

The European and North American species of *Epicypta* Winnertz (Diptera: Mycetophilidae)

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Epicypta is treated in the sense employed by Edwards (1925) under the name *Delopsis* Skuse. The species of *Epicypta* in the Holarctic region are discussed and keyed. Type material of *Mycetophila aterrima* Zett., *M. selecta* Walker, *M. vitrea* Coquillett and *Epicypta pulicaria* Loew has been examined and found to be conspecific. Lectotypes are designated for *aterrima*, *vitrea* and *pulicaria*. *Mycetophila anomala* Johannsen (holotype examined) is a distinct species but a new name, *limnophila* nom. n. is proposed as it is a homonym. Both *aterrima* and *limnophila* are Holarctic. Four other European species, *scatophora* (Perris), *fumigata* (Dziedzicki), *torquata* Matile and *nigrobasis* (Dziedzicki) (last not examined) are recognised. These six species and the Japanese *ornatipennis* (Okada) (not examined) belong to one species group related to Oriental and Afrotropical species. Two new species, *lepida* n.sp. and *helvopicta* n.sp., described from north America, belong to different, otherwise Neotropical, species groups. Descriptions and figures are given for all species known from the Holarctic, except *nigrobasis* and *ornatipennis*.

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This study was prompted by the discovery that the British species hitherto placed under the name *Epicypta scatophora* Perris was not this species and the resultant examination of available types and other material established that both British species are Holarctic in distribution while there are at least 3 (probably 4) further species in Europe and 3 in North America. Of the two species recorded from Japan, one is possibly Holarctic, the other apparently endemic.

The Holarctic fauna, however, is small in comparison with all the tropical regions where *Epicypta* is one of the largest mycetophilid genera. Its separation from the related genus *Platurocypta* Enderlein has been doubted by some authors because of the variability of some of the characters that had been employed, e.g. the degree of extension of the costa beyond the tip of vein R5. This led Lane (1954) to place *Platurocypta* in synonymy with *Epicypta* sensu stricto which he distinguished from two other subgenera based on the South American fauna by a range of external and genital characters. Subsequent au-

thors have, however, queried this arrangement and Colless (1966) commented that revision of the group on a world scale was necessary before subgeneric categories could be usefully employed.

The two Micronesian species described by Colless (1966) were evidently nearly related to the European species in the structure of their male genitalia, i.e. the genital capsule is retracted within segment VI, bears very prominent cerci, a pair of hooked spines on sternite X and has a pair of median lateral processes considered by Colless to be apical processes of the fused basistyles (coxites of segment IX), here termed basimere. This type of structure is also found in some Oriental species (Colless 1966) and in many Afrotropical species (cf. those described by Matile, 1973 and 1978 from Fernando Po and the Comoro Islands respectively). The pair of hooked spines and lateral processes are not, however, present in any of the Neotropical species dealt with by Lane (1948–1962). Furthermore, his *Epicypta* sensu stricto was

characterised by the somewhat shining distinctly pitted mesonotum, while the other subgenera, *Bosomyia* Lane and *Callicypta* Lane lack the pitting. The European species, including the genotype, have a strongly shining mesonotum but have only very fine pitting in the different genital characters confirm that they are at least subgenerically distinct from any of Lane's subgenera. Some Afrotropical species have a pitted mesonotum, suggesting that this character may not be of subgeneric importance. The two new Nearctic species described below fall into Lane's "*Epicypta* sensu stricto" and are presumably of Neotropical origin; if this group is a valid taxon another name is required and the correct application of *Delopsis* Skuse (based on an Australian species) should be investigated in this context.

Perris (1849) described the life history of *Epicypta scatophora*, while that of *E. aterrima* was described by Brocher (1931) and Steenberg (1938). The larva lives within a characteristic case constructed of frass and develops on damp rotten wood, probably feeding on fungal mycelium. Larvae of several Neotropical and Oriental species of *Epicypta* have been recorded as living in such cases on the foliage of higher plants, where they are presumably feeding on moulds, rusts or other microscopic fungi.

The limits assigned to *Epicypta* here thus follow the treatment by Edwards (1975). The unique genital structure typifying those Old World and Holarctic species which have been studied indicates a valid taxon within the genus but they are linked with the Neotropical groups (including two of the Nearctic species) by the wing venation, thoracic structure and paired bristles on the second sternite. *Platurocypta* is less clearly distinguished from *Mycetophila* and future work may lead to the transfer of at least some elements to *Mycetophila*.

The following abbreviations are used for the museums in which type material is deposited:

BMNH, British Museum (Natural History)
 ISUM, Iowa State University Museum, U.S.A.
 MCZH, Museum of Comparative Zoology, Harvard University, U.S.A.
 USNM, United States National Museum, Washington D.C., U.S.A.
 ZIL, Zoologiska Institutionen, Lund, Sweden.

Epicypta Winnertz

Epicypta Winnertz, 1863: 909. Type species *Epicypta scatophora* (Perris) Winnertz, 1863: 911, by subsequent designation (Johannsen 1909: 110) (= *Mycetophila aterrima* Zetterstedt, 1852: 4225).

Delopsis Skuse, 1890: 623. Type species *Delopsis flavipennis* Skuse, 1890: 624, by monotypy.

Allophallus Dziedzicki, 1923: 3. Type species *Allophallus nigrobasis* Dziedzicki, 1923: 3, according to Lane 1954: 114.

Edwards (1975) used the name *Delopsis* for this genus, disregarding Johannsen's designation of a type species because it did not conform to the diagnosis by Winnertz who placed three species, "*scatophora*", *testata* (as *trinotata*) and *punctum* in his *Epicypta*. As he erroneously applied *Epicypta* to *testata* and *punctum*, Cohér (1949, 1950) proposed the name *Neoepicypta* for *Epicypta* of Edwards but Laffoon (1965) indicated that *Platurocypta* Enderlein (1910) was an available name for that group.

The Holarctic *Platurocypta* also typically have a relatively dull unpitted mesonotum although several Afrotropical species described by Matile (1978) have the mesonotum shining and more or less strongly pitted. It was initially distinguished on the costa being produced beyond R5, also found in some typical *Epicypta*, but can be maintained as valid on other characters such as the genital structure (resembling that of *Mycetophila*, with differentiated dorsal and ventral stylomeres of the dististyle articulating with each other at their point of contact with the basistyle), the more distinct separation of the pronotal lobe from the proepisterna and the absence of long bristles on the second abdominal sternite. A pair of long bristles on this sternite in both sexes is probably present in all true *Epicypta*.

