CANTHARIDAE - KEYS TO THE ADULTS OF THE BRITISH SPECIES

Original keys produced by Mike Fitton 1973. Additions and amendments by Brian Eversham 2006

The keys below were originally produced by Dr Mike Fitton as part of his unpublished PhD thesis; since that time the typed paper copy has been photocopied repeatedly and widely circulated amongst coleopterists. The digitised version below, with some minor amendments by Brian Eversham, was seen and approved by Dr Fitton in Feb. 2008. Dr Fitton intends to publish a paper including a version of his key in *The Coleopterist* in the near future.

a) Introduction

Keys have been prepared for the identification of the adults of the British Cantharidae (and also for the seven remaining British species of Cantharoidea). The existing keys, in the standard works of Fowler (1890) and Joy (1932), are usable but suffer from serious drawbacks. Fowler's keys are supported by descriptions of the species but there have been a number of nomenclatural changes and additions to the British list since his times. Some of the characters used in Fowler's keys are not satisfactory, for example, some apply only to males.

In general Joy's keys are less satisfactory than those of Fowler and even include some errors of proof reading. There are other keys (usually not covering all species) in more popular publications (e.g. Dibb, 1948). Reitter's keys (1911, in German) also include all the British species.

Several collections of British Coleoptera have been examined during the course of the present work and in general the majority of cantharids in them had been correctly determined. However, many of the incorrect determinations could be attributed to the unsatisfactory parts of Fowler's and Joy's keys.

b) Nomenclature

There have been some nomenclatural changes since the publication of Kloet and Hincks check list (1945). These are tabulated below.

Name at present valid	**Kloet and Hincks (1945)**	Notes
Cantharis rufa Linnaeus, 1758	*C. rufa* Linnaeus 1758 *C. darwiniana* (Sharp, 1866)	1
Cantharis pallida Goeze, 1777 *Cantharis bicolor* Creutzer in Panzer, 1797	*C. pallida* Goeze, 1777	2
Cantharis nigra (Degeer, 1774)	*C. fulvicollis* Fabricius,	3
Cantharis decipiens Baudi, 1871	*Metacantharis clypeata* (Illiger, 1798)	4
Malthinus seriepunctatus Kiesenwetter, 1852	*Malthinus fasciatus* (Olivier, 1790)	5

Notes:

1. Fowler (1890) first suggested that *C. darwiniana* was only an extreme form of *C. rufa*. Payne (1914) investigated the problem but came to no firm conclusion. Because of the occurrence of a large number of intermediates *C. darwiniana* has been treated merely as an extreme form of *C. rufa* by recent authors (Rorion, 1951 and 1953; Allen, 1969).

2. Ashe (1946) discovered that the beetle known as *C. pallida* in Britain and on the continent included two species. He described the second species as new in the following year

(*Cantharis cryptica* Ashe, 1947). Wagner (1971) has synonymised *C. cryptica* with *Cantharis bicolor* Creutzer in Panzer, 1797 (previously synonymised with *C. pallida*).

3. Kloet and Hincks (1945) indicated the doubtful validity of the name *C. fulvicollis* and Wagner (1971) has shown that it should be replaced by *Cantharis nigra* (Degeer, 1774).

4. Continental workers (Palm, 1956) first discovered that the insect standing in collections under the name of *M. clypeata* (or *M. haemorrhoidalis* (Fabricius, 1792) was in fact *Cantharis decipiens* Baudi, 1871. Allen (1969) made this alteration in the British list. The true *M. haemorrhoidalis* is a distinct species which does not occur in Britain.

5. Allen (1969) has demonstrated that the species known in Britain as *M. fasciatus* is in fact *Malthinus seriepunctatus* Kiesenwetter, 1852; the true *M. fasciatus* not occurring here.

c) Keys to families of British Cantharoidea and subfamilies and genera of Cantharidae

Following Boving and Craighead (1931) and Crowson (1955) the families Melyridae, Cleridae, Lymexylidae and Dascillidae are excluded from the Cantharoidea. The key to families is based on those of Crowson (1955 and 1956) with the addition of characters which enable the British members of the families to be more easily separated. It is, in fact, not necessary to know the sex of a specimen to use couplet 1. Keys to the British Lampyridae (2 species), Lycidae (4 species) and Drilidae (1 species) are given in the appendix.

The key to subfamilies and genera of Cantharidae combines characters used by Fowler (1890), Reitter (1911) and Joy (1932), making more positive separation of the taxa possible.

Key to families of British Cantharoidea

1 Male: antennae strongly pectinate, their insertions widely separated, lateral. Prosternum long in front of coxae. Tarsi with segment 4 scarcely lobed below. Female: apterous and larviform. With hairy processes on ninth abdominal tergite. Without luminous organs. **DRILIDAE**

Male: antennae never strongly pectinate, their insertions less widely separated, often frontal. Prosternum much shorter in front of coxae. Female: if apterous, with luminous organs on posterior abdominal sternites (visible as pale yellowish white areas). Without hairy processes on ninth abdominal tergite. **2**

2 Luminous organs present on posterior abdominal sternites. Side margins of metasternum straight, trochanters normal. Sexual dimorphism strong. Female apterous. Males: with elytra and hind wings normal or with hind wings absent and elytra much reduced. Elytra with broad epipleura at base. Eyes large. Head partially concealed under semicircular front margin of pronotum. **LAMPYRIDAE**

