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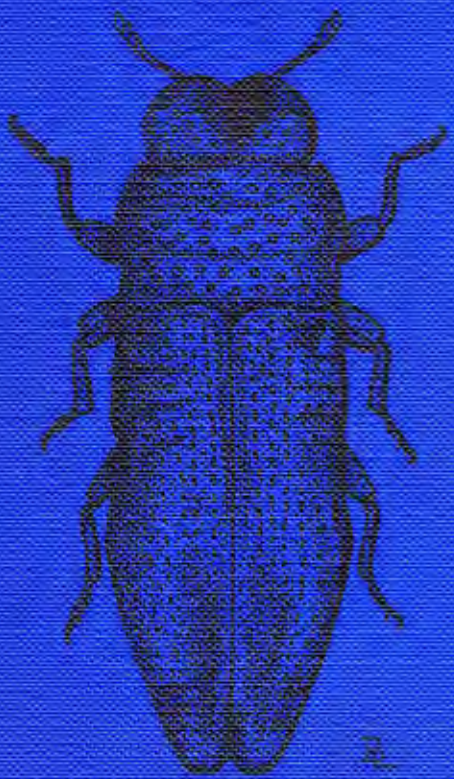
Vol. V Part 1(b)

COLEOPTERA BUPRESTIDAE

Brian Levey



ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

Handbooks for the Identification of British Insects
Vol. V, Part 1 (b)

COLEOPTERA
BUPRESTIDAE

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Cover-figure: *Aphanisticus pusillus* (Olivier)

COLEOPTERA

Family BUPRESTIDAE

B. LEVEY

INTRODUCTION

The family Buprestidae is a large one, containing over 15,000 described species. It is best represented in tropical and subtropical areas, both in numbers of species and individuals, but is almost world-wide in distribution and a few species are found north of the Arctic Circle. In Britain there are only 12 indigenous species, none of which is reliably recorded from Ireland. Several species have been imported from time to time, but only *Buprestis aurulenta* L. is imported regularly and included in the key.

ADULT CHARACTERISTICS

Form and colour highly variable but bright metallic colours are more common than cryptic ones; body between 2.0 and 75.0 mm in length. Superficially variable, the family is otherwise very homogeneous and almost all species have the following combination of characters: head hypognathous and retracted into the prothorax nearly to the level of the posterior margins of the usually large and ovate eyes; antennae eleven-segmented, usually shorter than the combined length of the head and pronotum, variably serrate between 4th, 5th or 6th to 10th segment, serrate segments covered with scattered 'sensory pores' and/or 'sensory foveae'; base of pronotum closely coadapted to the base of the elytra; intercoxal prosternal process well developed, partially or completely dividing the mesosternum; metasternum with a well-marked transverse suture; five visible sternites, the first two connate; tarsi five-segmented, segments 1–4 with variably developed ventral pads; hind coxae with the posterior face excavate. For further characters see Crowson (1955) and Schaefer (1949).

LARVAL CHARACTERISTICS

Soft, white or creamy, apodous, eucephalous larvae, somewhat dorsoventrally flattened, and often with an enlarged prothoracic segment. Head small and retracted into the prothoracic segment to about the level of the antennae; labrum free; prothoracic segment with equally well-developed dorsal and ventral ambulatory plates; spiracles cribriform.

Wood and bark boring larvae, typically with the prothoracic segment much the broadest (e.g. *Anthaxia*, *Buprestis* and *Melanophila*); *Agrilus* and related genera have a pair of urogomphi on the 10th abdominal segment. Stem and leaf mining species lack a greatly enlarged prothoracic segment (e.g. *Aphanisticus* and *Trachys*). See Schaefer (1949) and Burke (1917) for keys to genera.

