

Notes on Species of the Genus *Pectinopygus* (s. l.).
(Mallophaga).—I. By GORDON B. THOMPSON.

[Plate VIII.]

Pectinopygus (*Pectinopygus*) *bassani* (O. Fabricius).

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TYPE-HOST.—*MORUS BASSANUS* (Linn.).

HISTORY OF THE SPECIES.

Miller's name is a *nom. nud.*, and therefore needs no further consideration. Fabricius (1780), whose description reads as follows, was the first person to describe this interesting species:—

“*Pediculus Bassani*.

Pediculus fuscus capite rotundato, abdomine oblongo-ovato.

Pediculus Bassani, Mill. prodr. 2193.

Grœnl. *Kuksuh-koma*.

Descr. Facies et magnitudo formicæ minoris. Totus fuscus, s. ex brunneo nigricans. Caput parvum rotundatum; thorax gracilis; abdomen maximum fere-ovatum. Pedes 6.

Habitat in Pelecano Bassano.

Tam retrorsum quæ-antrorsum incedere valet.”

Denny (1842) described a species, which he apparently took to be the same as the one described by Fabricius, from specimens collected from *Sula bassana*, *Phalarocorax carbo* and *Sterna hirundo*. The specimens from the last two hosts must have been either stragglers or representatives of another species. The latter alternative is likely with regard to those from *P. carbo*. Denny was so struck by the differences between the immature specimens and the adults that he at first took them to be distinct species. He figured both forms. The same author, in the same work, later described and figured a male as a distinct and new species, which he called *staphylinoides*, from the same host. He did not, however, associate the sexes, in spite of their common host. Denny's collection (*vide* Thompson, 1937, p. 81) contains 4 ♂♂, 3 ♀♀, and 1 imm. of his original specimens.

Gervais (1844), under the name *Philoterus bassani*, gave a brief description, which he apparently took from Denny's work, and listed the same hosts as Denny. He also listed *staphylinoides* and gave a figure to which he made the

following reference:—“nous en figurons le mâle d'après nature.” Denny (1852) merely listed his own two species and gave references to previous works.

The name “*pullatus*,” proposed by Giebel (1861), is a *nom. nud.* Five years later Giebel (1866) described a species apparently on the basis of Nitzsch's material, to which the name *pullatus* had been given. The host definitely came from Germany and is quoted as *Sula alba*.

In 1874, Giebel in his ‘*Insecta Epizoa*’ quoted Denny's latin diagnosis and the hosts given by the latter. On a later page Giebel quoted Denny's latin diagnosis of *L. staphylinoides*, gave the host as *Sula bassana*, and added that the broad triangular and anteriorly truncate head, the broader thoracic segments, the black colour of the body with light yellow antennæ and legs, characterised this *Staphylinoid* species. On the same page Giebel described both sexes of Nitzsch's *L. pullatus*, giving the host as *Sula alba*. He did not associate the species described by Denny with his own.

Piaget (1880) redescribed Nitzsch's *pullatus* from *Sula alba* and *Sula fusca* and presented figures of the following:—An adult male, the terminal abdominal segments of a male and a female, the female antenna and the 3rd, 4th and 5th segments of a male antenna. He treated Denny's *staphylinoides* as a variety of Nitzsch's *pullatus*. Piaget's collection contains eight slides of 9 ♀♀ and 7 ♂♂, all determined as *L. pullatus* Nitzsch, off the following hosts:—*S. bassana*, *S. fuscus*, *S. alba*. The specimens from *Sula bassana* must have come into Piaget's hands after he wrote his Monograph, for he does not mention them.

Taschenberg (1882) merely referred to Nitzsch's *pullatus* on p. 143, including it in the group “*clypeatus sutura distincta*.” Later, on p. 145, he included it in a key to the group. He did not, however, mention Denny's *staphylinoides*, and as the genus *Docophorus* was not included in Taschenberg's Monograph, *bassanæ* was not referred to at all.

Osborn (1896) referred specimens off an unknown host, “probably a Gannett,” to Denny's *bassanæ*. Later in this work, Osborn recorded specimens off *Sula bassana* and *Sula alba* from North America, and made the following comments:—“specimens labelled from *Sula alba* lighter

coloured than those from *Sula bassana*, but the latter agree perfectly with Piaget's excellent figure. It would seem that Denny's *staphylinoides* must come here, but the specimens do not agree with his description or figure."

