

# Some temperatures of birds of Belém, Brazil

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## ABSTRACT

Cloacal temperatures are listed for Amazonian birds of Belém, Pará. Eight hundred and two individuals representing 85 species and 23 families were studied. As in birds of temperate zones, large and small birds show low cloacal temperatures and medium-sized birds show high cloacal temperatures.

## INTRODUCTION

Wetmore (1921), King and Farner (1961) and McNab (1966) list temperatures of birds from temperate zones. From tropical zones, little data has been available. Only a few hummingbirds (Lasiewski, 1964; Morrison, 1962) and some oceanic birds (Howell and Bartholomew, 1961) have been measured. Supplementing some previous work (Onik, 1972a and MS), the present study lists cloacal temperatures from some birds of Belém, State of Pará.

## MATERIAL AND METHODS

Most data was obtained when birds were captured by T. E. Lovejoy III and his group for other ornithological studies, from July to September 1972. Additional data were obtained by E. O. Willis, from April 1972 to May 1973. With the Lovejoy group, the birds were usually captured from 6:00 to 12:00 h. After release from the mist net, the birds were placed in cloth bags to be transported to the field laboratory, where measurements were made. A Schultheis thermometer was then inserted in the cloaca of the bird and the temperature read in degrees Celsius, 30-60 se-

conds after insertion and after the mercury column had stabilized. Soon after, the bird was weighed, molt condition studied, and the bird released. For Willis' work, the birds were always captured in front of a swarm of army ants (*Eciton burchelli*), immediately measured and weighed, and soon released. All the birds were captured in mist nets 2.5 m high.

The nomenclature and order of birds followed here is that of Meyer de Schauensee (1970). Birds were captured in upland forest (terra firme), second growth (Capoeira) and swamp forest (Várzea), all located in the Área de Pesquisas Ecológicas do Guamá, a forest reserve of the Instituto de Pesquisa Agropecuária do Norte (IPEAN), Belém (description of types of forest in Oniki, 1972b).

## RESULTS

Eight hundred and two individuals representing 85 species and 23 families of birds are represented in Table 1. Small birds, such as hummingbirds, have low cloacal temperatures. Temperatures increase with weight, but decrease again for large birds. Figure 1 shows that birds up to about 25 g have cloacal temperatures between 38.5 and 42.3°C; birds with weights between 25 and 75 g have cloacal temperatures between 41.0 and 40.0°C. Unfortunately, the number of individuals weighing more than 70 g were too few to show the decrease at high weights.

Cloacal temperatures ranged from 38.5°C (from the hummingbird *Threnetes leucurus*) to 43.8°C (from the grosbeak *Pitylus grossus*).

