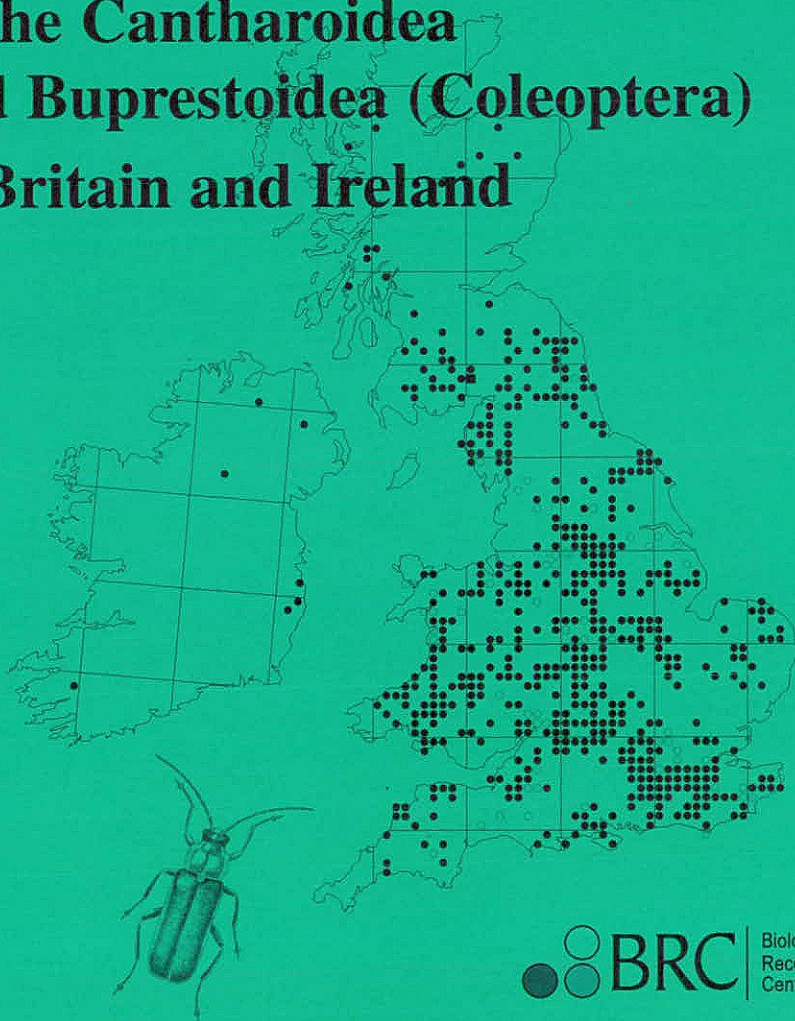


# Provisional atlas of the Cantharoidea and Buprestoidea (Coleoptera) of Britain and Ireland



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# **Provisional atlas of the Cantharoidea and Buprestoidea (Coleoptera) of Britain and Ireland**

**Keith N.A. Alexander**

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## INTRODUCTION

This *Provisional Atlas* covers two distinct groupings of beetles. This is a pragmatic combination and not intended to imply any relationships between the two groups. The Buprestoidea are represented in Britain by a single family, the Buprestidae, none of which appears to occur naturally in Ireland. The Cantharoidea are represented by three families, the Drilidae, Lycidae and Cantharidae.

These four families are an interesting mixture of popular, neglected and obscure species. The common glow worm *Lampyrus noctiluca* is very unusual for a beetle in receiving a great deal of attention from general naturalists (see Tyler, 2002) and even from people who would not normally profess an active interest in wildlife. Consequently, it has been relatively well documented. Jewel beetles of the genus *Agrilus* are particularly popular amongst coleopterists and even amongst other entomologists. Although the larger Cantharidae are brightly coloured they tend to be neglected by coleopterists. *Malthinus* and *Malthodes* appear hardly ever to be noticed by recorders while the obscure habits of *Trachys* and *Aphanisticus* make them difficult to find without considerable targeted effort.

The aim of publication at this stage in the recording scheme (see below) is to summarise and make available what has been learnt so far and to stimulate further interest and recording.

## Ecology and life histories

**Cantharidae** are all believed to be mainly carnivores or omnivores, feeding on a variety of plant and animal material. The adult beetles are relatively short-lived – perhaps only six weeks – and are generally found amongst tall vegetation or at flower heads. There is a clear succession of species across the season. The earliest is usually *Cantharis decipiens*, from mid May, and the latest *Rhagonycha fulva* from late June into early August. Tall, well-developed vegetation and trees and shrubs are the most productive sources, with the majority of species living in woodlands, hedgerows and scrub, or in marshland and wet meadows. Fewer species occur in dry grasslands or on heath and moor – although these do have their own specialists and should not be neglected. The velvety larvae of the larger species are found in similar situations to the adults, and are also present in the surface layers of the soil

and in leaf litter. Larvae of the smaller species of *Malthinus* and *Malthodes* are, in contrast, mainly found associated with dead and decaying timber.

**Lampyridae** and **Drilidae** feed on slugs and snails. **Lycidae** develop in decaying wood. Again, the adults are short-lived and very seasonal.

**Buprestidae** are, by contrast, all plant feeders. The smaller species – *Trachys* and *Aphanisticus* – overwinter in the adult stage and so adults may be found over a much more extended period. Larvae of these species feed within their plant hosts causing characteristic leaf-mines. Adult *Agrius* are also longer-lived than adult Cantharidae and may be found through much of the summer period. Their larvae burrow in the cambial layers of dying stems of woody plants.

## The recording scheme

The recording scheme was launched in 1984 and an introductory newsletter was issued. This included a "*Field Key to the Cantharinae*". Three subsequent newsletters were produced at two-yearly intervals until 1992 when reports began to be published in *The Coleopterist* instead of forming separate publications.

The majority of records presented in this *Provisional Atlas* are derived from new recording stimulated by the recording scheme plus earlier records provided by the recorders concerned. The more readily available published records have also been incorporated plus a range of data from various museum collections and local biological or environmental records centres. The only systematic recording that has been carried out has been at a local level by a small number of recorders.

Despite the *ad hoc* nature of much of the data gathering, the provisional maps are believed on the whole to show real patterns of distribution of the species concerned. There are obvious weaknesses in the spread of the data. Geographically, this shows in much of Scotland and central Ireland. Seasonally it is well shown by the distributions of the records for the wetland species and for *Rhagonycha fulva* in Ireland where much of the recording work has been carried out in May and June, before the main flight periods of these species.



