# Little-known African bird: Bocage's Sunbird *Nectarinia bocagii*—an Angolan near-endemic

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**O pouco conhecido beija-flor de Bocage *Nectarinia bocagii*: uma espécie quase endémica de Angola.** O beija-flor de Bocage *Nectarinia bocagii* é uma espécie pouco conhecida e praticamente endémica da cintura de matas de *Brachystegia* do planalto angolano. Com base em 42 especímenes angolanas que consegui localizar, a sua distribuição em Angola está mais ou menos restrita ao planalto ocidental entre os 1.420 e os 1.770 m de altitude. No entanto existem três registos de localidades afastadas desta faixa, a norte e a este, e a mais baixas altitudes (1.150–1.260 m), que sugerem que a sua distribuição possa ser muito mais ampla. A espécie não está bem representada nos guias de campo e outros livros; é preciso cuidado especial para a não confundir com a sub-espécie *gadowi* do beija-flor-bronzeado *N. kilimensis* com que co-ocorre. O beija-flor de Bocage apresenta um brilho azul-púrpura conspícuo sobre a sua cabeça e costas, distinto do brilho verde-bronzeado do beija-flor-bronzeado. Em certas condições de luz, ambas as espécies parecem pretas. O beija-flor de Bocage tem preferência por zonas abertas ao longo dos rios que atravessam matas de *Brachystegia* e alimenta-se de néctar e invertebrados. Tanto o beija-flor-bronzeado como o beija-flor-acobreado *Cinnyris cupreus* podem ocorrer no mesmo habitat dentro da área de distribuição do beija-flor de Bocage.

**Summary.** The little-known Bocage's Sunbird *Nectarinia bocagii* is near-endemic to the *Brachystegia* woodland belt of the Angolan plateau. Based on the 42 Angolan museum specimens I traced, its range in the country is more or less confined to the western highlands at altitudes between 1,420 m and 1,770 m. However, three records are from distant localities to the north and east of this, and from lower altitudes (1,150–1,260 m), hinting at a much wider distribution. The species is misleadingly illustrated in various field guides and books; care should be taken when separating it from the similar Bronzy Sunbird *N. kilimensis*. It is best distinguished from the sympatric *gadowi* subspecies of Bronzy Sunbird by the conspicuous purplish-blue sheen over its head and mantle, whereas Bronzy Sunbird has a bronzy-green sheen. Under certain light conditions both species can appear black. Bocage's Sunbird favours open areas along rivers within *Brachystegia* woodland and feeds on nectar and invertebrates. Both Bronzy Sunbird and Copper Sunbird *Cinnyris cupreus* may occur in the same habitat within its range.

The little-known Bocage's Sunbird *Nectarinia bocagii* (sometimes incorrectly spelled *N. bocagei*) is a *Brachystegia* woodland endemic (Benson & Irwin 1966) confined to Angola and a small area of south-western Democratic Republic of Congo (DRC) (Schouteden 1959, Dean 2000, Fry 2000). Few people have observed it in life and field guides do a poor job of illustrating and describing it. Here I summarise specimen information pertaining to Angola and review available literature, augmenting this with my own observations in order to update our knowledge of the species and elucidate the key field identification features. I also provide an annotated bibliography for the species that includes a listing of morphological measurements from primary / known sources alone.

## Angolan specimens in collections

I interrogated various online museum catalogues and databases including the Global Biodiversity Information Facility (GBIF; http://www.gbif.org/) and ORNIS (http://www.ornisnet.org/), where possible verifying information through direct correspondence with museum staff, contacted other museums directly, and personally visited the Lubango Bird Skin Collection (LBSC) to compile a list of available specimens of Bocage's Sunbird from Angola, based on Dean (2000) (see Appendix A for a list of museums checked). Martim Melo (pers. comm.) provided details of the specimen in the Instituto de Investigação Científica Tropical in Lisbon (IICT).