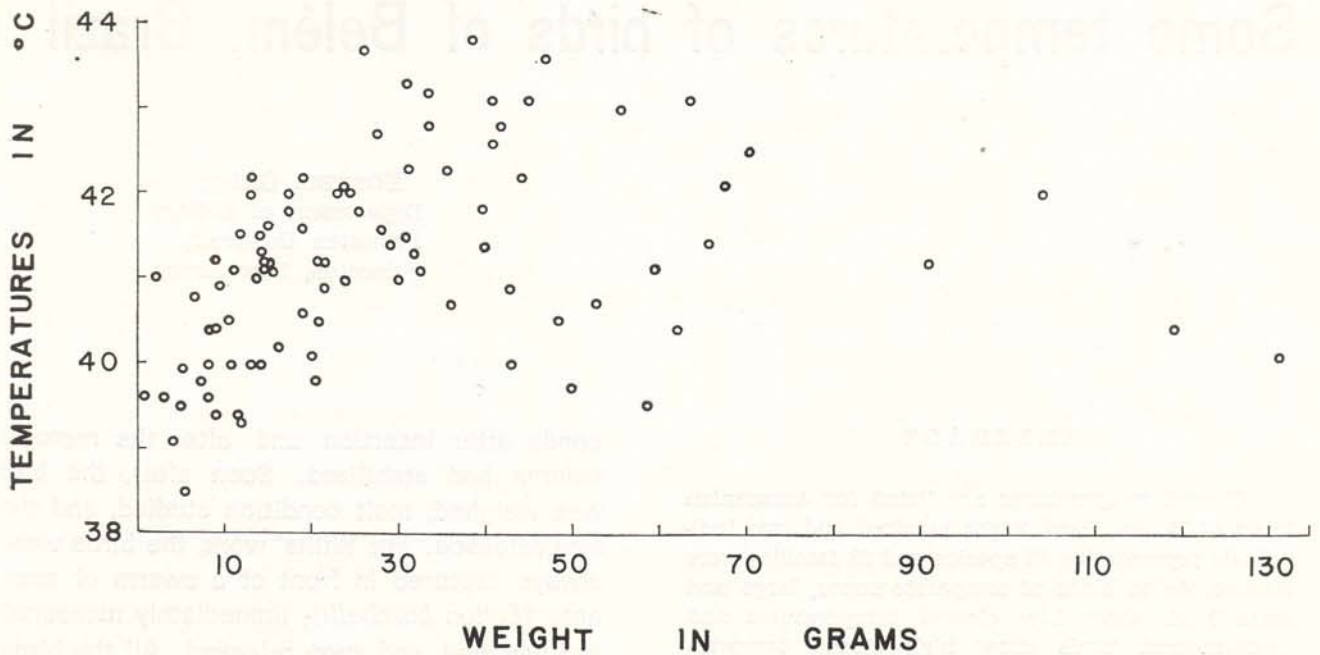


Fig. 1. Temperature of birds according to their weight. Two hawks are not included: one weighing 180 g with cloacal temperature 40°C and another weighing 246 g with cloacal temperature 41.0°C.

In Table 1, the species marked with an asterisk were either captured by Willis, or his data were combined with mine due to the small number of captured individuals (from 1 to 3). With the Lovejoy group, the birds remained quiet in the cloth bag from 2 to 3 hours after being released from the mist net. Consequently, they lost weight but cloacal temperatures probably dropped to normal. Because the birds captured by Willis were measured and weighed immediately after capture, the weight was probably normal but the cloacal temperature a little higher than normal due to the excitement of being captured and fluttering in attempts to escape. This can be seen clearly in those species in Table 1, where the data of Willis are separated: they show high cloacal temperatures and high weights for the woodcreepers, *Dendrocincla fuliginosa*, *Dendrocincla merula* and *Dendrocolaptes certhia* and for the antbirds, *Pyriglena leuconota* and *Phlegopsis nigromaculata*.

The average ambient temperature was 25.6°C (23.2°C — 28.3°C; n = 27).

#### DISCUSSION

Following earlier observations for temperate-zone birds (McNab, 1966), data obtained from these tropical birds show that small birds such as hummingbirds and large birds such as hawks have low cloacal temperatures. Medium-sized birds show high cloacal temperatures, especially the woodcreepers, *Dendrocincla fuliginosa* and *Dendrocincla merula*; the antbird, *Phlegopsis nigromaculata*; and the tanager, *Tachyphonus rufus* and *Eucometis penicillata*. As in Panamá, the tanager *Eucometis penicillata* and the flycatcher *Myiodynastes maculatus* show high cloacal temperatures. Possibly these birds and others with rapid flight present high cloacal temperature so they can move rapidly from one location to the other and in this way obtain food in many places.

TABLE 1 — Temperatures of birds of Belém

Species	Cloacal Temp. Average (°C)	(Interval)	N. Birds	Weight, g	(Interval)	N. Birds
Accipitridae						
Double-toothed Kite	40.0		1	180.0		1
Roadside Hawk	41.0		1	246.0		1
Falconidae						
Russet-crowned Crane	39.5		1	58.8		1
Columbidae						
Ruddy Quail-Dove	42.0		2	104.3	(94.6-114.0)	2
Psittacidae						
Sapphire-rumped Parrotlet	41.1	(40.1-42.0)	6	59.7	(52.6-62.6)	6
Cuculidae						
Squirrel Cuckoo	41.2		1	91.0		1
Little Cuckoo	40.7	(39.4-42.0)	2	36.4	(35.9-36.9)	2
Pavonine Cuckoo	39.9	(38.4-41.3)	2	43.2	(40.5-45.9)	2
Trochilidae						
Rufous-breasted Hermit	39.3		1	5.4		2
Pale-tailed Barbthroat	38.5	(37.0-40.0)	17	5.5	(5.0-6.2)	20
Long-tailed Hermit	39.5	(37.5-41.6)	9	5.1	(4.8-6.0)	10
Reddish Hermit	41.0		1	2.3		1
Gray-breasted Sabrewing	39.6	(37.8-42.0)	14	8.3	(5.0-10.4)	15
Blue-chinned Sapphire	39.6		1	3.4		1
Fork-tailed Woodnymph	39.1	(36.7-42.0)	13	4.0	(3.3-4.8)	13
Alcedinidae						
Green-and-Rufous Kingfisher	40.5	(39.1-41.6)	5	48.7	(46.6-51.2)	5
Pygmy Kingfisher	40.0	(39.0-41.4)	6	13.2	(11.1-16.3)	6
Momotidae						
Blue-crowned Motmot	40.1	(40.0-40.2)	2	132.8	(131.0-134.5)	2
Galbulidae						
Yellow-billed Jacamar	41.0		1	24.2		1
Bucconidae						
Rufous-necked Puffbird	40.9	(40.8-41.1)	3	40.3	(36.0-42.6)	3
Picidae						
Waved Woodpecker	40.4		1	64.6		1
Dendrocolaptidae						
Plain-brown Woodcreeper	41.4	(41.0-42.8)	11	40.3	(30.7-46.0)	11
White-chinned Woodcreeper	43.1	(41.7-44.2)	16	41.4	(36.2-46.8)	16
Wedge-billed Woodcreeper	42.3	(41.7-42.9)	2	35.6	(34.6-36.6)	2
	43.6	(42.4-44.7)	8	40.7	(38.5-43.2)	9
	41.3	(39.2-43.0)	112	14.6	(12.2-16.9)	113