BIOLOGY

The larvae of nearly all Buprestidae feed within plant tissues. The larvae of the non-British Julodini alone are known to feed externally, on plant roots. The degree of host specificity appears to vary considerably, wood boring species tending to have wider host ranges than leaf and stem

mining forms. Very few wood boring species attack both angiosperms and gymnosperms, and most appear to confine their attacks to a single family or group of closely related families. Stem and leaf miners generally attack only a single genus or family of plants. Some wood borers confine their attacks to the bark and superficial layers of the wood of their hosts, but others may also bore deep into the wood. Apparently healthy, ailing or dead hosts may be attacked by different species of wood borers, but ailing trees appear to be the most frequently used.

The length of the larval stage varies with environmental conditions, although in Europe most species appear to have an annual life-cycle. Southern European species of *Aphanisticus*, however, may have more than one generation a year (Schaefer, 1949), and delayed emergence in *Buprestis aurulenta* L. is well known.

Most adult Buprestidae frequent their larval host plants, although many can also be found on flowers of 'non-larval' host plants, e.g. *Anthaxia nitidula* (L.). The adults are diurnal and are most active on hot sunny days, and may be difficult to capture under such conditions. Some species, e.g. *Aphanisticus* however, tend to drop to the ground and remain still if disturbed.

Wood boring species probably overwinter as immature stages in their host plants. Stem and leaf mining forms overwinter as adults in moss and plant refuse.

DISTRIBUTION

In Britain Buprestidae are mainly confined to south-eastern England. Their restricted distribution is apparently related to climate, as the larval host plants are widely distributed in Britain. Our buprestid fauna is very impoverished when compared with most of continental Europe, e.g. 42 species are recorded from Scandinavia (Lindroth 1960); but compared with other areas of Europe having a similar cool, temperate, western marginal climate, the number of species is roughly comparable, e.g. Finistère has five species (Schaefer, 1949, p. 22); Netherlands, 19 species (Everts, 1903 & 1922); Denmark, 13 species (Lindroth, 1960) and W. Norway, five species (Lindroth, 1960).

On the basis of known distributions there are only three species of N.W. European Buprestidae not found in Britain which might become established here; they are *Agrilus sulcicollis* Lacordaire, *Agrilus cyanescens* Ratzeburg and *Anthaxia quadripunctata* (L.). The larvae of the latter feed in coniferous trees and might become established in the extensive conifer plantations of S.E. England. It is possible that the relatively recent appearance of *Melanophila acuminata* (Degeer) in Britain may have been facilitated by the extensive planting of conifers in S.E. England, this species being well known for its ability to fly very great distances to forest fires.

The extreme localisation of *Anthaxia nitidula* (L.) in Britain may be a result of the fact that it is at the extreme edge of its range. It is not recorded from the extreme west of France (Finistère & Manche), Scandinavia or the western Netherlands. The disjunct distribution of *Agrilus pannonicus* (Piller & Mitterpacher) and *A. viridis* (L.) in Britain cannot be accounted for in this way. It is possible that the former is an insect of ancient deciduous woodland, a type of habitat becoming increasingly rare in this country (Hammond, 1974).

The distribution of each species is given by vice-counties. Asterisked records have not been verified by the present author. More precise localities are given for very local species but only a synopsis of the distribution is given for the most widespread species. I have not given the distribution of *Buprestis aurulenta* L. which has been covered by Shaw (1961).

NOTES ON THE KEYS

The keys are artificial and do not necessarily reflect the systematic relationships of the genera and species. Where a genus is represented by a single species, this species is named in the generic key.

Figures of the male genitalia can be found in Schaefer (1949).

The information given on larval and adult habits is taken from both published and unpublished sources, but is mostly taken from Schaefer's excellent monograph (Schaefer, 1949). The temporal distribution of the adults is based solely on British records.

The species covered are those listed by Kloet & Hincks (1945), except for the following changes: *Buprestis aurulenta* L. is included because it is frequently imported into Britain, although the chance of its becoming established as a breeding species here is remote; *Trachys pumilus* Illiger is now known not to occur in Britain, the species previously known under this name in Britain is *T. scrobiculatus* Kiesenwetter.