Luminous organs absent. Sexual dimorphism slight or absent. Elytral epipleura very narrow or absent. Side margins of metasternum characteristically "bent" (fig. 1) OR trochanters long. **3**

3 Elytra simple. Antennal insertions not very closely approximated. Trochanters normal. Side margins of metasternum obtusely angled behind middle (fig. 1). Ventral lobe of tarsal segment 4 bilobed. **CANTHARIDAE**

Elytra with longitudinal and transverse ridges. Antennal insertions very closely approximated. Trochanters long. Side margins of metasternum not angled. Ventral lobe of tarsal segment 4 entire. **LYCIDAE**

Key to subfamilies and genera of Cantharidae

1a Elytra completely covering hind wings and completely or almost completely covering abdomen. Terminal segment of maxillary palpi flattened, broadest at apex. **CANTHARINAE 3**

1b Elytra short, exposing part of hind wings and abdomen. Terminal segment of maxillary palpi oval, tapering to apex. **MALTHININAE 2**

2a Mandibles with a tooth on the inner side. Elytra with more or less strongly punctured striae and/or head and thorax rugosely punctured. Antennal sockets separated from eyes by at least half the width of the sockets. **MALTHINUS** Latreille, 1806

2b Mandibles without a tooth. Elytra without striae. Head and thorax smooth, not or only finely punctured. Antennal sockets separated from eyes by less than half the width of the sockets. **MALTHODES** Kiesenwetter, 1852

3a Disc of pronotum extremely coarsely and irregularly punctured; hind angle of pronotum sharp. Antennae inserted very close to front margin of head; antennae black and serrate. Front edge of clypeus produced forwards centrally between antennal insertions (fig. 2). **SILIS** Charpentier, 1825

3b Disc of pronotum not or only finely punctured; hind angle rounded. Antennae inserted further from front margin of head; antennae not serrate. Front edge of clypeus only produced forward slightly, over a large part of its width (e.g. fig. 3). **4**

4a Prothorax "truncate" in front, exposing almost the entire head, which is strongly contracted behind the eyes forming a neck (fig. 4). Basal angles of pronotum each containing a deep fovea. **PODABRUS** Westwood, l838

4b Anterior margin of prothorax entire, covering base of head, which is not strongly contracted to form a neck. Basal angles of pronotum not containing deep foveae. **5**

5a Third segment of middle and hind tarsi simple (fig. 5). All tarsal claws split longitudinally (fig. 6). Area of clypeus in front of and between antennal insertions flat or slightly concave (best seen from in front or behind) (fig. 7). **RHAGONYCHA** Eschscholtz,1830

5b Third segment of middle and hind tarsi bilobed at apex (fig. 8). The anterior claw of each tarsus appendiculate (i.e. with a tooth at its base) (figs. 9 and 10), very exceptionally with this tooth absent. Area of clypeus in front of and between antennal insertions convex (best seen from in front or behind) (fig. 11). **CANTHARIS** Linnaeus, 1758

FIGURES 1 – 5 & 8

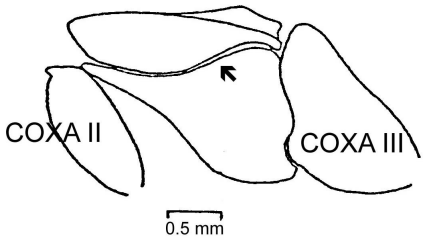


Fig. 1 ***Cantharis nigricans***
Metathorax, lateral. To show shape of side margin of metasternum