TABLE 1 (Continued)

Species		Cloacal Temp. Average (°C)	(Interval)	N. Birds	Weight, g	(Interval)	N. Birds
Barred Woodcreeper	<i>Dendrocolaptes certhia</i>	41.4		1	60.6		1
Striped Woodcreeper	<i>Dendrocolaptes certhia</i> *	43.1	(42.8-43.3)	4	64.0	(61.3-68.9)	3
Spix's Woodcreeper	<i>Xiphorhynchus obsoletus</i>	42.7		1	28.2		1
Buff-throated Woodcreeper	<i>Xiphorhynchus spixii</i>	41.5	(40.2-42.4)	17	31.2	(27.2-36.2)	17
Furnariidae	<i>Xiphorhynchus guttatus</i>	43.0		1	55.7		1
Ruddy Spinetail	<i>Synallaxis rutilans</i>	41.6	(41.2-41.8)	3	19.3	(19.0-19.9)	3
Cinnamon-rumped Foliage-Gleaner	<i>Philydor pyrrhodes</i>	41.6	(41.1-42.1)	2	28.3	(26.6-30.0)	2
Olive-backed Foliage-Gleaner	<i>Automolus infuscatus</i>	41.1	(40.0-42.0)	11	32.9	(30.2-36.2)	11
Chestnut-crowned Foliage-Gleaner	<i>Automolus rufopileatus</i>	41.3		1	32.0		1
Plain Xenops	<i>Xenops minutus</i> *	41.1	(39.9-42.2)	16	10.6	(8.2-11.4)	16
Short-billed Leafscraper	<i>Sclerurus rufifigures</i>	40.5	(40.0-41.2)	6	21.3	(20.2-23.0)	6
Formicariidae							
Lined Antshrike	<i>Thamnophilus palliatus</i>	42.0		1	23.3		1
White-shouldered Antshrike	<i>Thamnophilus aethiops</i>	40.9	(39.8-42.4)	6	21.7	(20.0-23.0)	6
Amazonian Antshriks	<i>Thamnophilus amazonicus</i>	41.2	(40.4-42.0)	5	21.1	(19.3-24.4)	5
Plain Antvireo	<i>Dysithamnus mentalis</i>	39.3	(39.0-41.1)	3	12.1	(11.0-13.2)	3
Cinereous Antshrike	<i>Thamnomanes caesius</i>	41.2	(40.2-41.6)	5	15.9	(15.2-16.8)	5
Plain-throated Antwren	<i>Myrmotherula hauxwelli</i>	40.5	(39.1-41.6)	23	10.7	(8.0-16.0)	23
White-flanked Antwren	<i>Myrmotherula axillaris</i>	40.4	(39.3-41.0)	8	8.2	(7.3-8.8)	8
Long-winged Antwren	<i>Myrmotherula longipennis</i>	41.2	(41.0-41.4)	2	9.2		2
Gray Antwren	<i>Myrmotherula menetriesii</i>	40.0		1	8.4		1
Dusky Antbird	<i>Cercomacra tyrannina</i>	39.8	(36.0-40.8)	7	14.3	(13.6-15.6)	7
White-backed Fire-eye	<i>Pyriglena leuconota</i>	41.4	(39.0-42.8)	27	29.4	(26.2-34.2)	28
Band-tailed Antbird	<i>Pyriglena leuconota</i> *	42.8	(41.2-44.1)	57	33.9	(29.4-37.5)	50
Silvered Antbird	<i>Hypocnemoides maculicauda</i>	41.5	(40.0-43.0)	2	14.5	(14.2-14.7)	2
Scale-backed Antbird	<i>Sclateria naevia</i>	41.2		1	22.0		1
Black-spotted Bare-eye	<i>Hylotyphlax poecilnота</i> *	41.8		1	17.7		1
Black-faced Anthrush	<i>Phlegopsis nigromaculata</i>	42.8	(42.2-43.5)	9	42.2	(38.0-44.6)	9
Hooded Gnateater	<i>Phlegopsis nigromaculata</i> *	43.1	(41.9-43.8)	37	45.1	(39.2-53.0)	36
Cotingidae	<i>Formicarius analis</i>	40.7	(39.0-42.1)	10	53.0	(47.8-54.6)	10
Screaming Piha	<i>Conopophaga roberti</i>	39.8		1	20.8		1
Pipridae	<i>Lipaugus vociferans</i>	42.5		1	70.6		1
Red-headed Manakin	<i>Pipra rubrocapilla</i>	41.5	(40.2-42.3)	16	12.0	(10.2-13.0)	17
White-crowned Manakin	<i>Pipra pipra</i>	41.1	(40.0-42.0)	8	11.2	(10.0-13.9)	8
Band-tailed Manakin	<i>Pipra fasciicauda</i>	42.0	(42.0-42.1)	2	13.4	(12.2-14.6)	2