According to Laffoon (1965) the two widespread European species of *Platurocypta*, *punctum* (Stannius) and *testata* (Edwards) (= *trinotata* Winnertz nec Staeger) of which the genitalia were figured by Kinel & Noskiewicz (1932), are Holarctic in distribution; a third European species was described and figured by Bukowski (1934). These are distinguished from Holarctic *Epicypta* also by the following characters:

- (1) costa strongly produced beyond R5;
- (2) vein M before r-m bearing about 20 setulae, reaching almost to its base (bare or only a few setulae at junction with r-m in *Epicypta*);
- (3) base of posterior fork hardly if at all before

base of r-m (often well before base of r-m in *Epicrypta*);

(4) anterior setulae of mid and hind tibiae yellow including the first row below the anterior bristles (the first row below anterior bristles brown in most *Epicrypta*); (5) hind femora dark along the dorsal mid line to the base (legs entirely \pm dusky yellow except for narrowly dark base of hind coxa and sometimes tip of femur in *Epicrypta*).

None of these characters are of generic importance, all varying similarly within *Mycetophila* Meigen. Both *punctum* and *testata* display infraspecific variation in the colour of the mid and hind coxae, which may be either entirely yellow or entirely black without intermediates; similar variation occurs in the *Mycetophila vittipes* Zetterstedt group, which also have the hind femora dark dorsally. The female cerci are two segmented in *Platurocrypta* as in the Nearctic species referable to Lane's "*Epicrypta sensu stricto*", while the remaining Holarctic *Epicrypta* have a single segment. Again some species groups within *Mycetophila* have this character and it is of subgeneric importance only.

The larval development also differs at least in the European species. The larvae of both Holarctic *Platurocrypta* develop in Myxomycetes (Perris 1839; Buxton 1954, 1960; Laštovka 1972), a habit otherwise known in the Mycetophilidae only in *Mycetophila vittipes* Zetterstedt and possibly also *Manota unifurcata* Lundström. Laštovka (1972) had found the larvae covered by a mass of spores in the dry aethalium and the dense cocoons were also formed within the aethalium. There is no larval case, contrary to the references by Edwards (1913, 1925b) to a supposed but mistaken rearing of *testata* from case-bearing (hence the specific name) larvae on rotten wood, which belonged to *Epicrypta aterrima* (Zetterstedt).

Dziedzicki (1923) described *Allophallus* for two new species, *fumigatus* and *nigrobasis*. This work was overlooked until Landrock (1937) synonymised *Allophallus* with *Delopsis*; he considered that *fumigatus* and *nigrobasis* might be synonymous with the two species recognised by Edwards (1925) i.e. *aterrima* (Zetterstedt) and *scatophora* (Perris) respectively. These species were distinguished externally only by the colour of the abdomen, entirely shining black in *aterrima* but orange laterally in "*scatophora*" of

which Edwards considered he had only seen females. Landrock (1927) followed Edwards, only mentioning the female of *scatophora*. Ségué (1940), however, recognised only one European species, claiming to have seen several co-types of *scatophora* which did not differ from *aterrima*; his description and figure certainly represent *aterrima*. Laffoon (1956, 1965) followed Ségué and placed the three names based on North American types, i.e. *Epicrypta pulicaria* Loew (1869), *Mycetophila vitrea* Coquillett (1905) and *M. anomala* Johannsen (1912) in synonymy with *scatophora*, thus recognising a single Holarctic species.

Mycetophila scatophora Perris (1849), the earliest described species, was evidently an *Epicrypta* but the male genitalia were described as having very long lamellate processes, 1 mm. in length, which were visible externally. Strobl (1895) described his "*aterrima*" male as bearing two very long lanceolate yellow lamellae, thickened with long hairs and Edwards (1913) suggested that *aterrima* of Strobl was *scatophora*, of which he considered he had British females. Winnertz (1863), however, used the name *scatophora* for a species with a small hypopygium and entirely black body and Edwards (1935) considered his description to refer to *aterrima*, which is therefore the genotype. Edwards established the synonymy of *aterrima* with *Mycetophila selecta* Walker, having examined the types of both.

I found on examination of British material fitting Edwards' *scatophora* on abdominal colouration that the males have small retracted genitalia, with only small but constant differences from *aterrima*; the structure of the ovipositor is also very similar. The figure of male genitalia by Johannsen (1912) of his *anomala* agrees well and I have confirmed the synonymy from examination of the type; *anomala* is, however, preoccupied in *Mycetophila* and a new name is proposed here for the species (*limnophila* nom. n.).

In both *aterrima* and *limnophila*, the sexes are difficult to separate while the genitalia are contracted as the partially protruding cerci are similar in shape and size and this had led most authors into error. If Perris' description and figure were accurate, *scatophora* must be a distinct species and Dr. L. Matile has informed me (in litt. 1976) that the supposed co-types mentioned by Ségué are two females labelled "Vosges".

Perris had eight examples, reared 8–15.x. and as he lived at Mont de Marsan (Landes) this is the probable type locality and Dr. Matile has no doubt that these two females were later specimens and not part of the original series. Apparently part of Perris' collection came to Paris as an integral part of Gobert's collection and it is assumed that the types of *scatophora* are lost. Dr. Matile also informed me that he had personally obtained two further species of *Epicypta* in Europe, i.e. that since described as *torquata* Matile (1977) from Rumania and Iran and another which fitted Dziedzicki's figure of *fumigatus*, from Rumania and northern Italy; for this reason he believed *nigrobasis*, assuming the accuracy of the figure, was probably also a good species although no fresh material has become available. All of these species are closely related to *aterrima* and *limnophila* and have small hypopygia.

As the specimen mentioned by Strobl might be *scatophora*, I obtained his material on loan and found that the male concerned has the cerci greatly elongated and conspicuous reaching 0.7 mm in length and is undoubtedly the true *scatophora*, apparently the only extant example in collections. Dr. Matile has informed me that many undescribed Afrotropical species have similar very long processes. The four supposed females in Strobl's series included a male of *aterrima* and one of *fumigata*, which is virtually indistinguishable from *aterrima* on external characters.

New records of *E. torquata* are given here for Corsica and Spain so that it appears to be Mediterranean in distribution while *fumigata* and *scatophora* (possibly also *nigrobasis*) are more central European. The two Holarctic species are evidently more widespread and occur also in northern Europe.