I traced a total of 42 Angolan specimens of Bocage's Sunbird (Table 1) of which 18 are listed by Dean (2000). In addition, there are also two

Table 1. Details of the 42 Angola museum specimens of Bocage's Sunbird *Nectarinia bocagii* located during this study, listed in chronological order of collection. The first specimen is listed as the holotype, and the following two form part of the same series. For locality details, see Table 2.

Tabela 1. Detalhes dos 42 espécimes museulógicos do beija-flor-de-Bocage *Nectarinia bocagii*, localizados durante este estudo, listados por ordem cronológica da colecção. O primeiro exemplar está listado como holótipo, e os dois seguintes formam parte da mesma série. Para detalhes da localização, ver Tabela 2.

AMNH = American Museum of Natural History, New York; BMNH = Natural History Museum, Tring; CMNH = Carnegie Museum of Natural History, Pittsburgh; IICT = Instituto de Investigação Científica Tropical, Lisbon; LACM = Los Angeles County Museum of Natural History, Los Angeles; LBSC = Lubango Bird Skin Collection; MCZ = Museum of Comparative Zoology, Harvard; NMZA = National Museum of Zambia, Livingstone; YPM = Yale University Peabody Museum, New Haven.

| Year | Month | Day | Locality | Museum | Specimen no. | Collector | Sex | Age |
|---|---|---|---|---|---|---|---|---|
| 1878 | 9–11 | | Caconda | BMNH | 1895.9.9.14* | Anchieta | M | Ad. |
| <1880 | | | Caconda | BMNH | 1895.5.1.2284 | Anchieta | M | Ad. |
| <1880 | | | Caconda | BMNH | 1895.9.9.5 | Anchieta | F | |
| 1904 | 9 | 16 | Losili River | AMNH | 690559 | Ansorge | M | |
| 1904 | 9 | 16 | Losili River | AMNH | 690560 | Ansorge | M | |
| 1904 | 11 | 9 | Cuquema | AMNH | 690562 | Ansorge | F | |
| 1904 | 12 | 8 | Cuquema | AMNH | 690561 | Ansorge | M | Juv. |
| 1904 | 12 | 18 | Cuima | AMNH | 690558 | Ansorge | M | |
| 1928 | 6 | 11 | Chipepe | MCZ | 165932 | Koester | M | Ad. |
| 1931 | 1 | 12 | Chitau | CMNH | 671 | Boulton & Boulton | | |
| 1931 | 1 | 24 | Chitau | AMNH | 268359 | Boulton & Boulton | M | |
| 1931 | 1 | 24 | Chitau | CMNH | 109118 | Boulton & Boulton | M | Ad. |
| 1931 | 1 | 25 | Chitau | CMNH | 109135 | Boulton & Boulton | M | Ad. |
| 1931 | 1 | 31 | Chitau | CMNH | 1135 | Boulton | F | Ad. |
| 1931 | 2 | 13 | Mount Moco | CMNH | 109296 | Boulton & Boulton | M | Ad. |
| 1931 | 2 | 14 | Mount Moco | CMNH | 109306 | Boulton & Boulton | M | Ad. |
| 1931 | 2 | 26 | Huambo | BMNH | 1931.12.21.118 | Lynes | F | Ad. |
| 1945 | 7 | 12 | Tchicala | LACM | 63055 | Mendes Costa | M | Ad. |
| 1945 | 7 | 12 | Tchicala | LACM | 63056 | Mendes Costa | M | Ad. |
| 1945 | 7 | 13 | Tchicala | LACM | 63057 | Mendes Costa | F | Ad. |
| 1945 | 7 | 25 | Londuimbali | LACM | 63054 | Mendes Costa | M | Ad. |
| 1957 | 8 | 13 | Tchicala | BMNH | 1957.35.552 | Williams | F | Juv. |
| 1957 | 8 | 13 | Tchicala | BMNH | 1957.35.553 | Williams | F | Ad. |
| 1957 | 8 | 13 | Tchicala | BMNH | 1957.35.554 | Williams | F | Juv. |
| 1957 | 8 | 14 | Tchicala | BMNH | 1957.35.555 | Williams | F | Juv. |
| 1957 | 8 | 25 | Londuimbali | BMNH | 1957.35.551 | Williams | M | Ad. |
| 1957 | 10 | 18 | Posto de Umpulo | IICT | CZ000006428 | Frade | M | Ad. |
| 1957 | 12 | 16 | Cambundi Catembo: 25 km NW of | YPM | 78809 | Heinrich | M | Ad. |
| 1958 | 1 | 18 | Cacolo: 40 km E of | YPM | 78808 | Heinrich | M | Ad. |
| 1960 | 7 | 26 | Tchicala | LACM | 63058 | Mendes Costa | F | Ad. |
| 1964 | 6 | 2 | Calpiongo | LBSC | 7630 | Loureiro | M | Ad. |
| 1964 | 6 | 22 | Mount Moco | LBSC | 8329 | Loureiro | M | Ad. |
| 1964 | 12 | 23 | Ninda | NMZA | 6022 | Hart | M | Ad. |
| 1967 | 10 | 8 | Uaba | LBSC | 20479 | Samahina | M | Ad. |
| 1968 | 10 | 21 | Gogué | LBSC | 25901 | Mumputu | F | Ad. |
| 1968 | 10 | 22 | Cativa | LBSC | 25950 | Ramos | M | Ad. |
| 1968 | 10 | 22 | Cativa | LBSC | 25941 | Ramos | M | Ad. |
| 1972 | 10 | 2 | Cachingues | LBSC | 36166 | Sousa | M | Ad. |
| 1972 | 10 | 6 | Cachingues | LBSC | 36283 | Sousa | M | Ad. |
| 1972 | 10 | 7 | Cachingues | LBSC | 36408 | Rosa Pinto | M | Ad. |
| 1972 | 10 | 24 | Cachingues | LBSC | 36697 | Felisberto | M | Ad. |
| 1972 | 11 | 14 | Andulo | LBSC | 37359 | Sousa | M | Ad. |

