A LIST OF ECTOPARASITES RECORDED FROM COLIES

J. A. Ledger

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INTRODUCTION

The aim of this paper is to list the ectoparasites of the Coliiformes recorded to date. The Department of Entomology of the South African Institute for Medical Research has for many years investigated Arthropod parasites of birds in sub-Saharan Africa, and has amassed considerably more information than was available to Rowan (1967: 91) in her paper on the colies. Furthermore, the study of ectoparasites may be useful in determining the relationships of the hosts themselves (Hopkins 1942 and 1949; Clay 1949 and 1950). This concept has been developed primarily by workers on bird lice (Mallophaga), and discussion here is also limited to this group.

The information contained in this paper has mostly been obtained from the parasitological literature, much of which is of a specialised nature and not normally consulted by ornithologists. I have also made use of unpublished records of the South African Institute for Medical Research. The list below attempts to be as complete as possible. Any omissions or additional records will be gratefully received by the author.

A. MITES (Acarina)

   The Tropical Fowl Mite is widely distributed over the Ethiopian region (Zumpt, 1961: 46) where it has been recovered from a number of bird species. Infestations have been found on Riparia paludicola, R. cincta, Hirundo cucullata, Spreo bicolor, Colius striatus, Ardea melanopephala, Ortygospiza atricolor and Jynx ruficollis. O. bursa is a blood-sucking mite, shows little preference in its choice of hosts, and may be expected from many additional bird species in the future.

2. Pellenxynus viator (Hirst, 1922). Mesostigmata Laelaptidae
   Recently recorded from a nesting Colius colius collected in the Pretoria district by Mr. M. B. Markus. The mite was described from the nests of Apus affinis in India, but has not yet been recorded from this host in Africa. In Johannesburg P. viator has been recorded from Telophorus zeylonus and Passer melanurus. This mite is typically a nest-inhabitant. The larvae and deutonymphs do not feed; the proto-nymphs and adults are blood-sucking (Zumpt, 1961: 57).

   Described from Colius striatus at Astrida, Ruanda-Urundi, and thus far not recorded from any additional hosts or localities.
   The genus Sternostoma is widely distributed in the Holarctic and Ethiopian regions, and has been found to infest many birds of various orders. These mites show a progression towards an endoparasitic way of life, for they live in the respiratory system, some apparently restricted to the nasal cavities while others invade the lungs; they are blood-sucking species.

   Recorded from Colius striatus in East and South Africa.
   Members of the genus Harpyrhynchus live in or under the cuticle in tumours of various sizes in which the mites develop (Zumpt, 1959:349). This is again a progression from an ecto- to an endoparasitic way of life.

   Together with the next species, described from Colius striatus from the Southern Cameroons.


7. Pterolichus proctophyllus Trouessart, 1899. Sarcoptiformes; Pterolichidae.
   Described from Colius striatus in West Africa and collected from the same host in the Cameroons.
   The last three species are all typical feather mites, living in the plumage and feeding on feather material.

From the foregoing, six of the seven mites known from the Coliiformes have been collected from Colius striatus. Further collecting will probably yield new species of mites from the other species of colies,
especially in view of the fact that members of the Analgesiidae and Pterolichidae usually show a high degree of host-specificity. When more is known about the group, the mites may provide a useful aid to the study of relationships within the colies.

B. TICKS (Acarina: Ixodoidea)

1. *Rhipicephalus evertsi evertsi* Neumann, 1897.


   Immature stages of both these ticks have been recorded by Theiler (1959: 365; 1962: 102, 114, 178) from *Colius colius*. Theiler's record of adults (1959: 373) of both ticks from the same host is presumably a typographical error.

   Adult *Rhipicephalus* are primarily parasites of mammals. The immature stages frequently attach themselves to birds for a temporary period, usually showing little preference in the choice of host, as far as is known. The most important aspect of the phenomenon is the dissemination of the ticks from one area to another with the associated importance in the epidemiology of tick-borne diseases.

