternistis swierstrai</i>	Swierstra's Francolin	LC		•		
<i>Tauraco erythrolophus</i>	Red-crested Turaco	LC				
<i>Colius castanotus</i>	Red-backed Mousebird	LC	•			
<i>Gymnobucco vernayi</i>	Angola Naked-faced Barbet	LC	•			*
<i>Lybius leucogaster</i>	Angola White-headed Barbet	LC	•			*
<i>Platysteira albifrons</i>	White-fronted Wattle-eye	LC	•			
<i>Prionops gabela</i>	Gabela Helmetshrike	EN	•			
<i>Malaconotus monteiri</i>	Monteiro's Bushshrike	LC	•			1
<i>Laniarius amboimensis</i>	Gabela Bushshrike	EN	•			
<i>Laniarius brauni</i>	Braun's Bushshrike	EN	•			
<i>Phyllastrephus viridiceps</i>	Angola White-throated Greenbul	LC	•			*
<i>Phyllastrephus fulviventris</i>	Pale-olive Greenbul	LC	•			
<i>Macrosphenus pulitzeri</i>	Pulitzer's Longbill	LC	•			
<i>Cisticola bulliens</i>	Bubbling Cisticola	LC			•	
<i>Cisticola bailunduensis</i>	Huambo Cisticola	LC		•		*
<i>Cisticola melanura</i>	Black-tailed Cisticola	LC			•	
<i>Sheppardia gabela</i>	Gabela Akalat	LC	•			
<i>Xenopsychus ansorgei</i>	Angola Cave-Chat	LC	•	•		2
<i>Dioptornis brunneus</i>	Angola Slaty Flycatcher	LC	•			
<i>Nectarinia bocagii</i>	Bocage's Sunbird	LC			•	
<i>Cinnyris ludovicensis</i>	Ludwig's Double-collared Sunbird	LC	•	•		3
<i>Ploceus temporalis</i>	Bocage's Weaver	LC			•	
<i>Euplectes aureus</i>	Golden-backed Bishop	LC			•	4
<i>Lagonosticta ansorgei</i>	Ansorge's Firefinch	LC			•	
<i>Coccygia bocagei</i>	Angolan Sweet Waxbill	LC			•	
<i>Estrilda thomensis</i>	Cinderella Waxbill	LC			•	
<i>Macronyx grimwoodi</i>	Grimwood's Longclaw	LC			•	
<i>Crithagra benguelensis</i>	Benguela Seedeater	LC			•	

IUCN categories, *LC* Least Concern, *NT* Near Threatened, *VU* Vulnerable, *EN* Endangered, *S* Forests of the Western Escarpment ('Scarp forests'), *M* Afromontane forests, *O* Other habitats, *N* Notes

1. Recent records from Cameroon are considered doubtful (Mills 2010)
2. Near-endemic as a marginal population was recently found in Namibia (Swanepoel 2013)
3. Isolated populations in Malawi and Tanzania sometimes treated as sub-species are better treated as distinct species (Bowie et al. 2016)
4. Population on São Tomé Island was very likely introduced by humans as cage birds (Jones and Tye 2006)

*indicates recent species splits proposed by HBW and BirdLife International (2017) following the criteria in Tobias et al. (2010). In these cases only phenotypic data (morphology and song) was used and it would be useful to measure the levels of genetic differentiation from sister taxa

total number of endemic bird species associated with these forests is small (Table 14.3), but many endemic subspecies are present (Mills et al. 2011a, b) and molecular studies are likely to support the treatment of several of these populations as distinct species. It is likely that because of their small size, the Afromontane forests of Angola were not included in the 'Afromontane archipelago' biome as defined by White (1978; cf. Fig. 1). Current research has uncovered a key role of these forests in the evolutionary history of the bird communities of the montane forests of Africa. Genetic data, together with the reconstruction of past climates and associated habitats, have shown that the small Angolan Afromontane forests were areas of high climatic stability throughout glacial cycles and constituted the link between the montane bird communities of East Africa and the Cameroon mountains (Vaz da Silva 2015). For species such as the African Hill Babbler *Sylvia [Pseudalcippe] abyssinica* and Bocage's Akalat *Sheppardia bocagei*, populations were isolated in the Angola mountains from very early on and are likely to constitute distinct species (Vaz da Silva 2015).