The reinstatement of *Anthaxia salicis* F. as a British species, as proposed by Allen (1968), cannot be justified in my opinion. The circumstances of its capture, given by Stephens (1830: 238), suggest that it was not introduced, but its distribution in Europe (S. & C. Europe) indicates that it could not have been a native of Britain in recent times. Furthermore, the specimen at present representing this species in the Stephens collection is not a specimen of *A. salicis* F. but the similar *A. dimidata* Thunberg, whose distribution is almost totally confined to the W. Mediterranean region and the larvae of which live in olive trees.

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KEY TO GENERA, AND TO SPECIES OF *BUPRESTIS*, *MELANOPHILA* & *ANTHAXIA*

1 Each elytron with 5 shiny, unpunctured, longitudinal costae; intercostal area strongly and densely punctured. Length 13.5–19.5 mm **BUPRESTIS** L.
Sole British species **aurulenta** L.
Imported from western N. America in conifer wood. Thuja plicata *Don.*, Pinus *spp.*, Pseudotsuga *spp. and* Abies grandis *Lindl. are larval hosts. Often emerges from structural and other processed wood many years (up to* 50*) after processing. Not known to reinfest processed wood. The only regularly imported species. See Shaw (1961) for list of records.*

– Elytra without costae; elytral puncturation not strong and dense. Length 13.0 mm or less 2

2 Apices of elytra acuminate (fig. 1); colour black. Length 6.5–12.0 mm **MELANOPHILA** Eschscholtz
Sole British species **acuminata** (Degeer)

Larvae feed in and under the bark of scorched and burnt conifers (Pinus *spp.*, Picea abies (*L.*) *and firs*), *also recorded from burnt* Betula *sp.* (*Birch*). *Adults oviposit on very recently burnt and scorched trees, and fly great distances to forest fires. Very local and sporadic. Apparently not recorded in recent years. Adult June to early October.* **S. Devon, *N. & S. Hants., *E. Kent, Surrey, Berks.*

– Apices of elytra rounded, serrate or truncate; if colour black, then less than 4 mm long 3

3 Basal margin of pronotum almost straight; sculpture near lateral margin composed of a polygonal meshwork enclosing shiny raised granules. Length 4.5–7.0 mm **ATHAXIA** Eschscholtz

Sole British species **nitidula** (L.)

Adults beaten from Crataegus *sp. and* Vibernum opulus *L., also frequents flowers of* Crataegus *sp.*, Rosa *sp. and* Ranunculus *sp. Larvae live beneath the bark of* Prunus spinosa *L. and cultivated* Prunus *spp. Adult mid May to late July. Very local and sporadic. Apparently not recorded in recent years. S. Hants (New Forest).*

– Basal margin of pronotum bisinuate; pronotal sculpture not as above 4

4 Scutellum large, about 0.25 times the width of pronotum at base; pronotal sculpture consisting of sinuate transverse ridges **AGRILUS** Curtis (p. 4)

– Scutellum small, about 0.05 times the width of pronotum at base; pronotal sculpture not as above. 5

5 Apical 4 segments of antennae serrate; form elongate, at least 2.5 times as long as wide **APHANISTICUS** Latreille (p. 6)

– Apical five segments of antennae serrate; cuneiform, less than twice as long as wide **TRACHYS** Fabricius (p. 6)

Genus **AGRILUS** Curtis

KEY TO SPECIES

1 Apical margin of 5th abdominal sternite emarginate at centre (fig. 3) 2

– Apical margin of 5th abdominal sternite evenly rounded (fig. 2) 3

2 Lateral margins of prosternal process almost parallel sided (fig. 4); serration of ♂ antennae occupying about one-half length of segment (fig. 10); serration of ♀ occupying nearly whole length of segment (fig. 9). Length 4.0–6.5 mm **angustulus** (Illiger)

Can be beaten from Quercus *spp., especially dying branches with leaves still attached (larval host). Adult May to mid August. Fairly common. Most vice-counties south of N.E. Yorks. and east of Herefordshire.*

