NOTES ON TRICHODECTIDAE (Mallophaga). III. ¹

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(With 7 figures)

THREE NEW FORMS OF FELICOLA

A recent visit to South Africa enabled me to search for Mallophaga a number of skins in the Transvaal Museum, Pretoria, which Doctor AUSTIN ROBERTS, in charge of the museum's collections of birds and mammals, most kindly placed at my disposal. Among the material thus obtained are the hitherto-unknown males of two species which were described from females only, as well as one new species, all from mongooses. It gives me much pleasure to name the new species in honour of Dr. ROBERTS. Not only were the three new forms all obtained from skins which he permitted me to examine, but a very large part of the material described by the late Mr. G. A. H. BEDFORD was of the same provenance, so that the collections of the Transvaal Museum have contributed more than any other source to our knowledge of the Tricho- ductidae of the Ethiopian Region.

I am again deeply indebted to Dr. F. L. WERNECK for the drawings which accompany the descriptions.

Felicola robertsi n. sp.
(Figs. 1-4)

Apparently nearest to Felicola rostratus Bedford, but easily separated in the male by the different genitalia; the females are difficult to distinguish.

Male (fig. 1) — Lenght 1.02 mm. Head slightly longer than broad (index 1.12); preantennal region strongly triangular, its sides almost straight; antenna with the first segment only moderately enlarged, slightly longer than the second segment and nearly twice the diameter of the latter. Abdomen much as in rostratus; first tergal plate of abdomen almost divided in the middle line,
each half produced into a pedestal which bears a single long and stout seta. Genitalia (fig. 3) with basal plate very similar to that of *F. rostratus*; parameral ring absent, parameres elongated slender rods nearly as long as the endomeris; endomeris partially fused to form a slender double rod which is proportionately much longer than the similar structure in *F. rostratus*.

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*Felicola robertsi* n. sp. — Fig. 1: Male holotype; fig. 2: female allotype; fig. 3: male genitalia; fig. 4: genital region of female.

**Female** (fig. 2) — Length 1.12 mm. Extremely similar to that of *F. rostratus*, but the abdominal spiracles (of which there are three pairs in both sexes) distinctly smaller than in *rostratus* and the inner lobe of the copulatory valve considerably longer in proportion to its breadth (fig. 4).

**Type-material** — Male holotype, female allotype and six male and seven female paratypes from a skin of *Rhynchogale melzeri langi* Roberts; Ranches Ltd., Swaziland, South Africa; 17.vi.1937 (Transvaal Museum skin n.° 8.368); two further male paratypes from the same host and locality; 13.vi.1937 (T. M. skin n.° 8.367). The types will be presented to the British Museum.

*Felicola bedfordi* Hopkins

(Fig. 5)

**Male** (fig. 5) — Length 1.18 mm. Like the female, at once separable from all other known members of the genus by the presence of only one pair of abdo-
minal spiracles. In addition, it shares only with \textit{Felicola setosus} Bedford the character of possessing more than one pair of strong setae on the first tergal plate of the abdomen.

Head much more elongated than that of the female (index 1.33); first segment of antenna hardly more enlarged than in the female. Abdomen oval with the last segment very narrow and projecting very strongly from the general outline (more than 1\(\frac{1}{2}\) times as long as broad); tergal plate of first segment rather deep and much less modified than is usual in the genus, bearing six stout setae of which two are placed a little to each side of the middle line and evidently represent the single pair normal in the genus, while the others are placed in pairs at the outer ends of the plate and the members of each pair with their bases almost in contact; last tergal plate of highly characteristic shape, quadrate anteriorly, posteriorly with two projections bordering a space shaped almost like a key-hole. Genitalia with basal plate similar to that of \textit{robertsi} but longer and narrower; parameral ring absent, parameres very long and strap-shaped; endomeres not well displayed in any of the specimens, but apparently fused into a solid rod much shorter than the parameres.

\textbf{Female} — Dr. \textsc{Werneck} has very kindly drawn my attention to an error in my description of this sex (\textsc{Hopkins}, 1942-b, p. 444). Owing to a mistake about the magnification, the length of the holotype was given as 1.39 mm., whereas it is really 1.24 mm.

\textbf{Type-material} — Neallotype male and three male neoparatypes obtained, together with eight females, from a skin of \textit{Bdeogale crassicauda crassicauda} Peters; Ncheu, Nyasaland; 4.x.1939; C. W. \textsc{Benson} (T. M. skin n.\textdegree 9.195). The neallotype will be presented to the British Museum.