Apart from the Afromontane and Scarp forests, most other vegetation types and bird habitats are all part of much larger areas that extend into Angola from (i) the North: Guinea-Congolian forests; (ii) the East: miombo woodlands; and (iii) the South: Namib Desert. The avifauna of these biomes is endemic to the habitat type and thus not confined to Angola. An exception might be Bocage's Sunbird *Nectarinia bocagii* that is known only from Angola (Dean 2000; Mills 2013) and western DRC (Dowsett et al. 2008), Black-tailed Cisticola *Cisticola melanurus* (Irwin 1991; Mills et al. 2011a, b) and the White-headed Robin-Chat *Cossypha heinrichi* that show a similar distribution. There are no data on the relative abundance of these species in the DRC, but in Angola they are considered uncommon to locally common (Dean 2000; Mills and Melo 2013), and thus Angola is very likely to house most of the population, giving them near endemic status. On the other hand, the formerly endemic Angolan Cave Chat *Xenocopsychus ansorgei* is now treated as 'near-endemic' after the discovery of an isolated population in northern Namibia (Swanepoel 2013).

Commonness and Rarity

The relative abundance of birds in Angola is covered by Mills and Melo (2013). Most bird species that are widespread in Angola are, if not common, then frequently seen. About 170 species can be considered uncommon (134 species) or rare (35 species). The status of many of the uncommon and rare species is uncertain – some species are known from a few, or a single specimen, collected a long time ago and not subsequently recorded. Examples are the Congo Serpent Eagle *Dryotriorchis spectabilis*, collected in 1954 at Canzele, Cuanza-Norte, and another specimen collected at Mwaoka, Lunda-Norte, in 1964, and not seen since. The status of the Lemon-bellied Crombec *Sylvietta denti* of which a single specimen was collected at Dundo, Lunda-Norte, in 1958, and a second specimen sound-recorded at Lago

Carumbo (Mills and Dean 2013) is uncertain. Similarly, the status of the Long-tailed Hawk *Urotriorchis macrourus* is not known. A specimen was collected at Cacongo (Lândana) in Cabinda by L. Petit, probably in 1876, and not recorded since, despite an extensive collecting trip to Cabinda by the IICA in 1969 (Pinto 1972). Species that have restricted ranges with small populations in Angola, are generally not rare, and may be locally common within their particular habitat.

Anomalies in Bird Distribution Ranges and Recent Findings

A few species are known from isolated communities within certain areas, with the nearest conspecifics many kilometres away. These patterns could be real, or they could be the result of the geographical bias in surveys and collecting. Most collectors favoured the western half of Angola. With the exception of Lunda-Norte, and parts of Moxico, the coverage by collectors across the east-west gradient was poor (e.g., Fig. 3 in Monteiro et al. 2014). For a few species we can be certain that the gap in the distribution between western Angola and western Zambia is real, and is likely to be the result of relict mountain chains that no longer exist.

The recent exploration of places such as Lagoa Carumbo in Lunda-Norte has provided much new information on distributions thought to be disjunct (Mills and Dean 2013). Only 67 species had been collected in the Lagoa Carumbo area during the 1950s by Heinrich (1958a, b, c). Field surveys by MSLM in 2011 recorded 175 species, with 21 species that had been collected by Heinrich not seen. The data on the species seen at Lagoa Carumbo included new records for the area, extensions of ranges and two new records for Angola.

Some remarkable recent finds have been made. The presence of the White-collared Oliveback *Nesocharis ansorgei* in Angola was unknown and not even suggested until populations were found in 2011, 2012, and 2013 at Quibaxi and Quitexe, Cuanza-Norte, and at Uíge (Mills and Vaz Pinto 2015). Before this the nearest known populations were > 1500 km away in eastern DRC.

