THE MALLOPHAGA FROM EUDYPTES CHRYSOLOPHUS (BRAND) AND E. CRISTATUS (MILLER).

By S. von Kéler

(Berlin).

This note is based mainly on material collected by the Australian National Antarctic Research Expedition and loaned to me by the British Museum (Natural History).

Two species of Mallophaga known from *Eudyptes cristatus* have hitherto been known, namely *Austrogoniodes hamiltoni* Harr. and *A. maquariensis* Harr., no positive record being known from *E. chrysolophus*.

Clay and Rothschild (1938) have recorded *A. struthus* Harr. from captive specimens of *Eudyptes chrysolophus* and *E. cristatus*, but these records are probably due to contamination. I have not seen specimens from the first-named bird, but Miss T. Clay was kind enough to send me specimens collected in March, 1937, in the London Zoo from *Eudyptes cristatus* (two slides no. 8309, both undetermined), which proved to be conspecific with my *A. bifasciatus* ssp. *demersus* from *Spheniscus demersus*, Dyar’s Isl., South Africa. They are also conspecific with a good series of specimens collected by Clay from captive individuals of *Spheniscus demersus*, and with a pair collected by Waterston from the same bird in South Africa.

*A. struthus* was described by Harrison from *Eudyptes salateri*, no locality. According to Thompson (cf. Guimarães, 1938), who has examined a specimen determined by Harrison as *A. struthus*, this species is conspecific with *A. bifasciatus* (Fuget) from *Spheniscus magellanicus*. As I have not seen specimens of *A. struthus*... om one of the original hosts, I cannot decide whether this species is conspecific with *bifasciatus* or with ssp. *demersus*. It is at any rate certain, also from the original description, that the affinity of *A. struthus* is near *Austrogoniodes bifasciatus* and its occurrence on *Eudyptes salateri* and *schlegelii*, which are confined to the Islands south of New Zealand, is interesting, as has been already pointed out by Guimarães (l.c.).

Elsewhere (Kéler, 1952) two further species from *Eudyptes cristatus* are described, one of them being represented in the collection at hand, namely *Austrogoniodes cristati* from Tristan da Cunha.

We have then four species of Mallophaga known from *E. cristatus* and none from *E. chrysolophus*.

In the present material, collected by the A.N.A.R.E., there are represented the following species:

1. *From Eudyptes cristatus*: *Cesareus hamiltoni* (Harr.) (type host), and *Austrogoniodes cristati* Kéler (type host).

2. *From Eudyptes chrysolophus*: *Cesareus bicornatus* sp. n. (see below), *C. maquariensis* (Harr.) (new host) and *Austrogoniodes cristati* Kéler (new host).

Dr. S. von Kéler on the Mallophaga from Eudyptes

Cesareus macquariensis (Harrison) (figs. 1-3).

Two males, four females and three nymphs from Eudyptes chrysolophus Rog., Heard Isl., S. Ind. Ocean, A.N.A.R.E. coll. no. 640, bird no. 631, 26. xii. 1949. The specimens were collected off the head of the band.

---

Harrison (1937) described this species from two males and two females collected from Eudyptes chrysochomae (= cristatus filholi) and E. schlegeri, both from Macquarie Isl. Later this species was recorded by Eichler (1941) from the original host (Catharactes chrysochomae = Eudyptes cristatus cristatus) in Tierra del Fuego, collected by the Hamburger Magalhaens Expedition in 1893. This slide of the Hamburg Museum is before me. It contains one male of...
C. macquariensis and three males and two females of Austrogoniodes cristati Kéler, one of the latter males having been figured by Eichler (l.c.) as "macquariensis" Harr."

The occurrence of C. macquariensis on Eudyptes chrysolophus in Heard Island may easily be accounted for by the distribution of the penguin species in question, i.e., Eudyptes cristatus cristatus, E. c. filholi and E. chrysolophus (see fig. 1) and on the other hand by the contact which these birds may often have on their breeding places.

Fig. 2.—C. macquariensis (Harr.), 1937. Posterior part of male genitalia.
Specimen from Eudyptes chrysolophus, Heard Is.

This case is similar to that of the occurrence of Austrogoniodes bifasciatus or demersus (struheus, s.o.) on Eudyptes solateri and schlegeli in the New Zealand area. In both cases we have evidence that Mallophaga can, in natural conditions, pass over from one host species to another and can survive on the new host; or alternatively we can accept the other opinion, namely that C. mac-
quariensis or *A. bifasciatus* (demersus resp.) remained unchanged when the
original species of the host split into three different species.