TABLE 1 (Continued)

	Cloacal Temp. Average (°C)	(Interval)	N. Birds	Weight, g	(Interval)	N. Birds
Blue-backed Manakin	40.6	(38.5-41.6)	7	19.2	(18.4-21.2)	7
White-bearded Manakin	41.1	(38.7-43.2)	44	15.0	(12.2-18.1)	44
Thrush-like Manakin	41.0	(38.5-42.5)	3	30.3	(30.0-30.7)	3
Tyrannidae						
Streaked Flycatcher	42.6	(42.2-43.0)	2	41.2	(37.2-45.2)	2
Bright-rumped Attila	42.3	(41.0-43.1)	4	31.2	(29.9-31.6)	4
Short-crested Flycatcher	43.7		1	26.3		1
Ruddy-tailed Flycatcher	39.8	(39.0-40.6)	2	7.4		2
Royal Flycatcher	41.0	(38.9-42.5)	13	14.0	(9.7-16.2)	13
Cinnamon-crested Spadebill	40.0	(38.6-40.8)	3	11.0	(8.8-15.0)	3
Olivaceous Flatbill	40.1	(40.0-40.2)	2	20.2		2
Black-chested Tyrant	40.4		1	9.4		1
Helmeted Pygmy-tyrant	40.8	(40.6-41.0)	2	6.7	(6.2-7.2)	3
Ochre bellied Flycatcher	40.9	(38.4-43.3)	29	9.8	(8.4-11.0)	29
McConnell's Flycatcher	41.6		1	15.5		1
Ringed Antpiper	41.2	(40.0-42.1)	3	14.6	(14.0-14.9)	3
Troglodytidae						
Moustached Wren	42.2	(41.5-42.6)	8	19.3	(16.2-22.8)	8
Nightingale Wren	40.2	(39.2-41.4)	6	16.5	(13.3-19.0)	6
Turdidae						
Cocoa Thrush	42.1	(41.0-43.2)	19	67.8	(62.6-76.6)	19
White-necked Thrush	42.2	(40.8-43.1)	8	41.6	(38.6-52.0)	8
Parulidae						
River Warbler	42.2	(41.8-42.5)	2	13.2	(12.4-14.0)	2
Coerebidae						
Bananaquit	39.4	(38.4-40.6)	3	9.2	(8.8-9.6)	3
Thraupidae						
Golden-sided Euphonia	39.4		1	11.8		1
Silver-beaked Tanager	42.1	(40.3-44.2)	15	24.0	(20.4-26.8)	15
White-lined Tanager	43.2		1	33.6		1
Fulvous-crested Tanager	42.0		1	17.8		1
Gray-headed Tanager	43.3	(42.2-44.1)	13	31.0	(26.2-34.3)	13
Fringillidae						
Buff-throated Saltator	41.8	(39.6-43.8)	11	39.9	(36.0-44.0)	11
Slate-colored Grosbeak	43.8		1	39.0		1
Blue-black Grosbeak	41.8	(40.2-42.8)	18	25.8	(21.4-27.7)	17
Pectoral Sparrow	42.0	(40.4-43.1)	42	34.8	(22.0-27.8)	42

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#### SUMÁRIO

É apresentada uma lista de temperaturas cloacais para aves tropicais de Belém, Pará, Brasil. Como foi obtido para as aves de zonas temperadas, as aves pequenas e grandes mostram baixa temperatura cloacal enquanto as aves de tamanho médio alta temperatura cloacal.

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