Notes on the genera and species of Lepturinae (Coleoptera, Cerambycidae) with special reference to their male genitalia*

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As already mentioned by Nakane (1954)**, one of the authors of the present paper, the shape and structure of the male genitalia may serve in Lepturinae, at least partly, for the separation of genera and species as in other groups of beetles. In this paper we have dealt with the results of our further study in Lepturinae including some of the type species.

I On the genus Leptura Linné, 1758

Most of the species included in the genus *Leptura* in Japan form a rather homologous group having to each other similarly constructed male genitalia, which resemble also that of *L. quadrifasciata* Linné, the type of the genus. The following species may be included in this group (*Leptura* s. str.):

subtilis Bates kusamai Ohbayashi et Nakane duodecimguttata Fabricius latipennis Matsushita ochraceofasciata Motschulsky aethiops Poda + ssp. dimorpha Bates arcuata Panzer + ssp. mimica Bates + tsumagurohana Ohbayashi

Some of the species in the genus *Leptura* are, however, differentiated from the typical form of the genus in the male genitalia as well as in the external structure and would require other or new generic names which will be referred below.

Genus Macroleptura gen. nov. (Type: Leptura thoracica Creutzer)

Leptura thoracica Creutzer and Strangalia regalis Bates have both very robust body and short but rather robust antennae which are not or a little getting beyond the middle of elytra in the male and not reaching the middle in the female. Further, the 3rd joint of hind tarsi is cleft from middle to apex in middle, and in the male the anal sternite is very broadly and conspicuously hollowed and its sides are laminate and expanded downwards. The parameres of the male genitalia are very long and only a little narrowed to the apex but not dilated apically. These characteristics are not found in the typical Leptura and we propose here a new genus Macroleptura for the two species above-cited.

Genus Etorofus Matsushita, 1933 (Type: Etorofus variicornis Matsushita)

In Leptura vicaria Bates the parameres of the male genitalia are fused to each other at the base above the penis and narrowed gradually towards apex and at the apex sparsely bearing rather long hairs. These features are quite different from that of the typical Leptura and rather resemble that of the species included in the genus Pedostrangalia. Leptura vicaria also differs from the latter genus in having longer legs and not sulcate under surface of hind tarsi. The specialization in L. vicaria is found again in Leptura circaocularis Pic=Etorofus variicornis Matsushita (non variicornis Dalman). The genus Etorofus may be valid for the reception of the two species and Leptura adumbrata Bates

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^{***} The male genitalia and their taxonomic importance in the Japanese Lepturinae (Coleoptera: Cerambycidae) (Preliminary report). Sci. Rep. Saikyo Univ. (Nat. Sci. & Liv. Sci.), Vol. 1, No. 4, p. 189-192, 40 figs.

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which is considered to be a local form of vicaria Bates.

Gressitt (1947) reduced *Leptura vicaria* to a subspecies of North American *L. obliterata* Haldeman. But his opinion is untenable, because of the following differences between them: the head is in front of eyes about twice as long as the diameter of an eye in *vicaria*, whereas in *obliterata* it is about as long as the eye diameter; the antennae are much longer in *vicaria* than in *obliterata*; the prothorax is more strongly narrowed in front in *vicaria*; and the punctures of head and pronotum are finer and denser in *vicaria* than in *obliterata*.

Genus Pedostrangalia Sokolow, 1896 (Type: Pedostrangalia Kassjanowi Sokolow)

Leptura xanthoma Bates from Japan may belong to this genus. In this species the parameres of the male genitalia are somewhat broader and shorter than that of Etorofus and fitted closely to each other along the inner margin.

Genus Paranaspia Matsushita et Tamanuki, 1940 (Type: Leptura anaspidoides Bates)

The genus was established as a subgenus of Strangalia (=Leptura in the present sense) for a Japanese species, Leptura anaspidoides Bates. The male genitalia of this species are differentiated from the typical Leptura by the following points: the protuberance at the outside of the articulating point of the parameres is less remarkable, the parameres are narrow, with long and shorter hairs at apex, and the penis is broad up to a point just before the apex, then suddenly terminated and the middle of the apex is a little produced and pointed. The body is nearly parallel-sided and markedly different from others. Basing upon the above mentioned characteristics we treat here Paranaspia as a separate genus.

The elytra of *P. anaspidoides* are, as Bates described, dark red in the female, while those are, as far as we know, black in the male. *Leptura mikadoi* Pic is, according to our study, a name given for this male form. Though the name *mikadoi* Pic has been referred repeatedly by Japanese authors, the beetle was practically unknown to us. The difference of the ground colour of elytra in *P. anaspidoides* is probably a sexual, but we treat provisionally *mikadoi* Pic as a form of *anaspidoides* in the following list.

Genus Paranaspia Matsushita et Tamanuki

Strangalia subg. Paranaspia, Matsus. et Taman., 1940, Ins. Matsum., XV, 1 & 2, p. 5; Tamanuki, 1942, Fauna Nipponica, Cerambyc. 2, Lepturinae, p. 141, 182. Generotype: Leptura anaspidoides Bates.

