AVIAN PARASITES AND NOTES ON HABITS OF LICE FROM MATO GROSSO, BRAZIL

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ABSTRACT

Nematoda and Acari were found on or in birds from Estação Ecológica Serra das Araras and region, Mato Grosso, Brazil, 1987-1988, but lice (Phthiraptera) were commoner, showing more females in some cases. In Oscines, numbers of females and males of lice were similar. Different species of lice occupied different sites on the bird, some feeding on feathers and skin scalings and others on blood.

KEYWORDS. Birds, parasites, Nematoda, Acari, Phthiraptera.

INTRODUCTION

Lice and other parasites from Brazilian birds are little known, due to the small number of specialists and lack of good collections. GUIMARÃES (1945) published many taxonomic papers, especially on lice (Phthiraptera) of Tinamidae and Psittacidae. He also reported on lice and other parasites from Paraná State. CLAYTON **et al.** (1992) published a comparative study on Peruvian bird lice. Due to an increased number of ornithologists in Brazil in recent years, parasites have also attracted attention (ONIKI 1990; ONIKI & WILLIS 1991, 1993; ARZUA **et al.**, 1994; MARINI **et al.**,1996).

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Here I report on parasites found on mist-netted or collected birds of the Ecological Station Serra das Araras and surrounding areas, during 1987-1988 surveys with the Universidade Federal de Mato Grosso (UFMG), "Projeto Polonoroeste", and other ornithological projects of the Universidade Estadual Paulista (UNESP).

MATERIAL AND METHODS

Geology and vegetation of the Ecological Station Serra das Araras (EESA; 15° 38' S, 57° 12' W, 200 m elevation) are described in SILVA & ONIKI, 1988 and WILLIS & ONIKI, 1990. A few birds were netted at the Fundação Evangelista Buriti at Chapada dos Guimarães (approx. 15° 25' S, 55° 48'W), and at Km 28 on the road from Pontes e Lacerda (15° 20' S, 59° 25' W) to Vila Bela.

Field activities were in EESA from 14 Feb to 15 March, 20-30 June, 21-30 July, 22 Sept-5 Oct 1987 and 23-26 Jan I visited Chapada dos Guimarães 13-16 July 1987, revisited 8-11 Jan 1988, and netted at Km 28 on 19 Jan 1988. During visits, one to eight nets were set up each day. From the netting activities, I obtained morphometrical measurements and weights from birds as well as parasites.Voucher specimens of some birds were collected for the "Projeto Polonoroeste", and deposited in the Department of Zoology of the Universidade Federal de Mato Grosso, Cuiabá, MT; live birds were released after brief studies.

To collect parasites, I first checked rapidly with forceps through the feathers from the rump toward the head or the belly toward the chin, removing adults and immature lice as well as ascertaining presence of eggs. Then, the netted bird was placed, head out, in a plastic bag with a piece of cotton wet with ethyl acetate. Vapor penetrated among the body feathers and soon lice, feather mites, and ticks started falling in the bag. These were removed with forceps and placed in a jar with 70% ethanol. Sometimes, instead of ethyl acetate, a small amount of lindane, a powder human delouser, was used. The plastic bag and cotton were not reused, to avoid mixing lice from different birds. Only flower mites had to be captured with forceps, because they remain within the nostrils or wander on the bill. Released birds seemed unaffected by the brief procedure, flying well. Endoparasites were removed with forceps from the legs, near the eye or inside the body, the last only from voucher specimens being prepared.

