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The parasite fauna of rodents from urban and suburban areas of Accra-Tema, South Ghana

BY

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INTRODUCTION

A survey of parasites of rodents was carried out in 1964 in the urban and suburban areas of Accra-Tema. *Rattus rattus* is very common in the residential areas and in the suburbs. In the residential area and in its periphery, there still are large patches of vacant land, covered by bush or farmed in shifting cultivation. Here, native rodents are still common.

Much data on parasites of rodents in West Africa are scattered throughout the literature dating back as early as 1908 (GRAHAM); the majority of these are accounts of one or few species or of a single group. Recently, OBENG, in 1965, published an account of helminths found in rodents in Southern Ghana.

In the present survey, 118 rodents of 5 species were studied. The authors wish to thank Dr. H. HOOGSTRAAL of U. S. Naval Medical Research Unit Number three, Cairo, Egypt for the identification of the ticks, Dr. R. TRAUB, University of Maryland, School of Medicine, Baltimore, Maryland for the identification of the fleas and Dr. P. H. VER-

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RESULTS

1) **Arvicanthis niloticus** : 25 spec. studied (East contonments : 7, *vide* : EC, Tema periphery: 18, *vide* : T).

MITES :

- Androlaelaps zulu* (BERLESE), 1 * EC.
- Laelaps (Echinolaelaps) bakeri* HIRST
- Laelaps keegani* THURMAN
- Macronyssidae, protonymphs
- Hypoaspis sp.*, 1 EC.
- Ascidae, 1 EC.
- Trombiculidae, 2 EC: *Leptotrombidium sp. A* and *Leptotrombidium sp. B*.
- Listrophoridae, 1 EC, 1 T.
- Tyrophagus palmarum* OUDEMANS, 2 T, host kept for three months in laboratory.

} total: 6 EC, 1 T.

TICKS: *Haemophysalis leachii* AUDOUIN, Nymphs, 2 EC.

LICE :

- Hoplopleura sp.* (yet to be identified).
- Polyplax sp.* (yet to be identified).

} total: 3 EC, 10 T.

FLEAS :

- Xenopsylla cheopis* (ROTHSCHILD), 2 T, in hosts kept for three months in laboratory.

MYIASIS PRODUCING FLIES: *Cordylobia anthropophaga*, GRUNBERG, 3 EC.

HELMINTHS, CESTODES :

- Hymenolepis diminuta* (RUDOLPHII, 1819), 4 EC.
- Inermicapsifer muricola* (BAYLIS, 1915), 3 EC, 17 T.
- Inermicapsifer guineensis* (GRAHAM, 1908), 1 T.
- Raillietina baeri* (MEGGIT & SUBRAMANIAN, 1927), 1 EC.

* Numbers which follow the parasite names imply the number of host specimens found infected, letters are abbreviation for localities.

HELMINTHS, NEMATODES :

- Longistriata affinis* (BAYLIS, 1928), 5 EC.
- Mastophorus muricola* (GEDOELST, 1916), 2 EC, 4 T.
- Oxyurids females (*Syphacia obvelata* (RUDOLPHII, 1802)?), 2 EC, 2 T.
- Strongyloides sp.*, 6 EC, 2 T.
- Trichuris cf. muris*, 2 EC.

2) **Cricetomys gambianus** : 10 spec. studied from Tema periphery.

MITES :

- Laelaps (Echinolaelaps) muricola* TRÄGÅRDH, 6.
- Laelaps sp.* (nov. sp. near *spinifer*)
- Androlaelaps fenilis* (MEGNIN) deutonymph & adults
- Tyrophagus sp.*, 1.
- Listrophoridae, 5.
- Cheyletus sp.*, 1.

} 5

TICKS: *Amblyomma sp.*, larva 1.

LICE: *Hoplopleura sp.* (yet to be identified), 2.

FLEAS: *Xenopsylla aequisetosa* (ENDERLEIN), 9.

MYIASIS PRODUCING FLIES: *Cordylobia anthropophaga*, GRUNBERG, 3.

BLOOD PARASITES: *Grahamella*, type of MACFIE, 1914 (natural infection in non splenectomized animals).

HELMINTHS, CESTODES :

- Inermicapsifer guineensis* GRAHAM, 1908, 10.

HELMINTHS, NEMATODES :

- Heterakis spumosa* SCHNEIDER, 1866, 8.
- Trichuris cf. muris*, 1.