Paranaspia anaspidoides (Bates) n. comb.

Leptura anaspidoides, Bates, 1873, Ann. Mag. nat. Hist., (4) XII, p. 196.

m. mikadoi (Pic) n. comb.

Leptura mikadoi Pic, 1906, Longicornia, VI, 1, p. 16.

Genus Rutpela gen. nov. (Type: Leptura maculata Poda)

Leptura maculata Poda has long been assigned in Europe and Japan as the generotype of Strangalia, but Van Dyke (1930) and Gressitt (1947) both denied this type designation and chose S. luteicornis Fabricius, as the type of Strangalia and L. quadrifasciata as the type of Leptura. After we have accepted the selection of the type species by American Coleopterists, L. maculata Poda is, of course, included in the genus Leptura. But if we examined the male genitalia, we find remarkable difference between L. maculata and the typical Leptura-species. Further, in the outer structure L. maculata bears certain peculiarities, especially in the male. Under the circumstances we propose a new generic name

Rutpela for the reception of L. maculata Poda. The genus may be characterized as follows: head in front strongly protruded, antennal joint 3rd to 11th annulated basally, pronotum with median line not or hardly canaliculate, in male metasternm bearing a pair of longitudinal laminate carinae along median sulcus and hind tibiae bearing two teeth along inner margin which is emarginate between teeth.

The new genus is considered to be near the genus *Oedecnema*, on account of the presence of a pair of carinae on the metasternum, the abnormality of the hind tibiae of male and the prolongation of head in front.

II On the genus Strangalia Serville, 1835

The type of the genus, S. luteicornis Fabricius, from North America, is allied closely to S. attenuata Linné, the type of the genus Strangalina Aurivillius, from the Palaearctic region. Consequently the genus Strangalina sinks into a synonym of Strangalia. Japanese species previously belonging to Strangalina are now transferred to Strangalia, but they are also divisible into a few genera.

The genus Strangalia s. str. includes following three species from our faunal region:

attenuata Linné koyaensis Matsushita

gracilis Gressitt

Genus Mimostrangalia gen. nov. (Type: Strangalia kurosonensis Ohbayashi)

Under this new genus two Japanese species are included.

Regarding Strangalia kurosonensis Ohbayashi, Tamanuki (1942) put it in the subgenus Pedostrangalia (gen. Strangalia), and Gressitt (1953) and Hayashi (1955) treated it as a species of the same subgenus (gen. Leptura). While Strangalia dulcis Bates has been referred under the genus Strangalia (=Strangalia in the present sense).

The male genitalia of both species are, however, rather closely related to each other: the parameres somewhat thickened, broad at base and gradually narrowed to apex and rounded-acuminate at apex bearing two long hairs. In the external structure both species have following features: base of pronotum not so produced laterally and not perfectly covered shoulders, hind tarsal joints sulcate below, antennae in male longer than the body. We give for these species a new generic name *Mimostrangalia*.

Genus Idiostrangalia gen. nov. (Type: Strangalia contracta Bates)

This new genus contains two Japanese species, Strangalia contracta Bates and S. hakonensis Matsushita.

In the male genitalia of both species the parameres are connate entirely just above the penis and each bears only two (or three) hairs at the apex, whereas in that of the genus *Strangalia* s. str. the parameres bear long hairs, though sparsely, along the outer margin and at the apex.

The differences in the external features between two genera may be seen in the following table:

Strangalia Serville

Body not so slender,

Antennae not reaching apex of elytra, in female much shorter, each joint without an oblique plain at apex,

Base of pronotum expanded and covering shoulders, strongly bisinuate, with a deep fovea on each side,

Elytra tapering, each apex obliquely truncate

Idiostrangalia gen. nov.

Body extraordinarily slender,

Antennae prolonged beyond apex of elytra in both sexes, each joint with an oblique round space at apex in male,

Base of pronotum not covering shoulders, weakly bisinuate, not deeply impressed on each side,

Elytra narrowed to behind middle, each apex

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with outer angle acutely produced in a spine, only one abdominal tergite uncovered,

Legs straight, hind tarsal joints without a sulcus beneath.

narrowly truncate with outer angle not pointed, two abdominal tergites uncovered,
Legs extremely slender, hind tarsal joints with
a sulcus beneath.

III On the genus Anoplodera Mulsant, 1839

The genus Anoplodera (type: Leptura sexguttata Fabricius) has long been treated as a subgenus of the genus Leptura in Europe and Japan, but as mentioned above Gressitt chose L. quadrifasciata Linné as the type of Leptura, and consequently Anoplodera took the place of Leptura in older sense.