RESULTS AND DISCUSSION

No parasites were found on the following birds (number of individuals in parentheses, when more than one): *Rostrhamus sociabilis* (Vieillot, 1817), *Geotrygon montana* (Linnaeus, 1758), *Chlorostilbon aureoventris* (Orbigny & Lafresnaye, 1838), *Eupetomena macroura* (Gmelin, 1788), *Caprimulgus rufus* Boddaert, 1783, *Nyctidromus albicollis* (Gmelin 1789), *Momotus momota* (Linnaeus, 1766) (2), *Sittasomus griseicapillus* (Vieillot, 1818) (2), *Pyriglena leucoptera* (Vieillot, 1818), *Tityra semifasciata* (Spix, 1825), *Tolmomyias sulphurescens* (Spix, 1825), *Elaenia albiceps* (Lafresnaye & Orbigny, 1837)(4), *Elaenia chiriquensis* Lawrence, 1867 (2), *Megarynchus pitangua* (Linnaeus, 1766), *Mionectes oleagineus* Lawrence, 1868, *Stelgidopteryx ruficollis* (Vieillot, 1817) (2), *Cyclarhis gujanensis* (Gmelin, 1789) (2), *Basileuterus hypoleucus* Bonaparte, 1850, *Oryzoborus angolensis* (Linnaeus, 1766) (2), *Coryphospingus cucullatus* (Müller, 1776), *Saltator maximus* (Müller, 1776) (2).

Numbers of nematodes were usually low (tab. I), some being short (1.8-2.0 cm) and others very long; many were attached to the outer wall of the proventriculus: *Gnorimopsar chopi* (Vieillot, 1819) (2 nematodes), *Phaeomyias murina* (Spix, 1825) (many), *Monasa nigrifrons* (Spix, 1824) (many), *Myiarchus tuberculifer*(Orbigny &

Lafresnaye, 1837). Nematodes were found in the abdominal cavity of *Casiornis rufa* (Vieillot, 1816) (3), *Saltator atricollis* Vieillot, 1817 (many short nematodes), *Cissopis leveriana* (Gmelin, 1788) (many), *Trogon curucui* Linnaeus, 1766 (1), *Monasa nigrifrons* (2), *Furnarius rufus* (Gmelin, 1788) (1), and *Celeus lugubris* (Malherbe, 1851) (1 nematode above but next to the proventriculus, liver). *Tapera naevia* (Linnaeus, 1766) had a nematode near the eye.

In one *Myiarchus swainsoni* Cabanis & Heine, 1859, I found 2 nematodes embedded in the femur-tibiotarsal articulation, and in *Tachyphonus rufus* (Boddaert, 1783) 1 nematode at the base of the right tarso-metatarsus while there were 3 on the left leg. These nematodes belong to the genus *Pelecitus* Railliet & Henry, 1910 (Nematoda, Filarioidea, Dirofilariinae). According to BARTLETT & ANDERSON (1987, 1989), members of this genus may develop within and can be transmitted by lice.

Chiggers (Acari, Actinedida) were usually collected from around or near the cloaca, breast or inside the ear. Some birds like *Leptotila verreauxi* Bonaparte, 1855 (around cloaca) and *Taraba major* (Vieillot, 1816) (inside ear) had a massive infestation where a blister formed, and usually the wound bled after removal of the chiggers. Flower mites (Acari, Gamasida), moving on the mandibles or nostrils, were collected on some hummingbirds.

Ticks were of the suborder Ixodida, Parasitiformes. *Picumnus albosquamatus* Orbigny, 1840 and *Pipra fasciicauda* Hellmayr, 1906 had single larvae of *Amblyomma* sp. in June-July, while a *Xiphorhynchus guttatus* (Lichteinstein, 1820) had 2 larvas and a *Turdus leucomelas* Vieillot, 1818 had 120 in February. Single nymphs were on the *X. guttatus, P. fasciicauda, Thryothorus genibarbis* Swainson, 1837 and 2 *Cissopis leveriana* in February, 2 *Formicivora grisea* (Boddaert, 1783) and *T. genibarbis* in June, a *M. nigrifrons*, *P. fasciicauda* and *Tachyphonus rufus* in July, and *P. fasciicauda* and *S. atricollis* in September. *Haemophysalis leporispalustris* larvas were found in June, 4 on *Myiarchus tyrannulus* (Müller, 1776) and 13 on *T. genibarbis*, in higher number than *Amblyomma* sp. (except for one case). A *Cacicus cela* (Linnaeus, 1758) had an unidentified larva in September. Wild birds rarely carry many ticks. Such birds as *Turdus leucomelas* and *Conopophaga lineata* (Wied, 1831) in São Paulo (pers. obs.) can have a heavy infestation of larvae of ticks near the cloaca, but only a few survive to the nymphal stage or move to the head, close to the eyes or ears. These two birds nest near the ground, or perch and hop there, thus being more subject to infestation by ticks.