Ecotourism in Angola: Birding

Ecotourism is becoming a significant means of raising funds for the protection of sites of high biodiversity value. With recent changes in the entry requirements for visitors, improvements in road and hotel infrastructure, and its high biodiversity, Angola stands to attract a large number of visitors for ecotourism purposes. Most of the key bird watching sites are unprotected, thus making income from tourism even more important (Cáceres 2011). For visiting birders the endemic and near-endemic birds (Table 14.3) are a major drawcard, but the country also holds a variety of specials summarised in Mills (2018), including Finsch's Francolin *Scleroptila finschii*, Anchieta's Barbet *Stactolaema anchietae*, Angola Batis *Batis minulla*,

Yellow-throated Nicator *Nicator vireo*, Angola Lark *Mirafra angolensis*, Brazza's Martin *Phedina brazzae*, Black-and-rufous Swallow *Hirundo nigrorufa*, Sharp-tailed Starling *Lamprotornis acuticaudus*, White-headed Robin-Chat *Cossypha heinrichi*, Forest Scrub Robin *Erythropgyia leucosticta*, Oustalet's Sunbird *Cinnyris oustaleti*, Black-chinned Weaver *Ploceus nigrimentus*, Dusky Twinspot *Euschistospiza cinereovinacea* and Black-faced Canary *Crithagra capistrata*, all arguably seen more easily in Angola than any other country. Table 14.4 lists the key sites for visiting birders, with main habitats and most sought-after birds – some of which are depicted on Fig. 14.2. Most 'Namibian specials' are also easily found in Angola.

Where to from Here? Future Directions for Ornithological Research in Angola

As noted in the introduction, it is clear that there have been major advances in the knowledge of avian species diversity and distribution and in the relative abundance of species during the last 15 years. This information is crucial to identify potential conservation areas, although more local surveys of bird communities are needed to paint a complete picture. We can run algorithms on the species distribution and abundance data to identify precisely where conservation areas should be, and the inclusion of other parameters such as endemism and/or threat levels can be used to

Table 14.4 Key sites for birdwatching in Angola

Site name	Habitat	Key birds
Northern Escarpment	Congo forest	Braun's Bushshrike, Congo basin birds
Calandula Falls area	Gallery forest, miombo	White-headed Robin-Chat, Anchieta's Barbet, Bannerman's Sunbird
Quiçama NP	Gallery forest, thickets	Grey-striped Francolin, White-fronted Wattle-eye, Monteiro's Bushshrike, Gabela Helmetshrike, Bubbling Cisticola, Red-backed Mousebird
Cumbira Forest	Forest	Gabela Akalat, Gabela Bushshrike, Pulitzer's Longbill, Red-crested Turaco, Hartert's Camaroptera, Black-faced Canary, Forest Scrub Robin
Mount Moco	Montane forest, grassland, miombo	Swierstra's Francolin, Finsch's Francolin, Ludwig's Double-collared Sunbird, Bocage's Sunbird, Black-and-rufous Swallow, Dusky Twinspot, Angola Lark
Benguela area	Arid bushveld	Hartlaub's Francolin, White-tailed Shrike, Bare-cheeked Babbler
Tundavala	Montane forest, grassland, rocks	Angola Cave Chat, Swierstra's Francolin, Angola Sweet Waxbill, Angola Slaty Flycatcher, Oustalet's Sunbird, Ludwig's Double-collared Sunbird
Lubango-Namibe	Arid bushveld, desert	Cinderella Waxbill, Benguela Long-billed Lark, Rüppell's Korhaan



Fig. 14.2 Some special birds of Angola. Top to bottom, left to right: Red-crested Turaco, the endemic national bird of Angola. (Photo: Lars Petersson); Anchieta's Barbet, a sought-after species with a range extending to the DRC and Zambia but best seen in Angola. (Photo: Maans Booysen); Braun's Bushshrike, an endemic restricted to the forests of the northern escarpment. (Photo: Fiona Tweedie); Monteiro's Bushshrike, a difficult-to-see endemic associated primarily with the central escarpment. (Photo: Tasso Leventis); Gabela Helmetshrike, an endemic that occurs primarily at the base of the central escarpment, as in Quiçama NP. (Photo: Tasso Leventis); Bocage's Sunbird is only present in the highlands of Angola and the southwest of the DRC. (Photo: Alexandre Vaz)

prioritise conservation efforts. Detailed data on patterns of bird diversity and conservation threats have been obtained for the core habitats of the only Endemic Bird Area of Angola: the Afromontane forests at Mount Moco (Mills et al. 2011a, b) and at the Namba Mountains (Mills et al. 2013a, b); and the Angolan Scarp forests, in particular for the central scarp forests where most endemism is concentrated (Mills 2010), with special emphasis in Cumbira Forest (Cáceres et al. 2015, 2016, 2017).

