

ORTHOPTEROLOGICAL NOTES
I. ON THE LESINI OF THE LEIDEN MUSEUM
(TETTIGONIIDAE, COPIPHORINAE)

by

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When rearranging a part of the collections of Orthoptera in the Rijksmuseum van Natuurlijke Historie at Leiden I found a number of specimens belonging to this tribus, which by former authors is considered as a separate subfamily with the name *Eumegalodontinae* (Kirby, 1906, p. 289; Caudell, 1927, p. 30). With Karny I think it justified to let it retain its place as a tribe of the Copiphorinae.

The representatives of this group are of such a remarkable shape that they can easily be recognized among the other Copiphorinae by their relatively big head and strangely shaped prothorax, which bears strongly spined lateral processes on the disc.

The species under consideration can be divided into two groups, in the one of these the specimens possess a number of thorns on the fore and middle femora dorsally and ventrally. In this first group the following species are placed:

- Megalodon ensifer* Brullé (1835)
- Lesina lutescens* Walker (1869)
- Eumegalodon vaginatus* Karny (1923)
- Eumegalodon intermedius* Karny (1923)
- Lesina karnyi* nov. spec., described below.

In the second group the dorsal surface of the fore and middle femora is devoid of spines, the ventral surface only bears a number of thorns. This group contains only one species:

- Megalodon blanchardi* Brongniart (1890).

The generic names have been used differently by various authors. Brongniart (1892 a) established the name *Eumegalodon* for *Megalodon* Brullé (1835), as this name was preoccupied by *Megalodon* Sowerby (1829). The genotype *Megalodon ensifer* Brullé also is the genotype of

Eumegalodon. Kirby (1906) discovered that *Lesina lutescens* Walker (1869) is congeneric with *ensifer* Brullé and that in consequence *Lesina* Walk. had priority against *Eumegalodon* Brongn. He, however, wrongly used *Eumegalodon* as the generic name for the second group. Caudell (1927) found out this error and introduced the new name *Ellatodon*.

Lesina Walker

Lesina Walker, 1869, p. 231; Kirby, 1906, p. 289; Hebard, 1922, p. 235; Ebner, 1924, p. 94; Caudell, 1927, p. 31.

Megalodon Brullé (nec Sowerby), 1835, p. 156; Burmeister, 1838, p. 724; Serville, 1839, p. 536; Blanchard, 1840, p. 28; De Haan, 1842, pp. 171, 173, 175, 181; Walker, 1869, p. 334; Redtenbacher, 1891, pp. 329, 356; Brongniart, (1891) 1892 a, p. CLXXVI; 1892 b, p. 279.

Locusta Megalodon De Haan, 1842, pp. 171-178, 181, 210.

Eumegalodon Brongniart, 1892 a, p. CLXXVI; Karny, 1907, pp. 1, 6; 1912, p. 7; 1923, pp. 187, 191; 1926 a, p. 235; 1926 b, p. 151; Ebner, 1924, p. 94.

As I read Karny's remarks concerning the priority of *Eumegalodon* versus *Lesina* (1926 a, pp. 235-236) I was stimulated to study this genus and to try to find out whether Kirby (1906) was right or wrong when establishing the above-mentioned synonymy. As I myself had not the opportunity to visit the British Museum I asked my colleague Dr. H. C. Blöte, who went there in 1938 to study the types of some other groups of insects, to be so kind as to compare critically the type of *Lesina lutescens* Walk. with specimens of *Megalodon ensifer* Brullé. Together with Dr. B. P. Uvarov he concluded that the specimen is a juvenile specimen of a species belonging without any doubt in the "*ensifer*"-group, though he could not give certainty as to the species. A further comparison of the specimen with juveniles of the same instar of the other species will probably contribute to settle the question at last.

In my opinion Walker did not recognise this juvenile specimen with very poorly developed wings as a Conocephalid. In fact these young larvae do very much resemble the adult Heterodinae.