I dislike describing the male from material obtained on a host subspecifically different from the original one, \textit{Bdeogale crassicauda omnivora}, but the chance of obtaining more material from the latter seems poor as it is so rarely collected, and subspecific differences between forms of \textit{Felicola} found on hosts differing only subspecifically are very rare, though such cases are known. If material obtained from \textit{B. c. omnivora} should prove to be distinguishable, the present neallotype will, of course, lose its status.

\textit{Felicola helogale} Bedford

(Figs. 6-7)

\textbf{Male} (fig. 6) — Length 0.74 mm. Separable from all other known species of the genus by the shape of the head and also by the chaetotaxy of the first tergal plate of the abdomen.

Head like that of the female (\textsc{Bedford}, 1932, p. 362, fig. 9), except for the sexual difference in the antenna; the latter is much stouter than that of the female, especially the first segment, which (though less modified than in many members of the genus) is considerably longer and stouter than the other segments. Abdomen very broadly oval (almost circular), with the terminal segment forming a conspicuous triangular projection of which the base is longer than the sides; no abdominal spiracles. Abdominal tergal plates seven in number, the
most anterior very characteristic, being a wide shallow bar of almost equal width throughout (but slightly expanded at the ends) and curved backwards, especially towards the outer ends; it bears two exceptionally large setae, two-thirds as long as the antenna, placed at its outer ends; these setae are broken off in the neallotype, though their calyces are plainly visible, but they are both present in the neoparatype. Genitalia (fig. 7) with a basal plate of the same type as in

![Diagram](image)

**Fig. 5** — Felicola bedfordi Hopkins, neallotype male. **Felicola helogale Bedford** — **Fig. 6**: male; **fig. 7**: male genitalia.

*F. rostratus*, a well-developed parameral ring, and rather stout, slightly curved, rod-shaped endomeres which appear to be fused at their apices but are separate basally; between the bases of the endomeres and somewhat proximal to these is a small but very distinct sclerite of roughly wedge shape.

**Type-material** — Described from two males, both somewhat damaged, which were obtained, together with 17 females and 15 nymphs, from a skin of *Helogale parvula brunnula* Thomas and Schwann; Njelele River, Zoutpansberg, Transvaal; 1.viii.1929 (T. M. skin n.° 5.868). This is the same host-form and locality as of the material which served for Bedford's original description, but the individual skin from which his specimens came (T. M. n.° 5.869) furnished only females and nymphs on re-examination. The neallotype will be deposited in the Bedford collection, while the neoparatype is in my own collection.

Some explanation seems necessary for the description of the male of a species of which a description purporting to be that of a male has
already been published (Bedford, 1932, p. 363). I have examined Bedford's "male" and it is a young nymph, which I loosely called an "immature specimen" (Hopkins, 1941, p. 283); it cannot stand as the allotype because its sex is indeterminable, and it must be considered as the type of one of the nymphal stages.

**FURTHER NOTES ON THE MALLOPHAGA OF PROCAVIIDAE**

The acquisition of further material has enabled me to add a little to my notes on this group of Trichodectidae (Hopkins, 1942-a).

*Procavicola (Procavicola) subparvus* Bedford

I have seen five males of this species and three of *P. (P.) parvus* Bedford. The difference in the shape of the basal plate is constant throughout these specimens.

*Procavicola (Procavicola) vicinus* Werneck

Dr. Roberts very kindly sent me a second male of this form, obtained from the same host-form and locality as the type, and I have been able to collect eight others from two skins of the same host from the same locality. These specimens show the differences from *LOpesi* to be constant. Furthermore, Dr. Roberts has now been able to identify the skins from which all the material was obtained, which he considers to be topotypes of *Procavia capensis capensis* (Pallas). The published number of the skin from which the type of *vicinus* was obtained (F. M. 116) was a field-number; the permanent number of the skin is South African Museum n.° 19.448.

The female of *vicinus* was previously unknown, but there are fifteen specimens of this sex in the new material. It is quite inseparable from the same sex of other members of the subgenus *Procavicola*. The female neallotype will be placed in the Bedford collection; it is from the type-host and locality, 14. vii. 1939 (S. A. M. skin n.° 19.449).