## Identification and keys

Identification of *Cantharis* and *Rhagonycha* can be problematic to the unwary. The array of pale yellowish and dark grey to black soldier beetles - some very variable in colouration and size - produces many pitfalls and few reference collections that I have inspected are without at least the occasional misidentification. The situation is even worse with *Malthodes*, and yet male beetles are fairly straightforward. This has meant that the acceptance of published records, without voucher material readily available, has had to be cautious. Where individual records have seemed surprising - based on knowledge of the habits and distribution of the species concerned - they have been omitted from this *Provisional Atlas* pending confirmation.

The **Buprestidae** are relatively well served with identification keys. Levey (1977) specifically covers the British and Irish fauna of that time - although no Buprestidae are native to Ireland - whilst Bílý (1982) provides a more detailed identification guide to the fauna of Fennoscandia and Denmark. The latter covers all British and Irish species except *Agrius sinuatus*, and includes *Anthaxia quadripunctata* and *Agrius sulcicollis*, which have been reported in Britain since Levey (1977) was published.

With the **Cantharoidea** the main identification key to adult beetles remains Joy (1932) but this should be no serious problem. The only missing species are *Cantharis cryptica*, which was subsequently separated from *C. pallida* (Ashe, 1946), and *Phausis splendidula*, old English specimens of which were only recently discovered (Allen, 1989). Joy (1932) includes *Malthodes brevicollis* although there is no real evidence for this species in Britain. Fitton (1973) provides a much-improved key to the Cantharidae and, although this has not been published, photocopies seem to be in wide circulation. The main problem with using Joy (1932) was recognised at the start of the scheme as being the variability of the larger Cantharidae and so a field key to the Cantharinae was produced in 1984 and was circulated with the first recording scheme Newsletter - further copies may be obtained from the author. The larvae are identifiable to genus level using Fitton (1975).

It is all too easy to forget that today's knowledge of the British and Irish faunas was built up gradually over a long period of time. This can have serious implications when attempting to incorporate old records into a recording scheme. The genus *Malthodes* was sorted out by Kiesenwetter only in the middle of the 19<sup>th</sup> Century (Sharp, 1868) so old records should be treated with caution. Similarly *Agrius angustulus* and *A. laticornis* appear to have been confused until the end of the 19<sup>th</sup> Century and were lumped together

under the name *A. viridis* until sorted out just before Fowler (1890) appeared. Thus pre-Fowler records for "*A. viridis*" refer to either of these two smaller species.

## Recording techniques

The use of sweep net and beating tray will enable most of the species of both groups to be found. The exceptions are primarily the ground-living glow worms (Lampyridae) and certain of the Buprestidae. With the latter, more targeted searching is usually required, notably for *Melanophila aculeata* on burnt branches, *Agilus biguttatus* on oak trunks and main boughs, and the *Aphanisticus* and two of the *Trachys* species by operating suction devices amongst suitable ground vegetation. Indeed many of the Buprestidae are perhaps most readily recorded by searching for the feeding signs of the larvae on the food plants (Alexander, 1989 & 1990).

Virtually all of the native species are best found by searching semi-natural habitats, especially longer established examples, i.e. mainly where the vegetation reflects unmodified soil conditions. Gross disturbance by human activities results in severe impoverishment of the fauna. The best sites tend also to be those with a mosaic of vegetation and structural types, e.g. open woodlands and wood-pastures with tall flowery grasslands amongst the trees, both wet and dry areas, and a plentiful supply of decaying wood.

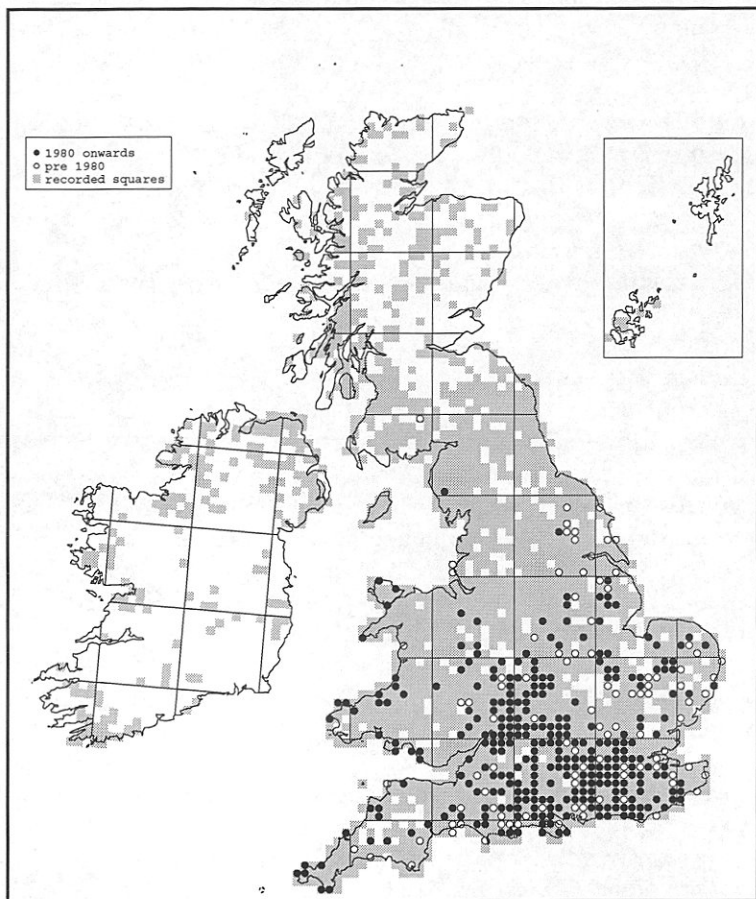
Care needs to be taken when mounting specimens for retention in a reference collection. Many species need to be examined on their under-sides as well as upper-sides, and *Malthodes* males have complex terminal segments to their abdomen, which need to be seen from the side. My own preference is to pin specimens rather than use the standard card mounting technique more conventional amongst beetle specialists.

## Coverage in the distribution maps

**Buprestidae:** One native English species has been extinct for some time and is not mapped - *Anthaxia nitidula*. Also excluded are various other species that have been reported from time to time and almost certainly represent only casual importations. None of the family appears to be native to Ireland, but Speight (1989) has reviewed the occurrence of various casual introductions and contemplated the possibilities for resident species that may

have so far eluded the few recorders active in Ireland. Buprestidae occur mainly in the south and southeast of Britain (Map 1).

