

BODY MASSES AND MEASUREMENTS OF BIRDS FROM SOUTHERN ATLANTIC FOREST, BRAZIL¹

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ABSTRACT. Five hundred and eight body masses of 74 forest birds, and measurements of wing, tail, tarsus and beak of 14 poorly known species mist-netted at two sites in the Atlantic Forest of eastern Paraná State, southern Brazil, are presented.

KEY WORDS. Birds, body masses, measurements, Atlantic Forest

The Atlantic Forest is one of the world hotspots of biodiversity (MYERS 1988) with high levels of endemism (HAFFER 1974; CRACRAFT 1985; SCOTT & BROOKE 1985), but also with high levels of deforestation (OEDEKOVEN 1980; REDFORD 1989). In spite of the importance of this ecosystem, taxonomic and basic biological data (see *e.g.* DAVIS 1946; SCOTT & BROOKE 1985; TEIXEIRA *et al.* 1986, 1993; WILLIS 1979, 1989) are relatively scarce for most birds of the region. Examples of taxonomic revisions of birds present on the sampled region include the reports by SILVA & STOTZ (1992) for the now polytypic *Heliobletus contaminatus* Berlepsch, 1885, by RAPOSO & TEIXEIRA (1992) and WILLIS (1992) for *Chamaeza meruloides* Vigors, 1825, misidentified as *C. campanisoma* (Lichtenstein, 1818), and by WILLIS & ONIKI (1992) for *Phylloscartes kronei* Willis & Oniki, 1992, a new species misidentified as *P. ventralis* (Temminck, 1824). Other example of the little knowledge about Atlantic Forest birds is the recent discovery of *Stymphalornis acutirostris* Bornschein, Reinert & Teixeira, 1995, a new genus and species of Formicariidae from the Paraná coast (BORNSCHEIN *et al.* 1995). Previous studies that reported body masses of birds that occur in the Atlantic Forest region include BELTON (1984), TEIXEIRA *et al.* (1986, 1987, 1988, 1989, 1993), STORER (1989), and DUNNING (1992), which compiled body masses of birds of the world.

This paper intends to improve the knowledge about body masses of birds from southern Atlantic Forest in Paraná State, and provide measurements of some poorly known species, mostly endemic to this region.

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MATERIAL AND METHODS

Birds were captured with mist-nets in July-August 1991, March 1992, February 1993 and July-August 1995, at two sites in Paraná State: Mananciais da Serra (25°30'S, 48°57'W; *c.* 1.050-1.150m a.s.l.), municipality of Piraquara (all dates), and at a forest reserve Reflorestadora Banestado (25°38'S, 48°30'W; *c.* 8m a.s.l.), municipality of Paranaguá (in July 1991 and August 1995). In Mananciais da Serra it was sampled patches of primary and secondary dense montane forest, and in Reflorestadora Banestado a palm-heart (*Euterpe edulis*, Arecaceae) managed forest, classified respectively as "Floresta Ombrófila Densa Montana" and "Floresta Ombrófila Densa das Terras Baixas" (*sensu* VELOSO *et al.* 1991).

Body masses were taken from live mist-netted birds with 30, 50, and 100g Pesola spring scales, and recorded to the nearest 0.5g. Birds were captured mostly in the morning (6:00-14:00). Sample sizes for each particular mass value are given in parenthesis. For samples larger than 10 was given mean more or less standard deviation, range and sample in parenthesis. Sex identification (M = male, MJ = juvenile male, F = female, I = indeterminate, IJ = indeterminate juvenile) was based on plumage characteristics. Body measurements were taken with a metal Caliper to the nearest 0.1mm by only one of the authors. It was taken the chord (non-flattened wing), the tail (measured from the uropygial gland to the tip of the tail), standard tarsus-metatarsus length and nostril (anterior end of the nostril to the tip of the beak) measurements. Taxonomy of species follows SIBLEY & MONROE (1990).

Table I. Measurements in millimeters of four body parts of some poorly known birds, mostly endemic to Atlantic Forest.

