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XLIV.—*A List of the Japanese Silphidæ.*

By GEORGE LEWIS, F.L.S.

THE following is a list of the Japanese Silphidæ, consisting of twenty-three species, of which three are treated of as new.

Neerophorus concolor, *Kraatz*.

— *japonicus*, *Harold*.

— *maculifrons*, *Kraatz*.

— *montivagus*.

— *4-punctatus*, *Kraatz*.

— *latifasciatus*.

— *mortuorum*, *Fabr*.

— *tenuipes*.

Ptomascopus morio, *Kraatz*.

— *plagiatus*, *Ménétr.*, *Motsch*.

— *4-maculatus*, *Kraatz*.

— *Davidis*, *Fairm*.

— *plagiatipectennis*, *Lewis*.

Necrodes littoralis, *Linn*.

— *nigricornis*, *Harold*.

Silpha japonica, *Motsch*.

— *brunnicolis*, *Kraatz*.

— *venatoria*, *Harold*.

— *perforata*, *Gebler*.

— *sylvatica*, *Lewis*.

— *sinuata*, *Fabr*.

— *rugosa*, *Linn*.

— *thoracica*, *Linn*.

— *subrufa*, *Lewis*.

— *nigropunctata*, *Lewis*.

— *atratus*, *Linn*.

The Silphidæ have a curious habit, common enough also with other insects, and well known to every one who studies them, of remaining stationary when alarmed, with outstretched legs and with the head and thorax bent towards the abdomen. The attitude is often expressed as "the feigning of death;" but what the beetles really do in assuming this posture is to bring the edges of the hard chitinous epidermis together, and this is the only position in which the edges can meet. When the insects are active and the head on a plane with the thorax the soft membranous parts between the hard segments are exposed, and it is presumable that a wound or injury to these frail structures would be very harmful, if not mortal. We sometimes find a beetle with part of its chitinous covering broken or bruised; but it is probable that unless the membranous part beneath (for it extends under it) is injured, the damage done to the insect is not by any means immediately fatal. If, as suggested, the piercing or lacerating of the membranous film is mortal, there is a manifest object in the animal covering it when disturbed. Dr. Sharp, in an interesting paper on *Hypocephalus armatus*, Desmarest (C. R. ent. Belg. xxviii.), has already written on this subject.

The stationary posture of the imago is similar to the recumbent attitude of the insect when it is a pupa, except that the legs are free. When the beetles "feign death" their legs are thrust out away from the body, and this action closes the

coxal cavities ; but to us it gives an appearance of great helplessness, as the insect lies on its back or side.

What the special enemies of *Necrophorus* are, or what the conditions of its life most disadvantageous to it may be, I cannot say. *Acari* often swarm on their bodies, but they do not apparently hurt the imagos, although we may well conceive that they are a source of intense discomfort to them. Hasty flight is apparently of less importance than the covering-up of the membranous surface ; yet after a minute or so the beetles run away fast enough. *Creophilus maxillosus*, Linn., is a common English species which "feigns death" before running, and the large larvæ of Sphingidæ, with retractile heads, will remain stiff on their food-plants, although they will jerk and sway their heads to and fro on the arrival of an ichneumon. They will not crawl when first alarmed.

Another benefit accruing from the closing of the harder plates over the thin membranous parts is that when the insects are hybernating or in repose desiccation is less, and the vital capital of the beetle is longer retained. It would thus get less hungry. It seems also that the chitinous part of the epidermis is the only portion of it which is exposed to the chemical action of the air &c. while the imago is yet soft after transformation ; and this doubtless has always been an important incident in the economic history of a species.

1. *Necrophorus concolor*, Kraatz.

Necrophorus concolor, Kraatz, Deutsche ent. Zeitschr. 1877, p. 100.

This species is abundant in South Japan and has been taken in Sado. It measures 30–36 millim., and is black, with a yellow club to the antenna.

2. *Necrophorus japonicus*, Harold.

Necrophorus japonicus, Harold, Deutsche ent. Zeitschr. 1877, p. 345.

The hind tibiæ of this insect are incurved in the male and the internal spine on the trochanter is long and conspicuous. The largest example in a series of fourteen specimens measures 27 millim.

Found at Nagasaki, Hiogo, and Yokohama.

3. *Necrophorus maculifrons*, Kraatz.

Necrophorus maculifrons, Kraatz, Deutsche ent. Zeitschr. 1877, p. 101.

Harold (l. c. p. 346) considered this species to be the same as *N. nepalensis*, Hope (Zool. Misc. 1831, p. 21) ; but this

determination is not correct. The type of *nepalensis* is in the British Museum, and has been carefully examined and compared by Mr. C. O. Waterhouse and myself with Japanese specimens which are undoubtedly Kraatz's *N. maculifrons*, and it is certain that the species are distinct.

I have taken it at Nikko, Hiogo, and Yokohama.

4. *Necrophorus montivagus*, n. sp.

Præcedenti similis, sed multo minor; antennarum clava partim nigra; elytris fasciis duabus rufis. L. 11-14 mill.

This species differs from *N. maculifrons*, Kraatz, in being much smaller; the antennæ, especially the basal joint, stouter, with the apical joint alone red. It has also no frontal red spot, and the red fasciæ of the elytra in most specimens are less encroached upon by the black denticulation of the other part. The thorax is rounder and anteriorly less widened. The trochanters, like those of *N. maculifrons*, are simply bifid.

