

XXVIII.—On *Docophorus bassanæ*, Denny, and *Lipeurus staphylinoides*, Denny. By James Waterston, B.D., B.Sc.

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

IN the *Monographia Anoplurorum Britannicæ* (London, 1842), Denny describes and figures *Docophorus bassanæ*¹ from the Gannet (*Sula bassana*), and in dealing later with the genus *Lipeurus*, introduces as a new species *L. staphylinoides*² from the same host. Piaget (*Les Pediculines*, 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. bassanæ*, 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 had 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 fasciæ 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 *bassanæ*, places it, with *brevimaculatus* 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 *bassanæ* 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 fasciæ 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 *bassanæ* 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.



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

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 *bassanæ*, 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,¹ 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. bassanæ*.

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 *bassanæ*. There is given for *bassanæ* one temporal spine less than for *pullatus*. But undoubted *bassanæ* 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 postero-lateral angle. This fascicle is pronounced in *pullatus* and is found also in *bassanæ*.

6. Piaget speaking of *bassanæ* makes a significant remark. "Les pattes par suite de leur insertion au bord du thorax et par la plus longue 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 *Phalacrocorax graculus* and *P. carbo*. 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 bassanæ*, 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 *bassanæ*.

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 *bassanæ*-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. bassanæ*, 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 bassanæ*. 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 Wytzman's *Genera Insectorum*, 66^{me}. 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.

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