**Map 1: The distribution of all Buprestidae species compared with the overall distribution of records collated by the scheme.**



**Cantharoidea:** *Phausis splendidula* and *Phosphaenus hemipterus* are the only species not mapped. *Phausis splendidula* is known in Britain only from specimens collected in Kent in the 19th Century (Allen, 1989). *Phosphaenus hemipterus* is probably an accidental introduction, most records being single reports from built-up areas or on disturbed ground in the southeast of England.

## Critical species

There remain several questions about the distribution of certain species and for which voucher material is needed before these can be resolved. In most cases there are old literature records for these species that appear to be well beyond the limits of their current range and where I have not so far been able to examine voucher material.

In Britain:

- *Cantharis decipiens* north of the Forth-Clyde line and from Cornwall;
- *Cantharis rustica* north of the Forth-Clyde line;
- *Rhagonycha elongata* south of the Forth-Clyde line;
- *Malthodes flavoguttatus* in the south and east of England;
- *Malthodes fuscus* in East Anglia and the East Midlands;
- *Agrilus viridis* away from the south and east of England.

In Ireland:

- *Cantharis lateralis*;
- *Silis ruficollis*;
- *Malthodes minimus*.

All records for these species from these areas have been removed from the provisional distribution maps until unequivocal evidence is forthcoming.

## Changes in range and abundance

The conventional 10km dot maps presented in this *Provisional Atlas* provide three main types of information, in relation to the overall coverage of records:

- extent of country over which the species has been found, which can be interpreted as showing the extent and pattern of the *range*;
- dot density, which can be interpreted as giving an indication of the *status* of the species within that range;
- age structure of the records on which the dots are based, which can be interpreted as giving an indication of *changing status*.

The presence of an open circle does not necessarily mean that the species has declined. It may indicate that the locality has not been visited or that the species was not looked for. However, the apparent absence of many species in recent years from within their former ranges suggest that these species may have become more difficult to find than was formerly the case.



It is interesting to read comments on the status of species in Fowler (1890). In most cases, the same assessments could justifiably be used today, although the precise meaning of terms such as 'rare' or 'local' may be different. The extent of habitat loss and fragmentation that has affected much of the countryside in the intervening 110 years is well documented and is not detailed here. Also the numbers and mobility of field recorders have increased considerably in that time, and several species have been added to the British list.

The strong association with long-established semi-natural vegetation, and especially mosaics of different structural types, has led to significant declines in abundance in most, if not all, species (see Alexander, 1999) and, in some cases, also contraction in range. The well-documented disappearance of traditional, unimproved hay meadows appears to account for the dramatic decline in *Cantharis fusca*, while agricultural intensification in general has meant that species-richness has declined throughout the open countryside, affecting species such as *Cantharis livida*, *C. rufa*, *C. rustica* and *Trachys troglodytes*. The abandonment of regular coppicing within enclosed woodlands in the last century has converted open, structurally varied and sunny woodlands into dark and shady closed canopy stands, with consequent declines in species such as *Agrilus angustulus*, *Trachys minutus* and *Rhagonycha lutea*.

In contrast, abandonment of regular boundary maintenance appears to offer an explanation for the expansion of *Agrilus sinuatus*, while global climate change offers the best explanation for the expansion of *A. biguttatus* from its old forest refugia (Alexander, in press). The recent appearance of *A. sulcicollis* in Hertfordshire may suggest more direct human interference.

## Conservation status in Britain

The results of the recording scheme will provide, for the first time, a quantitative basis for assessing the current statuses of these species in Britain. This will be undertaken as part of the Species Status Assessment Programme, led by the Joint Nature Conservation Committee, using internationally accepted criteria.

In the following table previous opinions on the status of species are summarised from three sources:

**Fowler (1890)** – Subjective comments on the rarity of individual species (included here only for species considered in the following two publications);

**Shirt (1989)** – The British Red Data Book – assessments based on the limited information available at the time;

**Hyman and Parsons (1992)** – A national review of the status of British beetles, updating assessments in Shirt (1989).

These sources are similar in that they are concerned mainly with rarity rather than threats to the status of a species, such as rapid decline in abundance at a local scale, or systematic reduction in the amount of previously common habitats.

Species	Fowler (1890)	Shirt (1989)	Hyman & Parsons (1992)
<i>Agrius angustulus</i>	Local		Scarce B
<i>Agrius biguttatus</i>	Very local	Vulnerable	Scarce A
<i>Agrius laticornis</i>	Local		Scarce B
<i>Agrius sinuatus</i>	Very rare	Vulnerable	Scarce A
<i>Aphanisticus pusillus</i>	Rare		Scarce B
<i>Trachys minutus</i>	Not uncommon	Vulnerable	Scarce A
<i>Trachys scrobiculatus</i>	Extremely local		Scarce A
<i>Drilus flavescens</i>	Local		Scarce A
<i>Dictyoptera aurora</i>	Very local		Scarce B
<i>Pyropterus nigroruber</i>	Extremely local	Rare	Scarce A
<i>Platycis cosnardi</i>		Endangered	Indeterminate
<i>Platycis minutus</i>	Very local		Scarce B
<i>Ancistronycha abdominalis</i>	Rare		Scarce B
<i>Cantharis fusca</i>	Local and not common		Rare
<i>Cantharis obscura</i>			Scarce B
<i>Rhagonycha elongata</i>	Local		Scarce A
<i>Rhagonycha lutea</i>	Not uncommon		Scarce B
<i>Rhagonycha translucida</i>	Rare		Scarce B
<i>Silis ruficollis</i>	Rare		Scarce B
<i>Malthinus balteatus</i>	Local		Scarce B
<i>Malthinus frontalis</i>	Not common		Scarce B
<i>Malthodes crassicornis</i>		Rare	Rare
<i>Malthodes fibulatus</i>	Local		Scarce B
<i>Malthodes fuscus</i>	Local		Scarce B
<i>Malthodes guttifer</i>	Rare		Scarce B
<i>Malthodes maurus</i>	Rare		Scarce B

# ***CHECK LIST***

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The following list is based on Kloet and Hincks (revised by Pope, 1977), with additions of species subsequently found in Britain. All named species have been found in Britain; those marked with an asterisk also occur in Ireland (Anderson, *et al.*, 1997).