Species	Measurements ¹ (mean ± 1 standard deviation, range) ²			
	Wing	Tail	Tarsus	Beak
<i>Platyrinchus leucoryphus</i> (n = 1)	69.9	48.0	15.0	8.6
<i>Carpornis cucullatus</i> (n = 4)	112.3 ± 2.9 (109.6 - 113.3)	108.1 ± 7.7 (102.1 - 118.7)	24.2 ± 0.6 (23.9 - 25.1)	9.2 ± 0.7 (8.6 - 10.1)
<i>Mymothyrula gularis</i> (n = 1)	49.7	32.0	22.3	7.6
<i>Drymophila malura</i> (n = 4)	54.2 ± 1.1 (53.2 - 55.6)	83.1 ± 2.0 (80.5 - 84.8)	23.4 ± 0.3 (23.1 - 23.7)	8.0 ± 0.3 (7.7 - 8.3)
<i>Syndactyla rufosuperciliata</i> (n = 9)	70.5 ± 2.0 (67.5 - 72.9)	82.7 ± 4.2 (76.0 - 90.0)	23.8 ± 0.7 (22.6 - 24.9)	12.4 ± 0.7 (11.5 - 13.9)
<i>Philydor amaurotis</i> (n = 24) ³	70.1 ± 3.4 (65.6 - 77.6)	76.5 ± 4.0 (65.7 - 82.6)	20.2 ± 0.6 (19.1 - 21.1)	10.6 ± 0.4 (9.8 - 11.5)
<i>Sclerurus scansor</i> (n = 1)	84.1	74.0	24.8	17.2
<i>Heliobletus contaminatus</i> (n = 2)	60.9, 63.0	54.9, 56.5	18.5, 19.4	9.3, 9.4
<i>Campylorhamphus falcularis</i> (n = 2)	96.8, 104.4	107.2, 108.9	22.9, 23.3	64.6, 70.6
<i>Grallaria varia</i> (n = 1)	125.3	57.2	61.8	18.8
<i>Thraupis cyanoptera</i> (n = 1)	94.5	78.4	21.9	10.3
<i>Tangara desmaresti</i> (n = 3)	67.9 ± 2.3 (66.2 - 70.6)	63.2 ± 1.7 (62.0 - 65.1)	20.1 ± 0.6 (19.6 - 20.8)	7.2 ± 0.1 (7.2 - 7.3)
<i>Haplospiza unicolor</i> (n = 11)	60.9 ± 1.7 (58.1 - 62.9)	55.8 ± 1.8 (54.1 - 21.0)	19.5 ± 0.8 (18.5 - 21.0)	8.0 ± 0.3 (7.6 - 8.3)
<i>Amaurospiza moesta</i> (n = 3)	59.6 ± 2.0 (58.0 - 61.8)	61.7 ± 0.2 (61.5 - 61.9)	20.2 ± 0.1 (20.1 - 20.2)	7.1 ± 0.4 (6.8 - 7.6)

1) Measurements as explained in the text; 2) For samples of one or two was given exact values for each individual; 3) Sample size of 23 for tail.

RESULTS

Listed below are 508 body masses of 74 forest birds, and in the table I the measurements of wing, tail, tarsus and beak of 14 poorly known species.