Ticks were mainly attached to soft skin around the eyes and on the chin, crown, neck, or forehead, or walking on the body. Since birds act as intermediate vectors, adult ticks are seldom found.

CLAYTON **et al.** (1992) found 45.4 % of males in Phthiraptera, while in the present study (tab. II) I found 42.3% (476 males/1124 adults), which is not much different. They had 4 cases with many males, this being different from previous authors. I did not encounter any bird with a disproportionately large number of males.

In Oscines the numbers of males and females were nearly equal, while in Tyranni there were more females than males, mainly because of *Philopterus* sp. on *Casiornis rufa* and *Myiarchus tyrannulus*. In non-Passeriformes, excess females were due to 2 species of *Columbicola* on Columbidae, *Kellogia* on Tinamidae and a slight excess of female *Picicola* on Bucconidae. CLAYTON **et al.** (1992) found more male *Columbicola* on *Columba plumbea* Vieillot, 1818, which is the reverse of what I found with *Leptotila verreauxi* and

Claravis pretiosa (Ferrari-Perez, 1886).

A comparison for birds found both by MARINI **et al.** (1996) and here shows similar prevalence rates for *Leptopogon amaurocephalus* Tschudi, 1846. Compared with CLAYTON **et al.** (1992), who found 50 % infestation for *Melanerpes cruentatus* (Boddaert, 1783) I found 33 %; none for *Veniliornis passerinus* (Linnaeus, 1766) while I found 50 %; 50 % for *Monasa nigrifrons* in both studies; 100 % for *Crotophaga ani* Linnaeus, 1758, while I found 25 %; 18 % for *Thalurania furcata* (Gmelin, 1788) while I found 33 %; 100 % for *Cacicus cela* in both studies. Further collections will be needed to establish if rates vary greatly or not.

Notes on feeding and other habits of lice. *Columbicola* of Columbidae, especially those on *Claravis pretiosa*, are mainly on the under side of the bird's wings and do not fall easily with ethyl acetate or lindane. *Physconelloides* wander mainly within the body feathers, feeding on feathers, and fall easily with acetate or lindane. *Osborniella crotophagae* feed on feathers and body scaling, but have a pale stomach. *Trochiliphagus* on *Thalurania furcata* had recently fed on blood.

Brueelia sp. on *Picumnus albosquamatus* remain attached to the feather. *Picicola* sp. on *Bucco chacuru* Vieillot, 1816 remain on the under side of the wing feathers and feed on them; those of *Galbula ruficauda* Cuvier, 1816 feed on feathers as well. *Penenirmus* on *Melanerpes cruentatus* seemed young but also seemed to have an egg inside; perhaps the young female develops eggs before complete sclerotization.

Philopterus sp. on *Myiarchus tyrannulus* remain on the head feathers, nape and neck, sometimes even 2-3 individuals per feather, moving slowly so that it was easy to pick them off with forceps. Eggs are laid at the base of head feathers. *Menacanthus*, also found in this species, lays eggs on chin feathers. *Philopterus* on *Vireo olivaceus* (Linnaeus, 1766) were attached to feathers on top of the head and chin; very young individuals as well as adults feed on feathers, as shown by the enlarged black digestive tract. *Philopterus* on *Leptopogon amaurocephalus* were found on the head and neck; they leave the dead bird's body when it cools but do not come out in the hand. In *Casiornis rufa, Myrsidea* feed on body feathers, and have large and dark digestive tracts; there can be 2 individuals per feather.