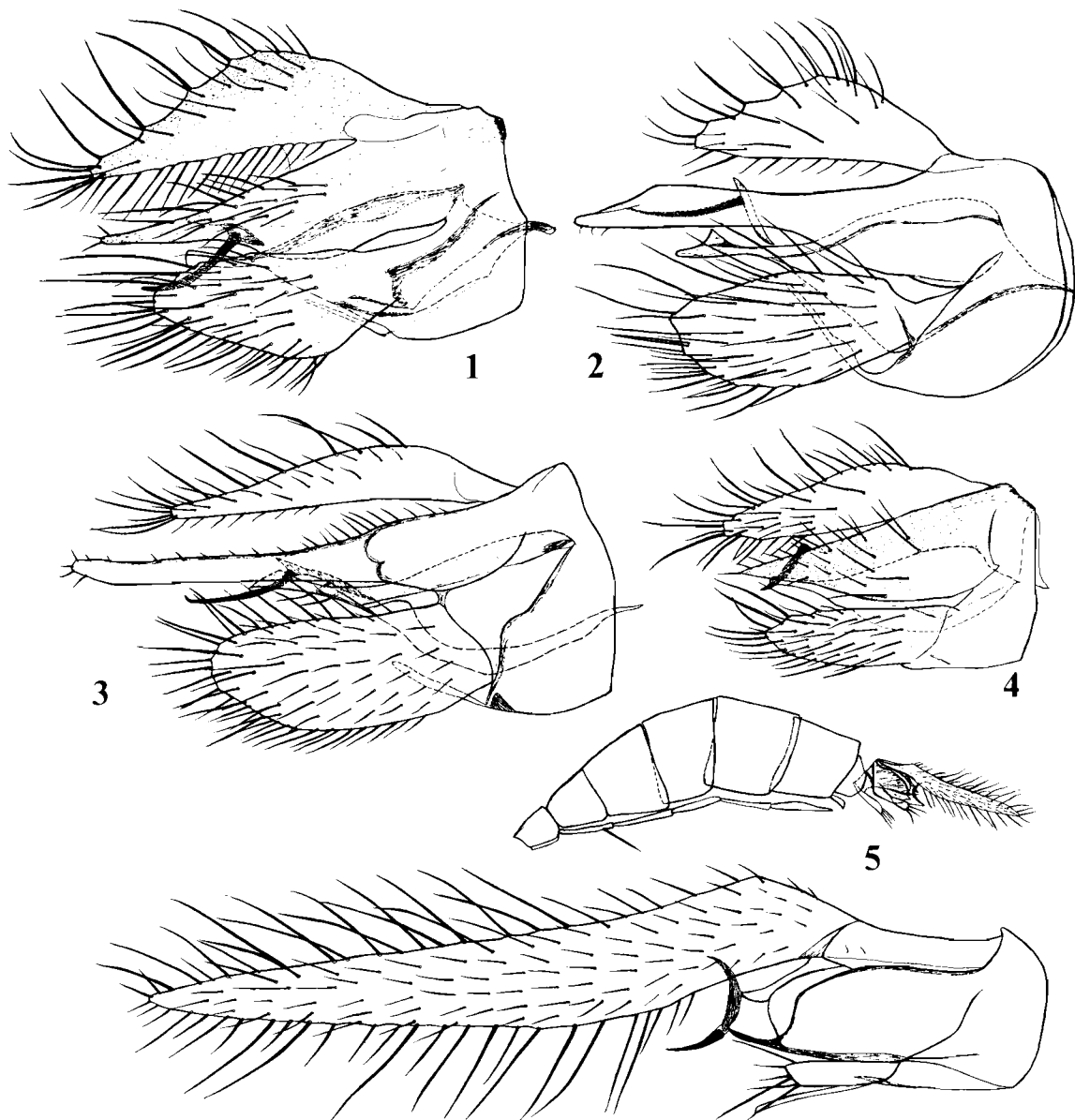
Examination of Nearctic material has established that at least five species occur in that region. *E. aterrima* is frequent there and the types of *vitrea* and *pulicaria* are considered conspecific with it; *E. limnophila* is also widespread. A single female of a closely related species, with differently shaped cerci, has been seen from Alaska but the females have not yet been distinguished for all European species. Both sexes of the two undoubtedly new species are described below; they are closely related to some Neotropical species but cannot be referred to any of those yet described.

The Japanese species

No Japanese material has been examined. *E. aterrima* has been recorded from Japan on several occasions (Okada 1937, 1939, 1940; Sasaki & Tamu 1961) but this material requires reassessment. A second Japanese species was described as *ornatipennis* by Okada (1939), who figured the entire insect and a dorsal view of the male hypopygium. His figure indicates that it belongs to the *aterrima* group but is specifically distinct from any of the European species. It is included in the following key on the basis of the characters given by Okada.

Key to Holarctic species of *Epicypta*

1. Mesoscutum with moderately strong pitting at least anteriorly; partly yellow. Hind tibia with 2 penultimate anterior bristles distinctly shorter than adjacent bristles. Male genitalia with median sternal protuberance of basimere absent or no longer than broad. Female ovipositor with two-segmented cerci. Wings with distinct spot over Rs and r-m. Prothorax yellow. 2
- Mesoscutum with only very fine pitting; usually entirely dark, if not prothorax usually dark or hind tibia without 2 shorter anterior bristles on apical half. Male genitalia with median sternal protuberance of basimere longer than broad. Female ovipositor with one-segmented cerci. Wings with yellowish membrane, usually without darker marking (except *ornatipennis*). 3
2. Mesoscutum brownish yellow with three indistinct brown stripes. Abdomen brownish yellow with posterior black markings on each tergite. Male basimere without a median protuberance. *lepida* n.sp. ♂ ♀
- Mesoscutum mainly shining black or dark brown with narrow yellow anterior margin extended laterally as far as spiracle. Abdomen brownish yellow, darker above without distinct markings. Male basimere with a short rounded bristly median protuberance. *heliopicta* n.sp. ♂ ♀
3. Thorax shining black with contrasted narrow orange yellow anterior margin to mesoscutum. Wings either with distinct spot or veins brownish in contrast to membrane.* 4
- Thorax shining black or dark brown; anterior margin may be paler but not sharply contrasted. Wings unmarked and veins yellowish, not strongly contrasted with membrane.* 5
4. Wing with large brown spot over Rs and r-m, reaching base of median fork. Abdomen entirely black. Metatarsus I subequal to tibia in length (as all spp. except *torquata*). Male cerci rather elongate (but lateral processes may be longer). *ornatipennis* (Okada) ♂ ♀ (not seen)
- Wing without brown marking but veins brownish in contrast to membrane. Abdomen mainly shining black but tergites 3–5 have narrow dark



Figs. 1-5. *Epicrypta*, male genitalia, lateral view: 1, *aterrima* (Zetterstedt); 2, *fumigata* (Dziedzicki); 3, *torquata* Matile; 4, *linnophila* nom. n.; 5, *scatophora* (Perris), with lateral view of entire abdomen.

- orange side margins. Lateral process of male hypopygium distinctly longer than either cerci or stylomeres. *torquata* Matile ♂ ♀
5. Abdomen at least partly brown, darkened dorsally. Cross vein r-m and vein M1+2 before fork subequal in length. 6
- Abdomen entirely shining black. Cross vein M1+2 usually very short, normally distinctly shorter than r-m. 7
6. Males:
- Hypopygium small and retracted with all parts rather short. *linnophila* nom. n. ♂
- Hypopygium small except for very long conspicuous bristly membranous yellow cerci, which protrude from retracted position. *scatophora* (Perris) ♂

Females:

- Ovipositor with cerci tapered apically, resembling *aterrima*. *limnophila* nom. n. ♀
- Ovipositor with cerci broadly rounded on dorsal margin. ?sp (Alaska) ♀
7. Hypopygium with cerci subequal in length to lateral processes. Ovipositor with cerci tapered apically. *aterrima* (Zetterstedt) ♂ ♀
- Hypopygium with cerci rather short, distinctly shorter than lateral process. *fumigata* (Dziedzicki) ♂

* *E. nigrobasis* (Dziedzicki) (not seen) was described as having the body entirely black, the wing darkened basally but otherwise yellowish: the hypopygium is small, with the sternal process rather broad basally.