3) **Mastomys natalensis** : 52 specimens studied (East cantonments, 26, Achimota 17, *vide* : A, Nungua-Tema area 7, *vide* : NT, Korle-Bu area 1 *vide* : K).

MITES :

- Laelaps (Echinolaelaps) muricola*, TRÄGÅRDH, 22 EC, 10 A, 3 NT, 2 K.
- Laelaps lamborni* HIRST (Protonymphs, nymphs and adults) EC, A.
- Androlaelaps zulu* (BERLESE), EC.
- Androlaelaps sp.* (male & nymph), A, NT.

Androlaelaps sp. near *dasymys* (RADFORD), NT.

Macronyssidae - Protonymphs, EC,

(Total infected with *laelapid* mites with the exclusion of *L. muricola*: 6 EC, 4 A, 1 K, 2 NT).

Ascidae, 1 EC.

Cheyletus sp., 1 NT.

Trombiculidae, 3 EC, 1 A:

Eltonella (*Coecicula*) *mastomia* (RADFORD).

Leptotrombidium sp.

TICKS: *Haemophysalis leachii* (AUDOUIN), larvae, 4 EC, nymphs, 1 EC, 2 A, 1 K.

LICE: *Polyplax* sp. (yet to be identified), 6 EC, 5 A, 1 K.

FLEAS: *Xenopsylla nubica* (ROTHSCHILD), 3 EC, 1 NT.

Xenopsylla cheopis (ROTHSCHILD), in animal kept for one month in the laboratory.

BLOOD PARASITES: *Grahamella*, type of MACFIE, 1914 (natural infection in nonsplenectomized animal), 1 EC.

HELMINTHS, CESTODES:

Hymenolepis diminuta (RUDOLPHII, 1819), 2 EC.

Catenotaenia lobata BAER 1925, 11 A.

Raillietina baeri MEGGIT & SUBRAMANIAN, 1927, 20 EC, 15 A, 5 NT, 2 K.

HELMINTHS, NEMATODES:

Strongyloides sp. (BAYLIS, 1928), 24 EC, 12 A, 1 NT.

Capillaria gastrica (BAYLIS, 1928), 6 EC, 5 A, 1 NT.

Capillaria hepatica (BANCROFT, 1893), 2 A.

Capillaria annulata (MOLIN, 1858), 2 EC.

Mastophorus muricola (GEDOELST, 1916), 10 EC, 3 A, 1 NT.

Trichiuris cf. *muris*, 9 EC, 8 A, 1 K.

Oxyurids-females (*Syphacia obvelata* (RUDOLPHII 1802)?), 12 EC, 5 A, 1 NT, 1 K.

4) **Rattus rattus** : 24 specimens studied (urban area of Achimota-8, Accra town area, 2, vide: At, Tema, 14; additional 12 rats were checked for ectoparasites and blood, from Tema).

MITES:

Laelaps (*Echinolaelaps*) *muricola* TRÄGÅRDH, 2 A, 1 At.

Liponyssoides muris (HIRST), 2 T, 1 A.

(Syn. *Dermanyssus muris* HIRST).

Listerophoridae, 1 At.

BLOOD PARASITES:

Trypanosoma sp. (*T. lewisi*?), 2 A, 1 At, 8 out of 26 from Tema.

Grahamella (of MACFIE, 1914 or *Bartonella* sp., natural infection in nonsplenectomized animals), 2 T.

LICE: *Polyplax* sp., (yet to be identified), 5 T.

FLEAS: *Xenopsylla cheopis*? (leg only), 1 A.

HELMINTHS, CESTODES:

Hymenolepis diminuta (RUDOLPHII, 1819), 2 A.

Raillietina baeri MEGGIT & SUBRAMANIAN, 1927, 1 At (single young specimen).

Taenia taeniaformis BASTCH, 1786, Cysticerci in the liver, 2 A.

HELMINTHS, NEMATODES:

Capillaria sp. (in the oesophagus, single female).

Gongylonema neoplasticum (FIBIGER & DITLEUSEN, 1914), 3 A, 2 T.

ACANTHOCEPHALA:

Moniliformis moniliformis (BREMSER, 1811), 2 A, 1 At, 1 T.

5) **Tatera kempi** : 7 specimens studied (6 East continents, 1 Tema, 1 from East continents as maintained in the laboratory *Vide lab*).

