

A NEW SPECIES OF *Anaticola* (PHITHIRAPTERA : ISCHNOCERA)

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Synopsis

A new species of *Anaticola* from the flamingo, *Phoeniconaias minor* (Geoffroy), is described and compared with *A. phoenicopteri* (Coinde, 1859) from the same host. The distribution of the two species on this host is discussed.

Introduction

The two genera, *Anaticola*, parasitic on birds of the orders Anseriformes and Phoenicopteriformes, and *Ardeicola*, on Ardeidae, Ciconiidae and Threskiornithidae, are perhaps related to each other. This possible affinity is revealed by the general habitus of the species of the two genera, the similar position of the thoracic trichobothrium relative to the thoracic spiniform seta and the chaetotaxy of the terminalia in both sexes (Hajela & Tandan, 1970; Kumar & Tandan, 1971). The species of *Anaticola* are unusually homogeneous, in both their sexual and non-sexual characters, while those of *Ardeicola* exhibit considerably greater diversity. However, the new form here described is the first species of *Anaticola* to show a striking difference from all other known congeneric forms in the characters of the male genitalia.

Phloptoridae

Anaticola Clay 1935

Anaticola dissonus sp. n. (Figs. 1-6)

Type host: *Phoeniconaias minor* (Geoffroy)

The male of this species resembles *A. phoenicopteri* (Coinde, 1859) in its non-sexual characters, but can be distinguished from all known congeneric species by its unique penis and the details of the endomere. In the female specific separation has not been found possible.

General characters and normal chaetotaxy as shown in figs. 1-4. Post-temporal seta extremely minute as in other species of *Anaticola* with 2 additional temporal setae antero-lateral to it, one of these being short in both sexes and the other moderately long in the male and short in the female. The 1+1 anterior, minute or short, setae on pro- and ptero-notum found in *Ardeicola* are absent. The 1+1 minute posterior setae on tergum II widely separated, less so on III and close together on terga

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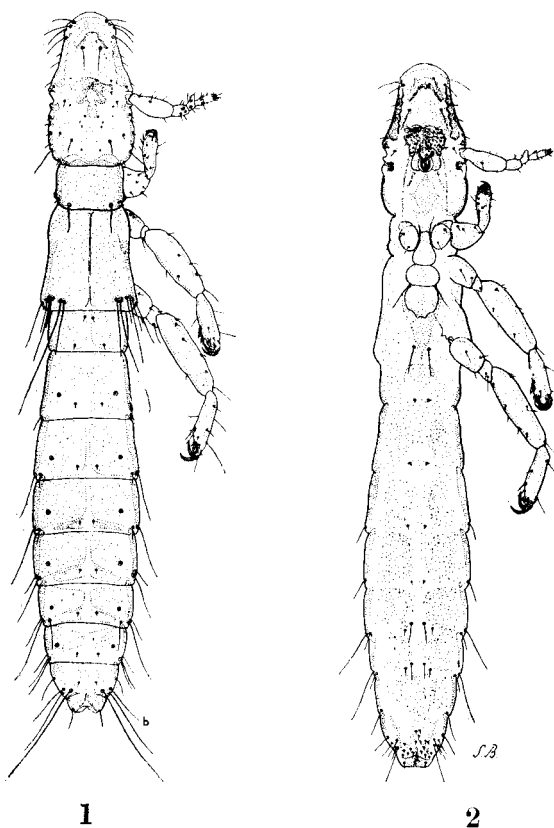


Fig. 1. *Anaticola dissonus*, ♂, dorsal.

Fig. 2. *Anaticola dissonus*, ♂, ventral.

IV-VIII. Post spiracular setae 1+1, on segment VIII only. No pleural seta on segment II; 1+1 normally on III, 3+3 on segments IV and V, 4+4 on VI and VII, and only 3+3 on VIII. On sternum VIII no setae in the male, but 1+1 in the female. The 1+1 minute to short setae on tergum IX-XI relatively more posterior than in *Ardeicola*; the 2+2 posterior setae, those of each side being well separated, on this composite tergum are regarded as the homologues of the 4 (2 tergo-central and 2 tergo-lateral) setae on the same tergum of *Ardeicola*. In this species of *Anaticola* these 4 are longer and the tergo-central seta has shifted laterally, closer to the tergo-lateral seta of its side. In the male the middle anal seta is inner to the anterior and posterior anal setae, in the female it is outer to these setae. Some of these features of the chaetotaxy are of supra-specific value.