eggs at BMNH (E/1931.12.21.18–19) collected by H. Lynes & J. Vincent at Huambo town on 26 February 1931 (Cheke & Mann 2001, Dean & Milton 2007). The largest series of Angolan skins are 11 in the LBSC, nine at BMNH and six each at AMNH and CMNH (all museum acronyms are explained in Table 1). Carreira (1990) mentions a specimen at the Museu Zoológico da Universidade de Coimbra in Coimbra (MZUC), but photographs of this individual revealed it to be a male Bronzy Sunbird *N. kilimensis* (pers. obs.).

## Overview of collecting in Angola

The first specimen of Bocage's Sunbird, an adult male, was collected in the Caconda area by José de Anchieta during September–November 1877 (see Table 2 for locality details). He sent this specimen to the Lisbon museum where José Vincente

**Figure 1**. Side-by-side comparison of breeding-plumage males of Bocage's Sunbird *Nectarinia bocagii* and the Angolan endemic (*gadowi*) subspecies of Bronzy Sunbird *N. kilimensis*, housed in the Lubango Bird Skin Collection. Under certain light conditions both species can appear all black. It is the colour of the gloss—purplish-blue in Bocage's Sunbird and bronzy-green in Bronzy Sunbird—most visible on the upperparts, that best distinguishes the two species. In general Bronzy Sunbird has a longer tail, but moulting or fresh plumage birds may have a shorter tail, like Bocage's Sunbird (Michael Mills)