As is stated by Hebard (1922), Kirby (1906) in all probability has seen the specimens in the British Museum when he composed his Synonymic Catalogue of Orthoptera and after all it appears that he was right when placing *Lesina lutescens* Walker and *Megalodon ensifer* Brullé together in the same genus. For this genus the name *Lesina* Walk. should be used as *Megalodon* Brullé (1835) is preoccupied by *Megalodon* Sowerby (1827) for a Lamellibranchiate, and *Lesina* (1869) has priority against *Eumegalodon* Brongn. (1892).

In the above mentioned arguments of Karny he doubts whether *Lesina*

ensifera (Brullé) is found on Borneo. It is not impossible that the species which was reported from Borneo as *ensifer* in reality has been a species which I will describe below and which very strongly resembles *ensifer*.

***Lesina lutescens* Walker**

Lesina lutescens Walker, 1869, p. 232; Kirby, 1906, p. 289; Hebard, 1922, p. 235; Karny, 1926 d, p. 235; Caudell, 1927, pp. 30, 31.
Eumegalodon lutescens Ebner, 1924, p. 94.

No material was examined by me, but the following data were kindly communicated by Dr. B. P. Uvarov of the British Museum and by Dr. H. C. Blöte, who together examined Walker's type specimen for me.

Holotype: 1 ♂ larva from Amboina.

Spine of vertex a little longer than the first antennal joint, straight, pointed, upper surface at the base somewhat concave, shorter than in *ensifer*, directed forwards. Frontal tubercle low, scarcely perceptible. Lateral projections of pronotum large, horizontally produced and very similar to those of *ensifer*. Fore and middle femora above strongly spined.

For the present we only know that this species is congeneric with *ensifer* and with the other species formerly placed in *Megalodon* Brullé or *Eumegalodon* Brongniart.

***Lesina ensifera* (Brullé) (figs. 1 a and b, 2 a)**

Megalodon ensifer Brullé, 1835, p. 157 (pl. 15 fig. 4)¹⁾; Burmeister, 1838, p. 724; Serville, 1839, p. 537; Blanchard, 1840, p. 28; Charpentier, 1841, pl. 9; Westwood, 1848, p. 33, pl. 16 fig. 2; Mulder, 1865, p. 120; Walker, 1869, p. 334; Maindron, 1887, p. 129, fig.; Brongniart, 1890, pp. 286, 288; Redtenbacher, 1891, p. 357.
Locusta (Megalodon) ensifera De Haan, 1842, pp. 170, 210.
Eumegalodon ensifer Brongniart, 1892 b, p. 279, pl. 12 figs. 1-4; Karny, 1907, pp. 1, 6; 1912, p. 7, pl. 1 figs. 1 and 2; 1923, p. 187; 1926 a, pp. 162-169, 236, figs. 156, 158-160, 162, pl. 5; 1926 b, p. 151; Ebner, 1924, pp. 94, 95, figs. 3 and 4.
Lesina ensifer Kirby, 1906, p. 289; Hebard, 1922, p. 210; Caudell, 1927, p. 31.

Leiden Museum:

Sumatra: 1 ♂, Tebingtinggi, leg. F. J. Weynman.

Java: 1 ♂, Preanger Regencies, XI 1911, leg. P. Buitendijk (figs. 1 a and b, 2 a); 1 ♂, leg. Colemans Beynen; 1 ♀ larva and 2 ♂ ♂.

Amsterdam Museum:

Java: 1 ♀ and 1 ♂, Top of Mt. Salak, 1882, leg. J. C. C. Loman.

1) Westwood (1848, p. 33) gives a note: "The plate referred to by M. Brullé has never been published." The copy of vol. 9 of Brullé's book, which I had at my disposal, contained plates 1, 2, 4, 6, 7, 9, 10, 12 and 20. Probably the other plates have not been published.

Karny (1926 a) mentions 1 ♂ from Sumatra which is somewhat larger and more strongly built than the specimens from Java. The ♂ specimen from Sumatra in the Leiden Museum shows no differences from the Java specimens. In the ♀ larva, like Karny mentions this for the ♂ larva (1926 a), the nose-like projection over the clypeal border is less developed than in the adult specimens but yet it is distinctly visible. (In the adult and the larva of *blanchardi* it is altogether missing).

Walker (l.c., p. 334) mentions one specimen from "Hindustan". Apparently this locality is wrong as it is far from Java and Sumatra and no specimens of the species are ever recorded from the intermediate area.