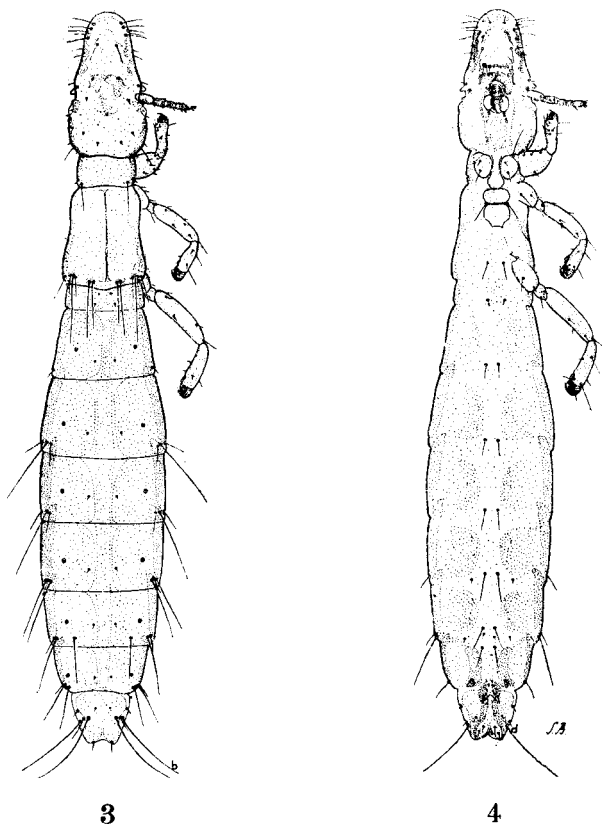


Fig. 3. *Anaticola dissonus* ♀, dorsal.

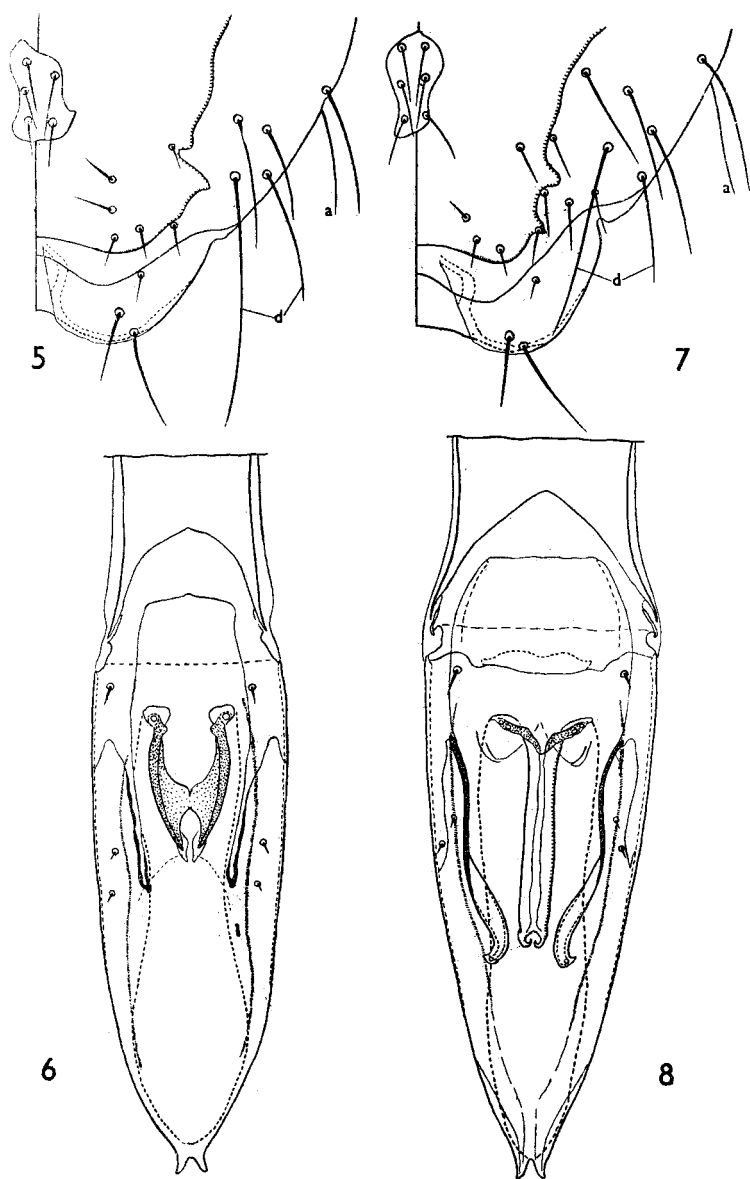
Fig. 4. *Anaticola dissonus*, ♀, ventral.