Comparação lado-a-lado da plumage nupcial de machos de beija-flor-de-Bocage *Nectarinia bocagii* e da subespécie endémica de Angola *gadowi* de beija-flor-bronzeado *N. kilimensis*. Estes exemplares fazem parte da Colecção de Aves do Lubango. Sob determinadas condições de luminosidade, ambas as espécies podem parecer completamente pretas. É a coloração do brilho reflexo—púrpura-azul no beija-flor-de-Bocage e bronze-esverdeado no beija-flor-bronzeado—principalmente visível na parte superior, o que melhor distingue estas duas espécies. Geralmente, o beija-flor-bronzeado tem uma cauda mais comprida, mas aves com plumagem jovem ou durante a muda podem apresentar uma cauda mais curta, como no beija-flor-de-Bocage (Michael Mills)

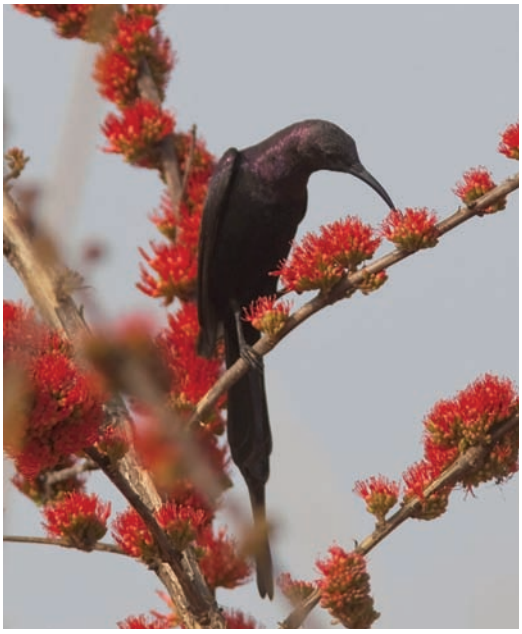

**Figure 2**. The first-known photograph of a live Bocage's Sunbird *Nectarinia bocagii*, illustrating the diagnostic, strong purplish gloss that is usually visible over the head and back, Huambo, Angola, July 2010 (A. Vaz)

A primeira fotografia conhecida de um beija-flor-de-Bocage *Nectarinia bocagii*, ilustrando o forte brilho púrpura que é diagnóstico e geralmente visível sobre a cabeça e no dorso, Huambo, Angola, julho 2010 (A. Vaz)

**Figure 3**. Male Bronzy Sunbird *Nectarinia kilimensis gadowi*, Mount Moco, Angola, July 2010; the bronzy-green gloss on the upperparts is clearly visible, but note that this individual has a relatively short tail, as is typical for Bocage's Sunbird *N. bocagii*. (U. Franke)

Macho de beija-flor-bronzeado *Nectarinia kilimensis gadowi*, Morro Moco, Angola, julho 2010; o brilho bronze-esverdeado na parte superior é claramente visível, mas é de notar que este indivíduo tem uma cauda relativamente curta, o que é típico do beija-flor-de-Bocage *N. bocagii*. (U. Franke)

Barboza du Bocage (1878a) identified it as Tacazze Sunbird *N. tacazze*. However, Barboza du Bocage subsequently sent it to George Ernest Shelley at the British Museum for critical examination, and in his monograph of sunbirds Shelley (1879) described a new species '*Nectarinia bocagii* Bocage's Sunbird' based on this specimen, named in honour of Barboza du Bocage, the man considered the father of Angolan ornithology (Barboza du Bocage 1878b, Beolens & Watkins 2003). At the time of its description the type specimen was deposited in the 'Lisbon Museum' (Shelley 1879).

By 1880 Anchieta had collected and sent to Lisbon five specimens from Caconda, one of which was a female (Barboza du Bocage 1880). Barboza du Bocage at this time appeared to be unconvinced by Shelley's (1879) conclusion that it was a new species, stating that he considered it to be identical to Tacazze Sunbird. Later, probably in 1895 (according to the specimen registration numbers), the type specimen along with another male and female specimen were presented to Shelley by Barboza du Bocage; these specimens are now in the BMNH (British Museum of Natural History 2001) while the other specimens in Lisbon (Museu Bocage) were presumably destroyed in the fire in March 1978 (Roselaar 2003). Interestingly, the female plumage remained undescribed for almost 80 years!