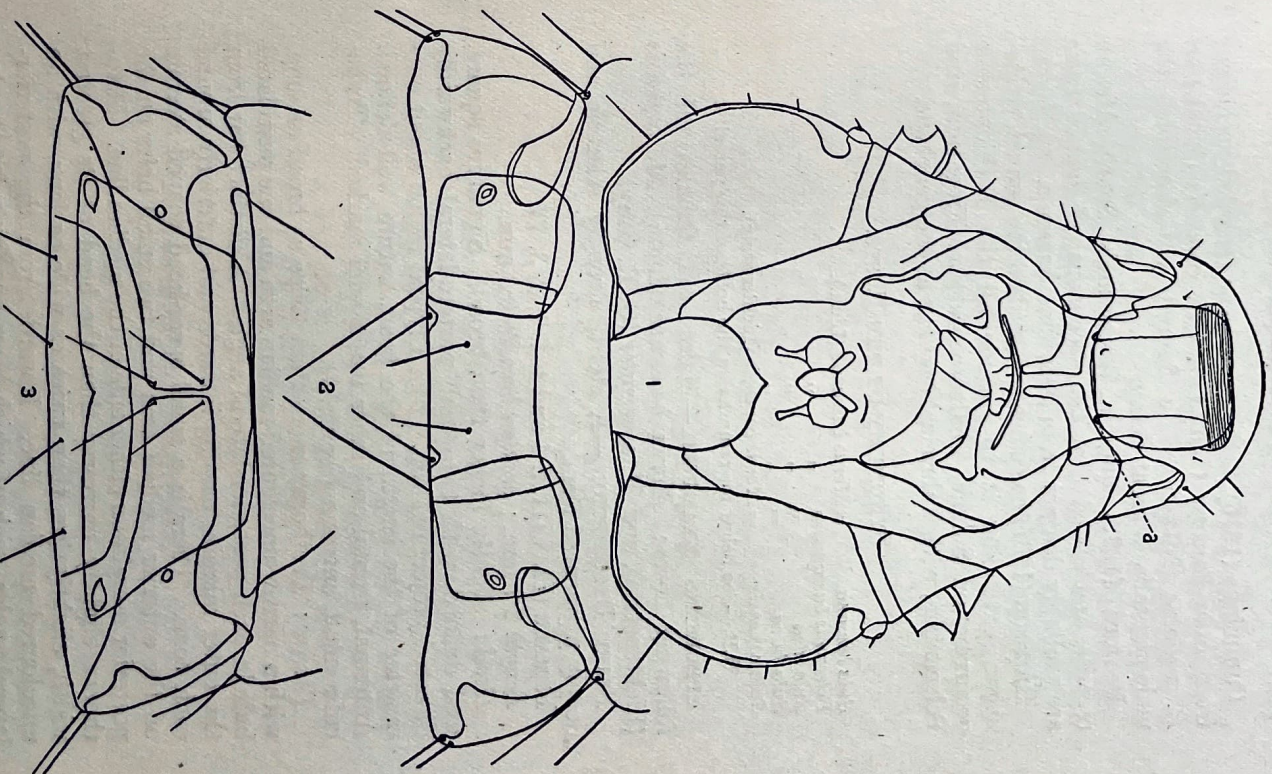
He was the first person to suggest that Denny's *staphylinoides* had some relation to *bassanae*. Kellogg (1899, Proc. U.S. Nat. Mus. xxii, pp. 41 & 60) merely listed *D. bassanae* Denny and *L. pullatus* Nitzsch on the basis of Osborn's records. He did not mention *L. staphylinoides* Denny. Evans (1906), quite independent of Osborn's remarks, in recording specimens collected from *Sula bassana* on the Island of St. Kilda, alluded to the resemblance of the females of the species which he determined as *staphylinoides* to Denny's figure of *bassanae*.

Kellogg (1908) listed Denny's *bassanae* and Nitzsch's *pullatus*, but omitted Denny's *staphylinoides*. His host records were obviously taken from Osborn's paper (see above) and it is strange that he does not refer to *staphylinoides* (cf. Kellogg, 1899, cited above).

In 1910, Mjöberg erected a new genus which he called *Pectinopygus*, with Nitzsch's *pullatus* as the genotype and sole species. He figured a male antenna and the ventral genital plate of the male.