*C. macquariensis* differs in many respects from the *bifasciatus* group (*Austro-
goniodes* *bifasciatus*, sp. demersus; *A. crista* may perhaps also prove to
be a sp. of *bifasciatus*) and is more closely related to forms of the *hamiltonii-
group*, which I have placed in the genus *Cesarea*.

---

**Fig. 3.—*Cesarea macquariensis* (Harr.). Posterior part of male *in situ*.
Specimen from *Eudyptes cristatus cristatus*, Ushuaia, Tierra Del Fuego.**

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Harris-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>son</td>
<td>Heard Is.</td>
</tr>
<tr>
<td>HL₁</td>
<td>0·427</td>
<td>0·482</td>
</tr>
<tr>
<td>HL₂</td>
<td>0·363</td>
<td>0·370</td>
</tr>
<tr>
<td>HB</td>
<td>0·521</td>
<td>0·504</td>
</tr>
<tr>
<td>PB</td>
<td>0·201</td>
<td>0·217</td>
</tr>
<tr>
<td>MB</td>
<td>0·470</td>
<td>0·420</td>
</tr>
<tr>
<td>AR</td>
<td>0·888</td>
<td>0·590</td>
</tr>
<tr>
<td>TL₁</td>
<td>1·386</td>
<td>1·288</td>
</tr>
<tr>
<td>TI₁</td>
<td>1·26</td>
<td>1·26</td>
</tr>
<tr>
<td>TI₂</td>
<td>1·35</td>
<td>1·36</td>
</tr>
</tbody>
</table>

* HL₁ = head length, with posttemporal projections, and (HL₂) in the mid-line.
  HB = head breadth, PB = prothorax breadth, MB = metathorax breadth, AB = abdo-
  men breadth, TL = total length of the body, TI = head index for the first and TI = second
  length of the head.
chrysolophus (Brand) and E. cristasus (Miller)

The specimens from E. chrysolophus differ slightly in some measurements from the original description, as also from the male taken in Ushuaia. The latter is juvenile and besides it is mounted in Canada balsam without having been treated in caustic potash, both facts being probably responsible for the differences. As the head index of C. macquariensis-males from chrysolophus is greater and that of the females agrees in the mean (± 1.455) with that of the original description, it seems that the differences may be only individual, or partly due to differences in mounting.

**Fig. 4.—Cenereus hamiltoni** (Harr.), 1937. Posterior part of male genitalia. Specimen from Eudyptes cristatus filholi, Macquarie Isl.

The male genitalia of my specimens from E. chrysolophus (fig. 2) are exactly as in the male from Ushuaia (fig. 3) except the small differences caused by the oblique position of the genital organ in the latter male.

I do not think, at present, that there are any subspecific differences between C. macquariensis from Eudyptes chrysolophus and E. cristasus, but a com-
parison of a longer series of specimens from both hosts and from E. schlegeli
and sclateri may perhaps throw some new light on the systematics of this
species.

As to the generic position of C. macquariensis, it may be noted that this
species shows in both sexes a very distinct appendix coni on the end of the
clavi, which is also present in C. hamiltoni and C. bicornatus, while it is wanting
in the species of the bifasciatus-group. The antennae of macquariensis are
distinctly dimorphic only in the basal segment and the temporal lobes are
not so prominent as in hamiltoni and bicornatus, but much more prominent
than in the bifasciatus-group. The lateral lobes of the metathorax are nearly
as strongly dilated as in hamiltoni and bicornatus. Finally, the shape of the
strongly dilated tibial spurs in macquariensis is as in hamiltoni and bicornatus.

Cesareus hamiltoni (Harrison) (figs. 4–7).

Material.—Seven males, 13 females and 6 nymphs from Eudystes cristatus
(juv.) Macquarie Isl., A.N.A.R.E. coll. no Mi/49/B.7, 9. vi. 1949, and 2 females

This species was described from many males and females by Harrison (1937) from Eudyptes chrysoceoue (= E. cristatus filholi) from Macquarie Isl. Clay (1940) recorded it from E. c. cristatus, Falkland Isl.

As the drawing of the copulatory apparatus in the original description shows a different shape of the tips of the parameres, it was necessary to compare the types of this species. Through the kindness of Miss Theresa Clay, British Museum (Natural History), I have been able to compare a male and a female paratype of C. hamiltoni.

Fig. 6.—Ceareus hamiltoni (Harr.). Left antenna of male, dorsal aspect.