Almost 25 years after Anchieta's original series, W. J. Ansorge collected five specimens in the Huambo / Bié highlands in 1904 (Table 1). The next substantial series was obtained by W. R. & J. Boulton, who collected seven specimens during 1931, also from the Huambo / Bié highlands. Thereafter, in 1945 A. Mendes Costa added four specimens and in 1957 J. G. Williams added five to the growing tally, all from the Huambo Highlands. The female was finally described in 1959 (Schouteden 1959), based on the first specimens from DRC (Wille 1964). Finally, between 1964 and 1972, various staff members of the Instituto de Investigação Cientifica de Angola collected 11 specimens held at the LBSC. Among the eight other specimens, however, are the most interesting records, geographically. G. Heinrich and R. C. Hart collected the species well north

Table 2. List of known localities from which Bocage's Sunbird *Nectarinia bocagii* has been collected in Angola, ordered from north to south. Almost all are within a relatively small area in the highlands of Huambo, Huíla, Kwanza Sul and Bié. Cambudi Catembo, Cacolo and Ninda, however, lie a long way outside of this area, hinting at a much wider distribution for the species. Details of Losili River could not be traced, but based on the known locations of Ansorge either side of the relevant date (W. R. J. Dean pers. comm.) this locality probably lies within the range of the other specimens. It may refer to the Luvili River that is situated in Huambo province, with a settlement of the same name at 12°07'23.5"S 15°26'22.6"E.

Tabela 2. Lista das localidades conhecidas onde o beija-flor-de-Bocage *Nectarinia bocagii* foi colhido em Angola, ordenados de norte para sul. Quase todas as localidades vêm de uma pequena área no planalto do Huambo, Huíla, Kwanza-Sul e Bié. Contudo, Cambundi Catembo, Cacolo e Ninda, ficam a uma longa distância desta área, sugerindo uma distribuição muito mais vasta para a espécie. Registos do rio Losili não puderam ser encontrados, mas baseando-se em locais de colecta conhecidos de Ansorge à volta da data em questão (W.R.J. Dean com. pess.), esta localidade provavelmente corresponde à região dos outros espécimes. Poderá referir-se ao rio Luvili que se situa na província do Huambo, com uma povoação com o mesmo nas coordenadas 12°07'23.5"S, 15°26'22.6"E.

| Locality name and province | Alternative name | Latitude (S) | Longitude (E) | Altitude |
|---|---|---|---|---|
| Cambundi Catembo: 25 km NW, Malanje | Nova Gaia, Songo | 10°00'31.6" | 17°20'14.6" | 1,250 m |
| Cacolo: 40 km E, Lunda Sul | | 10°01'29.9" | 19°35'30.0" | 1,259 m |
| Chitau, Bié | | 11°25'35.2" | 17°08'38.8" | 1,486 m |
| Andulo, Bié | Vila Macedo de Cavaleiros | 11°29'07.7" | 16°41'35.5" | 1,671 m |
| Chipepe, Kwanza Sul | Quipepe | 11°59'47.4" | 14°56'29.0" | 1,722 m |
| Londuimbali, Huambo | Luimbale | 12°14'36.3" | 15°18'48.6" | 1,577 m |
| Calpiongo, Humabo | | 12°22'40.0" | 15°11'33.5" | 1,748 m |
| Mount Moco, Huambo | Fazenda do Cuito | 12°24'49.1" | 15°15'22.1" | 1,672 m |
| Cuquema, Bié | Pedreira/Kukema River | 12°28'54.1" | 16°48'20.6" | 1,741 m |
| Tchicala, Huambo | Vila Flor/ Ecunha | 12°40'56.3" | 15°30'15.8" | 1,773 m |
| Posto de Umpulo, Bié | | 12°42'14.4" | 17°41'23.0" | 1,419 m |
| Huambo, Huambo | Nova Lisboa | 12°46'36.2" | 15°44'1.7" | 1,720 m |
| Cachingues, Bié | | 13°04'23.0" | 16°45'0.6" | 1,711 m |
| Cuima, Huambo | | 13°14'38.9" | 15°38'20.6" | 1,684 m |
| Caconda, Huíla | | 13°44'02.8" | 15°03'37.3" | 1,683 m |
| Gogué, Huíla | Chipindo | 13°50'00.0" | 15°50'00.0" | 1,628 m |
| Uaba, Huíla | Laba | 13°51'05.4" | 14°54'28.3" | 1,529 m |
| Cativa, Huíla | | 14°12'47.9" | 16°10'17.4" | 1,575 m |
| Ninda, Moxico | | 14°48'21.2" | 21°23'03.1" | 1,150 m |
| Losili River, Benguela | | - | - | - |