C. FLIES (Diptera)


   According to Maa (1963) this species is widely distributed over the Old World tropics and subtropics and has been recorded from about fifty genera of many bird orders. It has been recorded from *Colius indicus* in our region (Zumpt, 1961: 218). This particular parasite does not exhibit a high degree of host-specificity. The normal hosts are probably Passeriformes, Coraciiformes and Piciiformes (Maa, 1963: 93).


   The larvae of the Tropical Nest Fly are obligatory, blood-sucking ectoparasites causing myiasis in nesting birds, and these larvae have been recorded from about 20 species of birds in Africa south of the Sahara. A nest of *Colius striatus* was collected by C. J. Vernon on 23.3.68 in the Pietermaritzburg district, Natal, and on 10.4.68 a single male fly emerged from the nest in our laboratory. This constitutes the first and only record of *Passeromyia heterochaeta* from the Coliiformes.

D. FLEAS (Siphonaptera)


   There is one record in the literature of a single female specimen of this flea from *Colius indicus* (De Meillon, Davis & Hardy, 1961: 41). *E. larina* is found principally on the warthog, less frequently on larger carnivores, small antelopes and domestic animals. The record from a coly may be regarded as an accidental occurrence, and it is unfortunate that later workers have continued to list this record (Zumpt, 1966: 218).

E. BIRD LICE (Mallophaga)


   Recorded from *Colius striatus* (Tendeiro, 1964: 166; unpublished records, S.A.I.M.R.). The species was described from an undetermined host collected at Harar, Abyssinia, probably *C. striatus* ssp. (Hopkins & Clay, 1952: 73).


   Described from the type-host, *Colius indicus*, and recorded from this host several times in the Transvaal (unpublished records, S.A.I.M.R.).


   Described from two undetermined birds from Harar, Abyssinia. Clay (1955) has discussed the interpretation of Neumann’s figures and put forward conclusive evidence that this is the Ischnoceran louse normally occurring on *Colius striatus*. It has been recorded from this host from Kenya, Uganda, Zambia and the Cape Province (Clay, 1955; unpublished records, S.A.I.M.R.).


   Known only from the type-host, *Colius colius*, collected at Potchefstroom, Transvaal by Dr. F. Zumpt.

    Described from the type-host, *Colius indicus*, collected at Onderstepoort, Transvaal, and recorded since from the same species from Cape Province, Transvaal and South West Africa (Clay, 1955; unpublished records, S.A.I.M.R.).


    Described from the type-host *Colius macrourus* from Port Sudan.

    In addition, specimens of *Colilipeurus* from *Colius leucocephalus* have recently been received by the British Museum (Natural History). Dr. T. Clay (*in litt.*) states that these are *Colilipeurus radiatus*, perhaps subspecifically distinct from *C. r. radiatus* parasitic on *Colius striatus*.

From the above list it is apparent that the Mallophaga represent the best known group of ectoparasites as far as distribution amongst the various mousebirds is concerned. All species of *Colius* (excepted *C. castanotus*) have at least one form on record. The Mallophaga can be separated into two very distinct superfamilies, the Amblycera (Fig. 1) and the Ischnocera (Fig. 2). The Amblycera are regarded as being closer to the ancestral free-living Psocid-type insect which is believed to have given rise to the group; they have evolved fewer ecological types. The Ischnocera on the other hand have radiated into a greater number of forms, and generally display a more marked host-specificity. This group is considered of most value in applying the concept that the phylogenetic relationships of the Mallophaga reflect those of their hosts.

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Fig. 1. Dorsal/ventral views of *Colimenopon hamatum* (Neumann, 1912) from *Colius striatus*. Total length about 2.4 mm. Female.