- Picumnus temminckii* Lafresnaye, 1845: M 10.5; F 11.5
Veniliornis spilogaster (Wagler, 1827): M 40.0; F 40.5
Trogon rufus (Gmelin, 1788): F 62.0
Phaethornis eurynome (Lesson, 1832): I 5.2±0.5 (N = 15)
Phaethornis squalidus (Temminck, 1822): I 3.0, 3.5 (2)
Ramphodon naevius (Dumont, 1818): M 9.0; F 6.0, 6.5; I 7.0
Thalaurania glaucopsis (Gmelin, 1788): M 5.0 (2), 5.5 (4); F 4.0 (2), 4.5 (2); I 4.0 (1), 4.5 (2), 5.0 (3)
Amazilia versicolor (Vieillot, 1818): F 4.5
Clytolaema rubricauda (Boddaert, 1783): M 8.0, 8.5, 9.0, 9.5, 10.0; F 6.5 (2), 7.0 (2), 7.5 (4); I 6.5, 7.0, 7.5
Geotrygon montana (Linnaeus, 1758): IJ 88.5
Mionectes rufiventris Cabanis, 1846: I 13.0 (2), 14.0, 14.5, 15.5
Leptopogon amaurocephalus Tschudi, 1846: I 12.0, 12.5 (2)
Hemitriccus obsoletus (Miranda Ribeiro, 1906): I 11.6±1.0 (N = 24)
Todirostrum plumbeiceps Lafresnaye, 1846: I 5.5 (2), 6.0 (2)
Phylloscartes difficilis (Ihering & Ihering, 1907): I 6.5, 7.0 (2)
Phylloscartes ventralis: I 7.5, 8.0, 8.5
Tolmomyias sulphurescens (Spix, 1825): I 17.0, 17.5 (3), 18.0
Platyrinchus mystaceus Vieillot, 1818: M 9.4±0.9 (N = 12); F 7.5 (3), 8.5, 10.0; I 9.5
Platyrinchus leucoryphus Wied, 1831: I 17.0
Onychorhynchus coronatus (Müller, 1776): I 23.5
Myiobius barbatus (Gmelin, 1789): I 11.0, 12.0 (2), 12.4
Lathrotriccus euleri (Cabanis, 1868): I 10.0, 10.5, 11.0 (2), 12.0 (3), 13.0
Attila phoenicurus Pelzeln, 1868: I 32.3±1.9 (N = 11)
Attila rufus (Vieillot, 1819): I 38.0, 42.0
Schiffornis virescens (Lafresnaye, 1838): I 23.0, 24.0, 25.0, 26.0 (4), 26.5, 27.0; M 26.0
Carpornis cucullatus (Swainson, 1821): M 72.0, 74.0 (2), 75.0; F 66.5; I 69.0
Chiroxiphia caudata (Shaw & Nodder, 1793): M 26.0 (6), 28.0 (2), 29.5; MJ 24.5; F 23.5 (2), 24.0, 25.5, 37.0; I 23.0, 23.5(2), 25.0, 25.5, 27.0, 28.5, 33.0
Thamnophilus caerulescens Vieillot, 1816: M 23.5; F 21.0 (2)
Dysithamnus mentalis (Temminck, 1823): F 11.0, 12.0; M 11.5, 12.0 (2); I 12.5
Myrmotherula gularis (Spix, 1825): M 11.0 (4), 13.0; F 11.5
Myrmotherula unicolor Ménériès, 1835: F 11.5
Drymophila malura (Temminck, 1825): M 12.0, 12.5, 13.0 (2), 13.5 (2), 16.5; MJ 12.5; F 11.5, 12.5; I 11.5
Pyriglena leucoptera (Vieillot, 1818): F 26.0
Synallaxis ruficapilla Vieillot, 1819: I 13.8±0.7 (N = 18)
Clibanornis dendrocolaptoides (Pelzeln, 1859): I 42.0