Entirely on grounds of geography and host, I regard *Procavicola vicinus* as a good species and not a subspecies of *LOpesi*, considering the very close resemblance between these two forms to be due to convergence. Not more than one form of *Procavicola s. str.* is known from any one host-form, and the area between the ranges of *LOpesi* and *vicinus* is occupied by a large number of perfectly distinct species of this subgenus, each occurring on its own specific host.

The fact that the host of *P. vicinus* is *Procavia capensis capensis* makes it practically certain that the host of *Procavicola (P.) parvus*
Bedford is not *capensis capensis*, as I formerly suggested (1941, p. 292), but an undescribed subspecies of *Procavia capensis*.

*Procavicola (P.) sternatus* (Bedford)

I wish to withdraw my suggestion (1941, p. 291) that the type host of this species, *Procavicola (Condylotrephus) lindfieldi* (Hill), and *Procaviphilus serraticus* (Hill) was probably *Procavia capensis natalensis*. The occurrence of *Procavicola (P.) natalensis* Bedford on the latter host is now fully confirmed, and Dr. Roberts tells me that Mtabamholo (the locality of the hyrax from which Hill obtained the three species mentioned) is in a district which is ecologically different from the type-locality of *Procavia c. natalensis*, and in which the occurrence of a different (and undescribed) subspecies of *Procavia capensis* is very probable.

*Procavicola (Acondylotrephus) angolensis* Bedford, P. (A.) jordani Bedford, and *P. (Condylotrephus) bedfordi bedfordi* Werneck.

As the paper in which I intended to publish my notes on the hosts of these forms is not likely to appear for a considerable time, it may be useful to give them here.

Dr. Karl Jordan has made it possible to clear up an unfortunate and rather complicated series of errors about the hosts, especially "*Dendrohyrax angolensis*". Bedford (1936, pp. 33-35) described *Procavicola angolensis* from *Dendrohyrax bocagei* (Benguella, Angola, 27-iv-1934, K. Jordan) and *P. jordani* from *D. "angolensis"* (Congulu, Ambom district, Angola, K. Jordan); he also recorded *P. bedfordi* Werneck (under the name *P. univirgata*), and *P. angolensis* Bedford, from *D. "angolensis"* from Congulu. Finding that there is no hyrax with the specific or subspecific name *angolensis*, and that Dr. Jordan did not mention in his account of his expedition to Angola (Jordan, 1936) the capture of any hyraxes at Congulu, I wrote to him to ask if he could throw any light on the matter. He kindly informs me that the hyraxes from which all the material from Ambom district was obtained were collected near Congulu, which is on the escarpment above Quirimbo and a few miles away from that place, that they are the specimens from Quirimbo which were determined by Miss. St. Legé (1936, p. 81) as *Procavia bocagei* Gray, and that the name *angolensis* must have been a slip of the pen. All the records from *Dendrohyrax "angolensis"* are, therefore, actually from *D. bocagei*. Furthermore, the type-series of *Procavicola angolensis* bear on the slide the name "Amhirna" as well as the particulars published by Bedford; Dr. Jordan informs me that
he did not obtain any hyraxes at or near Benguella, that the hyrax he obtained on 27-iv-1934 was one of the specimens from the escarpment above Quirimbo and that “Amhirna” must be a misreading of the name of the district, Amboim. The type-locality of *Procacivola angolensis* Bedford is, therefore, Congulu, near Quirimbo, Amboim district, Angola, and not Benguella.

**CORRECTIONS TO A PREVIOUS PAPER**

In the second instalment of these notes (Hopkins, 1943) there are some errors which I take this opportunity of correcting.

Through the mistake about the magnification (mentioned above with regard to the female of *Felicol a bedfordi*) several other measurements are also incorrect. The lengths of the male holotype and female allotype of *Damalinia spinifer* should be 1.69 and 1.76 mm., of *D. annectens* 1.74 and 2.02 mm., and of the female allotype of *D. conectens* 2.73 mm.

I stated (p. 28) that a small round spermatheca is present in the female of *D. conectens*. Re-examination of a number of paratypes has failed to demonstrate the presence of such an organ in any of them and I now believe that the structure I observed in the allotype was not a spermatheca.

In the description of the male genitalia of *D. ourebiae* a small misprint (p. 21, lines 5 and 6) rather alters my meaning; the word “finger-point” should be “finger-print”.

**REFERENCES**