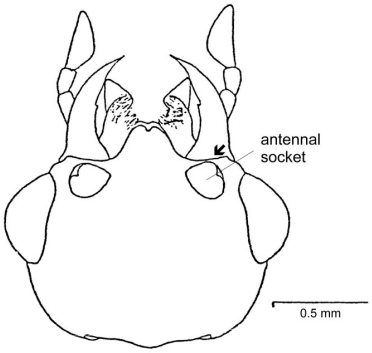


Fig. 2 ***Silis ruficollis*** (m)
Head, dorsal

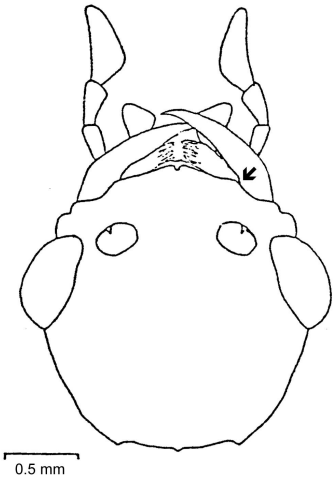


Fig. 3 ***Cantharis pellucida*** (m)
Head, dorsal

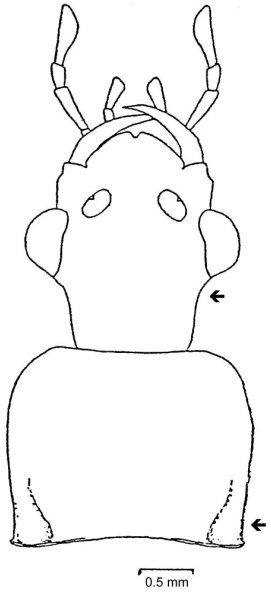


Fig. 4 ***Podabrus alpinus*** (m)
Head, dorsal

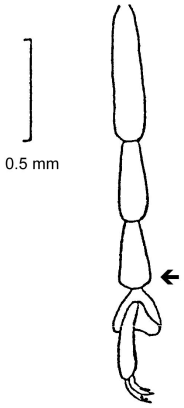


Fig. 5 ***Rhagonycha fulva***
Hind tarsus - dorsal

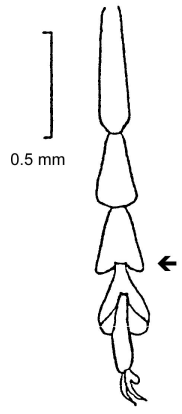


Fig. 8 ***Cantharis bicolor***
Hind tarsus - dorsal

FIGURES 6 – 7, 9 – 14 & 16

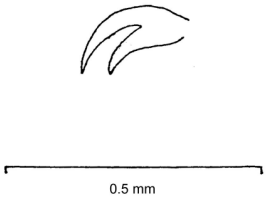


Fig. 6 ***Rhagonycha limbata*** Anterior claw of foretarsus

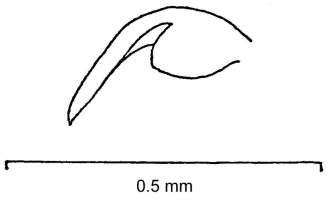


Fig. 9 ***Cantharis rufa*** (m) Anterior claw of foretarsus

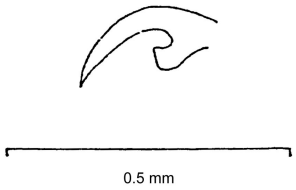


Fig. 10 ***Cantharis rufa*** (f) Anterior claw of foretarsus

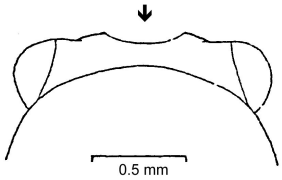


Fig. 7 ***R.fulva*** Head – postero-dorsal

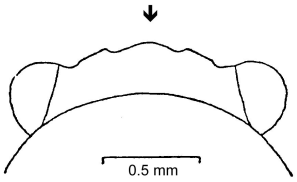


Fig. 11 ***C.pallida*** Head – postero-dorsal

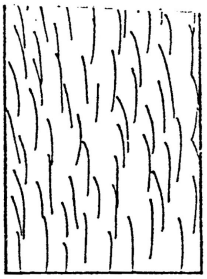


Fig. 12 ***C.pallida*** Elytral pubescence - dorsal

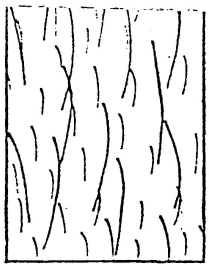


Fig. 14 ***C.bicolor*** Elytral pubescence - dorsal

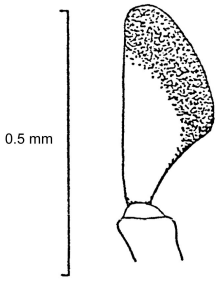


Fig. 13 ***C.pallida*** Maxillary palp

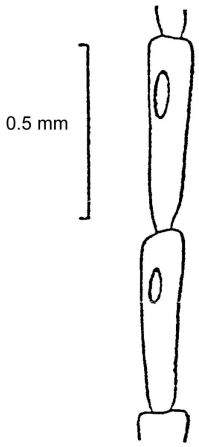


Fig. 16 ***C.figurata*** (m) Left antennal segments 5-6 dorsal

FIGURES 15 & 18 – 20

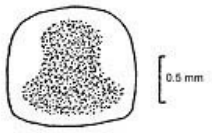


Fig. 15 ***C.decipiens***
Pronotum

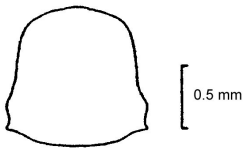


Fig. 18 ***R.lignosa***
Pronotum

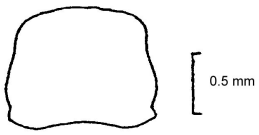


Fig. 19 ***R.limbata***
Pronotum

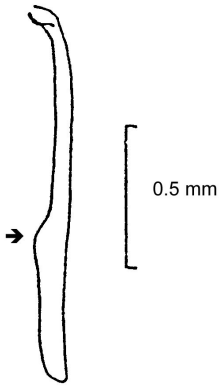


Fig. 20 ***Malthinus balteatus***
Right hand tibia - dorsal

d) Keys to species

The general facies and colour patterns of the species (with the exception of those of *Malthodes*) form the most convenient and reliable guide to identification in the field. There is a need however, especially in keys of this kind, to utilise structural characters which will enable the user to be more confident of his initial identifications and which will be more reliable in dealing with exceptional specimens. The main fault of previous keys was their rather poor use of size and colour characters in the initial division of genera. The present keys are constructed so that the genera are initially divided into groups of related species and this has the further advantage that colour varieties are not keyed out separately.

Notwithstanding the above remarks, extensive use has been made of colour characters. This is mainly because of the ease with which they are observed, compared to structural features (such as those of the abdominal terminalia), on specimens preserved dry on cards in the usual manner. The stability of these colour characters has been checked by reference to long series of specimens from a number of localities. Notes on the structural characters investigated and on those employed in the keys are given under individual genera. **Lengths are measured from the front of the head to the apices of the elytra, not to the apex of the abdomen.** In the figures the important characters are indicated by small arrows.