Waterston (1912), after examining a number of specimens of *Sula bassana*, concluded that Denny's *staphylinoides* was the male of *bassanae*, and that these two were conspecific with Nitzsch's *pullatus*. Evans (1912), on a later page in the same journal, arrived at the same conclusion with regard to Denny's "two" species. In 1914 Waterston, in dealing with *bassanae* Denny, stated that it represented the female (adult and immature) of Nitzsch's *pullatus*. On a later page the same author recorded *pullatus* from *Sula capensis* and *Phalacrocorax capensis*—the specimens of the second host may be regarded as stragglers. He also added that he preferred to leave *pullatus* in the genus *Lipeurus* rather than accept Mjöberg's *Pectinopygus*, since "the characters upon which the latter were founded were of specific rather than generic value."

Harrison (1916) was the first person to revive Fabricius' name. He gave the host as *Sula bassana* and relegated Nitzsch's *pullatus* and Denny's *staphylinoides* to the synonymy of Fabricius' *bassanae*.



Pectinopygus (P.) bassanae (Fabr.).

Fig. 1.—Head of ♀.

Fig. 2.—Fourth abdominal segment of ♀.

Fig. 3.—Fourth abdominal segment of ♂.

Cummings (1916) in the same year recorded specimens from *Sula bassana* (Linn.) and *S. capensis* (Licht.) as *P. pullatus* (Nitzsch). He figured and described the male genitalia in great detail.

Bedford (1932) quoted Waterston's South African records, and added that the specimens of *Sula capensis* are probably distinct from Fabricius' *bassanae*.

Harrison (1937) has since redescribed the genus *Pectinopygus*, extending it to include all the Esthiopterinæ occurring on Sulidæ, Phalacrocoracidæ, Fregatidæ, and Pelecanidæ, with Fabricius' *bassanae* as the genotype.

SYNONYMY OF THE HOSTS.

<i>Sula bassana</i>	=	<i>Morus bassanus</i> (Linn.).
<i>Pelecanus bassanus</i>	=	"
<i>Sula alba</i>	=	"
<i>Sula fusca</i>	=	"
<i>Sula capensis</i>	=	<i>Morus capensis</i> (Lichtenstein).

N.B.—See below for remarks on the hosts of this parasite.

SPECIMENS EXAMINED.—Males and females of the following hosts: *Morus bassanus* (Linn.), *M. capensis* (Lichtenstein), and *M. s. serrator* (G. R. Gray).

BRIEF DESCRIPTION.—A stout, strongly sclerotic and deeply pigmented form.

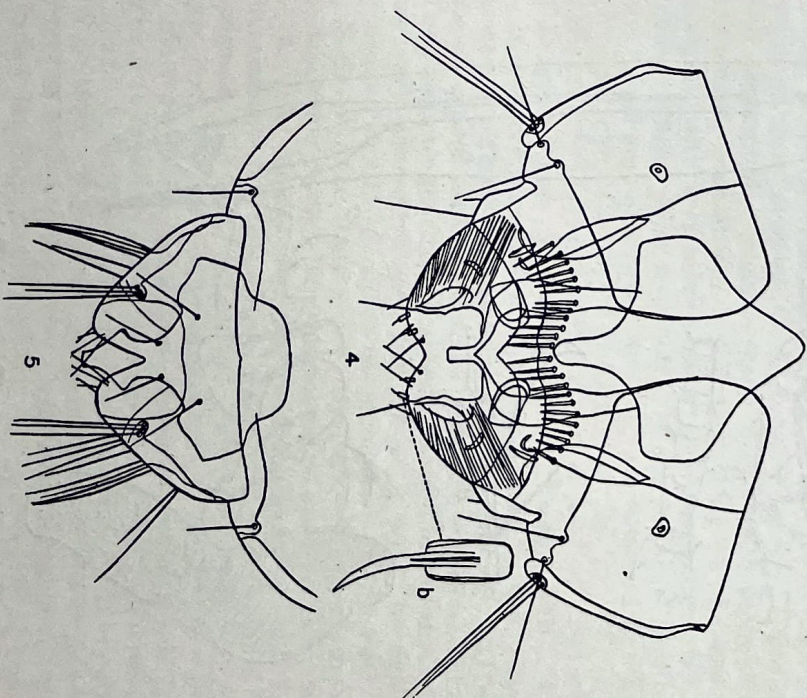
FEMALE (Pl. VIII. f. 1 and t. f. 1, 2, 3, 7).

Length 2.7 mm.; **greatest breadth** 0.8 mm.

Head: slightly longer than broad. Signature square, well defined, with two small postero-lateral backwardly directed projections (fig. 1 a). Clypeal region about one-quarter of the length of the head, suture well defined. Antennæ, frontal and inner bands well marked. Tracheule small, antennæ (see fig. 7).