***Epicypta aterrima* (Zetterstedt)**

Figs. 1, 6, 11.

Mycetophila aterrima Zetterstedt, 1852: 4225.

Mycetophila selecta Walker, 1856: 16.

Epicypta pulicaria Loew, 1869: 151, *syn. nov.*

Epicypta scutophora (Perris) sensu Winnertz 1863: 911.

Mycetophila vitrea Coquillett, 1905: 68, *syn. nov.*

Epicypta aterrima (Zetterstedt); Johannsen 1909: 110.

Mycetophila unicolor (Stannius) sensu Edwards 1913: 372.

Delopsis aterrima (Zetterstedt); Edwards 1925: 650.

Type locality: Sweden, Jämtland, Skilstugan.

Type material: Lectotype ♂, "M. aterrima Zett. ♀. Skilstug. 16 Jul." Small square of green paper, "1977 516", "aterrima type 516" (genital prep.). In Zetterstedt's Gothenburg collection/Sweden, Jämtland: Skilstugan 16/7 1840/. (ZIL) hereby designated — *Paralectotypes*: "M. aterrima Zett. ♀ horto Wadstena". Small square of ochreous paper. "1977 514", "aterrima ♂ 514" (genital prep.). In Zetterstedt's Insecta Lapponica collection./Sweden, Östergötland: Vadstena/. (ZIL) "M. aterrima Zett. ♂. Ö. Hogdal in Herjedalen 17–18.8.1840". Small square of green paper. "1977 515"./Sweden, Härjedalen: Överhogdal/. In Zetterstedt's Insecta Lapponica collection. (ZIL).

Mycetophila selecta Walker: Holotype ♂ labelled as such and as *Delopsis aterrima* by Edwards who had made a genitalia preparation (BMNH).

Epicypta pulicaria Loew: Two syntypes (MCZH) labelled "1197, Penn, Type", one also labelled "pulicaria m"; the latter is designated lectotype. Both are males of *aterrima* although described as females by Loew.

Mycetophila vitrea Coquillett: One syntype (USNM) labelled "Type, Det. W. Gap, N. J. July 1912" lacks the abdomen. A specimen labelled "Kaslo, 11.6.B.C., H. G. Dyar" must be the second syntype mentioned by Coquillett, who did not record the sex of his specimens. It is a male of *aterrima* and is designated lectotype. The character of the posterior fork beginning level with r-m does not apply to either specimen and it is proximad in position as usual.

*Description**Male*

Body mainly shining black, clothed with fine yellow hairs. Antennae often all dark, sometimes brownish or yellowish on basal segments. Palpi dark yellow. Mesoscutum with only fine pitting, at points of insertion of bristles; only macrochaetae are strong bristle on each postalar angle, 2 pairs prescutellars between them, 2 pairs scutellars, all bristles reclinate, yellow to dark brown. Pronotal lobes with short hair, not clearly marked from proepisternum which bears 4 long downcurved brownish yellow bristles. Anepisternite 1.6–1.7× long as broad, bearing strong bristles on posterior margin. Mesepimeron with transverse series; pleurotergite with bristly hairs.

Wings yellowish, especially at base and in radial sector. Costa not produced beyond R5. Only 1–2 setulae apically on M before r-m. M1+2 usually distinctly shorter than r-m, often about 0.5 its length, but sometimes longer to nearly subequal. Base of posterior fork usually length of r-m before level of its base, sometimes only a little before. Halteres yellow.

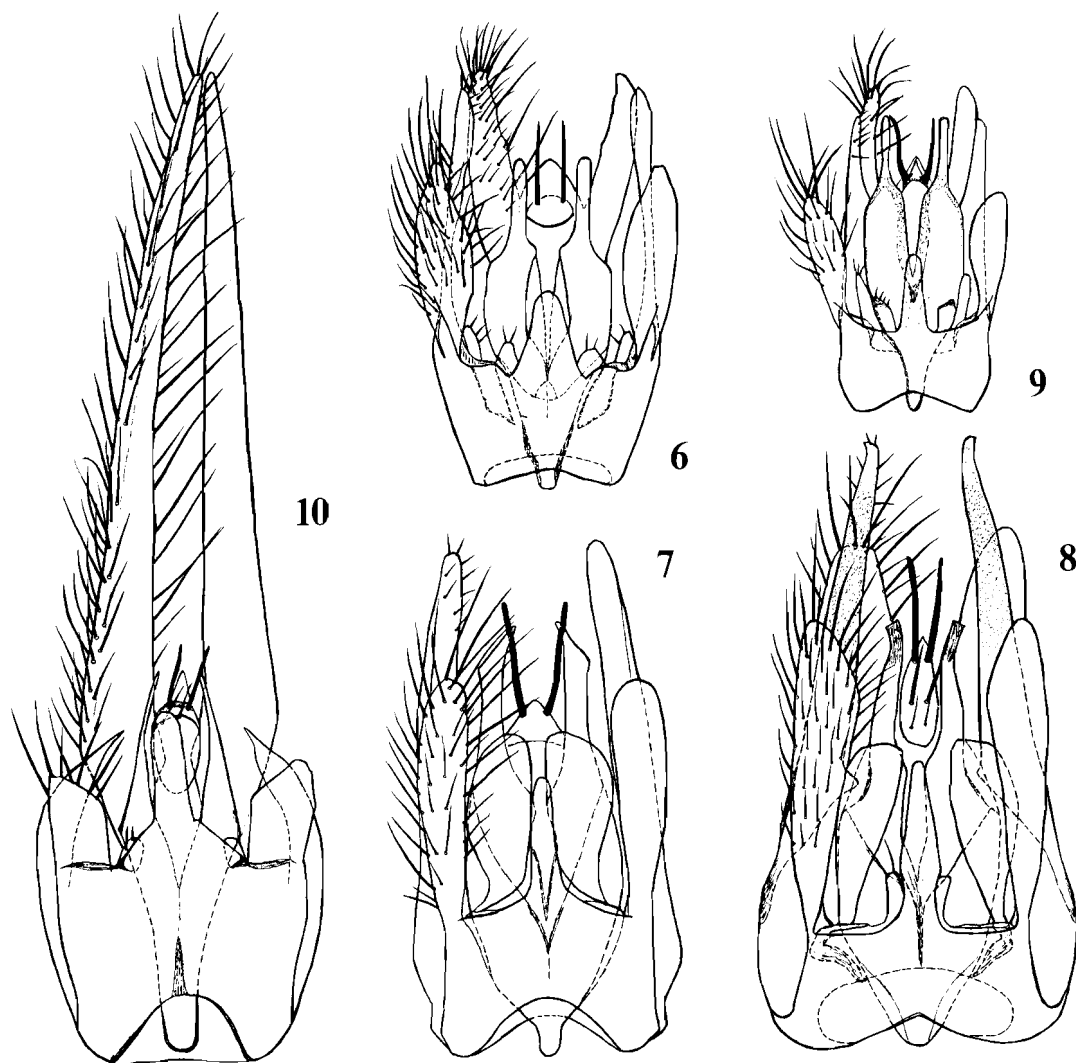
Legs mainly orange yellow; dark shades at base of coxae (especially III), femur III narrowly dark apically. Coxa III with tuft of subapical internal bristles. Tibia I with 2–3 p-d. Tibia II with 3–4 a, 5 d, 1 short p near tip, 2–3 v. Tibia III with 5–6 a (only basal shorter), 5–6 d (3 basal shorter), 2–4 short p near tip. Tibiae with dark dorsal setulae, tibia III with anterior setulae yellow except first row below anterior bristles, which is almost entirely brown, but ventral setulae dark. Metatarsus I almost as long as its tibia.