MITES:

Androlaelaps arvicantis RADFORD, 1944, 1 EC.

Androlaelaps tateronis (RADFORD), 1 EC.

Androlaelaps theseus ZUMPT, 1950, 1 EC.

Androlaelaps sp. nov. (nymphs and adults), 2 EC.

Androlaelaps sp. (nymphs), 1 EC.

Laelaps lamborni HIRST, 1925, 1 EC.

Tyrophagus palmarum OUDEMANS, 1 lab.

Cheyletidae, 2 EC.

Listrophoridae, 1 lab.

TICKS: *Haemaphysalis leachii* (AUDOUIN, 1827), (nymph), 1 EC.

LICE: *Hoplopleura* sp., (yet to be identified), 1 EC.

FLEAS: *Xenopsylla nubica* (ROTHSCHILD), 2 EC.

HELMINTHS, CESTODES:

Hymenolepis diminuta (RUDOLPHI 1819), 1 EC.

Catenotaenia lobata, BAER, 1925, 1 T.

Aprostotandrya africana (BAER, 1933), 2 EC.

HELMINTHS, NEMATODES:

Mastophorus muricola (GEDOELST, 1916), 2 EC, 1 T.

Trichuris cf. *muris*, 1 EC, 1 T.

Oxyurids, females (*Syphacia obvelata* RUDOLPHI), 1 EC.

DISCUSSION

Rattus rattus caught in our survey were found to be infected with relatively small numbers of parasite species. Some of the typical rat parasites, found on this host elsewhere were lacking, these are:

Xenopsylla cheopis, *Echidnophaga muris* (TIRABOSCHI) *Strongyloides ratti* (SANDGROUND, 1925), *S. venezuelensis* (BRUMPT, 1934) and *Nippostrongylus brasiliensis* (TRAVASSOS, 1914) (syn. *N. muris*).

Other common parasites of the rat, though missing from local rats were still found on native rodents: *Capillaria gastrica*, *Capillaria annulata*, *Capillaria hepatica* and *Mastophorus muricola*. The last two species as well as *Hymenolepis nana*, *Mastophorus muris* (GMELIN, 1790) and *Trichosomoides crassicauda* though missing from the rats studied by us, were reported earlier by OBENG (1965) from rats obtained from Accra and Kumasi.

Xenopsylla cheopis was recovered only from white mice and rats as well as from native rodents kept in the laboratory and the attached animal house. Fleas in large numbers were found only on *Cricetomys gambianus* (*X. aequisetosa*). Trypanosomes (apparently *T. lewisi*) commonly occurred in the blood of the rats. In the absence of fleas, it is possible that other ectoparasites such as mites could play a part in the transmission of the trypanosome.

Of the laelapid mites collected *Androlaelaps zulu* is very closely related to and possibly the same as *Androlaelaps fahrenheitsi* BERLESE. The latter is a cosmopolitan species of very wide host range. *Laelaps lamborni* is a very common parasite of *Mastomys natalensis*, and a single collection from *Tatera kempi* may represent an accidental host-parasite association. *Laelaps* (*E.*) *muricola* appears to be a common parasite of *Mastomys natalensis*, with only occasional records on other hosts in the vicinity of Accra. The dermanyssid mite *Liponysoides muris* is a common parasite of *Rattus* and occasionally of other rodents.

Comparing the parasite fauna of the four native species, it occurs that generally each of these species has a distinct fauna of parasites, *M. natalensis* and *A. niloticus* and to lesser extent *T. kempi* were infected with some common species of soil transmitted nematodes and with the larval tick *H. leachii*. Adults of the latter were extremely common on dogs and cats in the trapping area of East Contonments.

The larvae of the Myiasis producing fly *Cordylobia anthropophaga* were common in *C. gambianus* and *A. niloticus*. These larvae were fairly often recovered also from dogs and cats in the residential area of Accra.

SUMMARY

An account is given on the parasitological study of five species of rodents (*Arvicanthis nilotica*, *Mastomys natalensis*, *Tatera kempi*, *Cricetomys gambianus* and *Rattus rattus*) which inhabit the urban and suburban areas of Accra. In the course of the study, 27 species of parasitic arthropods, 20 species of helminths and two species of blood parasites were collected and identified from 118 animals. The interrelations between the parasitefauna of each of these rodents is also discussed.

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