
(Received 19th January 1912. Read 22nd January 1912.)

In the Monographia Anoplurorum Britanniae (London, 1842), Denny describes and figures Docophorus bassanae from the Gannet (Sula bassana), and in dealing later with the genus Lipeurus, introduces as a new species L. staphylinoides from the same host. Piaget (Les Pédiculines, Leide, 1880, vol. i.) treats L. staphylinoides as a variety of L. pullatus, Nitzsch.3

"Le L. staphylinoides de Denny provenant d'une S. bassana me parait une simple variété où les taches de l'abd. mâle sont toutes transverses."

The form named by Denny, D. bassanae, seemed to him so variable as to merit two figures. After describing two stages he says, "I am induced to consider these two insects, although differing considerably at first sight, as the adult and immature state of the same species. I have drawn both and committed them to copper under the impression that they were specifically distinct, but since, upon examining many specimens taken from recent birds, I find such varieties in size, proportion, markings and colour, as to convince me that the fig. 3 of plate 7 is nothing more than the last moult but one; many specimens in still earlier stages exhibit a greater diversity of appearance, and it is only by comparing a series that the identity of the whole can be inferred, sometimes the fascic are without the notch, at other times pale brown and extending nearly across the abdomen."

Piaget, who also evidently felt some difficulty in dealing with bassanae, places it with brevicaulis and dubius, last among the species of Docophorus which he had personally examined. It forms, in his opinion, a distinct type in the genus, but he adds that bassanae is "only half known" to himself, presumably because he had seen but one sex.

Through the courtesy of Mr A. M. Rodger, The Museum, Perth, I have recently had submitted to me a series of Gannet parasites, amongst which both the species under discussion are represented. There is one adult male of L. pullatus, N., which is normal in having the first four abdominal fascic mesially divided. There are besides several females corresponding exactly with Piaget's figure, and a number of other examples which are as plainly the insect named bassanae by Denny.

1 Pp. 110, 111, pl. vi, fig. 3, and pl. vii, fig. 4.
2 Pp. 180, 181, pl. xv, fig. 2.
3 P. 340, pl. xxvii, fig. 9.
Docophorus bassaneæ, D., and Lipeurus staphylinoides, D. 249

To any one going over the latter material, the justice of Denny's remark as to the variability of bassaneæ is evident. But it seems clear, on detailed examination, that the mature form to which the juvenile (and typically bassaneæ) stages lead up is simply the female of pullatus.

One or two points in support of this conclusion may be noted.

1. No one apparently has seen the male of bassaneæ.

2. As regards the female, Denny has figured an adult which might stand for the known female of pullatus. Piaget figures the immature stage of bassaneæ, and naturally finds that the genital marks are indistinct.

3. As regards pullatus, Piaget, who figures the terminal segments of the female, makes no remark as to the frequency or infrequency of the occurrence of this sex. Denny says that the female of his staphylinoides is so rare that he has seen one example only. Possibly his identification of the sex was erroneous. More probably, as it seems to the writer, Denny, having taken as the type of staphylinoides a male in which the abdominal bands were continuous, looked for a similar female to match it. The usual females, with two quadrate spots on each abdominal segment, being left unaccounted for, were correctly attributed to the younger stages and became D. bassaneæ.

4. The chaetotaxy of the head (to take one special region), so carefully detailed by Piaget, reads in the case of pullatus practically as in bassaneæ. There is given for bassaneæ one temporal spine less than for pullatus. But undoubted bassaneæ in this Perth material show the spine not noticed in Piaget's description.

5. Most Docophori have a fringe of hairs on the posterior margin of the metathorax, while many species of Lipeurus show a fascicle of long hairs rising from a single or double pustule at the posterolateral angle. This fascicle is pronounced in pullatus and is found also in bassaneæ.

6. Piaget, speaking of bassaneæ, makes a significant remark. "Les pattes par suite de leur insertion au bord du thorax et par la plus longueur du trochanter, rappellent par leur confirmation celles des Lipeuri." But he takes no further step. No more material seems to have come into his

1 Piaget, as noted already, makes this a var. of pullatus. But it may also be an old stage of the type. In the Christmas Island material referred to, there are adults of both sexes with the abdominal bands divided and others with them all entire. Various gradations occur, and the more continuous are the bands the darker is the coloration, so that specimens with no trace of a median furrow on the abdomen are almost black. Two Lipeuri closely related to pullatus occur commonly in Scotland, viz., L. brevicornis, Denny, and L. longicornis, P. They are found respectively on Phalaenocorax graculus and P. cerro. In both species the females, when newly adult, show on the abdomen a broad, clear median space which darkens afterwards so that the segments show a band divided into three quadrate spots, by two narrow lines.
hands in the interval between the publication of the *Essai* (1880) and that of the *Supplement* (1885). Consequently *Docophorus bassana*, D., was included by Kellogg in his list of Mallophaga (1908).\(^1\)

7. One further point may be mentioned. On the postero-ventral aspect of the tarsus of *pullatus* (well seen on the mid and hind legs) is an almost apical group of peculiar broad spines which are slightly hooked at the end. These, somewhat less developed, reappear in *bassana*.

While examining this material from *Sula bassana* it occurred to me to make a comparison with a long series of *Lipeurus* from a "Booby Bird" (*Sula* sp.) from Christmas Island. This is a large form, perhaps new, closely related to *L. annulatus*, P., and *L. pullatus*, N. Here again one finds a *bassana*-like juvenile stage. The tarsal hooks (see 7 above) are replaced by stout, straight bristles, and the juvenile changes in this respect also.

It would seem then that *D. bassana*, D., and *L. staphylinoides*, D., are conspecific with *L. pullatus*, N.

Mr Wm. Evans, in recording (*Ann. Scot. Nat. Hist.*, 1906, p. 87) the occurrence of both sexes of *L. staphylinoides*, D., from St Kilda, made the remark that the females bore a close resemblance to Denny's figure of his *Docophorus bassana*. I find on inquiring that Mr Evans had then reached the above conclusion, though he did not publish his result. I am glad to have the support of his valuable opinion in a matter where accuracy is so desirable.

\(^1\) Kellogg, in Wytman's *Genra Insectorum*, 66th Fascicule, "Mallophaga," p. 10, species 25. Kellogg gives as host, "*Sula bassana* (Great Britain) and the Gannet (United States of America)," so that the duplication of *pullatus* must exist in the American literature also.

*(Issued separately, 9th April 1912.)*
ON DOCOPHORUS BASSANÆ, DENNY,
AND
LIPEURUS STAPHYLINOIDES, DENNY.

BY
JAMES WATERSTON, B.D., D.M.S.

EDINBURGH:
Published by ROBERT GRANT & SON, 107 PRINCES STREET.

MDCCCLXII.

Price Sixpence.