## ***BUPRESTOIDEA***

### **BUPRESTIDAE**

**MELANOPHILA** Eschscholtz, 1829

***acuminata*** (Degeer, 1774)

**ANTHAXIA** Eschscholtz, 1829

***nitidula*** (Linnaeus, 1758)

***quadripunctata*** (Linnaeus, 1758)

**AGRILUS** Curtis, 1825

***angustulus*** (Illiger, 1803)

*viridis* sensu Stephens, 1830 partim

***biguttatus*** (Fabricius, 1777)

*pannonicus* (Piller & Mitterpacher, 1783)

***laticornis*** (Illiger, 1803)

*viridis* sensu Stephens, 1830 partim

***sinuatus*** (Olivier, 1790)

***sulcipectus*** Lacordaire, 1835

***viridis*** (Linnaeus, 1758)

**APHANISTICUS** Latreille, 1810

***emarginatus*** (Olivier, 1790)

***pusillus*** (Olivier, 1790)

**TRACHYS** Fabricius, 1801

***minutus*** (Linnaeus, 1758)

***scrobiculatus*** Kiesenwetter, 1857

*pumilus* sensu auct. not (Illiger, 1803)

***troglodytes*** Gyllenhal in Schoenherr, 1817

## ***CANTHAROIDEA***

### **DRILIDAE**

**DRILUS** Olivier, 1790

***flavescens*** (Fourcroy, 1785)

## LYCIDAE

- DICTYOPTERA** Latreille, 1829  
*DICTYOPTERUS* auct. (misspelling)  
*EROS* Newman, 1838  
    *aurora* (Herbst, 1784)  
**PYROPTERUS** Mulsant, 1838  
    *nigroruber* (Degeer, 1774)\*  
        *affinis* (Paykull, 1799)  
**PLATYCIS** Thomson, C.G., 1859  
    *cosnardi* (Chevrolat, 1829)  
    *minutus* (Fabricius, 1787)

## LAMPYRIDAE

- PHAUSIS** Le Conte, 1851  
*LAMPROHIZA* Motsschulsky, 1852  
    *splendidula* (Linnaeus, 1767)  
**LAMPYRIS** Müller, O.F., 1764  
    *noctiluca* (Linnaeus, 1758)  
**PHOSPHAENUS** Laporte de Castelnau, 1833  
    *bemipterus* (Goeze, 1777)

## CANTHARIDAE

- PODABRUS** Westwood, 1838  
    *alpinus* (Paykull, 1798)\*  
**ANCISTRONYCHA** Markel *in* Kiesenwetter, 1852  
    *abdominalis* Fabricius, 1798  
        *cyanea* (Curtis, 1828)  
**CANTHARIS** Linnaeus, 1758  
*TELEPHORUS* Schaeffer, 1766  
    *cryptica* Ashe, 1947\*  
        *bicolor* sensu (Fowler, 1889) partim not Fabricius, 1798  
        *pallida* sensu auct. partim not Goeze, 1777  
    *decepiens* Baudi, 1871  
        *clypeata* sensu (Fowler, 1889) not Illiger, 1798  
        *haemorrhoidalis* sensu auct. Brit. not Fabricius, 1792  
    *figurata* Mannerheim, 1843\*  
        *cruachana* Chitty, 1893  
        *scotica* (Sharp, 1866)  
    *fusca* Linnaeus, 1758



**lateralis** Linnaeus, 1758\*

*oralis* Germar, 1824

**livida** Linnaeus, 1758

*dispar* Fabricius, 1792

*rufipes* Herbst, 1784

**nigra** (Degeer, 1774)\*

*flavilabris* Fallén, 1807

*fulvicollis* Fabricius, 1792 nec Scopoli, 1763

**nigricans** (Müller, O.F., 1776)\*

*discoidea* (Stephens, 1830)

**obscura** Linnaeus, 1758

**pallida** Goeze, 1777\*

*bicolor* sensu (Fowler, 1889) partim not Fabricius, 1798

*bicolor* Panzer, 1797 nec Linnaeus, 1763

**paludosa** Fallén, 1807\*

**pellucida** Fabricius, 1792\*

**rufa** Linnaeus, 1758\*

*darwiniana* (Sharp, 1866)

*lituratus* Fallén, 1807

**rustica** Fallén, 1807

**thoractica** (Olivier, 1790)\*

*bicolor* Herbst, 1784 nec Linnaeus, 1763

? *caeruleocephala* Thunberg, 1784

**RHAGONYCHA** Eschscholtz, 1830

**elongata** (Fallén, 1807)

**fulva** (Scopoli, 1763)\*

**lignosa** (Müller, O.F., 1764)\*

*pallida* (Fabricius, 1787) nec (Goeze, 1777)

**limbata** Thomson, C.G., 1864\*

*femoralis* sensu auct. Brit. not (Brullé, 1832)

**lutea** (Müller, O.F., 1764)\*

*fuscicornis* (Olivier, 1790)

**testacea** (Linnaeus, 1758)

**translucida** (Krynicky, 1832)\*

*pilosa* sensu (Stephens, 1830) not (Paykull, 1798)

*unicolor* sensu Fowler, 1889 ?not (Curtis, 1840)

**SILIS** Charpentier, 1825

**ruficollis** (Fabricius, 1775)\*

**MALTHINUS** Latreille, 1806

**balteatus** Suffrian, 1851\*

**flaveolus** (Herbst, 1786)\*

*punctatus* sensu Fowler, 1889 ?not (Fourcroy, 1785)