– Lateral margins of prosternal process diverging behind middle of fore coxae (fig. 5); serration of ♂ antennae occupying whole length of segment, broad at base (fig. 8); in ♀, serrations as in female *angustulus* (fig. 9). Length 4.5–7.0 mm. **laticornis** (Illiger)

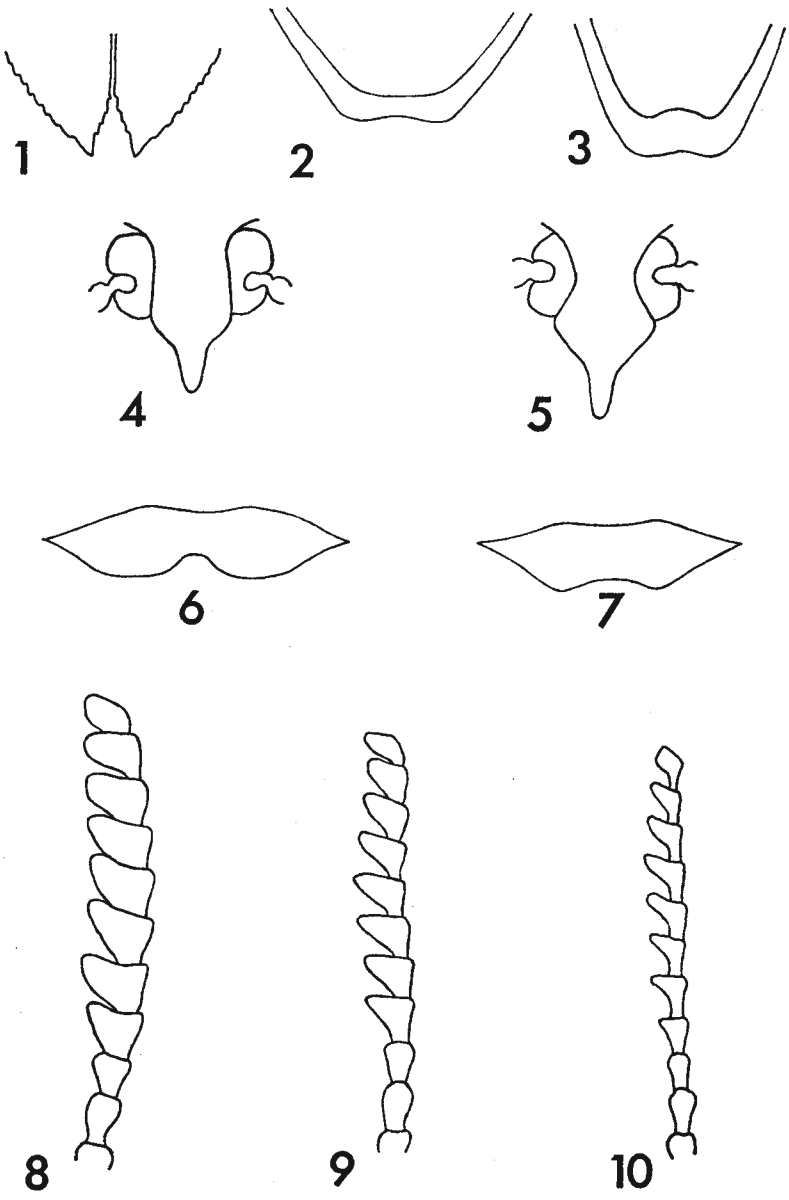
Can be beaten from Quercus *spp.* (*larval host*), Salix *sp. and* Corylus avellana L. *Adult late May to early September. Fairly common. Distribution almost identical to that of* angustulus.

3 Colour blue or green, with patches of white pubescence at base of elytra next to humeral callosity, at apical quarter near the suture, and on 1st, 3rd–5th pleurites and 3rd–5th sternites of abdomen. Length 10.0–13.0 mm. (= *biguttatus* (Fabricius), 1777 *nec* (Scopoli), 1763) **pannonicus** (Piller & Mitterpacher)

Adults found on trunks and branches of Quercus *sp. Larvae tunnel in thick* Quercus *bark. Adult June to early July. Very local, and not recently recorded from any of its known localities except Bishops Wood.* **S. Hants.* (*New Forest*), *W. Kent* (*Darenth Wood*), **Surrey* (*Cuckfield*), **Middlesex* (*Hampstead*), **Herts.* (*Bishops Wood, Batchworth*), *Notts.* (*Sherwood Forest*).