Genus SILIS Charpentier, 1825

A single British species, which is easily recognised by the characters given in the key to genera. There is some sexual dimorphism; the pronotum of the male is deeply excised near each of the basal angles. ***ruficollis*** (Fabricius, 1775)

Genus PODABRUS Westwood, 1838

A single British species, which is easily recognised by the characters given in the key to genera. The elytra vary in colour from testaceous to black. ***alpinus*** (Paykull, 1798)

Genus CANTHARIS Linnaeus, 1758

Sixteen British species. Most of the species are quite distinctive but where there is likely to be or has been confusion (mainly due to the use of colour characters) only structural characters are given (which can be reliably used with every specimen) in the key. *Cantharis abdominalis* is now known as *Ancistronycha abdominalis*.

A number of structural characters have been investigated for use in the key. As in most Coleoptera the male genitalia show good specific characters but all the British species can be reliably separated without resort to dissection. The form of the female terminalia seems never to have been investigated previously. The structure of the last visible sternite, although showing some variation, is specifically distinct (fig. 17) and is of use in identification in conjunction with other characters. The appendiculate tarsal claws show some specific and sexual characters (e.g. figs. 9 and 10) but there is a wide overlap in the variation of related species. Palm (1956) figures the tarsal claws of some British species. The antennae of the males of most species bear elongate sensory (?) pits (e.g. fig. 16), which are easily seen in the larger species, and their presence or absence is of use in the key. The form and colour of elytral pubescence is of value in the separation of some species.

It should be noted here that in most specimens the colour of the elytra can be termed either testaceous or "black". However to the naked eye the black or pitchy ground colour may be modified. (e.g. to a silvery grey) by the form and colour of the covering pubescence and this should be borne in mind until the use of the terms is familiar.

1 Both tarsal claws on each leg with a tooth at the base. Elytra metallic blue-black (sometimes black in old specimens) (***Ancistronycha***) ***abdominalis*** Fabricius, 1798

Only the anterior tarsal claw on each leg with a tooth at the base. Elytra never metallic **2**

2 Length less than 8mm and elytra black and head unicolorous black at least from base to the middle of eyes **3**

Longer than 8mm OR if less then elytra testaceous and/or head with some reddish colour behind middle of eyes **6**

3 Outer edge of elytra yellow. Elytra clothed with a thick greyish pubescence giving them a matt appearance. Two types of hair on elytra, a dense mat of short, curved, appressed hairs and fewer longer, sparser, more upright hairs ***lateralis*** Linnaeus, 1758

Elytra entirely black, pubescence finer and sparser, appearing shiny to the naked eye. Only the longer, sparser hairs present **4**

4 Scutellum red. Pronotum red ***thoracica*** (Olivier, 1790)

Scutellum black. Pronotum black, intermediate between red and black or red **5**

5 All legs with at least tibiae testaceous. Pronotum varying from red to black ***nigra*** (Degeer 1774)

Legs black or pitchy except for "knees" and. sometimes fore tibiae which are lighter. Pronotum black ***paludosa*** Fallen, 1807

6 Head unicolorous black from base to about middle of eyes and elytra black **7**

Head reddish, sometimes darkened basally, and elytra testaceous, brown or black OR head black from base to middle of eyes and elytra testaceous **11**

7 Fore tibiae unicolorous reddish **8**

Fore tibiae black or reddish with at least the basal half extensively darkened **9**

8 Abdomen (seen from the side) unicolorous red. Apex of hind femora not or only extremely narrowly black. Elytra with only longer, sparser, more upright hairs present ***pellucida*** Fabricius, 1792

Abdomen red with extensive black areas. Apex of hind femora black. Two types of hair on elytra, a dense mat of short, curved, appressed hairs and some longer, sparser more upright hairs ***nigricans*** Müller, 1776

9 Pronotum with a broad longitudinal black band extending to the anterior and posterior edges. Lateral margins of pronotum yellow ***obscura*** Linnaeus, 1758

Pronotum with a black discal spot not extending to both anterior and posterior edges. Ground colour of pronotum red **10**

10 Black spot on pronotum extending to anterior edge. Legs entirely black ***fusca*** Linnaeus, 1758

Black spot on pronotum not extending to anterior edge. Legs with at least femora at least partly red ***rustica*** Fallen, 1807

11 Hind tibiae black except sometimes for base and apex. Hind femora red with apical $^1/_4$ to $^1/_3$ black. Head reddish with a dark central mark on the vertex. Elytra testaceous or black ***livida*** Linnaeus, 1758

Not coloured as above **12**

12 Extreme apex of posterior femora darkened, usually black. Head, pronotum and elytra always entirely reddish-testaceous **13**

Extreme apex of posterior femora reddish (femora unicolorous reddish, sometimes gradually darkening very slightly towards the apex, or extensively darkened in middle). Head, pronotum and elytra reddish testaceous or more or less extensively darkened **14**

13 Elytral pubescence uniform (fig. 12). Maxillary palpi yellow with apical edge black (fig. 13) ***pallida*** Goeze, 1777

Elytral pubescence of two types, with longer erect hairs amongst more recumbent ones (fig. 14). Maxillary palpi entirely yellow ***bicolor*** Creutzer in Panzer, 1797 (= ***cryptica*** Ashe, 1947)

14 Pronotum with a well defined black area of the form shown in figure l5, extending well onto the front part of the pronotum. Head entirely black from base to about middle of eyes. Hind femora and tibiae usually extensively darkened, remainder of legs testaceous. Elytra testaceous, scutellum black ***decipiens*** Baudi, 1871