***Lesina karnyi* nov. spec.** (figs. 1 c and d, 2 b)

Leiden Museum:

Borneo: 1 ♂, Mahakkam, Borneo Expedition Dr. A. W. Nieuwenhuis, 1894 (holotype).

This new species from Borneo is closely related to *Lesina ensifera* (Brullé) and in my opinion it may have been mistaken for that species as the differences are not very apparent at first sight. From that species it differs in the shape of the subgenital plate of the ♂ (figs. 1 b and d), the thorns on the dorsal ribs of the anterior tibiae, the failing of the protuberance on the clypeal suture, and the shape and direction of the projections and thorns on the prothorax (figs. 2 a and b).

The description of the holotype follows here:

General shape as that of *L. ensifera*. Vertex short, sharply pointed, directed slightly upwards. Clypeal suture without a frontal tubercle. Basal joints of the antennae for the greater part dark brown. Antennae ringed with dark brown at intervals of about 1½ cm, each ring occupying 6-8 joints. The length cannot be given as the antennae are broken off at about the length of the animal.

The prothorax is of a shape slightly differing from that of *ensifera* (cf. figs. 1 a and c, 2 a and b). The metazona is relatively shorter and less erected than in *ensifera*. The lateral projections of the disc are smaller, the thorns directed more upwards, the fore borders of the lateral lobes of the prothorax bear two small thorns near the anterior angle. On the surface of the disc a number of very short whitish blunt thorns are found, each surrounded by a diffuse brown zone. In *ensifera* only granules are found distributed on the disc. In *ensifera* this character is subject to some variation so I do not think it to be of specific value.

The fore and middle legs are spined nearly in the same way as in *ensifera*. A distinct difference is found in the fore legs: in contradistinction

to the other species strong thorns are found on the dorsal margins of the tibiae, 2 on the inner and 2 on the outer margin. The ventral tibial armament is 5 on the inner margin and 5-6 on the outer margin.

The middle femora bear 5-6 short thorns on their dorsal surface, ventrally they bear 4-5 stout thorns on outer and inner margin. The middle

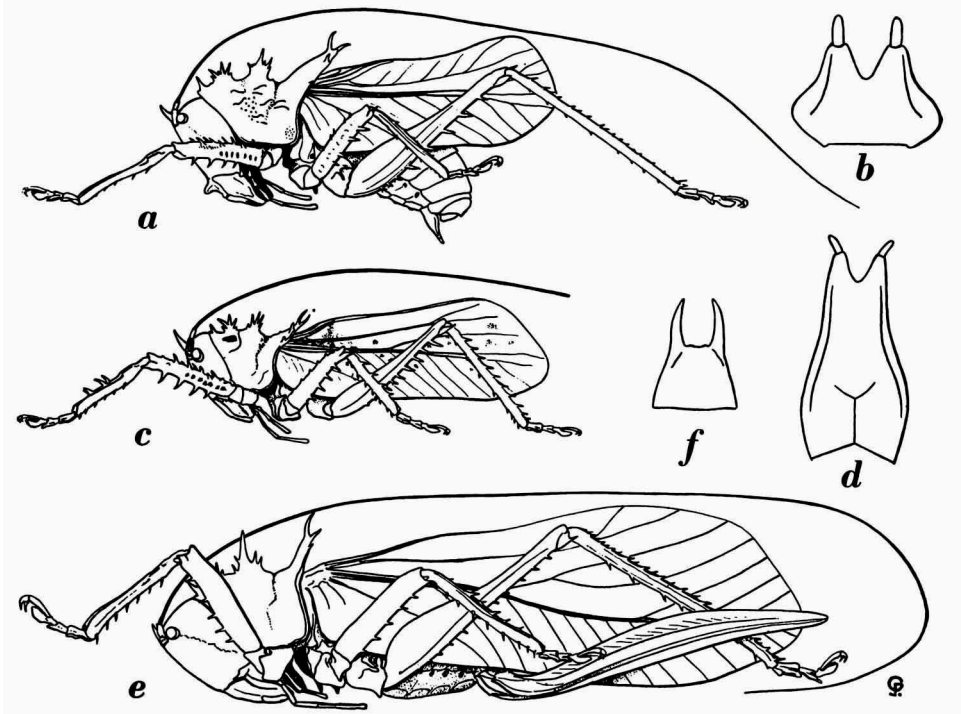


Fig. 1. a-b, *Lesina ensifera* (Brullé) ♂; a, lateral view; b, subgenital plate, ventral view; c-d, *Lesina karnyi* nov. spec. ♂; c, lateral view; d, subgenital plate, ventral view; e-f, *Ellatodon blanchardi* (Brongniart) ♀; e, lateral view; f, subgenital plate, ventral view.