– Elytra and abdomen without patches of white pubescence 4

4 Anterior margin of prosternum with a slight medial emargination (fig. 7); transverse ridges at centre of pronotum very shiny, without conspicuous striate microsculpture; male entirely blue or green; female with head, pronotum and underside copper coloured, elytra blue-green or green (many colour varieties have been



FIGS 1–10. 1, elytral apices of *Melanophila acuminata*. 2–10, *Agrilus* species. 2–3, apical margin of 5th sternite. 2, *viridis*. 3, *angustulus*. 4–5, prosternal process. 4, *angustulus*. 5, *laticornis*. 6–7, anterior margin of prosternum. 6, *sinuatus*. 7, *viridis*. 8–10, antenna. 8, *laticornis* ♂. 9, *angustulus* ♀. 10, *angustulus* ♂.

described but none is recorded from Britain). Length 5.0–9.0 mm **Viridis** (L.)
Adults can be beaten from old, decaying, coppiced Salix cinerea *L. and stunted* Quercus *sp. (larval hosts). Adult June to early August. Very local. Records bearing an asterisk possibly refer either to* angustulus *or* laticornis. *S. Hants. (New Forest), *E. Sussex (Haywards Heath), W. Kent (Ham Street Woods), *Norfolk, *S. Essex (Woodford), *Derby (Repton & Burton), *Shrops. (Netley), *S.E. Yorks. (Langwith), *Solway & Argyll districts.*

– Anterior margin of prosternum with a deep medial emargination (fig. 6); transverse ridges at centre of pronotum with striate microsculpture, not very shiny; upperside bronze or golden copper in both sexes. Length 7.0–10.0 mm. **sinuatus** (Olivier)
Adults can be beaten from old, decaying Crataegus *sp. (larval host) and also other trees. Adult late April to late September (mainly July & August). Local and uncommon. Dorset, *S. Wilts., S. Hants., Surrey, *Herts., Berks., Oxford, Beds., *Hunts.*

Genus **APHANISTICUS** Latreille

KEY TO SPECIES

1 Elytra about 2.5 times as long as their combined width (fig. 11). Length 3.0–3.75 mm **emaaginatus** (Olivier)
Can be swept from rushes, especially Juncus articulatus *L. which is a larval host. Hibernates as an adult. Adult late May to late September. Very local. *N. Devon (Braunton), Dorset (Uddens), Isle of Wight (Parkhurst Forest), *N. Hants (Longmoor Camp), Berks. (Bagley).*

– Elytra about 2.0 times as long as their combined width (fig. 12). Length 2.25–3.0 mm **pusillus** (Olivier)
Can be swept from Schoenus nigricans *L. Adults taken in all months of the year. Hibernates as an adult in plant refuse. Local. *E. Cornwall, S. & N. Devon, Dorset, *N. Somerset, S. Hants, W. Sussex, E. Kent, *W. Kent, Surrey, *S. Essex, Berks., Oxford., *E. & W. Suffolk, E. Norfolk, Cambridge, Hunts., *S. Lancs., *N.E. Yorks.*