So far, and understandably, almost all the research on the birds of Angola has been on species diversity and distribution patterns, and not processes. Avian diversity surveys – that would feed a permanently updated atlas for the breeding birds of Angola – should continue, as many areas remain poorly explored or not visited at all for decades. In parallel with such exploration efforts, research on ecological and evolutionary processes must be promoted, as this will provide the information that ultimately is essential for guiding conservation efforts.

Very few studies have been carried out on the biology of individual species, no long-term studies of breeding have been done, and the nests and eggs of many species have yet to be discovered (e.g., Mills and Vaz 2011). Seed dispersal and frugivory by birds in Angola is another field that needs investigation, particularly now where so much habitat is being destroyed for slash-and-burn cultivation and charcoal making. Birds can play a key role in the rehabilitation of damaged areas. Seeds regurgitated by birds often germinate below roost sites, and the seedlings can be collected and planted out. Rehabilitation initiatives are already underway, albeit at a small scale, on Mount Moco and Cumbira. The Mount Moco reforestation project has been running since 2010, with the community-run nursery holding over 1400 saplings grown from locally collected seeds, and with almost 950 trees planted back in the wild (MSLM, unpublished). The Cumbira project is still at its early steps, with the creation of a pilot-nursery (Aimy Cáceres & Ninda Baptista, unpublished).

Research on the evolutionary history of the endemic species and subspecies of Angola is likely to provide novel insights into bird diversification in Africa and on the uniqueness of the Angolan avifauna (see Endemism section above). The use of molecular tools will clarify the taxonomic status of species with small and isolated populations in Angola such as the Orange Ground Thrush *Geokichla gurneyi* restricted to Mount Namba or Margaret's Batis *Batis margaritae* present only on Mount Moco and Namba, and separated from its nearest conspecific in western Zambia by about 800 km. Moreover, the two subspecies occupy rather different habitats – in Angola Margaret's Batis is present in patches of Afromontane forest, whereas in Zambia the species is present in dissimilar evergreen *Cryptosepalum* forest. It is highly likely that the two forms constitute well-separated evolutionary lineages and could be considered different species. This situation, with one “subspecies” present in western Angola and the nearest other “subspecies” present 800–900 km to the east in Zambia or the Katanga area is repeated in many of the western Angolan avian taxa, and raises many questions about whether the isolated populations are two recently diverged forms of one species, or two species. Similarly, the identification of the complex of swamp-dwelling weavers along the eastern border of Angola, western Zambia and Katanga is still something of a mystery. The question

has been addressed by several authors (Louette and Benson 1982; Louette 1984; Dean 1996) but remains unsettled. Molecular tools may be required to clarify the situation.

The distinctive endemic subspecies of Horus Swift (*Apus horus fuscobrunneus*) is known from a single series of specimens taken on the coastal plain of Namibe and has not been recorded in Angola since the early 1970s. Likewise, the endemic subspecies of White-headed Barbet (*Lybius leucocephalus leucogaster*), which was fairly common around the southern escarpment, was only rediscovered in 2017, in Tundavala, after almost 40 years of being undetected (Baptista and Mills 2018). Both taxa have been proposed as endemic species, so finding extant populations in the field is a high priority.

Future ornithological research will only succeed and grow with greater local input. There is a great need to stimulate more interest within Angola for the study of birds, both by engaging students more directly and producing relevant educational materials for local students. To these ends, joint Portuguese-English language books have already been produced on *The Common Birds of Luanda* (Mills and Melo 2015) and *The Special Birds of Angola* (Mills 2018), to raise interest and awareness. A basic handbook on ornithology relevant to Angola and written in Portuguese would be a welcome addition. There is also a need for field courses to provide training to Angolan students, working together with Angolan universities. Most importantly, finding ways to encourage the interest of local students in field studies is greatly needed.

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