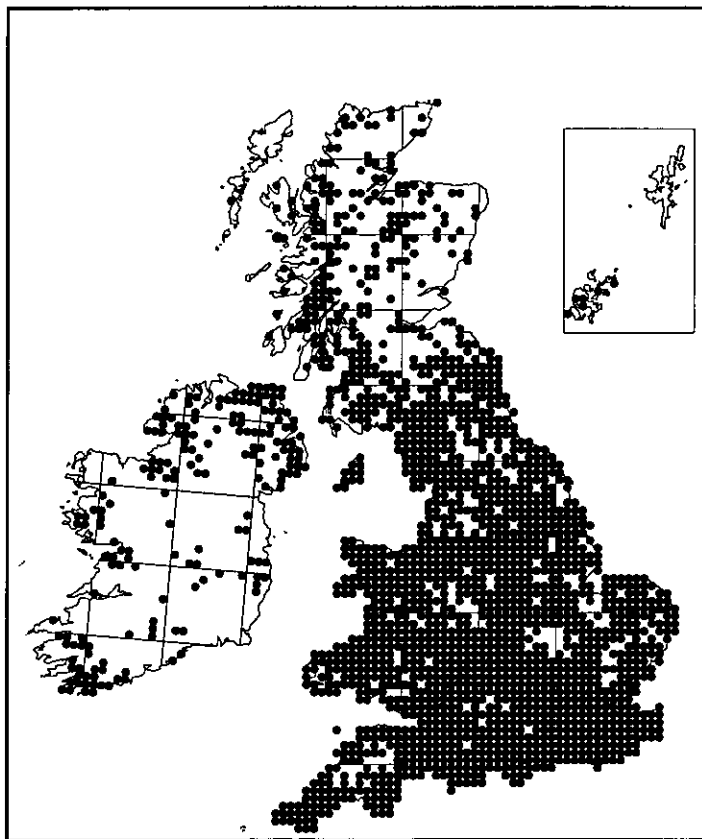
- frontalis* (Marsham, 1802)  
*seriepunctatus* Kiesenwetter, 1852\*  
*fasciatus* sensu auct. not (Olivier, 1790)  
**MALTHODES** Kiesenwetter, 1852  
*crassicornis* (Mäklin, 1846)  
*brevicollis* sensu auct. Brit. not (Paykull, 1798)  
*dispar* (Germar, 1824)\*  
*fibulatus* Kiesenwetter, 1852  
*flavoguttatus* Kiesenwetter, 1852\*  
*fuscus* (Waltl, 1838)\*  
*pellucidus* Kiesenwetter, 1852  
*guttifer* Kiesenwetter, 1852\*  
*marginatus* (Latreille, 1806)\*  
*maurus* (Laporte de Castelnau, 1840)  
*misellus* sensu auct. not Kiesenwetter, 1852  
*minimus* (Linnaeus, 1758)\*  
*marginicollis* Schilsky, 1892  
*mysticus* Kiesenwetter, 1852  
*pumilus* (Brébisson, 1835)\*  
*atomus* Thomson, C.G., 1864  
*brevicollis* sensu Kiesenwetter, 1852 not (Paykull, 1798)

## ***DISTRIBUTION MAPS AND SPECIES ACCOUNTS***

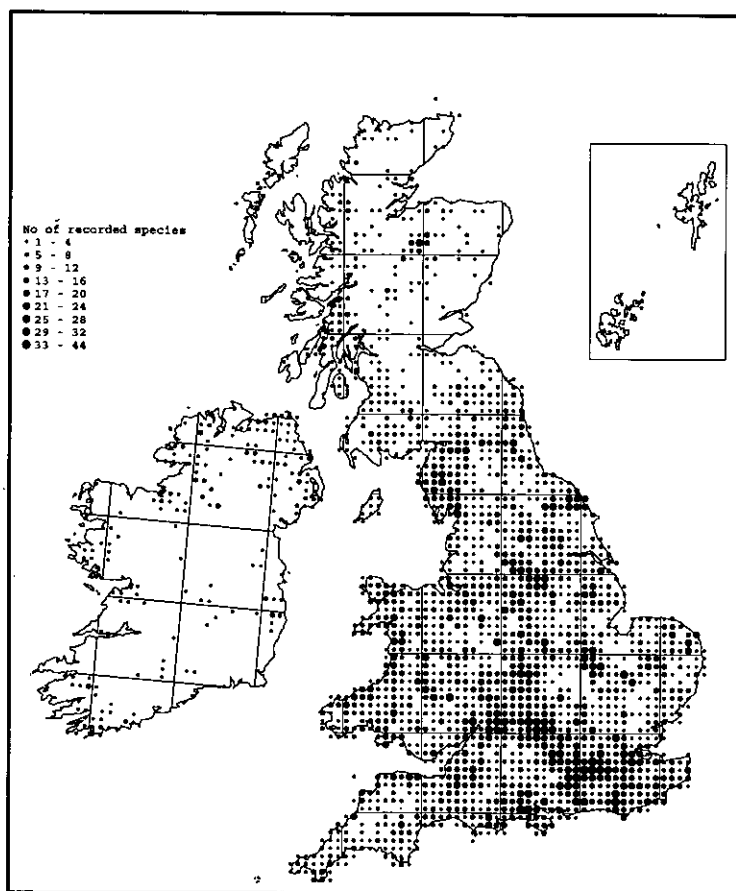
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This *Provisional Atlas* summarises 41071 records collated by the recording scheme since its inception in 1984. The following distribution maps of coverage and individual species summarise these data. Map 2 is a coverage map showing each 10km square from which at least one record has been received. The grey shading on the individual species maps also shows this overall coverage of records. Map 3 is a coverage map indicating the number of species recorded from each 10km square.

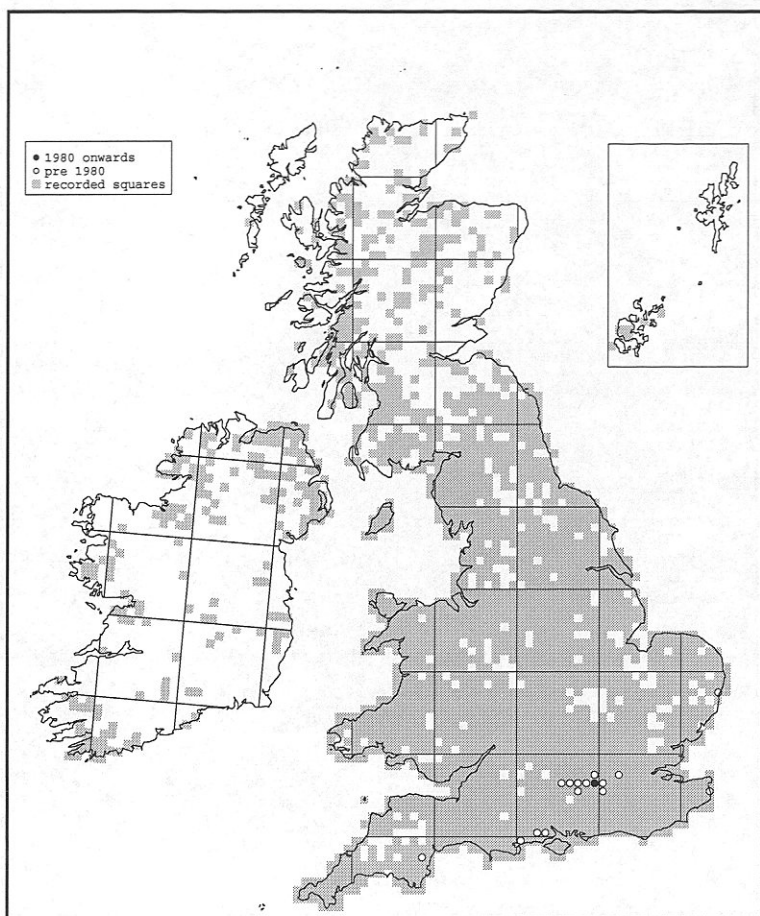
**Map 2: Coverage map**, showing each 10km square from which at least one record has been received. Squares in which surveys have taken place but where no species were found have not been identified separately and appear as blanks together with squares where there have been no surveys.



