A new species of Anatoecus Cummings (Mallophaga) from Phoenicopterus ruber Linn.

by

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Through the kindness of Professor K. H. Vooûs I have been able to examine a collection of Mallophaga from Phoenicopterus ruber made by Mr. J. Rooth in Bonaire, Netherland Antilles. There are five species represented of which four appear to be conspecific with those found on Phoenicopterus antiquorum Temminck, namely: Colpocephalum heterosoma Piaget, 1880; Colpocephalum salimali Clay, 1951; Trimoton femoratum Piaget, 1880 (a single female only) and Anicola phoenicopteri (Coindé, 1859). The fifth, a species of Anatoecus proves to be new. Dr. von Kéler (1960) has recently published an account of Anatoecus and in this erects two new genera, one of which, Flamingobius, has as type species A. pygaspis (Nitzsch, 1866) from Phoenicopterus antiquorum; the opportunity is taken here to discuss this new genus and Cereopsocoeus Kéler, 1960 and to say why it is considered that these generic divisions are unnecessary.

Anatoecus is a distinctive genus at once separated by the characters of the head (see Kéler, 1960: 211), dorsal chaetotaxy of the prothorax, the presence of a mesonotal rudiment, the general characters of the male genitalia and of the terminal segments of the male and female abdomens. At present, including the new species described below, there are probably eight or nine recognizable species, two of which, A. dentatus (Scopoli) and A. icterodes (Nitzsch), are usually sympatric and have a wide distribution throughout many of the subfamilies of the Anatidae, being represented by a number of populations differing from each other to a greater or lesser extent (see Kéler, 1960). Whether it is desirable to recognize all these populations by subspecific names or whether it is preferable to refer to them as A. icterodes sens. lat. and A. dentatus sens. lat. (see Clay, 1962) is perhaps in many cases a matter of opinion. Kéler (1960: 219) in the discussion of his two new genera Cereopsocoeus and Flamingobius considers the degree of development of the hypopharynx an important phylogenetic character, believing that it cannot be "present" and "absent" in closely related forms. In fact, it is never entirely absent, only less well developed, and this varying degree of development is found in a number of genera. Amongst the Amblycera, the two similar species Astromenopon phaeopodis (Schrânk, 1802) and A. crocatum (Nitzsch, 1866) show considerable differences in the development of the organ (see Clay, 1959: 159); the same situation is found in the two similar species Actornithophilus pustulosus (Piaget, 1880) and A. umbrinus (Burmeister, 1838). In the ischnoceran genus Iboecus, Cummings (1917: 670) showed the hypopharynx might be normally developed, greatly reduced or in an intermediate stage of modification. The degree of development of this structure does not therefore appear to be of great phylogenetic importance; in fact, the mouth parts as a whole may show considerable modifications not reflected in other parts of the body, as in Ricinus sens. lat. parasitic on the Passeres and the Trochili (see
Clay, 1949). It does not seem reasonable in this case to base a new family*) entirely on the characters of the mouth parts so that Ricinus sens. lat. is now contained in different families.

Ceropsoecus Kéler is a monotypic genus based on the species C. clayae Kéler parasitic on Cereopsis novaebollandiae Latham. It differs from Anatoecus icterodes in the presence of a fully developed hypopharynx and a prostheca on each mandible, the presence or absence of this latter structure may be functionally connected with the degree of development of the hypopharynx; in the presence of an inwardly directed projection on the molar area of the left mandible; in the length and thickness of some of the head setae which also show sexual dimorphism, in the shorter preantennal region and the differently shaped anterior plate. The last two characters resemble those of the species of Anatoecus parasitic on Cygnus. The relative sizes of the dorsal head setae are used as a differentiating character, but it would be difficult to separate clayae from A. penicillatus by this character. The molar projection is found also in A. penicillatus Kéler and the species from the Phoenicopteraeidae. It is not considered that any of the above characters are of more than specific value.

Flamingobius Kéler, type species A. pygaspis (Nitzsch), differs from A. icterodes in the presence of a fully developed hypopharynx and prostheca, the presence of a molar projection on the left mandible, the shape of the coni, the length and thickness of some of the head setae, the form of the basal segment (II) of the abdomen of which the tergal plate is undivided, the presence of two not four tergo-central setae, pleurites without anterior and posterior internal projections joining lines of thickening across the tergal plates (this character is less well-developed in some of the species from the Cygninae) and with smaller posterior ventral pleural projections, which are on pleurites II—V only. Of the other characters listed by Kéler, 1960: 306, the pointed anterior projection on each internal carina is also found in A. penicillatus; the more definite anterior delineation of the temporal carinae is also found in A. clayae; and the molar projection is found in other species. Another character not mentioned by Dr. Kéler in which the species from the Phoenicopteraeidae differ, is the presence in the males of a pigmented area between the divided tergites II—VIII. Both "Ceropsoecus" and "Flamingobius" have the dorsal carinae continued to the base of the medial posterior prolongation of the dorsal anterior suture; similar differences in the extent of this carina are found in the species of Saemundssonia from the Alcidae (see Clay, 1951: 192).