Abdomen with pair of strong bristles on sternite 2 brown. Hypopygium small, yellowish, retracted in situ; basimere with elongate median process rather broad basally (a little narrower in Nearctic material); dististyle simple; apically tapered lateral process and broad cerci are subequal in length and distinctly longer than dististyle.

Wing length 2.6–3.0 mm.

Female

Very similar in all external characters (1 ♀ from Alaska has trochanters and bases of femora



Figs. 6–10. *Epicrypta*, male genitalia, ventral view: 6. *aterrima* (Zetterstedt); 7. *fumigata* (Dziedzicki); 8. *torquata* Matile; 9. *limnophila* nom. n.; 10. *scatophora* (Perris).

darkened). Ovipositor small, yellowish; cerci one segmented.

Wing length 3.0–3.3 mm.

Biology

The case bearing larvae develop in damp rotten wood (Brocher 1931; Steenberg 1938). Two males were reared, viii.1968, by R. E. Evans from cocoons found under a damp log at

Wellesbourne Wood, Warwicks, England, 19.vi.68. The cocoons, constructed from the larval case, are rather bulky, tough and black with an oblique light brown papery cap at one end, through which emergence occurs.

Distribution: central and northern Europe, north America. There are published records from Japan and from most parts of Europe, some under the name *scatophora*, but these now require confirmation.

Material examined: Austria: Admont, 26.v.1895, ♂, labelled as ♀, Strobl collection. — British Isles, 19 ♂, 7 ♀: England: Sussex; Surrey; Berks.; Cambs.; Gloucs.; Worcs.; Warwicks.; Durham. — Wales: Gwynedd — Scotland: Tayside; Highland Region (Inverness). — Ireland: Down. — Canada: British Columbia, 1 ♂. — U.S.A., 16 ♂, 13 ♀: New Hampshire; Vermont; Massachusetts; New York; Pennsylvania; Maryland; Virginia; Texas; Michigan; Wisconsin; Minnesota; Iowa; Montana; New Mexico; Alaska.

Epicypta ? sp.

Fig. 12.

A brief description is given of a single female which may belong to a previously undescribed species but this cannot be confirmed in the absence of associated males. In colouration it resembles *scatophora* and some examples of *limnophila* (see below).

Description

Female

Head and thorax shining dark brown to black, with small yellow postalar spot. Antennae entirely dark brown, pedicel a little lighter. 4 propiternals.

Wings yellowish with M1+2 nearly 1.5× long as r-m. Posterior fork beginning length of M1+2 before level of base of r-m.

Legs yellow, with coxa III dark on basal quarter. Tibia I with 3 p-d. Tibia II with 3 a, 5 d, 1 p, 2 v. Tibia III with 6 a (basal short), 6 d, 5 p near tip.

Abdomen shining yellowish brown, darker dorsally. Ovipositor small, yellowish with one segmented cerci more broadly rounded dorsally than in *aterrima* or *limnophila*.

Wing length 2.8 mm.

Material examined: U.S.A.: Alaska: Fairbanks, 7.vi.1948. ♀. Leg. P. Sailer (USNM).

Epicypta fumigata (Dziedzicki) comb. n.

Figs. 2, 7.

Allophallus fumigatus Dziedzicki, 1923: 3.

The type material is probably lost. The specimen examined agrees in genital structure with a figure kindly sent to me by Dr. L. Matile, drawn from a specimen considered by him to be *fumigatus*. He had concluded that the differences in Dziedzicki's figure were due to the displacement of some parts such as the paired spines into an

unusual position by compression of the preparation. It is very similar to *aterrima* in all external characters and only the salient features are given in the description.

Description

Male

Body shining black, with head, anterior margin of mesoscutum and prothorax more brownish; a small yellow postalar spot. Antennae mainly dark, basal segments brownish yellow.

Wings with M1+2 about half length of r-m. Base of posterior fork more than length of r-m before level of its base.

Legs orange yellow, coxa III brown on basal fifth, femur III with dark shade apically. Tibia I with 2 p-d. Tibia II with 3 a, 5 d, 1 short p, 2 v. Tibia III with 5 a (basal a little shorter), 6 d (basal 3 shorter), 4 short p near tip.

Abdomen: hypopygium small, yellowish, with lateral processes distinctly longer than dististyles or cerci, protruding a little in situ.

Wing length 3 mm.

Distribution: Austria, northern Italy, Rumania. The type locality was not stated by Dziedzicki but was presumably in eastern Europe.

Material examined: Austria, Hall, 30.8, ♂, Leg. G. Strobl, named as ♀ of *aterrima* (Strobl collection, Admont, Austria).

Epicypta scatophora (Perris)

Figs. 5, 10.

Mycetophila scatophora Perris, 1849: 58, Plate 3.

Epicypta aterrima (Zetterstedt) sensu Strobl 1895: 171 (partim).

As discussed above, the type material is probably lost and only the single damaged male from Strobl's collection has been examined.

Description

Male

Head and thorax shining dark brown, a little lighter on head, fore margin of mesoscutum and prothorax; small yellow postalar spot. Antennae with scape, pedicel and 2 basal flagellar segments yellow, rest grey. Thoracic chaetotaxy as

aterrima but only 3 strong yellow proepisternals.

Wings yellowish. M before r-m with 2 setulae. M1+2 subequal to r-m. Base of posterior fork more than length of 4-m before level of its base.

Legs mainly orange yellow, coxa III slightly brownish on basal fifth. (Legs II–III missing in specimen).

Abdomen mainly shining dark orange brown, vaguely becoming more yellow towards sides of tergites and on apical half of 6, these areas and sternites dull yellow. Hypopygium yellow, small apart from very long membranous bluntly spear shaped cerci, which are clothed with decumbent yellow hair externally and bear long curved brownish bristles on dorsal and ventral margins; basimere with slender elongate median process, dististyle small and simple, lateral process short and pointed.