Thorax: Prothorax more than twice as broad as long, with a narrow uncoloured median area and one pustulated hair in each posterior-lateral angle. A distinct bar from the outer margin, passing inwards and anteriorly around each coxa. There is a small spear-head shaped sternite on the anterior median area and two small hairs on the posterior margin on either side of the median line. Metathorax slightly narrower than the head at its greatest width, slightly less than twice as wide as long, with an uncoloured median line. Inwards from the posterior-lateral angles, each of which bears one fairly long pustulated hair and a small spine, is an uncoloured area bearing

three long pustulated hairs and two smaller ones. Posterior margin slightly convex on abdomen. On either side there is a well-defined lateral bar. Sternite spear-head shaped with point directed posteriorly, bearing two small hairs on its posterior portion. Slightly anterior to the posterior margin on the ventral side are two small hairs situated medially.



Pectinopygus (P.) bassani (Fabr.).

Fig. 4.—Genital region of ♂.

Fig. 5.—Genital region of ♀.

Legs: stout and bearing powerful claws. On the postero-ventral aspect of each tarsus is an almost apical group of peculiar broad spines which are slightly hooked at the end. These were mentioned by Waterston (1912,

P. 2560), but are by no means easy to find in all specimens. They are, however, more distinct on the mid and hind tarsi, as pointed out by Waterston (*op. cit.*). I give a

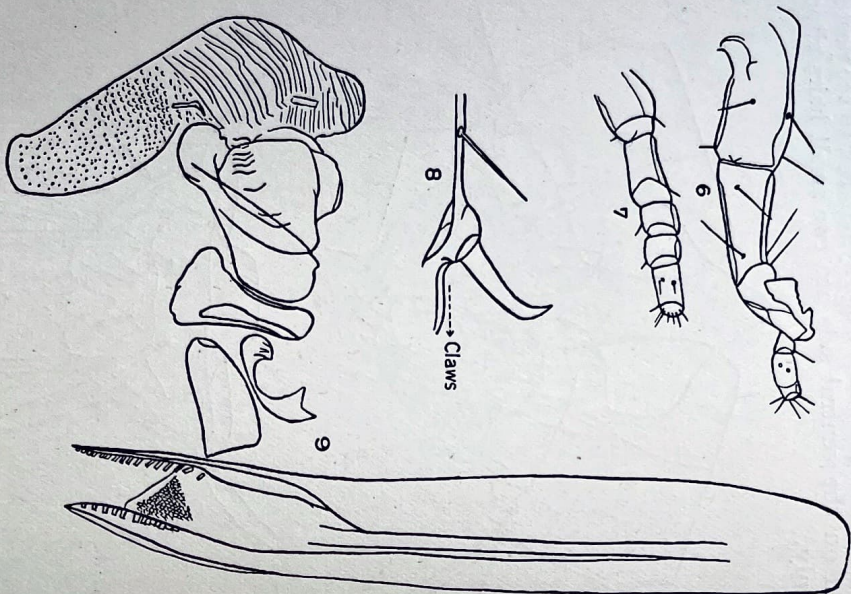


Fig. 6.—Antenna of ♂.
Fig. 7.—Antenna of ♀.
Fig. 8.—Specialised spine on posterior margin of mid-tarsus.
Fig. 9.—Genitalia of ♂.

drawing of one of these spines, highly magnified, from the mid-tarsus (see fig. 8).

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Abdomen: stout, slightly less than twice as long as greatest breadth. Apparently widest at fifth segment. Transverse bands rectangular, not continuous, with a clear median space which is only moderately pigmented. Spiracles clearly visible. Tergites each bear four long hairs at their postero-lateral angles, a single hair inwards on the postero-lateral margin and in the postero-median angle. Outer margins of segments heavily chitinised and pigmented. Sternites only moderately pigmented, transverse, continuous, but not reaching to the lateral margins, with two hairs on the posterior margin and a median pair at about two-thirds of the length. Terminal abdominal segments (see fig. 7). An enlarged figure is given of one of the sheathed hairs (fig. 7*b*).

MALE (Pl. VIII. f. 2 and t.-f. 3, 5, 6, 9).

Length 3.2 mm.; *greatest breadth* 0.77 mm.

In general form resembling the female. It is larger, however. The head is about as broad as long. There are no superficially clear areas apparent on the abdomen. The antennæ, genitalia, and terminal abdominal segments are very distinctive (see figs. 6, 9, & 4). The figures presented should render its recognition an easy matter.