Not coloured as above **15**

15 Anterior claw of fore tarsus as in figure 9 : males **16**

Anterior claw of fore tarsus as in figure 10 : females **17**

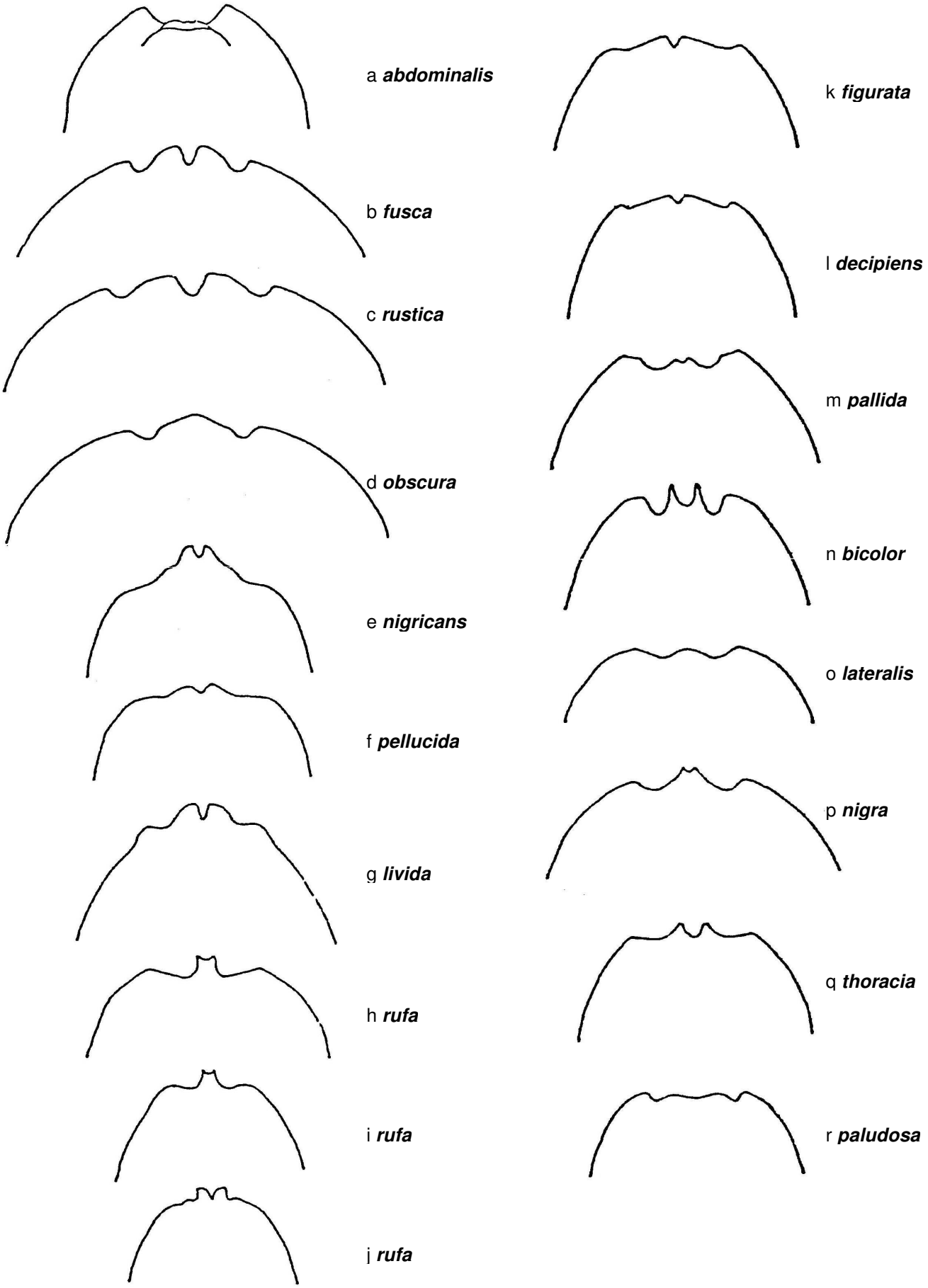
16 Length 6.5-8mm. Antennal segments 4 to 10 with large sensory openings on the outer side (fig. 16) ***figurata*** Mannerheim, 1843

Length 8.5-11mm. Antennae without large sensory openings on segments ***rufa*** Linnaeus, 1758

17 Length 6.5-8mm. Apex of last visible abdominal sternite as shown in figure 17 k (i.e. without a central apical projection) ***figurata*** Mannerheim, 1843

Length 8.5-11mm. Apex of last visible abdominal sternite as shown in figure 17 h to j (i.e. with a central apical projection). This species is very variable in both coloration and form ***rufa*** Linnaeus, 1758

Fig. 17 ***Cantharis*** females. Apex of last visible abdominal sternite



Genus RHAGONYCHA Eschscholtz, 1830

Seven British species. The species are very easily separated on colour characters alone but a number of structural characters are also included in the key. A single melanic specimen of *R. limbata* has been seen (for which provision is made in the key). In contrast to *Cantharis* there is little variation in the form of the last visible abdominal sternite in the females of the British species of *Rhagonycha*.