Fig. 2. Dorsal/ventral views of *Colilipeurus c. colius* (Bedford, 1920) from *Colius indicus*. Total length about 2.0 mm. Female.
HOST-PARASITE RELATIONSHIPS

A. Relationships within the Coliiformes

Systematists vary in their treatment of the two red-faced colies (C. indicus and C. macrourus), some workers placing them in the distinct genus Urocolius. Rowan (1967: 66) states: "It is true that these two mousebirds possess several distinctive characters . . . but their affinities with the other four are probably as well marked as their differences, and it remains debatable whether there are adequate grounds for thus splitting the six closely related members of this highly isolated group".

While the lack of information on the Mallophaga of C. castanotus is a drawback, the evidence available from the rest indicates that the red-faced species do form a natural group separate from the others. As noted by Clay (1955: 179): "The relationships between the taxa of Colilipeurus reflect those usually accepted for their hosts, that is C. striatus and C. colius being included in one species group (or the genus or subgenus Colius) and C. indicus and C. macrourus in another species group (or the genus or subgenus Urocolius). Each species group is parasitised by a species of Colilipeurus with a subspecies on each of the included host species". At the time she wrote, no Mallophaga had been seen from the other two species of the striatus group, but the more recent record of Colilipeurus radiatus from Colius leucocephalus supports the views above.

Only two species are known of the genus Colimenopon, one each from C. striatus and C. indicus, and the value of these Mallophaga as an indication of relationships within the colies cannot be gauged until the Amblycera of the remaining four hosts are collected and described.

B. Relationships between the Coliiformes and other taxa

Clay (1955) described the new Ischnoceran genus Falcolius, based on three species parasitizing the falcon Microhierax. She stressed the similarity of Falcolius and Colilipeurus, stating that the relationship is so close that Falcolius may later be considered as no more than a subgenus of Colilipeurus: "The similarity in basic characters of the two groups is the more remarkable in that they are characters which are not of a generalised kind found in other genera of the Mallophaga, but are extremely distinctive and never or rarely found elsewhere in the suborder. These facts suggest that the two groups are related and that the similarity cannot be explained by any form of convergence or parallel evolution".

Clay explains the similarity between Falcolius and Colilipeurus by suggesting that they are evolved from common stock; a parasite of the ancestral Coliiformes became established on a forerunner of Microhierax at a time when the ranges of both ancestral birds overlapped. The transfer of lice must have taken place fairly early in the history of both groups, for Falcolius and Colilipeurus have since radiated into several species. There is no evidence of a relationship between colies and Microhierax, so the explanation put forward by Clay is probably the correct one.

Most modern systematists place the Coliiformes close to the Swifts, suggesting some sort of relationship between the two groups, although it is generally accepted that both are products of very old lines of descent. Swifts are adapted to an aerial way of life, and it cannot be imagined that they came into contact with ancestral colies after their occupation of this niche. The possibility of an interchange of parasites is therefore a remote one. Also, our knowledge of the Mallophagan fauna of the swifts fails to reveal any similarity with that of the colies.

The swifts are parasitized by two closely related Amblycerean genera, namely Dennyus and Eureum. There are no characters known at present which could possibly be used to relate Dennyus and Eureum with Colimenopon. The swifts have no Ischnoceran representatives, and Dennyus and Eureum shed no light on the ancestry of the group, other than that they have been isolated for a long time in the history of birds. Similarly Colimenopon and Colilipeurus give no indication of affinities of the colies with other avian orders. From an examination of the Mallophaga, therefore, there is no evidence of a phylogenetic relationship between the colies and the swifts.

Further work on the Mallophaga and the mites may provide additional evidence of the relationships within the Coliiformes and their true systematic position.

SUMMARY

A list of the known ectoparasites of the Coliiformes is provided. Seven species of mites are known from the group, six of these from C. striatus. The immature stages of two species of ticks have been recorded from C. colius. One hippoboscid fly has been found on C. indicus and the record of a flea from the same species is regarded as an accidental occurrence. The Tropical Nest Fly has been reared from a nest of C. striatus. Mallophaga are known from five of the six species of colies, and relationships within the colies and their affinities with other groups are considered on the present knowledge of the relationships of these Mallophaga.
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REFERENCES