Wing length 2.8 mm, body 3.3 mm (abdomen 2 mm) without hypopygium, which is 1 mm (including cerci 0.7 mm).

Distribution: France, Austria.

Material examined: Austria: Melk, "Stiftsgarten", May, ♂. Labelled "3253" and "*M. aterrima*" (Strobl collection, Admont, Austria).

***Epicrypta limnophila* nom. n.**

Figs. 4, 9, 13.

Mycetophila anomala Johannsen, 1912: 96 nec Macquart 1826: 97.

Epicrypta scatophora (Perris) sensu Edwards 1913: 371. *Delopsis scatophora* (Perris) sensu Edwards 1925: 649.

Type locality: U.S.A., Wisconsin, Price County.

Type material: Holotype: ♂ labelled "Price Co., Wis., Aug 29.97, W. M. Wheeler collection" (Cornell University), wing and legs mounted separately on a slide; hypopygium, preserved separately in formalin, now mounted in euparal with pinned specimen. Allotype: ♀, labelled "Price Co. Wis. Aug. 21.97, W. M. Wheeler collection"; the female is doubtfully conspecific and is probably *aterrima*.

Laffoon (1965) indicated that *anomala* Johannsen was a homonym of *anomala* Macquart which is now placed in *Cordyla* Meigen, hence a new name is required now that *anomala* Johannsen is established to be a good species. Johannsen (1912) noted in his description of *anomala* that the venter was sometimes narrowly yellowish; this presumably applied to the male, of which the abdominal colour cannot now be determined, since his female had an entirely black abdomen.

Description

Male

Head and thorax mainly shining reddish brown to black, usually with indistinct lighter brown fore margin to mesoscutum and small yellow postalar spot; prothorax lighter brown than pleura. 3 proepisternals. Anepisternite 1.6–1.85 × long as broad. Antennae entirely dark brownish or brownish yellow basally.

Wings yellowish. M before r-m with 0–1 setulae apically. M1+2 subequal to r-m (to slightly longer or shorter). Base of posterior fork length of r-m before its base.

Legs yellow with basal quarter of coxa III brown. Tibia I with 2 p–d. Tibia II with 3 a, 5 d, 1 short p near tip, 2 v. Tibia III with 5 a (basal short), 6–7 d (1–3 basal shorter), 3–6 short p near tip.

Abdomen extensively shining orange brown, vaguely darkened dorsally. Hypopygium small, yellow; basimere with elongate median process narrow basally; cerci and lateral processes short, subequal, not much longer than dististyle.

Wing length 2.2–2.3 mm.

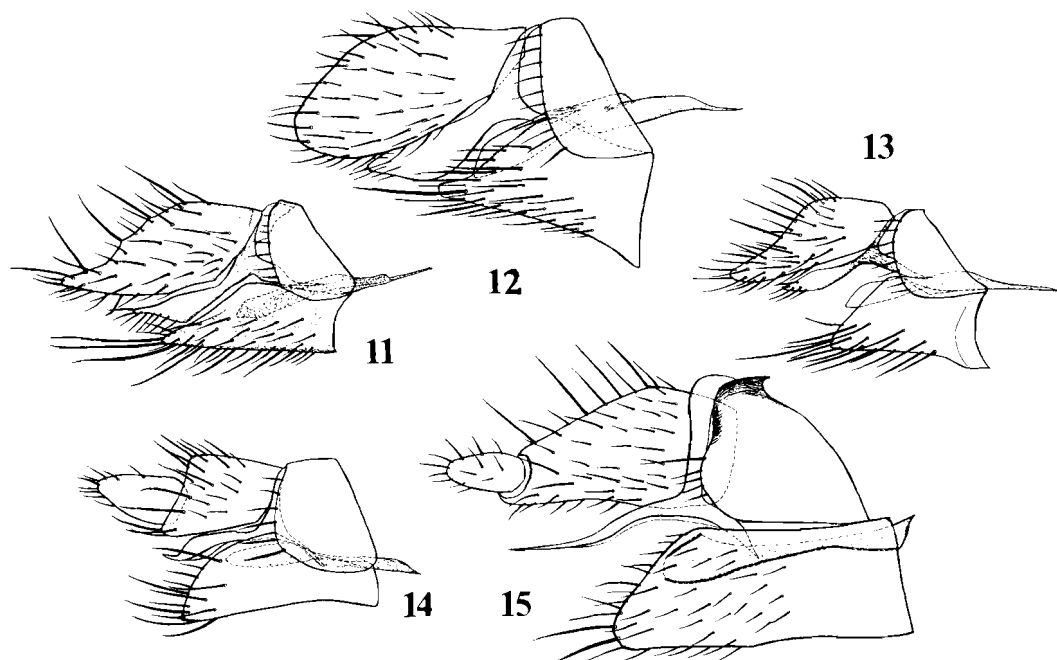
Female

Very similar to male (some extreme examples seen with respect to colour: mesoscutum shining black in Alaskan ♀, with yellow fore margin broadened laterally and prothorax also yellow in ♀ from Florida, which has identical ovipositor; abdominal colouration more constant, orange always present on lateral margins of tergites, usually also extending along basal margins). Ovipositor small, yellow; cerci one segmented, differing from *aterrima* only in proportions of parts.

Biology

In the British Isles at least *E. limnophila* occurs in carr woodland, marsh and bog, suggesting that it may develop on decaying herbaceous vegetation, rather than dead wood, unlike *aterrima* and *scatophora*.

Distribution: U.S.A., British Isles (probably widespread in intervening parts of Palaearctic Region).



Figs. 11–15. *Epicypta*, female genitalia, lateral view: 11. *aterrima* (Zetterstedt); 12. ? sp. Fairbanks, Alaska; 13. *limnophila* nom. n.; 14. *helvopicta* n.sp. 15. *lepida* n.sp.

Material examined: U.S.A., 3 ♂, 3 ♀, 1 other ex.; Alaska, Anchorage. — Montana, Shrewsbury. — Wisconsin, University arboretum. — Minnesota, Itasca State Park. — Iowa, Ledges State Park. — Florida, Sebring. — British Isles, 3 ♂, 4 ♀, 3 other ex.: England: Cambs., Cambridge. — Cambs., Brampton, "wet willow thicket". — Cambs., Monk's Wood. — Essex, Epping Forest. — Sussex, Harting Pond, reed bed. — Wales: Dyfed, Cors Tregaron, bog. — Ireland: Roscommon, shore of Lough Key.

Epicypta torquata Matile

Figs. 3, 8.

Delopsis aterrma (Zetterstedt) sensu Matile 1969: 250.
Epicypta torquata Matile, 1977: 142.

The specimens examined agree well with the description and figures given by Matile (1977), only differing in small details of an infraspecific nature.