a, c and e, natural size; b, d and f, $\times 3\frac{1}{2}$.

tibial armament consists of 5 spines on the inner and 4 on the outer margin.

The posterior legs strongly resemble those of *ensifera*, but they are relatively shorter. The dorsal surface of the femora is smooth, the ventral outer margin bears 9 spines, which are largest near the apex, the inner margin bears only three spines in the apical half. The armament of the posterior tibiae is as follows: dorsal exterior rib 10, interior 11, ventral exterior rib 8, interior 11 spines.

The genicular lobes of all legs are strongly pointed in all the legs, sharper than in our specimens of *ensifera*.

The thorns on the middle and hind legs, especially on the tibiae, are relatively longer and stronger than in *ensifera*.

The subgenital plate (fig. 1 d) differs strongly from that of *ensifera* (fig. 1 b). It is much longer, slightly tapering to the apex. The shape of the apical incision is nearly the same in both species. The styli are more slender and slightly diverging, whereas in *ensifera* they point straightly backward.

The tegmina (elytra) are about $1\frac{1}{2}$ time as long as the abdomen and nearly $2\frac{1}{2}$ times as long as broad and bear a few blackish brown dots along the radial vein, scattered in the areas before and behind it. The tegminal venation very strongly resembles that of *ensifera*. The radial branch vein, however, leaves the radial vein before the middle, the subcostal and radial veins diverge slightly from the apical third.

The species is named in honour of the late Dr. H. H. Karny who contributed so much to the knowledge of the Indo-malayan Orthoptera.

Measurements of the ♂ holotype (in mm): Length of the body 43; length elytra 45; length prothorax $16\frac{1}{2}$; length pro- and mesozona of prothorax $9\frac{1}{2}$, metazona 7; breadth prothorax at anterior transverse projections 18, at posterior transverse projections $10\frac{1}{2}$, at posterior part 9; breadth of the head below the eyes 11, at base of mandibles $11\frac{3}{4}$; length of what is left of the antennae 62; length fore femora $16\frac{1}{2}$; length fore tibiae 16; length middle femora $14\frac{1}{4}$; length middle tibiae $14\frac{1}{4}$; length posterior femora 25; length posterior tibiae 26.

***Lesina vaginata* (Karny) ?**

Eumegalodon vaginatus Karny, 1923, pp. 187, 188, 191, fig. 35 below; Ebner, 1924, p. 94, fig. 2.

Leiden Museum:

Sumatra: 1 ♀ larva, Puntian (Kumanis), Sumatra's Westkust, IV 1915, leg. E. Jacobson (det. Karny: *Eumegalodon intermedius*).

Besides the specimens of the genus *Lesina* mentioned before the Leiden Museum possesses a ♀ larva from Sumatra, which has been identified by Karny as *Eumegalodon intermedius* Karny. However, when comparing the specimen with Karny's descriptions of his *Eumegalodon intermedius* and *vaginatus* (Karny, 1923, pp. 187-191) it appears to possess some characters of the one and some of the other species. About as in *Lesina intermedia* the vertex is not long, not sharply pointed and directed forwards, but more blunt, curved upwards like in *L. ensifera*; the frontal tubercle at the clypeal suture is distinct but little prominent; the lateral projections of the disc are large, horizontally produced (the tegmina are not yet appreciably developed); fore and middle femora are strongly spined dorsally; the lobes of the subgenital plate are acute.

As to this last-mentioned character it could be said with equal authority that the lobes are produced into a short spine.