I obtained this insect first at Chiuzenji in June 1880, and on August 22, 1881, I took a series of twenty near the waterfall there, in bottles set with meat.

5. *Necrophorus 4-punctatus*, Kraatz.

Necrophorus 4-punctatus, Kraatz, Deutsche ent. Zeitschr. 1877, p. 100.

Kraatz considered this a variety of *N. maculifrons*; but beyond the colour there are other characters by which to separate it. The hind tibiæ in the male are swollen on the external surface, and the thorax is more rotundate. In the female the hind tibiæ are like those of the male of *N. maculifrons*.

I have one specimen in which the elytra are wholly black, and twelve others with the red bands as described by Kraatz, each having two isolated black spots.

It occurs in Central and South Japan, and is not uncommon.

6. *Necrophorus latifasciatus*, sp. n.

Niger, vix nitidus; elytris transversim late fasciatis, fasciis duabus rufis. L. 14-16 mill.

This species is similar in outline to *N. 4-punctatus*, Kraatz, but differs in the following essential details:—The head is much more enlarged behind the eyes, the thorax is dilated in front (as in *N. japonicus*, Harold), the elytra are more densely punctured, with interstices somewhat coriaceous, the red bands are broad and only touch the base of the elytron under the

humeral angle, and the bands are not interrupted at the suture, the elytral striæ are less distinct, and the hind tibiæ of the male are straight and not swollen externally. In *N. 4-punctatus* the trochanter is simply bifid, but in *N. latifasciatus* the internal spine is obtuse and hamate. I have four examples of this species, and in all the mesosternum is thickly clothed with a golden pubescence. Three of them are males, and one, which I think is of the other sex, has the trochanter simply bifid; but I am not sure about this, as the head is not enlarged behind the eyes and the clypeus has a small triangular red membranous space, which may be a character of an undeveloped male.

Found at Sapporo and on Mount Niohozan.

7. *Necrophorus mortuorum*, Fabr.

Necrophorus mortuorum, Fabr. Ent. Syst. i. p. 248.

Three examples were taken at Nikko and two at Sapporo. It occurs also in Europe, Asia, and North America.

8. *Necrophorus tenuipes*, sp. n.

N. humator similis, at paulo minor; pedibus gracilibus; antennarum clava nigra. L. 15-19 mill.

The sculpture of this species is very similar to that of *N. humator*, Fabr.; but the club of the antennæ is black and more lax, and the frontal sulci are more arched at the sides and much less widened out before the neck. The legs and antennæ are more slender, but I see no other differences.

I saw it in plenty on Nantaizan, August 20th, 1881, but most of the specimens were drowned in a tub containing rotten fish left by pilgrims, and only three good ones were secured.

9. *Ptomascopus morio*, Kraatz.

Ptomascopus morio, Kraatz, Deutsche ent. Zeitschr. 1877, p. 104.

Found in all the islands.

10. *Ptomascopus plagiatus*, Ménétr.

Ptomascopus plagiatus, Ménétr., Motsch., Etud. Ent. 1854, p. 27.

The synonymy of this species is first given in the 'Entomologist,' Oct. 1887. It is not unfrequent near Pekin, and I have taken it at Kiu Kiang, on the Yangtsze Kiang. I have only one Japanese specimen.

11. *Necrodes littoralis*, Linn.

Necrodes littoralis, Linn. Fn. Suec. p. 450.

Is not common in Japan.

12. *Necrodes nigricornis*, Harold.

Necrodes nigricornis, Harold, Deutsche Abhandl. nat. Ver. Bremen, 1875, p. 286.

This is one of the commonest of the Japanese Coleoptera, and occurs both inland and on the coast.

The descriptions of *Silpha sylvatica*, *subrufa*, and *nigropunctata* are given in the 'Entomologist,' Oct. 1887.

[Note.—*Eudæmonius*, *suprà* p. 72, must be changed to *Eutriplax*, as the first name has been used in Lepidoptera.]

XLV.—On the so-called *Microdon nuchalis*, Dixon, from the Chalk of Sussex, a new Species of Platax. By A. SMITH WOODWARD, F.G.S., F.Z.S., of the British Museum (Natural History).

IN his well-known work on 'The Geology and Fossils of Sussex' (p. 369, pl. xxxii. fig. 7) Mr. Frederic Dixon figured and briefly noticed a small deep-bodied fish from the Chalk of Washington, Sussex, which he referred to the Pycnodont *Microdon*, and considered to represent a new species of that genus, named *M. nuchalis*. The paragraph and figure were reprinted, without comment, in the revised edition of the work in 1878, and, so far as I am aware, the determination has hitherto been accepted as correct.

The original specimen, however, is now preserved, with Mr. Dixon's other fossils, in the British Museum, and a recent study of its characters has shown that it is in no respects allied to the Pycnodontidæ, but rather belongs to a truly Teleostean genus. The fossil is too fragmentary to allow of any very precise determination, but sufficient is preserved to indicate approximately its affinities; and as it evidently represents a family hitherto undetected in the English Chalk, I propose briefly to enumerate the most important of its structural features.