Ricinus on *Pipra fasciicauda* laid large eggs under the neck or chin and fed on blood and feathers. *Philopterus* and *Myrsidea* on *Pipra fasciicauda* had large black digestive tracts, showing they feed on feathers. *Sturnidoecus* on *Turdus leucomelas* were on the wings and tail. *Sturnidoecus* on *Myiarchus tuberculifer* were feeding on feathers. *Myrsidea* spp. (on *Trichothraupis penicillata* (Spix, 1825), *Tachyphonus rufus, Cissopis leveriana*), and *Myrsidea fallax* on *Cyanocorax cyanomelas* (Vieillot, 1818) all feed on feathers and have dark digestive tracts (full of ingested feathers). When *Cissopis leveriana* is handled, *Myrsidea* will move out onto one's hand, and they leave dead specimens. In *Furnarius rufus, Myrsidea* laid eggs on top of the head, and empty cases were also found on the chin. *Myrsidea* of *Tachyphonus rufus* laid eggs on the neck feathers, while empty egg cases were found on the chin, even on pinfeathers.

In the period in which visits were made, birds had mostly finished breeding, which may explain low numbers of immature lice. However, nests of such birds as *Columbina talpacoti* (Temminck, 1811) can be found almost all year, but still immatures of lice were not found.

Table I. Parasites and bird hosts from Mato Grosso, Brazil. [a] One individual may have two or more kinds of parasites; [b] = body; [c] = cloaca; [e] = ear; [h] = head mites; [n] = nose mites; [p] = bird pox (feet); [w] = wing mites.

Bird species	Nematodes	Fly	Lice	Ticks	Chiggers	Mites	Birds Parasitized/ Examined[a]
Crypturellus parvirostris (Wagler, 1827)	-	-	1	-	-	-	1/2
Anhinga anhinga (Linnaeus, 1766)	-	-	1	-	-	-	1/1
Crotophaga ani	1	-	1	-	-	-	2/4
Tapera naevia	1	-	-	-	-	-	1/1
Columba speciosa Gmelin, 1789	-	-	1	-	-	-	1/1
Columbina talpacoti	-	-	2	-	-	-	2/2
Claravis pretiosa	1	-	36	-	1[c]	-	38/104
Leptotila verreauxi	-	1	1	-	1[c]	-	2/4
Uropelia campestris (Spix, 1825)	-	-	1	-	-	-	1/1
Brotogeris chiriri (Vieillot, 1817)	-	-	1	-	-	-	1/1
Glaucis hirsuta (Gmelin, 1788)	-	-	-	-	-	1[n]	1/1
Phaethornis pretrei (Lesson & Delattre,1830)	-	-	-	-	-	1[nw]	1/1