As it is considered that the degree of development of the hypopharynx is not of phylogenetic importance there seems no grounds for erecting the monotypic genus Cereopsoecus. The main characters used to separate Flamingobius apart from those of tergum II and the pleurites, are also found in A. clayae, which morphologically forms a link between the species of Anatoecus parasitic on the swans (Cygninae) and geese (Anserinae), especially A. penicillatus, and those on the flamingoes (Phoenicopterae), Anatoecus comprises a small number of species so that there is no added convenience in subdividing them into groups and the introduction of two

*) This family was named Trochiliphagidae by Carriger, 1960: 311, but the type species was given as Trochiloeetes, the name therefore should be Trochiloeetidae.
new names merely obscures the relationship between the species. As the recognition
of generic divisions such as these is largely a matter of opinion it is suggested for
the sake of convenience and clarity that neither Cereopsoeus nor Flamingobius
should be recognized.

The systematic position of the Phoenicopteridae is still uncertain, so that the
origin of their mallophagan fauna is also doubtful. Of the six species comprising
the Phoenicopteridae as given by Peters, 1931 (Check-list of Birds of the
World), Phoenicopter us antiquorum, P. ruber and Phoeniconaias minor are
parasitised by species of all the three genera (Trinoton, Anaticola and Anatocus)
common to the Phoenicopteridae and the Anseriformes; only Anaticola species has
been taken from Phoenicopter us chilensis, and there are no records of any Mal-
lophaga from the two species of Phoenicoparrus. If it is assumed, therefore, that
the mallophagan fauna of the Phoenicopteridae is not a primary infestation derived
from an ancestral stock which gave rise to the Phoenicopteridae and the Anseriformes
but is secondary (see Clay, 1950), then it was most probably acquired from the
Anseriformes by the stock ancestral to the species of Phoenicopteridae listed
above, if not to all the living species. The fact that the representatives of the
three anseriform mallophagan genera found on the Phoenicopteridae are distinc-
tive, both the Anatocus and the Trinoton have been separated generically (Köler,
1960; Eichler, 1941), suggests an ancient separation, although the degree of
difference between species of Mallophaga is not necessarily a criterion of time of
separation (Clay, 1957). The differences between the two forms of Struthiolipe-
rus found on Struthio and Rhea, probably separated at least since the Eocene, are
less than those between the species of Mallophaga from the Anseriformes and
the Phoenicopteridae. The characters in which the species of Anatocus from the
Phoenicopteridae resemble that from Cereopsis, a goose of doubtful affinities, may
be primitive ones retained from the ancestral Anatocus found on the primitive
Anseriformes. The available information on the mallophagan fauna of the
Phoenicopteridae does not provide an answer to its origin and hence that of its
hosts, but suggests that it was established at least on the stock which gave rise to
Phoenicopter us and Phoeniconaias.

Anatocus köleri sp. n.
Type host: Phoenicopterus ruber Linn.

This new species resembles A. pygaspis (Nitzsch) from Phoenicopter us antiquo-
rum and is distinguished in the male by the characters of the genitalia. The avail-
able females are not in sufficiently good condition for description.

Male. — Shape of the head and anterior plate and dorsum of thorax as
shown in fig. 1; other characters and chaetotaxy of head as shown in Köler,
1960, fig. 16 except that the dorsal setae of the head such Köler’s numbers 7, 8,
20, 21 are more spine-like than shown, as they are also actually in pygaspis,
although there is some individual variation. It is difficult to represent correctly
the length and thickness of small setae at the magnification of most figures. Ab-
domen with tergite II as shown in fig. 1; tergites III—VIII separated medially
with central sclerotisation; dorsum of terminal segments of abdomen as in fig. 2.
Abdominal sternal thickening III—VI in the form of irregular indistinct patches each side; posterior segments as in fig. 2. Pleurites II—V with ventral internal posterior projections present but smaller than in other species of *Anatoecus*. Male genitalia as in figs. 3—5.

Chaetotaxy. Prothorax with chaetotaxy typical of genus; ptero thorax has one spine-like and one long setae laterally and five long setae each side of the posterior margin as shown in fig. 1; one specimen lacks all the marginal setae on one side except the lateral spine-like one. The sternum of the ptero thorax may have 2, 3 or 4 setae. Post-spiracular setae present only on VIII, but post-spiracular sensilli are present on segments III—V. Tergocentral setae of abdominal segments
Text-fig. 2. Anatoecus kelveri sp. n. Terminal segments of male abdomen. Right, ventral, left, dorsal.

II—VII, 2 long; VIII, 2 short. Pleural setae: II, 0, III, 1 spine-like seta; IV—V, 2 spine-like and 1 long setae. VI—VIII, 2 long setae, 1 medium and 1 short and fine. Sternal setae: II—V, 0; VI, 2. Chaetotaxy of terminal segments as in fig. 2.

Material examined: 12♂, 4♀ collected from the head and neck of specimens of Phoenicopterus ruber Linn. by Mr. J. Rooth in Bonaire, Netherland Antilles, 1959—1960.

Holotype: Male in the British Museum (Natural History), slide no. 661 from Phoenicopterus ruber with data as given above. Paratypes: 11♂ from the same host species with the above data in the Zoologisch Museum, Amsterdam and British Museum (Natural History).

Measurements in mm

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Measurements of heads of 7 specimens

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TEXTURES. 3 a. Male genitalia. 3 b. Whole apparatus, ventral view. 
4. Genital sac, dorsal. 5. Distal part of pars terminalis. 
Part of sclerotisation of tail.

References


--------. 1951. An introduction to a classification of the Neotropical Mallophaga.