1 Pronotum unicolorous reddish or yellow. Surface of pronotal disc smooth and shining, not micro-reticulate. Head black or reddish-testaceous **2**

Pronotum with at least disc black or pitchy. Surface of pronotal disc distinctly micro-reticulate. Head always entirely black **4**

2 Head, thorax and elytra entirely reddish-testaceous, elytra sometimes slightly dusky. Larger species, 8.5 - 12mm ***translucida*** Krynicky, 1832

Elytra with apices of elytra darkened, usually black. Smaller species, 6 - 10.5mm **3**

3 Head. black. Legs entirely testaceous. Antennae, maxillary palpi and scutellum testaceous to fuscous ***lutea*** (Müller, 1764)

Head reddish-testaceous. Legs reddish with tarsi black. Antennae, except base, and maxillary palpi black. Scutellum reddish ***fulva*** (Scopoli, 1763)

4 Pronotum entirely black or pitchy. Pronotum as long as broad (e.g. fig. 18). Longer, more slender species **5**

Pronotum with at least the lateral margins broadly yellow (very rarely the margins may be dark but distinguishable from the black disc). Pronotum not as long as broad (e.g. fig. 19). Smaller, shorter species **6**

5 Elytra testaceous. Maxillary palpi and legs yellow (femora and apex of tarsi sometimes slightly darker) ***lignosa*** (Müller, 1764)

Elytra pitchy. Maxillary palpi and legs (except apex of femora and base of tibiae) pitchy ***elongata*** (Fallen, 1807)

6 Femora entirely yellow. Clypeus pitchy to yellow. Black area on pronotum extending to apical and. basal edges ***testacea*** (Linnaeus,1758)

Femora black, except for apex. Clypeus black (edge rarely red). Black area on pronotum not usually extending to apical and basal edges ***limbata*** Thomson, 1864

Genus MALTHINUS Latreille, 1806

Four British species. In previous keys the male of *M. balteatus* has been confused with both sexes of *M. sereipunctatus* (*M. fasciatus* of British authors). Newbery (1896) pointed out the mistakes in Fowler's work (1890) but unfortunately this correction was overlooked by Joy (1932) who more or less repeated Fowler's key.

1 Apices of elytra yellow. Pronotum at least partly yellow **2**

Elytra and pronotum appearing entirely pitchy to the naked eye (Apices of elytra very obscurely yellow). Elytra with indistinct, obsoletely punctured striae
frontalis (Marsham, 1802)

2 Elytra with indistinct, obsoletely punctured striae ***flaveolus*** (Paykull, 1799)

Elytra with strongly punctured striae **3**

3 Elytra with a wide, lighter, transverse band just before the middle. Female with hind legs fuscous. Male with hindlegs yellow and with a tubercle on the inner side of the tibiae (fig. 20). Scutellum entirely fuscous ***balteatus*** Suffrian, 1851

Elytra lighter, only darkening just before the yellow apices. Hind legs yellow in both sexes, hind tibiae of males only very slightly sinuous, without a tubercle. Scutellum with at least apex yellowish ***seriepunctatus*** Kiesenwetter, 1852

Genus MALTHODES Kiesenwetter, 1852

Twelve British species. The keys of Fowler (1890) and Joy (1932) for this genus are inadequate and totally unreliable. However, the species are readily separated on characters of the considerably modified terminal abdominal segments of the males.

The male terminalia (excluding the genitalia proper) of all of the British species are accurately figured by Reitter (1911) and his figures are repeated here for convenience (fig. 21). In most specimens all of the necessary features can be seen without the need for dissection. The genus can be divided into species-groups using a small number of reliable characters observable in both sexes but identification of females of closely related species is very difficult. This is due both to a uniformity of structure and wide intra-specific variation. Careful examination of female genitalia has revealed some specific characters but as yet only a small number of preparations have been made and further work is necessary. **THE KEY PROVIDED BELOW IS PROVISIONAL AND SOME CHARACTERS ARE NOT ENTIRELY RELIABLE.** The characters used in the initial division of the genus (couplets 1, 4, 5 and 7) are thought to be satisfactory.

NB. Since the production of this paper *Malthodes lobatus* has been added to the British list (Barclay, M.V.L. & Kopetz, A. 2003); it was added on the basis of a single record from White Hawk Down in Sussex in 2003. Also, *Malthodes brevicollis* has been synonymized with *M. crassicornis* (Alexander, K.N.A., 2003).

1 Smaller species, length less than 1.8mm. Antennal segment 2 almost equal or equal in length to 3. Apices of elytra only very obscurely yellow (elytra appearing uniformly dark to the naked eye) **2**

Larger species, length greater than 2.5mm. Antennal segment 2 shorter than 3. Apices of elytra bright yellow or obscurely yellow **4**

2 Posterior angles of pronotum obtuse. Head parallel for some distance behind eyes. Male terminalia fig.21 d ***pumilus*** (Brebisson, 1835)

Posterior angles of pronotum almost right angles. Head contracted behind eyes **3**

3 Antennal segment 3 just shorter than 2. Pronotum less transverse, posterior angles more prominent. Male terminalia fig. 21 a ***crassicornis*** (Macklin, 1846)

Antennal segment 3 just longer than 2. Pronotum more transverse, posterior angles less prominent. Male terminalia fig. 21 b ***brevicollis*** (Paykull, 1793)

4 Pronotum with a complete lateral keel (best seen from the side. fig. 22) **5**

Pronotum without a complete lateral keel (best seen from the side. fig 23) **7**

5 Elytra longer, ratio of length to width at shoulders in female at least 2.45 to 1. Male terminalia fig. 21 c ***marginatus*** (Latreille, 1806)

Elytra shorter, ratio of length to width at shoulders in female less than 2.35 to 1 **6**