The critical point in the identification, however, is the length of the ovipositor. According to Karny's table the ovipositor of *intermedia* should be shorter than the body. In the specimen under consideration the ovipositor, though not yet fully developed, is already much longer than the whole body, even longer than the body of the adult type specimen of *inter-*

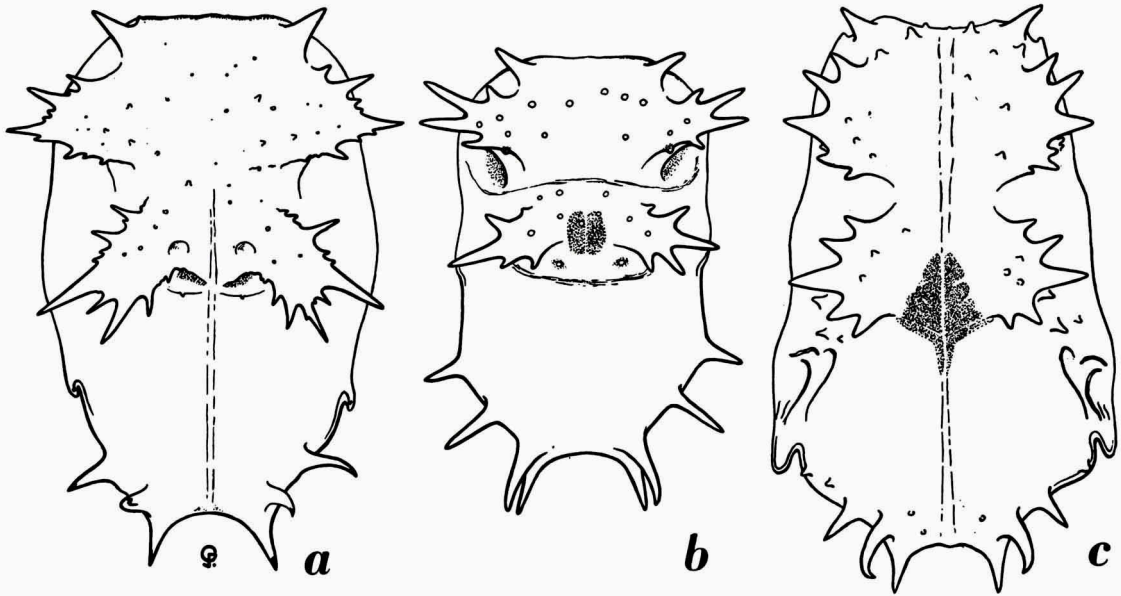


Fig. 2. a, *Lesina ensifera* (Brullé) ♂, pronotum, dorsal view; b, *Lesina karnyi* nov. spec. ♂, pronotum, dorsal view; c, *Ellatodon blanchardi* (Brongn.) ♀, pronotum, dorsal view.

All figures, $\times 3\frac{1}{2}$.

media. This character would point to *L. vaginata* (Karny). Now, when studying the specimen more closely, I found some other characters in which the specimen agrees with *vaginata*: the intermediate femora bear some thorns on the dorsal surface (two large and two smaller ones on the anterior margin and one small thorn before the knee); the face is distinctly bordered by a wrinkle which runs from below the eye to the mandible, and it is distinctly punctured, more coarsely laterally. In *intermedia* the dorsal surface of the intermediate femora is devoid of thorns except one before the knee, the face has no distinct lateral wrinkle and the front is smooth.

As the specimen is a larva it cannot be compared in all details with adult

ones, but yet a comparison may give some indication as to its identity with *vaginata* rather than with *intermedia*.

	<i>intermedia</i> ♀	larva ♀	<i>vaginata</i> ♀
Length of the body	49	(35)	51.5
Length of the pronotum	21	18	17
Length of the tegmina	59	(8)	31.5
Length of the hind femora	30.5	(19)	31
Length of the hind tibiae	31	(24)	31.5
Length of the ovipositor	44	57	64

Of these measurements those in parentheses are not comparable in a direct way, but as relative lengths they may add to give a clear idea of the specimen. Especially when compared with *intermedia* the relative and also the absolute length of the ovipositor is very obvious. When taking in account that the specimen is not yet fully developed it is not altogether speculative to suppose that in the adult ♀ the ovipositor will be still somewhat longer. In that case it will approach more to *vaginata* than to *intermedia*.