Description

Male

Head and thorax mainly shining black, but narrow orange yellow anterior margin to meso-

scutum extended around edge as far as prothoracic spiracle and small postalar spot. Antennae with scape, pedicel and base of flagellar segment 1 orange yellow, rest dark grey brown. Prothorax shining black but spiracular area dark brown. 4 proepisternals.

Wings dusky yellow, veins brownish. M1+2 very short, about half length of r-m. Base of posterior fork length of r-m before level of its base.

Legs mainly pale yellow; coxa III narrowly at base, trochanters II–III and well marked apical quarter of femur III dark brown. Tibia I with 2 p-d. Tibia II with 4 a (basal shorter), 5 d, 1 short p near tip, 2–3 v. Tibia III with 6 a, 6 d (basal short), 4–6 short p near tip. Metatarsus I about 1.25× its tibia (distinctly longer than tibial spur).

Abdomen shining black except narrow dark orange side margins of tergites 3–5 and narrow apical margin of 6. Hypopygium brownish yellow, small but long slender blunt lateral process, partly protruding in situ, distinctly longer than dististyles or cerci, basimere with slender median process.

Wing length 3.3 mm.

Female

(Not examined. Resembling male according to Matile 1977)

Distribution: France, Rumania, Spain, Iran.

Material examined: France: Corsica, by river Tavignano, 6 km east of Venaco, 26–29.iv.1978, ♂. Leg. A. E. Stubbs. — Spain: Barcelona, west of Vall Gorguina, 20.x.1978, ♂. Leg. P. J. Chandler (both in author's collection).

***Epicrypta lepida* n.sp.**

Figs. 15, 18, 19.

Type locality: U.S.A., Maryland, Glen Echo.

Type material: *Holotype:* ♀ labelled "Glen Echo, 22.8.22, Md. Leg. J. R. Malloch" (USNM). — *Paratypes:* ♂ labelled "Shrewsbury, Mo., 20.viii.49. Leg. W. Downes" (ISUM). — ♀, labelled "Shrewsbury, Mo., 28.viii.49. Leg. W. Downes" (ISUM).

Diagnosis: *E. lepida* is nearly related to some Neotropical species. In Lane's (1951) key it runs near *tacuens* Lane, differing in a more extensively yellow abdomen with black markings separated into spots, the presence of spines on the dististyle and a differently shaped basimere. *E. brasiliensis* Edwards (as figured by Lane) has a similar dististyle but with 3 strong apical spines and differs in other respects. A near relative to *lepida* occurs in the West Indies. A series of both sexes from Jamaica fits the description of *insipiens* (Williston), hitherto only known in the female described from St. Vincent. The hypopygium has a shorter more concave basimere; the dististyle has 2 spines apically but only long bristles internally; the body is mainly brownish yellow with dark brown apical bands on all tergites but the wing spot is small and not extending to the costal cell.

*Description**Female*

Head brown, darker above, appearing grey dusted in dorsal view. Antennae yellow at base, grading into grey on flagellar segments 3–4. Mesoscutum slightly shining brownish yellow with three faint broad brown stripes; clothed with short yellow bristles and moderately strongly pitted at least anteriorly at point of insertion of bristles; brown macrochaetae comprise 1 strong postalar and two pairs of prescutellars. Scutellum brown above, 2 pairs strong scutellars. Prothorax and spiracular area yellow, pleura otherwise brownish yellow: proepisternum bears 4 strong bristles, more strongly differentiated than in *aterrima* group from pronotal lobes, which bear short but strong hairs. Anepisternite 1.3–1.4 × long as broad.

Wings yellowish with dark brown central spot from base of median fork (filling base of cell R5) across r-m and base of R5 to reach costa. Costa produced a short distance beyond tip of R5, which is slightly downcurved apically. Apical part of M before r-m bears 3 setulae. M1+2 slightly shorter than r-m. Base of posterior fork level with or slightly beyond base of r-m. Halteres yellow.

Legs mainly yellow, very narrowly darkened at bases of femora, dark apical quarter to hind femora. Tibia I with 2 p-d. Tibia II with 3 a, 5 d, 0 p, 3 v (1 short, 2 long). Tibia III with 7 a (5th shorter), 6 d, 5 short p near tip. All tibial setulae except dorsal series yellow, including first row below anterior bristles on tibia III.

Abdomen mainly brownish yellow with dark brown markings: tergite 1 with narrow apical band (interrupted narrowly in middle); tergites 2–6 with pairs of spots, narrowly separated medially, occupying half to two thirds tergal length, only reaching side margins ventrally as broad bands on 5–6. Sternite 2 with pair of strong brown bristles. Ovipositor short, yellow; cerci two-segmented.

Wing length 2.7–3.2 mm.

Male

Only one damaged example seen: without antennal flagella; hind legs, abdomen and genitalia separate, in glycerine). Very similar to female in all external characters. Central wing spot only faintly extended to costa. Base of posterior fork slightly before level of base of r-m. Hypopygium small, yellow; basimere concave on apical ventral margin without median protuberance; dististyle bilobed, ventral lobe larger with 2 strong spinose bristles apically and 2 internally.

Wing length 2.7 mm.

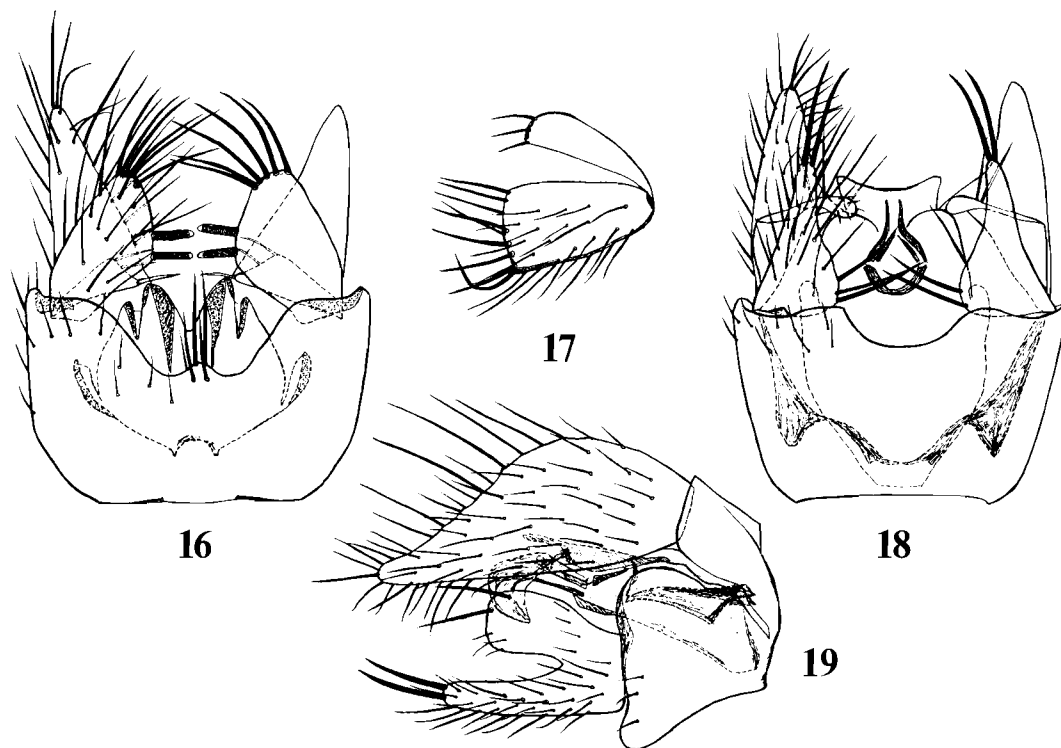
Distribution: U.S.A., Maryland and Montana.