N.B.—All the figures, save figs. 4*b* and 8, are drawn to the same scale. The photographs are approximately $\times 24$. The figures are approximately $\times 240$. All the illustrations and descriptive notes have been made from specimen of *P. (P.) bassani* (O. Fabr.) collected from the type-host, *i. e.*, *Morus bassanus* (Linn.).

Since Fabricius' type must be taken as lost, I am proposing to make neotypes and neo-paratypes as follows:—♂ and ♀ neotypes, off type-host, Devonshire, Plymouth, 19. xi. 1935. Numerous neo-paratypes off the type-host from the same locality, from Grassholm, 7. viii. 1934, and Orkney Is., Hoy, 5. viii. 1938.

NOTES.—When first considering the *Pectinopygus* occurring on species of the genus *Morus*, I was inclined to treat them as one species. A more careful examination has induced me to apply subspecific names to the forms occurring on *Morus serrator* (G. R. Gray) and *Morus cyparissis* (Lichtenstein). The differences are only slight and are mostly concerned with measurements, but they do seem to be fairly constant. The typical form, which

must be the species found on *Morus bassanus* (Linn.), is the largest. *Morus capensis* (Lichtenstein) carries the smallest form, and the one occurring on *Morus serrator* (G. R. Gray) is intermediate between the two. I have been unable to find any marked differences in the male genitalia, but it must be borne in mind that in dealing with such complex genitalia differences may easily be overlooked.

The following table of approximate measurements will serve to illustrate the differences referred to above:—

Host.	Length.	
	♀.	♂.
<i>M. bassanus</i> (Linn.)	2.7 mm.	3.2 mm.
<i>M. s. serrator</i> (G. R. Gray)	2.6 "	3.0 "
<i>M. capensis</i> (Lichtenstein)	2.5 "	2.9 "

The species occurring on these three hosts will in future be referred to as follows:—

- a. *Pectinopygus (P.) bassani bassani* (O. Fabricius).
Type-host.—*Morus bassanus* (Linn.).
- b. *Pectinopygus (P.) bassani serrator*, subsp. n.
Type-host.—*Morus s. serrator* (G. R. Gray).
♀ and ♂ types and numerous paratypes off the type-host from Tasmania, Storey's Creek, 7. iv. 1938.
- c. *Pectinopygus (P.) bassani capensis*, subsp. n.
Type-host.—*Morus capensis* (Lichtenstein).
♂ and ♀ types and paratypes off the type-host from S. Africa.

I have not seen specimens from the subspecies *Morus serrator rex* (Matthews and Iredale), but it is very probable that they will fall within the limits of the new subspecies off the typical host, since this bird is said only to differ from true *serrator* in minute shades of colouring of the head and neck.

EXPLANATION OF PLATE VIII.

Fig. 1. *Pectinopygus (P.) bassani* (Fabr.), ♀.
Fig. 2. *Pectinopygus (P.) bassani* (Fabr.), ♂.

FIG. 1.

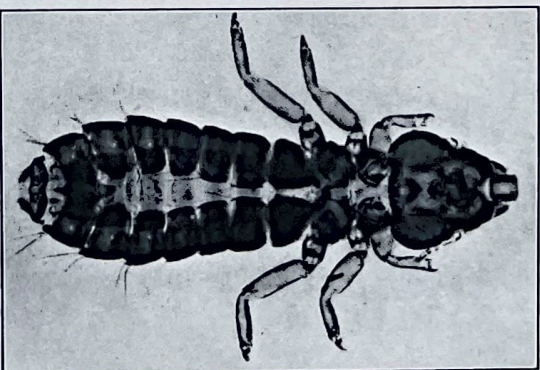


FIG. 2.

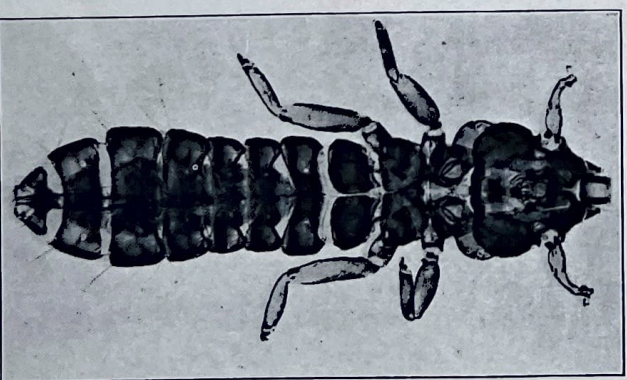


FIG. 1—*Pectinopygus (P.) bassani* (Fabr.). ♀.
FIG. 2—Ditto. ♂.