and east, respectively, of its formerly known range in Angola.

## Distribution and altitudinal range

Bocage's Sunbird is confined to Angola and south-western DRC (Fry 2000, Cheke & Mann 2008). Traylor (1963) lists its distribution in Angola as the western highlands, from northern Huíla to Huambo and Bié provinces, based on earlier specimens. Besides the two specimens collected by Heinrich and one by Hart, all of the other 39 Angola specimens come from a relatively small area within the highlands of Huambo, Bié, southern Kwanza Sul and northern Huíla, which must for now be considered the species' core range. These records span the altitudinal range *c.*1,420–1,770 m, whereas all three specimens collected outside of the core range are from 1,150–1,260 m, and those from the DRC come from as low as 600 m (Wille 1964).

It should be noted that Shelley (1900) and Fry (2000) also list Benguela as within the species' range, but the provincial boundaries have changed and while the type locality, Caconda, was originally in Benguela, it is now in Huíla (Law 1999). Dean (2000) lists Hanha in Benguela as a locality, but this is based on the misidentified specimen in the MZUC. Fry (2000) and Cheke & Mann (2008) include north-east Lunda Norte within its range, apparently based on Hall & Moreau (1970), but I cannot see where this is mentioned (certainly the distribution map does not show this) and am unable to locate any records from Lunda Norte.

Currently it is unclear whether the species actually possesses a rather patchy distribution across the Angolan plateau as suggested by the three outlying records and those from the DRC, or whether these latter records indicate a wider, continuous range throughout the plateau and into adjacent south-western DRC. The latter possibility appears more likely, given the paucity of ornithological work throughout most of Angola (Dean 2000).

## Field identification of adult males

There is little information available on the field identification of Bocage's Sunbird, and some descriptive details and illustrations are positively misleading. If relied upon, this information would and has led to the identification of the local *gadowi* subspecies of Bronzy Sunbird as Bocage's Sunbird. The only field guides that include Bocage's Sunbird are van Perlo (1999) and Sinclair & Ryan (2003, 2010). Information is also provided by Mackworth-Praed & Grant (1963), Fry (2000), Cheke *et al.* (2001) and Cheke & Mann (2008). Here I restrict discussion to the full adult male plumage.

Perhaps the single greatest misleading statement repeated by most sources is that Bocage's Sunbird appears all black at a distance and that no other long-tailed sunbird can appear all black within its range (Fry 2000, Cheke *et al.* 2001). In my experience Bronzy Sunbird is equally likely to appear all black. Fig. 1 illustrates that, under the same light conditions and alongside Bronzy Sunbird, Bocage's Sunbird is no blacker than Bronzy Sunbird. This feature is therefore not reliable for field identification.