Genus **TRACHYS** Fabricius

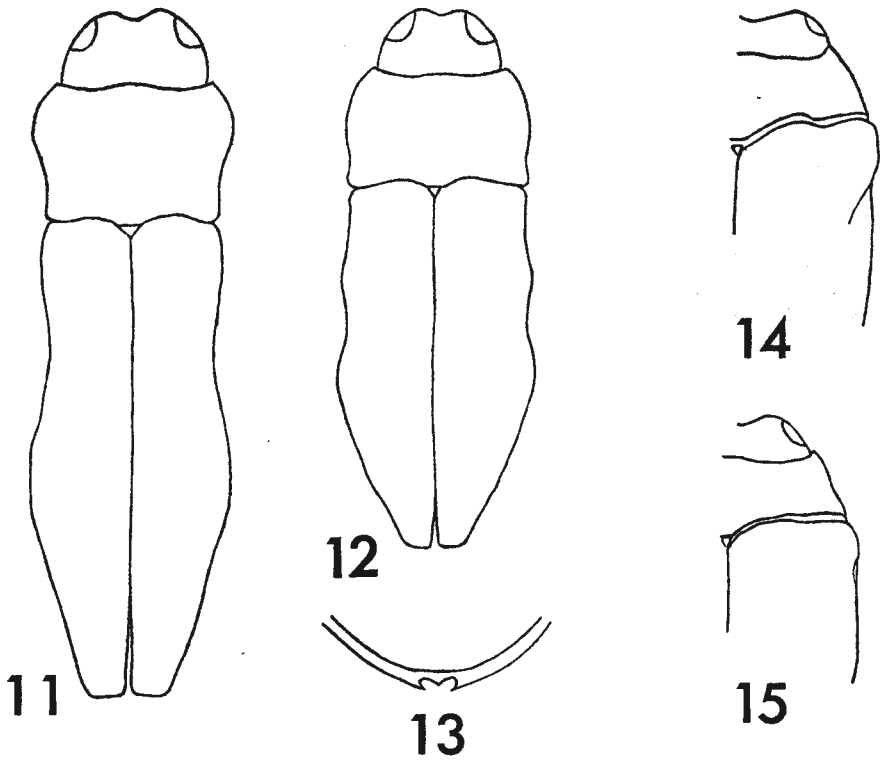
KEY TO SPECIES

1 Apical margin of 5th abdominal sternite with a small excision on either side of the mid line (fig. 13); elytra violet or blue, with green reflections. Length 2.5–3.0 mm. **troglodytes** Gyllenhal
Can be swept from Succisa pratensis *Moench (larval host), damp grassy places and sphagnum bogs. Hibernates as an adult in sphagnum moss. Adult January to July, September to October. Local. *W. Cornwall, S. Devon, N. Wilts., Dorset, S. Hants., E. Sussex, *E. and W. Kent, *Surrey, *S. Essex, Herts., Berks., Bucks., E. & W. Suffolk, E. Norfolk, Cambridge, Hereford., *W. Gloucs., *Warwick., Leicester., S.W. & N.E. Yorks., *Merioneth? (Barmouth), *Dumfries.*

– Apical margin of 5th abdominal sternite entire; elytra bronze or black.....2

2 Elytra with four transverse, sinuate, white pubescent fasciae (rubbed specimens occur); humeral callosities of elytra well marked (fig. 14). Length 3.0–3.75 mm. **minutes** (L.)
Can be beaten from Salix *sp. and* Carpinus betulus *L. (larval hosts). Adult mid May to late July. Hibernates as an adult. Local. S. Wilts., *Dorset, S. & N. Hants., *E. Sussex, W. Kent, Surrey, *Herts., *Berks., Oxford., Bucks., *E. Norfolk, Cambridge., Hunts., Northants., *Worcester., *N. Lincs., Leicester.*

– Elytra without pubescent fasciae; humeral callosities not well marked (fig. 15). Length 1.75–2.5 mm. (= *pumilus* auctt. *nec* Illiger) **scrobiculatus** Kiesenwetter
Adults can be swept from Glechoma hederacea *L. and* Hyoscyamus niger *L. Hibernates as an adult in moss. Adult April to December. Local. S. Wilts., Dorset, *Isle of Wight, *S. Hants., E. & *W. Kent, Surrey, Oxford., *Leicester.*



FIGS 11–15. 11–12, *Aphanisticus*, dorsal view. 11, *emarginatus*. 12, *pusillus*. 13–15, *Trachys*. 13, *troglodytes*, apical margin of 5th sternite. 14–15, humeral region of elytra. 14, *minutus*. 15, *scrobiculatus*.

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