- Lochmias nematura* (Lichtenstein, 1823): I 22.0, 23.0
Syndactyla rufosuperciliata (Lafresnaye, 1832): I 25.6±1.4 (N = 12)
Philydor amaurotis (Temminck, 1823): I 19.2±1.2 (N = 29)
Philydor rufus (Vieillot, 1818): I 22.0 (2), 23.0 (2), 24.0
Automolus leucophthalmus (Wied, 1821): I 33.0, 36.5, 38.0
Sclerurus scansor (Ménétrières, 1835): I 39.0, 41.0
Heliobletus contaminatus: I 12.5, 13.0, 14.0 (2), 15.5
Xenops minutus (Sparrman, 1788): I 8.5 (3)
Dendrocincla fuliginosa (Vieillot, 1818): I 38.5, 41.0, 41.5
Sittasomus griseicapillus (Vieillot, 1818): I 12.4±0.8 (N = 13)
Dendrocolaptes platyrostris Spix, 1825: I 56.0, 57.5, 58.5, 60.0
Lepidocolaptes fuscus (Vieillot, 1818): I 19.4±1.2 (N = 16)
Campylorhamphus falcularius (Vieillot, 1822): I 37.0, 40.5, 41.5
Chamaeza sp. cf. *C. campanisoma*: I 84.5, 97.0
Chamaeza ruficauda (Cabanis & Heine, 1859): I 63.5, 76.0
Grallaria varia (Boddaert, 1783): I 134.0
Conopophaga lineata (Wied, 1831): M 21.1±1.6 (N = 11); F 20.5; IJ 20.0 (2); I 19.0, 21.0, 22.0, 23.0 (2)
Cyclarhis gujanensis (Gmelin, 1789): I 29.0, 30.0, 31.0, 31.5; IJ 27.5
Hylophilus poicilotis Temminck, 1822: I 10.0 (2), 12.0
Platycichla flavipes (Vieillot, 1818): M 56.0 (2), 67.0, 77.0; MJ 53.5; I 50.0, 60.0, 61.5
Turdus rufiventris Vieillot, 1818: I 70.0, 73.0, 73.5, 74.0, 80.0
Turdus amaurochalinus Cabanis, 1851: I 59.0
Turdus albicollis Vieillot, 1818: I 68.0±6.3 (N = 23)
Basileuterus culicivorus (Lichtenstein, 1830): I 9.7±0.9 (N = 14)
Basileuterus leucoblepharus (Vieillot, 1817): I 15.1±0.9 (N = 26)
Pyrrhocomma ruficeps (Strickland, 1844): M 16.0, 17.0
Tachyphonus coronatus (Vieillot, 1822): M 29.5; F 20.5, 26.0, 26.5
Trichothraupis melanops (Vieillot, 1818): M 24.0; F 23.5, 24.0 (2), 24.5, 25.0, 25.5; I 25.0
Habia rubica (Vieillot, 1817): I 35.0
Thraupis sayaca (Linnaeus, 1766): I 40.5
Thraupis cyanoptera (Vieillot, 1817): I 40.0
Stephanophorus diadematus (Temminck, 1823): I 28.5, 30.5, 31.0, 32.0 (2), 34.0
Euphonia pectoralis (Latham, 1801): M 15.0, 15.5
Tangara desmaresti (Vieillot, 1819): I 19.5, 21.5 (2)
Haplospiza unicolor Cabanis, 1851: M 14.0, 15.0, 15.5, 16.0 (2), 16.5, 17.0, 17.5; F 14.7±1.4 (N = 10); I 11.0, 14.5 (2), 15.5 (2), 17.0
Poospiza lateralis (Nordmann, 1835): I 19.5
Amaurospiza moesta (Hartlaub, 1853): MJ 12.5; M 14.5; F 13.0; I 13.5
Saltator similis Lafresnaye & d'Orbigny, 1837: I 49.0
Cacicus chrysopterus (Vigors, 1825): I 38.0

DISCUSSION

Several Atlantic Forest endemic birds are poorly known either alive or at museum collections. Body masses and measurements provided here represent, thus, one of the few and first reports for these species.

Some species had highly variable body masses (*Platycichla flavipes*: 50 to 77g; *Chiroxiphia caudata* females 23.5 to 37.0g). An analysis of the body masses of the best sampled Atlantic Forest endemic birds shows that males and females had similar values for *Haplospiza unicolor*, whereas females were lighter in some hummingbirds (e.g. *Thalurania glaucopis* and *Clytolaema rubricauda*) and in some passeriforms, such as *Carpornis cucullatus*, *Chiroxiphia caudata* and *Drymophila malura*.

Some of the sampled Furnariidae which occur syntopically in southern Atlantic Forest have beak (see Tab. I) and body masses differences [*Syndactyla rufosuperciliata* (\bar{x} = 12.4mm and 25.6g), *Philydor amaurotis* (\bar{x} = 10.6mm and 19.2g) and *Heliobletus contaminatus* (\bar{x} = 9.3mm and 13.8g)], which may reflect an avoidance of diet overlap. Other closely related species (e.g. *Myrmotherula gularis* and *M. unicolor*; *Thraupis sayaca* and *T. cyanoptera*), however, have apparently similar body masses.

These examples are only illustrative of the potential importance of studies of body masses and measurements of birds.

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