Thalurania furcata	-	-	1	-	-	-	1/3
Colibri serrirostris (Vieillot, 1816)	-	-	-	-	-	1[n]	1/1
Trogon curucui	1	-	-	-	-	-	1/1
Galbula ruficauda	-	-	1	-	-	-	1/1
Bucco chacuru	-	-	2	-	-	-	2/2
Monasa nigrifrons	2	-	1	1	2[e]	-	2/2
Pteroglossus inscriptus Swainson, 1822	-	-	1	-	-	-	1/1
Melanerpes cruentatus	-	-	1	-	-	-	1/3
Veniliornis passerinus	-	-	1	-	1[b]	-	2/2
Celeus lugubris	1	-	-	-	-	-	1/1
Picumnus albosquamatus	-	-	1	1	-	-	1/1
Xiphorhynchus guttatus	-	-	-	1	-	1[p]	2/5
Furnarius rufus	1	-	1	-	-	-	1/1
Taraba major	-	-	-	-	1[oe]	-	1/1
Formicivora grisea	-	-	-	2	-	2[h]	4/5
Pipra fasciicauda	-	-	3	4	-	1[w]	5/9
Manacus manacus (Linnaeus, 1766)	-	-	2	-	-	-	2/4
Attila bolivianus Lafresnaye, 1848	-	-	-	-	-	1[w]	1/1
Sublegatus modestus (Wied, 1831)	-	-	-	-	-	1[w]	1/1
Elaenia flavogaster (Thunberg, 1822)	-	-	1	-	-	-	1/2
Cnemotriccus fuscatus (Wied, 1831)	-	-	1	-	-	-	1/1
Myiopagis viridicata (Vieillot, 1817)	-	-	1	-	-	-	1/2
Casiornis rufa	1	-	1	-	-	-	2/3
Myiarchus tyrannulus	1	-	3	1	-	1[w]	4/4
Myiarchus swainsoni	2	-	2	-	-	-	4/7
Myiarchus tuberculifer	2	-	2	-	-	-	2/2
Todirostrum latirostre (Pelzeln, 1868)	-	-	-	-	1[c]	-	1/2
Hemitriccus striaticollis (Lafresnaye, 1853)	-	-	-	-	3[c]	-	3/3
Phaeomyias murina	1	-	-	-	-	-	1/2
Leptopogon amaurocephalus	-	-	1	-	-	-	1/1
Thryothorus genibarbis	-	-	-	2	-	-	2/6
Campylorhynchus turdinus (Wied, 1827)	2	-	-	-	-	1[w]	2/5
Cyanocorax cyanomelas	-	-	1	-	-	1[w]	1/1
Turdus leucomelas	-	-	2	1	-	1[w]	2/3
Vireo olivaceus	-	-	1	-	-	-	1/3
Basileuterus flaveolus (Baird, 1865)	-	-	-	-	-	1[w]	1/4
Cacicus cela	-	-	2	1	-	-	2/2
Icterus icterus (Linnaeus, 1766)	-	1	-	-	-	-	1/3
Gnorimopsar chopi	1	-	7	-	-	1[w]	7/10
Ramphocelus carbo (Pallas, 1764)	-	-	3	-	-	1[w]	3/7
Trichothraupis penicillata	-	-	1	-	-	-	1/2
Tachyphonus rufus	1	-	3	1	-	-	3/5
Cissopis leveriana	1	-	5	2	-	-	5/5
Schistochlamys melanopis (Latham, 1790)	-	-	-	-	-	1[w]	1/7
Tiaris fuliginosa (Wied, 1831)	-	-	1	-	-	-	1/3
Volatinia jacarina (Linnaeus, 1766)	-	-	-	-	1[c]	1[w]	2/3
Myospiza humeralis (Bosc, 1792)	-	-	-	-	-	1[w]	1/4
Saltator atricollis	1	-	-	1	-	-	2/5