6 Male terminalia fig. 21 e ***mysticus*** Kiesenwetter, 1852

Male terminalia fig. 21 f ***guttifer*** Kiesenwetter, l852

7 Pigment at apices of elytra bright yellow **9**

Pigment at apices of elytra only obscurely yellow (elytra appearing uniformly dark to the naked eye) **8**

8 Pronotum uniformly pitchy. Male terminalia fig. 21 l ***maurus*** (Castelnau, 1840)

Pronotum narrowly but distinctly bordered with yellow. Male terminalia fig. 21 k ***fibulatus*** Kiesenwetter, 1852

9 Pronotum entirely black or pitchy (occasionally with the extreme anterior and posterior borders yellowish) **11**

Pronotum with at least the angles broadly reddish or yellow (occasionally entirely pitchy in *minimus*) **10**

10 Antennal uniformly fuscous. Pronotum uniformly reddish-yellow. Elytra longer, ratio of length to width at shoulders in female at least 2.30 to 1. Male terminalia fig. 21 g ***fuscus*** (Waltl, 1838)

Antennae with basal segments yellowish. Pronotum usually yellow with disc more or less extensively pitchy (occasionally entirely pitchy or entirely yellow). Elytra shorter, ratio of length to width at shoulders in female less than 2.25 to 1. Male terminalia fig. 21 h

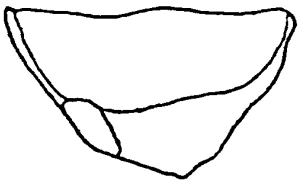
minimus (Linnaeus, 1758)

11 Antennae uniformly pitchy or black. Male terminalia fig. 21 i

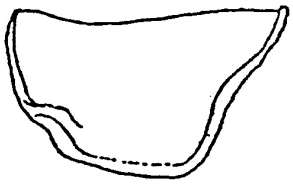
flavoguttatus Kiesenwetter, 1852

Antennae with basal segments reddish or ye1lowish. Male terminalia fig. 21 j

dispar (Germar, 1824)

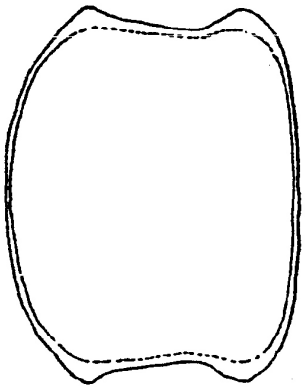


marginatus – pronotum lateral

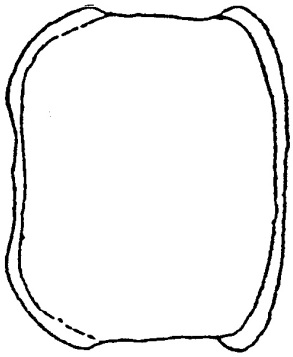


minimus – pronotum lateral

← **ANTERIOR**



marginatus – pronotum dorsal



minimus – pronotum dorsal

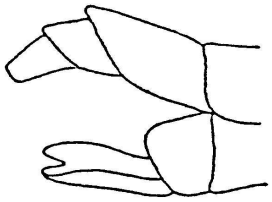
Fig. 22

0.5 mm

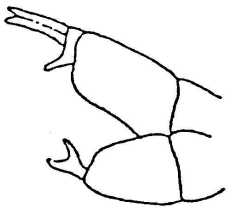
Fig. 23

***Malthodes* spp.**

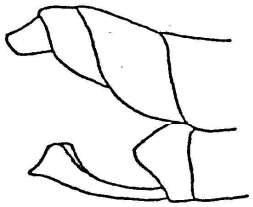
Figure 21 *Malthodes* spp. Male terminalia (excl. genitalia proper) lateral. Redrawn from Reitter 1911. No scale



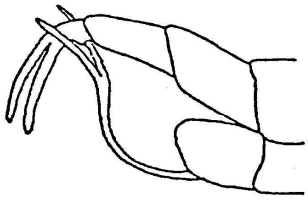
a ***crassicornis***



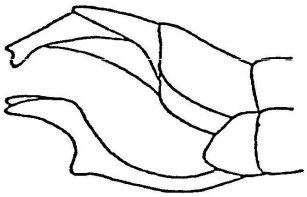
b ***brevicollis***



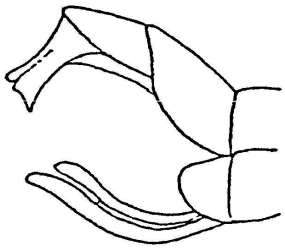
c ***marginatus***



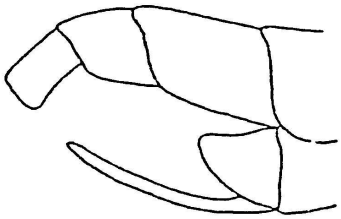
d ***pumilus***



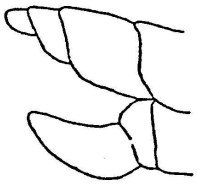
e ***mysticus***



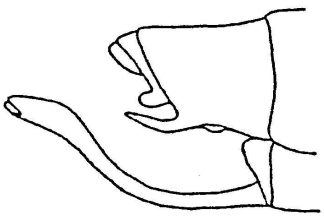
f ***guttifer***



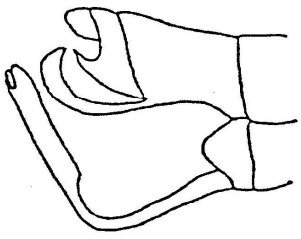
g ***fuscus***



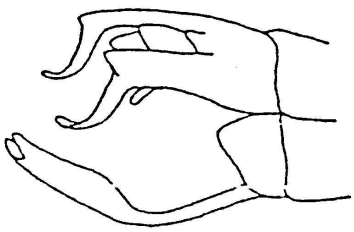
h ***minimus***



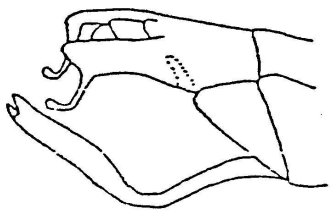
i ***flavoguttatus***



j ***dispar***



k ***fibulatus***



l ***maurus***

List of figures

All scale lines represent 0.5mm.