Figs. 4 and 5 in this paper show the copulatory organ of C. hamiltoni, A.N.A.R.E. coll., no. MI/49/B.7, and fig. 7 the ends of the parameres and endomeral plates of the paratype male.

If compared with the respective figure in the original description it must be stated that both the paramere teeth are not of equal length and are not both curved inwardly as in Harrison's drawing, but they are of unequal length and the outer tooth is strongly directed outwards, whereas the inner tooth is directed postero-medial as in my figures. The extreme tip of the inner tooth is in some specimens directed slightly outwards.
In fig. 5 the copulatory apparatus is shown in an early stage of erection, with the parameres stretched out and with both the parameral teeth directed outwards, just as in Harrison's second drawing.

Assuming that the male, the genitalia of which have been drawn by Harrison, was conspecific with his paratypes, then the drawing of the parameral teeth in the original description is erroneous.

Fig. 7.—Cesareus hamiltoni (Harr.). Ends of parameres and endomerite of a paratype male in British Museum (type no. 437).

Cesareus bicornutus sp. n. (figs. 8–9).


Holotype: a male from bird no. 620, coll. no. 628, in the British Museum.

Allotype: a female from the same bird, on the same slide with holotype.

Paratypes: two males and five females in the British Museum, and one male and one female in the Zoological Museum, Berlin. The nymphs have not been regarded as paratypes, as there are but three very young ones and I am not sure enough whether they belong to this species or perhaps to Cesareus macquariensis, from which I have but 3 nymphs of an early stage.

Males and females in length, habitus and chaetotaxy very similar to hamiltoni Harr. In the male the elytral region is more flatterly rounded than in hamiltoni (0:400–0:413 : 0:063–0:070 = 6 : 1 in, hamiltoni 0:400 : 0:050 = 8 : 1). Genital organ as in fig. 8. Last segment nearly regularly rounded, semicircular (in males of hamiltoni it is more parabolic), with distinctly flattened sides.

The females are practically indistinguishable from hamiltoni; being separated only by the pair of brown chitinised tubercle-like structures just behind the lateral pouches of the vaginal sac, which are wanting in all my females of hamiltoni.
**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Holo-type</th>
<th></th>
<th>Females</th>
<th></th>
<th>Allo-type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H</strong></td>
<td>0.511</td>
<td>0.497 0.504</td>
<td>0.576</td>
<td>0.562 0.525</td>
<td>0.525</td>
<td>0.525 0.525</td>
</tr>
<tr>
<td><strong>L</strong></td>
<td>0.406</td>
<td>0.392 0.400</td>
<td>0.497</td>
<td>0.483 0.462</td>
<td>0.462</td>
<td>0.448 0.455</td>
</tr>
<tr>
<td><strong>R</strong></td>
<td>0.680</td>
<td>0.650 0.658</td>
<td>0.728</td>
<td>0.700 0.640</td>
<td>0.646</td>
<td>0.658 0.632</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>0.378</td>
<td>0.357 0.343</td>
<td>0.370</td>
<td>0.350 0.294</td>
<td>0.310</td>
<td>0.294 0.310</td>
</tr>
<tr>
<td><strong>M</strong></td>
<td>0.658</td>
<td>0.632 0.632</td>
<td>0.675</td>
<td>0.650 0.590</td>
<td>0.590</td>
<td>0.576 0.583</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>0.680</td>
<td>0.910 0.882</td>
<td>1.010</td>
<td>0.910 0.896</td>
<td>0.896</td>
<td>0.940 0.952</td>
</tr>
<tr>
<td><strong>T</strong></td>
<td>1.975</td>
<td>1.904 1.764</td>
<td>2.072</td>
<td>1.960 1.750</td>
<td>1.792</td>
<td>1.778 1.802</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>1.35</td>
<td>1.31 1.30</td>
<td>1.26</td>
<td>1.24 1.22</td>
<td>1.22</td>
<td>1.23 1.25</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>1.67</td>
<td>1.61 1.64</td>
<td>1.46</td>
<td>1.43 1.43</td>
<td>1.43</td>
<td>1.49 1.37</td>
</tr>
</tbody>
</table>

**Fig. 8.—*Cexarea bicornutus* sp. n.** Posterior part of male genitalia.
Austrogoniodes cristati Kéler.


Fig. 9.—Cecereus bicornatus sp.n. Posterior segments of abdomen (apex) of female. Left dorsal, right ventral side.


Some of the specimens of the above series from E. chrysolophus were used in the original description, and are labelled as paratypes.

There is at present nothing to be added to the original description of this species.
References.