Male genital opening ventral, margin of genital opening unhardened. External genitalia as shown in fig. 6; penis not tubular, being quite different from that of all known congeneric species.

Setae in the genital region of the male, as follows (fig. 5); central, 4-6, $\times 5.70$ (10); marginal and submarginal, long, 4+4 (9), 5+4 (1), $\times 8.10$ (10) (of these 2+2 are referred to as d, as in *Ardeicola*), on margin of the genital opening, short, each side 4-8, total 9-15, $\times 11.80$ (10).

The body measurements in mm are given in Table 1.

Material examined. 13♂, 28♀, (of which 15♀ are in spirit), KENYA: Nakuru, i.1956 (R. Meinertzhagen, 20413, 20414, 20415); 13♂, 14♀, ETHIOPIA: Shala, 30.x.1960 (S. Brelih); 3♂, 1♀, TRANSVAAL: Barberspan, 21.i.1969 (P. Milstein); 1♂, 4♀,



Figs. 5-8. Males of *Anaticola* spp. from *Phoeniconaias minor*: 5, 7, genital region; 5, *dissonus*; 7, *phoenicopteri*. 6, 8, posterior components of external genitalia; 6, *dissonus*; 8, *phoenicopteri*.

TABLE 1
Measurements in mm of the two species of *Anaticola* parasitic on *Phoenicopatias minor*.

	Males			Females		
	dissonus	phoenicopteri		dissonus	phoenicopteri	
	Range	Mean	Range	Range	Mean	Range
Length						
Head	0.60-0.63	0.616 (10)	0.63-0.66	0.68-0.74	0.71 (10)	0.70-0.76
Prothorax	0.15-0.18	0.17 (10)		0.177-0.185	0.18 (10)	
Pterothorax	0.43-0.48	0.45 (10)		0.45-0.49	0.47 (10)	
Abdomen	1.57-1.67	1.61 (10)	1.58-1.71	2.24-2.34	2.30 (10)	2.16-2.46
Total	2.78-2.95	2.87 (10)	2.86-3.04	3.57-3.74	3.65 (10)	3.52-3.90
Breadth						
Head*	0.34-0.36	0.35 (10)	0.37-0.40	0.40-0.43	0.41 (10)	0.42-0.46
Prothorax	0.26-0.27	0.266 (5)		0.30-0.32	0.31 (5)	
Pterothorax	0.36-0.38	0.37 (5)		0.45-0.48	0.46 (5)	
Abdomen	0.43-0.46	0.44 (5)				

*Breadth of head across temples.

Figures in parentheses denote number of specimens.

ANGOLA: Port Alexander, 10.x.1912 (collector unknown, BMNH no. 1029). All from *Phoeniconaias minor*. 5♂, 4♀, MADAGASCAR (now MALAGASY REPUBLIC): Tuléar, ix.1963 (E. R. Brygoo, 203/63), the given host of these, the bat *Pteropus rufus*, is incorrect. 1♂, probably straggler, collected by G. H. E. Hopkins from skin of *Phoenicopterus ruber* (BMNH no. 1960-477).

Holotype ♂, slide no. 20415a, in BMNH from *Phoeniconaias minor* (Geoffroy), KENYA: Nakuru, i.1956 (R. Meinertzhagen).

Paratypes, all above mentioned specimens (30♂, 47♀) from *Phoeniconaias minor*.