1 Metathorax lateral. To show shape of side margin of metasternum. ***Cantharis nigricans***

2 Head, dorsal. ***Silis ruficollis*** (m)

3 Head, dorsal. ***Cantharis pellucida*** (m)

4 Head and pronotum, dorsal. ***Podabrus alpinus*** (m)

5 Hind tarsus, dorsal. ***Rhagonycha fulva***

6 Anterior claw of fore tarsus. ***Rhagonycha limbata***

7 Head, postero-dorsal. ***Rhagonycha fulva***

8 Hind tarsus, dorsal. ***Cantharis bicolor***

9 Anterior claw of fore tarsus. ***Cantharis rufa*** (m)

10 Anterior claw of fore tarsus. ***Cantharis rufa*** (f)

11 Head, postero-dorsal. ***Cantharis pallida***

12 Elytral pubescence, dorsal. (No scale, semi-diagrammatic) ***Cantharis pallida***

13 Maxillary palp, apex. ***Cantharis pallida***

14 Elytral pubescence, dorsal. (No scale, semi-diagrammatic) ***Cantharis bicolor***

15 Pronotum, dorsal. ***Cantharis decipiens***

16 Left antenna, segments 5 and 6. ***Cantharis figurata*** (m)

17 Apex of last visible abdominal sternite. ***Cantharis***, females

No scales shown

a	abdominalis	k	figurata
b	fusca	l	decipiens
c	rustica	m	pallida
d	obscura	n	bicolor
e	nigricans	o	lateralis
f	pellucida	p	nigra
g	livida	q	thoracica
h to j	rufa	r	palludosa

18 Pronotum, dorsal. ***Rhagonycha lignosa***

19 Pronotum, dorsal. ***Rhagonycha limbata***

20 Right hind tibia, dorsal. ***Malthinus balteatus*** (m)

21 Male terminalia (excluding genitalia proper), lateral. ***Malthodes*** species
Redrawn from Reitter, 1911. No scale.

a	crassicornis	g	fuscus
b	brevicollis	h	minimus
c	marginatus	i	flavoguttattus
d	pumilus	j	dispar
e	mysticus	k	fibulatus
f	guttifer	l	maurus

22 Pronotum, a. lateral b. dorsal. ***Malthodes marginatus***

23 Pronotum, a. lateral b. dorsal. ***Malthodes minimus***

References

ALEXANDER, K.N.A. 2003. Is *Malthodes brevicollis* (Paykull) (Cantharidae) a British beetle? *Coleopterist* **12**: 35-39.
BARCLAY, M.V.L. & KOPETZ, A. 2003. *Malthodes lobatus* (Kiesenwetter) (Cantharidae) new to Britain. *Coleopterist* **12**: 97-100.

APPENDIX

Keys to the British species of Lampyridae, Lycidae and Drilidae

Family LAMPYRIDAE: key to genera and species

1 Larger species, length* 9.5 to 19 mm. Antennae about equal in length to length of pronotum. Male: elytra and hind wings fully developed and normal. Female: wingless and larviform
Lampyris noctiluca (Linnaeus, 1758)

Smaller species, length* 5 to 7.5mm. Antennae about twice the length of the pronotum. Male: elytra much reduced and hind wings absent. Female: wingless and larviform
Phosphaenus hemipterus (Goeze, 1777)

Family DRILIDAE

A single British species (for character see key to families (section c, page 2)
Drilus flavescens (Geoffroy in Fourcrey, 1785)

Family LYCIDAE: key to genera and species

1 Longitudinal carinae on pronotum converging anteriorly and posteriorly, enclosing a discoidal areola 2

Longitudinal carinae on pronotum not converging anteriorly, meeting front edge well separated, not enclosing a discoidal areola 3

2 Pits between the four main elytral costae arranged in single rows. Antennal segments 2 and 3 very short and about equal in length. Pronotum black. ***Pyropterus nigroruber*** (Degeer, 1774) [This species was formerly known as ***Dictyopterus affinis*** (Paykull, 1799)]

Pits between the four main elytral costae arranged in double rows. Antennal segment 2 smaller than 3, which differs little in form from 4. At least the raised part of the pronotum reddish ***Dictyopterus aurora*** (Herbst 1784)

3 Antennae with at least last segment yellowish. Pronotum wholly black or pitchy. The pits between the four main elytral costae arranged in regular double rows
Platycis minutus (Fabricius, 1787)

Antennae entirely black. Pronotum reddish with disc fuscous. The pits between the four main elytral costae arranged irregularly ***Platycis cosnardi*** (Chevrolat, 1829)

* Lengths of lampyrids are measured from the front of the head to the apex of the abdomen