The next feature often treated incorrectly is the colour of the gloss. Shelley's (1879) original description is probably the origin of this confusion, and deserves repetition here:

'Black, with the feathers on the upper half of the head, ear-coverts, back and sides of the neck, and the least series of wing-coverts broadly edged with metallic lilac, slightly glossed with blue, green, and copper; feathers on the back, scapulars, and upper tail-coverts broadly edged with metallic bluish-green, glossed with lilac; median series of wing-coverts narrowly edged with the same metallic colours of the back; remainder of wings brownish black, with a green gloss; the tail has a greenish gloss, and the feathers are narrowly and indistinctly edged with violet-bronze; chin black; entire throat metallic bluish green, with a faint lilac gloss.'

I am not sure how Shelley reached these conclusions. I assume that in close-up examination under strong light these colours were visible in the plumage. Viewing the bird in the field, however, suggests nothing but a strong purplish-blue gloss, especially over the breast, head, mantle and back, with no green or bronze visible (Figs. 1–2). This is in contrast to the *gadowi* subspecies of Bronzy Sunbird which has a green-and-bronze gloss (Figs. 1 & 3).

Both field guides to treat the species illustrate it incorrectly. Sinclair & Ryan (2003, 2010) depict the species as having, if anything, a greenish tinge around the head, although they mention that it has a 'bronze (not greenish) metallic iridescence'. Van Perlo (1999) describes it as 'overall black with little reflection' and the illustration appears to show a blue-green iridescence.

Mackworth-Praed & Grant (1963) illustrate the colour of the gloss much more accurately, although the head is rather more bronze-coloured than in reality; the description of the colour as 'dull metallic blue-black with a purple wash' is accurate, although the word 'dull' should be under-emphasised. Fry (2000) gives it as 'mainly black, with inconspicuous dull bronzy violet reflections on head, breast, upperparts and wing-shoulders', once again with too much of a focus on 'dull' and 'inconspicuous', and the inclusion of 'bronzy'. Cheke *et al.* (2001) illustrate the species most accurately with a strong purplish sheen and describe it as 'metallic dark violet', whereas Cheke & Mann (2008) add 'reflecting blue-green, above', again referring to colours observed in the hand (R. A. Cheke *in litt.* 2012), although the illustration is correct and only shows a purplish sheen.

Other identification features mentioned, when compared to Bronzy Sunbird, are a shorter bill, shorter tail streamers and smaller size. While there may be measurable differences in the hand (I have not tested for these), I would advise against the use of any of these features in the field, as the differences are small (see Fig. 1). Furthermore, tail length can vary with plumage condition / wear; for example, Fig. 3 shows a Bronzy Sunbird with a relatively short tail. It should also be noted that Copper Sunbird *Cinnyris cupreus* occurs syntopically in Bocage's Sunbird's range, and can

also appear very black, although it is not the only sympatric dark sunbird as stated by Cheke *et al.* (2001).

In my experience the only reliable field character is the presence of a strong purple gloss, especially across the mantle, head, breast and back. With more experience it may be possible to distinguish Bocage's Sunbird and Bronzy Sunbird on size and bill length alone.

Another feature worth discussing is the observation that birds in the DRC have an eclipse plumage, whereas this has not been observed in Angola (Fry 2000). However, this is based on Wille's (1964) interpretation of his observation that outside the breeding season the strong metallic purple sheen on the back and underparts of males fades. I believe that this observation reflects feather wear, rather than birds moulting into an eclipse plumage; there appears to be no documented eclipse plumage for the species.