***Epicrypta helvopicta* n.sp.**

Figs. 14, 16, 17.

Type locality: U.S.A., Missouri, Lincoln Co., Cuivre River State Park

Type material: *Holotype:* ♂ labelled "Cuivre River St. Pk., Lincoln Co., Missouri, 26.viii.61, J. Laffoon" (ISUM). — *Paratypes:* U.S.A.: Iowa, Boone Co., Ledges State Park, 10.vii.49, ♂; 18.ix.51, 5 ♂, 3 ♀; 4.x.61, ♂; 12.x.61, ♂; 24.x.61, ♀; 19.ix.62, ♀; 26.ix.62,



Figs. 16–19. *Epicypta*, male genitalia; 16–17. *helvopicta* n.sp., ventral view and lateral view of stylomere with dorsal lobe deflected; 18–19. *lepida* n.sp., ventral and lateral views.

♂ (J. Laffoon, ISUM). — Iowa, Boone, 22.vii.49, ♂ (J. Laffoon, ISUM). — Iowa, Ames, 10.vi.52, ♂ (W. Downes, ISUM). — Iowa, Ames, 29.viii.62, ♂, ♀ (R. J. Gagné, ISUM). — Iowa, Sioux City, 8.ix.1951, ♀ (J. Laffoon, ISUM). — Iowa, Linn Co., Pallasades — Kepler State Park, 8.vii.50, 2 ♂ (Laffoon, Slater & Hicks, ISUM). — Iowa, van Buren Co., Lacey-Keosauqua State Park, 9.ix.49, ♀ (J. L. & J. Slater, ISUM). — Indiana, Laurence Co., Needmore, 5.viii.61, ♀ (J. C. Schaffner, ISUM). — Tennessee, Sevier Co., Great Smoky Mts., Fighting Creek, 1600', 7.vii.58, ♂ (J. Laffoon, ISUM). — North Carolina, Graham Co., J. Kilmer Memorial Forest, Poplar Cove, 2500', 20.vi.58, 2 ♂ (J. Laffoon, ISUM). — North Carolina, Macon Co., Highlands, 3850', 12.vii.58, ♂, 24.vi.58, ♀ (J. Laffoon, ISUM). — South Carolina, Pickens Co., Table Rock State Park, 1500', 6.vii.58, ♂ (J. Laffoon, ISUM).

Other material studied: U.S.A.: Iowa, Ledges State Park, 23.vi.51, ♀; 31.vii.55, ♀ (J. Laffoon, ISUM); 26.ix.62, ♂ (R. J. Gagné, ISUM). — Iowa, Ames, 26.vi.48, ♂ (M. Bacon, ISUM). — Pennsylvania, Natrona, vii, ♀ (C. W. Johnson, MCZH). — Kentucky, St. Thomas, ♀ (N. Banks, MCZH). — Virginia, Passage Creek, 7.viii, ♀ (N. Banks, MCZH). — Mexico, Vera Cruz, 14 ml. s.e. of Vera Cruz, 16.vi.58, ♀ (J. C. Schaffner, ISUM).

Diagnosis: *E. helvopicta* is rather close in male genital structure to *ornata* (Lane, 1948), in which the basimere has a similar but larger process with longer apical bristles; the ventral lobe of the dististyle is longer and narrower with several apical spines but with the two internal processes more basal and bearing spines; the dorsal lobe is, however, very similar to that of *helvopicta*. Lane (1954) placed *ornata*, which also differs in colouration and the extension of the costa beyond R5, in his sub-genus *Callicypta* but the strong resemblances again suggest that the pitting of the mesonotum may not be of subgeneric importance.

Description

Male

Head shining dark reddish brown. Antennae yellow basally, including at least part of flagellar segments 1–3, rest grey. Palpi yellow. Mesoscutum mainly shining dark brown with distinct yellow fore margin extended onto humeral area as far as spiracle and small yellow postalar spot; chaetotaxy and pitting similar to *lepida*. Scu-

tellum dark brown, 2 pairs scutellars. Prothorax and spiracular area yellow, structure as *lepida*; 3 yellow proepisternal bristles. Pleura otherwise dark brown but with yellow bristles. Anepisternite 1.4–1.5 × long as broad.

Wings yellowish grey with small brown spot over Rs and r-m, normally from R to base of median fork but sometimes restricted to clouding around Rs and r-m. Costa not produced beyond R5. Apical part of M before r-m bears 4–6 setulae below. M1+2 subequal to r-m. Base of posterior fork slightly before level of base of r-m. Halteres yellow.

Legs pale yellow with dark apical quarter to hind femora. Tibia I with 2 p-d. Tibia II with 3 a, 5 d, 1 short p near tip, 2 long v. Tibia III with 6 a (4th and 5th shorter than rest), 6 d (basal shorter), 1(–2) short p near tip. All tibiae have dark dorsal setulae; anterior setulae of mid and hind tibiae mainly yellow but first row below anterior bristles on tibia III brown on most of apical three fifths.

Abdomen dark brown above, orange yellow towards sides of tergites and narrowly on hind margins, also broadly extending dorsally on sutures between tergites 3/4 and 4/5, tergite 6 largely yellow except at base (occasionally yellow more extensive: 1 ♂ from Ames has abdomen mainly dull orange yellow except apical half of 5 and base of 6 which are dark brown; 1 ♂ from Ledges has basal part of 4 and 5 yellow dorsally and well marked apical band on 6, otherwise dark brown dorsally). Sternite 2 with pair of strong yellow bristles. Hypopygium small, yellow, protruding a little in situ; rather short basimere with rounded median process bearing long bristles; dististyle deeply divided with ventral lobe bearing long spinose bristles apically and 2 peg-like internal processes, dorsal lobe narrow, broadened and bristly apically.

Wing length 2.3–2.8 mm.

Female

Very similar in all external characters. Yellow colouration may be more extensive, e.g. fore margin of mesoscutum broadened on humeral area, more extensive postalar spot, abdomen almost entirely brownish yellow and only darker dorsally, dark tip to hind femur narrower. Ovipositor short, yellow; cerci two segmented.

Distribution: Evidently frequent in mountainous areas of the eastern U.S.A. The Mexican female was collected on coastal sand dunes with semi-arid growth: it appears structurally identical but may not be conspecific.

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