Discussion

Anaticola phoenicoptera (Coinde, 1859) is also parasitic on *Phoeniconaias minor*, as well as on the three species of *Phoenicopterus*, and differs from the new species in having (1) an altogether different type of penis (fig. 8); (2) the average measurements of the length and breadth of the head larger (Table 1); (3) a slightly greater number of relatively longer setae in the genital region of the male (fig. 7) (central, 5-8, $\times 6.50$ (10); marginal and submarginal setae, each side 4-5, total 8-10, $\times 9.30$ (10); short setae, each side 6-10, total 14-20, $\times 17.70$ (10); (4) longer seta b in both sexes and longer and stouter seta a in the female; (5) longer pleural seta on segment II in both sexes and the ventral pleural seta on VIII in the male; (6) the middle anal seta relatively closer to the posterior and removed from the anterior anal seta in the male. *Anaticola phoenicopteri* only from *Phoeniconaias minor* was compared with the new form.

Host parasite relationships

Petres (1931) includes the six species of flamingoes in three genera, *Phoenicopterus*, *Phoeniconaias* and *Phoenicoparrus*. *Anaticola* has been examined from all flamingoes with the exception of *Phoenicoparrus andinus* and *jamesi*. The three species of *Phoenicopterus* (*antiquorum*, *ruber* and *chilensis*) are parasitized by one species, *Anaticola phoenicopteri* (Coinde, 1859). The remaining flamingo, *Phoeniconaias minor*, differs from these three in being parasitized by two *Anaticola* species—*phoenicopteri* and *dissonus* n. sp. This therefore, is yet another instance of the occurrence of two species of the same Ischnoceran genus on one species of bird, as for example: *Goniodes meinertzhageni* Clay and *G. pavonis* (Linn.) on *Pavo cristatus* and *Ardeicola robustus* Tuff and *A. elongatus* Carriker on *Eudocimus albus*. While both species of the *Goniodes* and *Ardeicola* are found on the same individual of the host species, the position regarding the species of *Anaticola* on *Phoeniconaias minor* is not strictly the same. Examination of all the available *Anaticola* males from *P. minor* has shown that both species were never collected from the same individual (Table II). While 54 males collected from five

TABLE 2
Anaticola examined from *Phoeniconaias minor*

Date	<i>phoenicopter</i>		<i>dissonus</i>		Specimens	Date	Locality	Specimens
	Locality	Locality	Locality	Locality	♂ ♀			♂ ♀
1. v.1912	Tanganyika (now Tanzania)				0 8 M	10.x.1912	Port Alexander, Angola	1 4 M
2. iii.1936	Naivasha, Kenya				5 5 M 13 9 T	i.1956	Nakuru, Kenya	4 4 M 0 4 T
3. iii.1936	Naivasha, Kenya				11 23 M 13 10 T	i.1956	Nakuru, Kenya	3 6 M 0 7 T
4. ii.1937	Port Sudan, Sudan				12 12 M	i.1956	Nakuru, Kenya	6 3 M 0 4 T
5. 1908-09	Aldabra Is.				0 2 M	30.x.1960	Shala, Ethiopia	7 7 M
6.						21.i.1969	Baberspan, (W.) Transvaal	3 1 M

M, permanent preparations in Canada balsam.

T, temporary preparations of spirit material in lacto-phenol.

P. minor belonged to *A. phoenicopteri*, 30 males from six other specimens of *P. minor* belonged to the new species. Five males and four females of *A. dissonus* from Madagascar (now Malagasy Republic), the given host of which is the bat *Pteropus rufus*, and excluded from the foregoing count, could have come from *P. minor* only as this flamingo alone is found in that country.

The available information shows that: (1) both species, *A. phoenicopteri* and *A. dissonus*, occur in the same geographical area and locality; (2) both species are found on the same host species and (3) both have not been found on the same host individual. Of these above statements, one rules out a geographical distribution of the two forms on the same host species, as is the case in *Strigiphilus* from *Tyto alba* (see Clay, 1966). Two shows that they cannot be regarded as allopatric in the sense in which this term is applied to host-specific species of bird lice (Clay, 1957), and three shows that the two species are not sympatric in the same sense in which the cited pairs of *Goniodes* and *Ardeicola* species are.

What, therefore, is the precise relationship between these species of *Anaticola* and the host *Phoeniconaias minor* becomes an interesting question. Did *A. dissonus* evolve on *P. minor* and *A. phoenicopteri* on *Phoenicopterus*, the latter subsequently becoming established on *P. minor*; interspecific competition perhaps making it impossible for both to survive on the same host individual.

Acknowledgments

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