Gressitt (1947) transferred some Japanese species, succedanea, variicornis, pyrrha, etc., formerly placed in the genus Leptura, to Anoplodera. Nevertheless, the Japanese species concerned are clearly differentiated from A. sexguttata in the external appearance and in the male genitalia. The male genitalia of A. sexguttata are rather closely allied to that of Anoploderomorpha-species, i.e. the parameres are not connate above the penis but articulated, and bearing one or two long hairs at apex. A. rubra Linné (formerly considered to be the type of Leptura) and its allies are now lost their generic name, so we propose a new generic name for this group of beetles.

Genus Aredolpona gen. nov. (Type: Leptura rubra Linné)

In this genus the parametes of the male genitalia are entirely connate at the base just above the penis, subparallel-sided and pubescent at the apex.

The genus is somewhat allied to the genera *Vadonia* Mulsant and *Neovadonia* Kaszab, but the prothorax is distinctly constricted just behind the neck.

The following species found in Japan may be placed in this genus:

rubra succedanea Lewis

variicornis Dalman

igai Tamanuki

pyrrha Bates

scotodes Bates

Genus Anoploderomorpha Pic, 1901* (Type: Leptura excavata Bates)

The genus contains four Japanese species:

cyanea Gebler

excavata Bates

monticola Nakane

kishiii Nakane

This genus is rather closely related to *Anoplodera* in the structure of the male genitalia and the external features are also similar.

Genus Japanostrangalia gen. nov. (Type: Leptura dentatipennis Pic)

Leptura dentatipennis, the type of the genus, was included in the genus Leptura s. str. by Matsushita (1933), in the subgenus Anoploderomorpha (gen. Leptura) by Tamanuki (1933, 1942), in the subgenus Anoploderomorpha (gen. Anoplodera) by Gressitt and in Anoplodera (?) by Hayashi (1955). Nakane (1955) suggested that the species is not of the genus Anoploderomorpha, but would belong to the genus Strangalomorpha. But in this species the metasternum bears a pair of longitudinal carinae in the male and each elytral apex is distinctly emarginate, with both angles sharply pointed. In this respect it appears to be near the genus Ischnostrangalis Ganglbauer, but its prothorax is not constricted just behind the front margin and not longitudinally canaliculate in the middle.

^{*} vide Nakane, T. (1955): Studies on the Japanese longicorn beetles with special reference to their male genitalia (1), Akitu, I, 1, p. 11-13, 4 figs.

NOTES ON THE GENERA AND SPECIES OF LEPTURINAE

Genus Pachypidonia Gressitt, 1933

The unique species of this genus is Leptura bodemeyeri Pic=Pachypidonia crassicornis Gressitt.* Tamanuki (1942) referred it to the subgenus Vadonia of the genus Leptura (=Anoplodera in the present sense), but it is obviously incorrect. The species differs strikingly from Vadonia livida Fabricius (the type of the genus Vadonia) in the external structure as well as in the male genitalia. Pic mentioned in his original description that this species is nearly related to Leptura bangi Pic (now in the genus Judolidia), and our observation lead us to the same conclusion. At any rate the genus Pachypidonia may be valid, though it stands near Judolidia. (*=L. kochiana Matsushita)

Genus Judolia Mulsant, 1863 (Type: Leptura sexmaculata Linné)

This genus is distinct from *Anoplodera* and its allied genera in the shape of the male genitalia. *J. parallelopipeda* Motschulsky from our faunal region is probably a separate species, though very closely allied to *J. sexmaculata* Linné. *Strangalia japonica* Tamanuki should be placed in this genus. Because it has *Judolia*-type male genitalia and its elytral pattern resembles that of the two above-mentioned species.

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EXPLANATION OF PLATE

Male genitalia of Lepturinae (l. parameres, m: apex of penis, p. both in profile,)

Fig. 1 Leptura quadrifasciata Linné

- 2 Etorofus circaocularis Pic
- 3 Paranaspia anaspidoides Bates
- 4 Rutpela maculata Poda
- 5 Mimostrangalia dulcis Bates
- 6 Mimostrangalia kurosonensis Ohbayashi
- Fig. 7 Anoplodera sexguttata Fabricius
 - 8 Vadonia livida Fabricius
 - 9 Neovadonia steveni Sperk
 - 10 Judolia sexmaculata Linné
 - 11 Judolia parallelopipeda Motschulsky
 - 12 Judolia japonica Tamanuki n. comb.

癌 要

本報に於ては花天牛亜科に属する甲虫の属種の分類についてδ交尾器の調査結果を顧慮して検討し、又属模式種 generotypes の変更等に伴って起る所属の変化にも言及した。 この結果として欧州及び本邦の種を type とする 6 属を設定した。即ち

Macroleptura n. g. (type: Leptura thoracica Creutzer)

Rutpela n. g. (type: Leptura maculata Poda) Aredolpona n. g. (type: Leptura rubra Linné)

Mimostrangalia n. g. (type: Strangalia kurosonensis Ohbayashi)

Idiostrangalia n. g. (type: Strangalia contracta Bates) Japanostrangalia n. g. (type: Leptura dentatipennis Pic)

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