**Map 3: Species richness map**, indicating the number of species recorded from each square. More intensive recording results in longer lists of species, so this map indicates partly where the true species richness may be greatest and partly where recorders have concentrated their efforts.

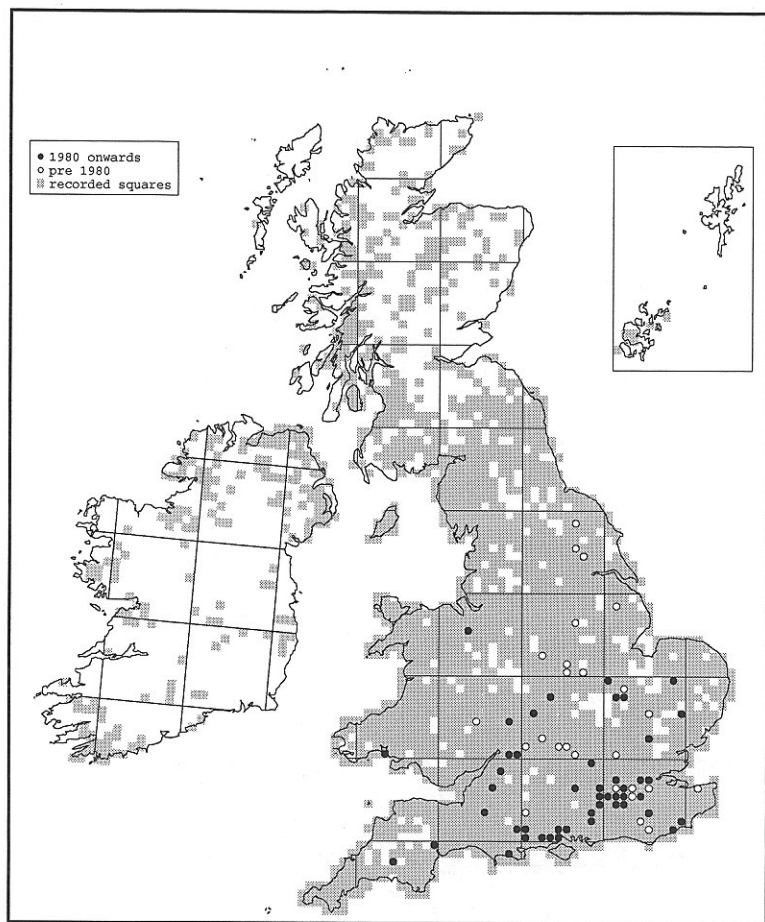






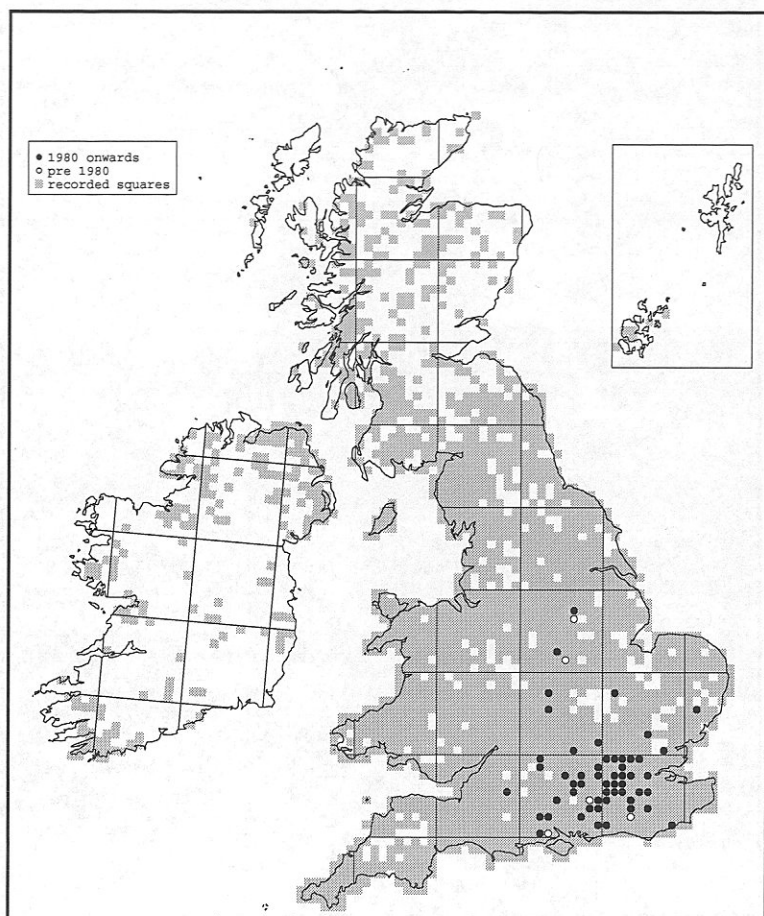
### ***Melanophila acuminata***

A long-established species that is widely regarded as being non-native in Britain. Larvae develop in and under bark of scorched and burnt trees on lowland heaths. Adults are active in July.