## Habitat

Not surprisingly, little is known about the habitat and habits of Bocage's Sunbird. Ripley & Heinrich (1966) collected two males from 'wide strips of open, flat, marshy meadows along brooks, interrupting the extensive and continuous brachystegia forests', where the birds were visiting swamp flowers. Hall (1960) noted the species in miombo (*Brachystegia*) woodland, but it is unclear whether they were inside the woodland or in open areas, such as dambos, in miombo woodland. Hart collected one at Ninda in an open, cultivated area surrounded by dense Zambezi teak (*Baikea plurijuga*) woodland (Benson & Irwin 1967). Habitat in DRC is similar; Wille (1964) observed the species in swampy grassland adjacent to the Kwilu River. All my observations of *c.*10 different males are from within the known range in the western Angolan highlands, and all were in open, grassy or swampy habitats along rivers in miombo, but never inside the woodland itself. I have also observed several birds around a village (adjacent to a grassland-lined river) where they flew among the huts.

There are several sources that claim the habitat in Angola includes montane forest and that, based on this, the habitat in the DRC is quite different from that in Angola (Wille 1964, Lippens & Wille 1976, Fry 2000, Cheke *et al.* 2001, Cheke & Mann 2008). This appears to be based on Wille's (1964) unsupported assumption that the first specimens from Caconda had been collected in dense vegetation with large trees (taken to be montane forest). In fact, the species has not been documented from montane forest.

## Diet, habits and breeding

Bocage's Sunbird's diet includes both nectar and invertebrates. Hall (1960) noted that it fed on *Erythrina* and red *Loranthus* flowers. I have seen it feeding on banana flowers, although I have most frequently observed the species feeding on low shrubs with orange or red flowers (see Fig. 2). In DRC, Wille (1964) observed it foraging on the purple flowers of *Sabicea* (previously *Stipularia*) *africana*. The gut contents of three specimens at LACM are catalogued as follows: 'spiders, diptera' (flies); 'spiders, diptera'; and 'minute beetles, diptera' (K. L. Garrett *in litt.* 2012).

The song of the species is still unknown; the female's call is described as a loud *wiep-wiep* and fighting males utter a rapid *kik-kik-kilo* and drawn-out *tsiek-tsiek* (Wille 1964). They have been observed to congregate around productive food sources (Wille 1964, Cheke *et al.* 2001).

The only breeding records are one from Huambo town in February 1931 (Dean & Milton 2007) and two nests with eggs in DRC in January and October (see Wille 1964 for details).

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Barboza du Bocage, J. V. 1878b. Aves das possessões portuguezas d'Africa occidental. Decima setma lista. *J. Sci. Math. Phys. Nat.* 24: 1–27. [Refers to Shelley's (1879) type description.]

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Longmans [Brief species account and a colour illustration.]

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Appendix. Alphabetical list of museum collections interrogated for Angolan specimens of Bocage's Sunbird *Nectarinia bocagii*, either via direct correspondence or online search facilities.

Apêndice. Lista ordenada alfabeticamente das colecções museulógicas consultadas para os espécimes em Angola de beija-flor-de-Bocage *Nectarinia bocagii*, quer através de correspondência directa quer por busca *online*.

Academy of Natural Sciences, Philadelphia

American Museum of Natural History, New York, USA (AMNH)

Carnegie Museum of Natural History, Pittsburgh, USA (CMNH)

Cornell University Museum of Vertebrates, Ithaca, USA

Field Museum of Natural History, Chicago, USA

Los Angeles County Museum of Natural History, Los Angeles, USA (LACM)

Museu Nacional de Historia Natural, Lisbon, Portugal (MNHN; previously the Centro de Zoológia, Lisbon)

Museum of Comparative Zoology, Harvard, USA (MCZ)

Museum für Naturkunde, Berlin, Germany

Museum of Vertebrate Zoology, Berkeley, USA

Natural History Museum, Biodiversity Institute of the University of Kansas, Kansas City, USA

National Museum of Zambia, Livingstone, Zambia (NMZA)

National Museum of Natural History, Smithsonian Institute, Washington DC, USA

Natural History Museum, Tring, UK (BMNH)

University Museum of Zoology, Cambridge, USA

Yale University Peabody Museum, New Haven, USA (YPM)

Zoology Museum, Hamburg, Germany