Table II. Lice and their bird hosts from Mato Grosso, Brazil. In brackets, Cha = Chapada dos Guimarães, Rod = Highway Porto Estrela-Cáceres; Est = Road Santo Antônio de Leverger-Cuiabá; Pon = Pontes e Lacerda; all others from EESA.

	Male	Female	Imm.	Nº Examined (% infested)
Tinamidae : *Crypturellus parvirostris*				2(50)
Physconella sp.	9	8	3	
Kellogia mendax (Guimarães & Hopkins, 1949)	11	28	7	
Anhingidae: *Anhinga anhinga* [Rod]				1(100)
Pectinopygus anhingae (Peters, 1935)	-	4	1	
Cuculidae: *Crotophaga ani* [Est]				4(25)
Osborniella crotophagae (Stafford, 1943)	10	11	6	
Vernoniella guimaraesi Thompson, 1948	9	9	5	
Columbidae: *Columba speciosa*				1(100)
Columbicola sp.	1	-	-	
Columbina talpacoti				2(100)
Columbicola passerinae (Wilson, 1941)	8	6	6	
Physconelloides talpacoti Carriker, 1963	8	5	8	
Claravis pretiosa				104(36)
Columbicola sp.	35	82	13	
Physconelloides pretiosa Carriker, 1961	95	108	66	
Hohorstiella sp.	-	1	2	
Leptotila verreauxi				4(25)
Columbicola sp.	27	44	55	
Physconelloides ceratoceps Ewing, 1927	10	8	12	
Hohorstiella sp.	2	2	-	
Uropelia campestris [Pon]				1(100)
Columbicola sp.	2	-	2	
Psittacidae: *Brotogeris chiriri*				1(100)
Psittacobrosus versicoluri Price, 1969	14	15	12	
Trochilidae: *Thalurania furcata*				3(33)
Trochiliphagus sp.	-	-	1	
Galbulidae: *Galbula ruficauda* [Cha]				1(100)
Picicola sp.	11	14	5	
Bucconidae: *Bucco chacuru*				2(100)
Picicola sp.	26	40	25	
Monasa nigrifrons [Cha]				2(50)
Picicola sp.	1	2	-	
Ramphastidae: *Pteroglossus inscriptus*				1(100)
Austrophilopterus sp.	2	-	-	
Picidae: *Melanerpes cruentatus*				3(33)
Brueelia sp.	2	-	11	
Penenirmus auritus (Scopoli, 1763)	2	2	10	
Veniliornis passerinus				2(50)
Penenirmus auritus (Scopoli, 1763)	-	-	1	
Picumnus albosquamatus				1(100)
Brueelia sp.	-	-	1	
Furnariidae: *Furnarius rufus*				1(100)
Myrsidea sp.	1	1	6	
Pipridae: *Pipra fasciicauda* [EESA, Cha]				9(33)
Myrsidea sp.	-	3	1	
Philopterus sp.	2	3	2	
Ricinus pessimalis Eichler, 1956	-	1	3	
Ricinus invadens (Kellogg, 1899)	1	1	1	
Manacus manacus				4(50)
Myrsidea sp.	-	1	-	
Ricinus pessimalis Eichler, 1956	-	-	1	
Tyrannidae: *Elaenia flavogaster* [Pon]				2(50)
Ricinus sp.	-	1	-	
Myrsidea sp.	1	-	1	
Philopterus sp.	-	-	1	
Cnemotriccus fuscatus				1(100)
Ricinus sp.	-	1	-	
Philopterus sp.	-	1	-	
Myiopagis viridicata				2(50)
Philopterus sp.	1	1	1	
Menacanthus sp.	-	-	1	
Casiornis rufa				3(33)
Philopterus sp.	8	33	3	
Myiarchus tyrannulus				4(75)
Menacanthus distinctus (Kellogg & Chapman, 1899)	8	10	14	

cont.

Table II. (Cont.)

Philopterus sp.	9	41	42	
Myiarchus swainsoni				7(28)
Myrsidea sp.	-	-	2	
Myiarchus tuberculifer				2(100)
Sturnidoecus sp.	-	1	-	
Myrsidea sp.	-	1	-	
Leptopogon amaurocephalus				1(100)
Philopterus sp.	4	6	2	
Myrsidea sp.	2	1	2	
Corvidae: *Cyanocorax cyanomelas*				1(100)
Myrsidea fallax Kéler, 1938	3	7	2	
Turdidae: *Turdus leucomelas*				3(67)
Myrsidea sp.	1	-	2	
Sturnidoecus sp.	19	22	5	
Vireonidae: *Vireo olivaceus*				3(33)
Philopterus sp.	2	13	22	
Icteridae: *Cacicus cela*				2(100)
Myrsidea picta Carriker, 1955	1	-	4	
Gnorimopsar chopi				10(70)
Brueelia sp.	17	5	-	
Myrsidea sp.	34	29	6	
Philopterus sp.	-	1	-	
Thraupidae: *Ramphocelus carbo*				7(42)
Myrsidea sp.	6	9	11	
Trichothraupis penicillata [Cha]				2(50)
Myrsidea sp.	1	-	-	
Tachyphonus rufus				5(60)
Myrsidea sp.	5	5	2	
Philopterus sp.	-	2	-	
Cissopis leveriana				5(100)
Myrsidea sp.	64	57	63	
Fringillidae: *Tiaris fuliginosa*				3(33)
Myrsidea sp.	-	2	1	

In general, wild and seemingly healthy birds do not harbor a great number of individuals or species of parasites (ticks or lice). However, the small sample size is still a problem for significant comparisons; we hope more collections will be made as the number of field workers increases.

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