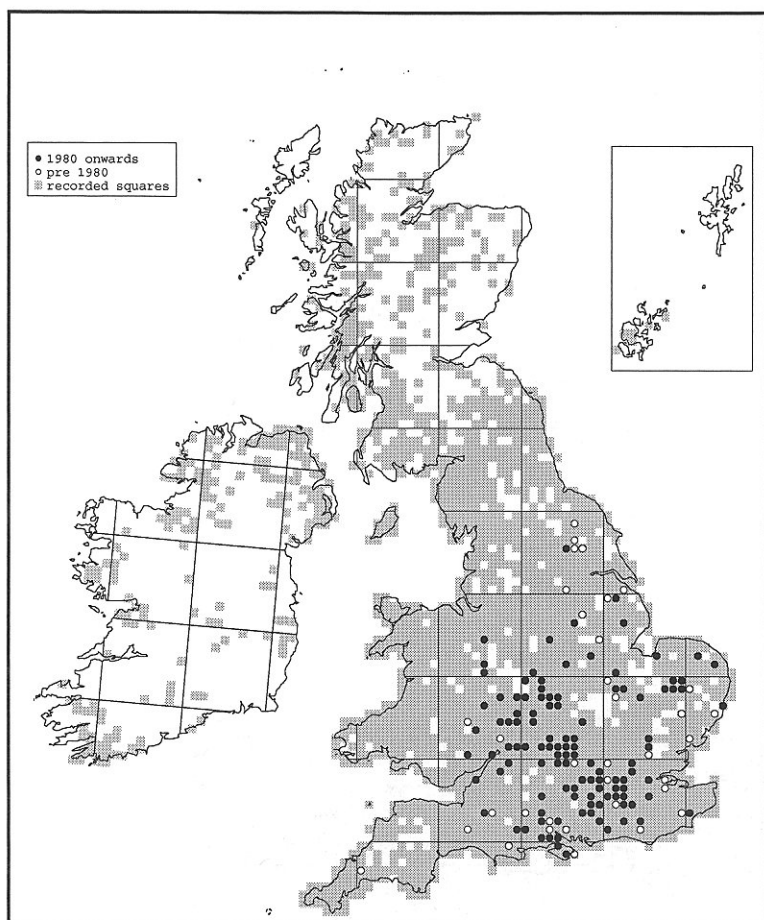
### ***Agrilus angustulus***

A species of lowland woodlands. The larvae develop beneath the sappy bark on dying and freshly dead, small branch wood, perhaps particularly where woods are under active coppice management, creating open sunny and sheltered conditions. It appears to have become increasingly scarce in recent decades. It has disappeared from much of its former range in the northern English Midlands, and its conservation status is certainly of concern. Adults are active from early May to early August.



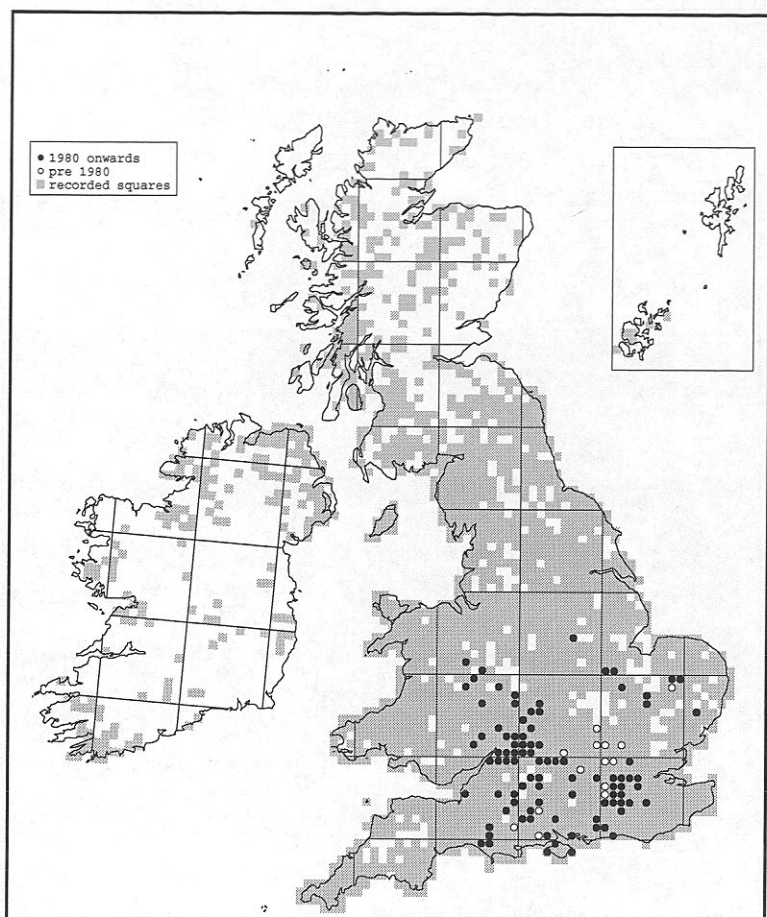
### ***Agrilus biguttatus***

The larvae develop in the thick bark of dying and recently dead oak trunks and major boughs, especially in open, sunny situations. Until very recently, it was confined to a few refugia in the relict forests of lowland England, but an increase in its abundance in the early 1980s has been boosted by the great storms of the late 1980s and the recent appearance of oak dieback disease. Consequently the species has expanded to become almost common across south-eastern England. Adults are active from mid May to late July.