For the present I shall reckon the specimen to *vaginata*. A larger material will be necessary to prove whether this is right or wrong.

Some additional remarks on the larva under consideration follow here: the length of the body cannot be used for comparison as in the dried larvae the body is relatively more shrunken than in the adult specimens; the pronotum seems to be almost fully developed; the hind femora are still shorter than the hind tibiae (this is a larval character for many Orthoptera, in most adults these parts are almost equally long, in the last moult the posterior legs and especially the femora increase in length); the ovipositor shows a coloration differing from that in adult *Lesini*, it is yellowish, marbled with brown. In other parts too the larva differs from adults: the feet, the ventral surface of the anterior and posterior femora, the dorsal surface of the posterior femora except the apical fifth and the external apices of the tibiae are dark brown.

Ellatodon Caudell

Ellatodon, Caudell, 1927, pp. 30, 31.

Eumegalodon Kirby (nec Brongniart), 1906, p. 289.

Ellatodon blanchardi (Brongniart) (figs. 1 e and f, 2 c)

Megalodon blanchardi Brongniart, 1890, pp. 286-288, 1 pl.; 1892 a, p. CLXXVI;

Redtenbacher, 1891, p. 357, fig. 13 a, b.

Eumegalodon blanchardi Brongniart, 1892 b, p. 282; Kirby, 1906, p. 289; Karny,

1912, p. 7, pl. 1 fig. 3; 1926 a, p. 236; 1926 b, p. 152; 1928, p. 14; Ebner, 1924, p. 94.

Lesina blanchardi Hebard, 1922, p. 235.

Ellatodon blanchardi Caudell, 1927, p. 31.

"*Megalodon hastifer*" (in litt. Burm.) Karny, 1928, p. 14.

Leiden Museum:

Borneo: 1 ♀, L. Dingat, 31 IX 189?, Borneo Expedition Dr. A. W. Nieuwenhuis.

This beautiful species of the genus *Ellatodon* is represented in the Leiden Museum by a fine ♀ specimen. It is larger than the specimens of *L. ensifera*. The tegmina are better developed and longer than in *ensifera*. They reach the apex of the ovipositor. The dorsal surface of the femora is smooth, whereas in the other species it is covered with spines. The face bears no tubercle above the clypeus. The lateral projections of the prothorax are relatively smaller and directed more upwards.

Key to the genera and species of *Lesini*.

1. Dorsal surface of anterior and intermediate femora devoid of spines or thorns: genus *Ellatodon* Caudell, with 1 species, tegmina 2-2½ times as long as the body. No tubercle at clypeal suture *E. blanchardi* (Brongn.), Borneo (Siam, cf. Ebner, 1924).
- Dorsal surface of anterior and intermediate femora with distinct spines or thorns genus *Lesina* Walker 2
2. Dorsal surface of anterior tibiae with thorns, tegmina slightly longer than the body. No clypeal tubercle *L. karnyi* nov. spec., Borneo.
- Dorsal surface of anterior tibiae without thorns 3
3. Dorsal surface of intermediate femora with only 1 thorn near the middle of the anterior margin. Tegmina twice as long as the body. Frontal tubercle at clypeal suture distinct *L. intermedia* (Karny), Malay Peninsula (Borneo, cf. Karny, 1925).
- Dorsal surface of intermediate femora with a number of spines (4-6) on the anterior margin. Tegmina much shorter than twice the length of the body ... 4
4. Frontal tubercle at clypeal suture large, prominent. Tegmina slightly longer than the body. ♀: ovipositor maximally as long as the body. Lobes of subgenital plate rounded *L. ensifera* (Brullé), Java, Sumatra.
- Frontal tubercle indistinct. Tegmina shorter than the body. ♀: ovipositor longer than the body. Lobes of subgenital plate produced into a short spine
L. vaginata (Karny), Malay Peninsula.

Except the species mentioned in this paper this key includes two species described by Karny (1923) from the Malay Peninsula. Karny's comparative table of species (1923, p. 191) has served to compose this key. As the adult of *Lesina lutescens* Walk. is not yet known, this species has been omitted for the present.

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1) See note on p. 265.