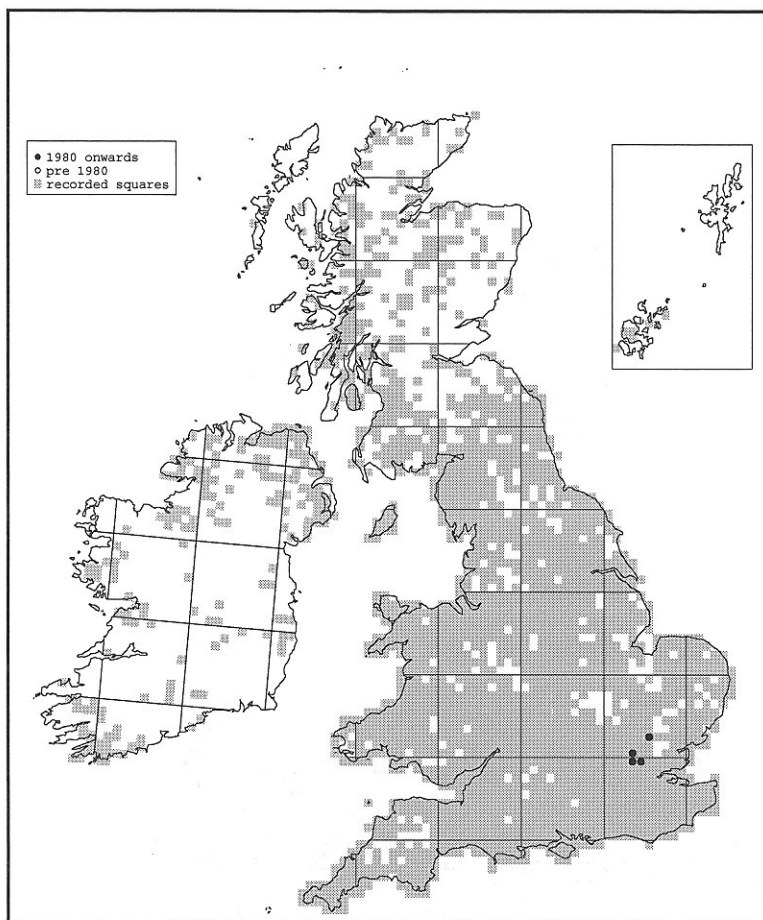
### *Agrilus laticornis*

A species of lowland woodlands and wood-pastures, where it favours open, sunny and sheltered situations. The larvae develop beneath the sappy bark on dying and freshly dead, large branch wood. It formerly had the widest range of all of British *Agrilus* species. It is still very strong in much of central southern England and the west Midlands, but appears to have become increasingly scarce elsewhere in its range, particularly across eastern England. Old records for *A. viridis* in the north, including Dumfries and Argyll, are presumed to refer to *A. laticornis*, but no voucher material has been found. Adults are active from mid May to early September, with a distinct peak in June and July.



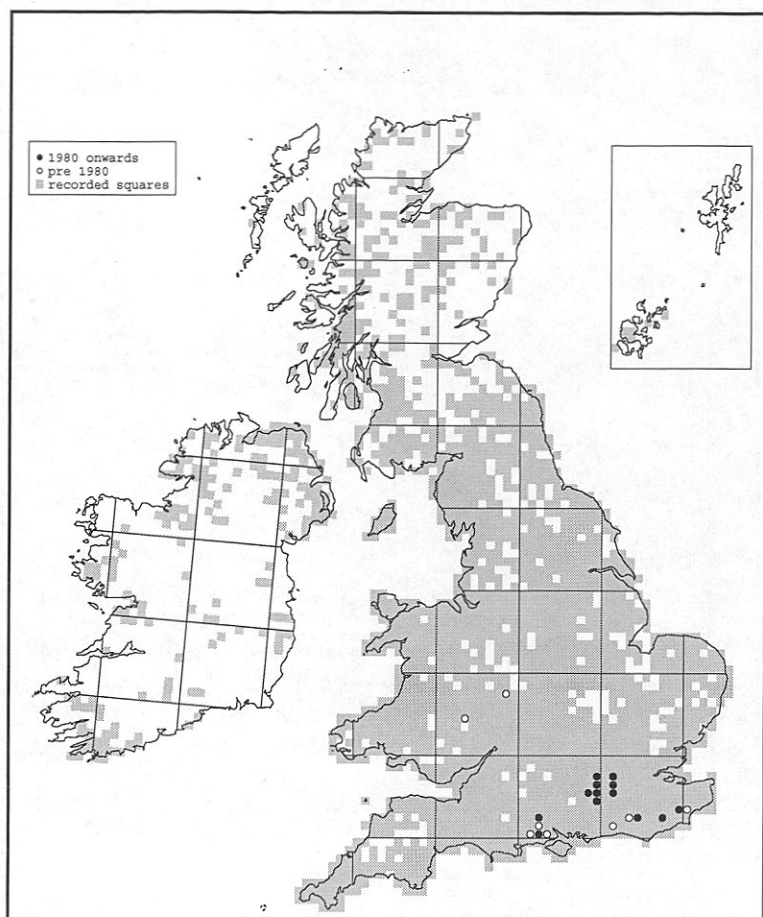
### *Agrilus sinuatus*

The characteristic D-shaped exit holes and larval burrows beneath the bark of dying and dead main boughs or trunks of old hawthorns are the easiest way of detecting this species (Alexander, 1990). Adults are seldom recorded, even as dead within the burrows. The recent recognition of these signs as a reliable means of recording may go some way in explaining the current frequency of records. Previously it was regarded as a rarity (Fowler, 1890), but the conclusion that it is now more widespread than in the past is inescapable. Adults are active from mid June to late September.



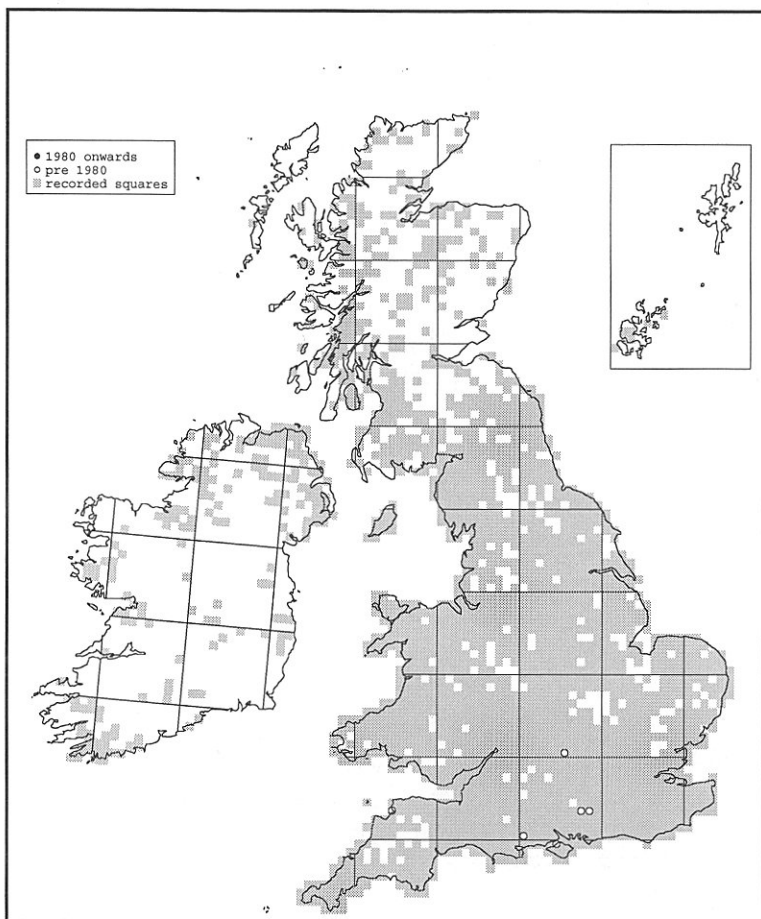
### ***Agrilus sulcicollis***

Develops in or under the bark of live oak species. The recent English records come from a variety of situations, including closed woodland and young oaks invading chalk grassland. Discovered in Hertfordshire in 1992 (James, 1994) and expanding.



### *Agrilus viridis*

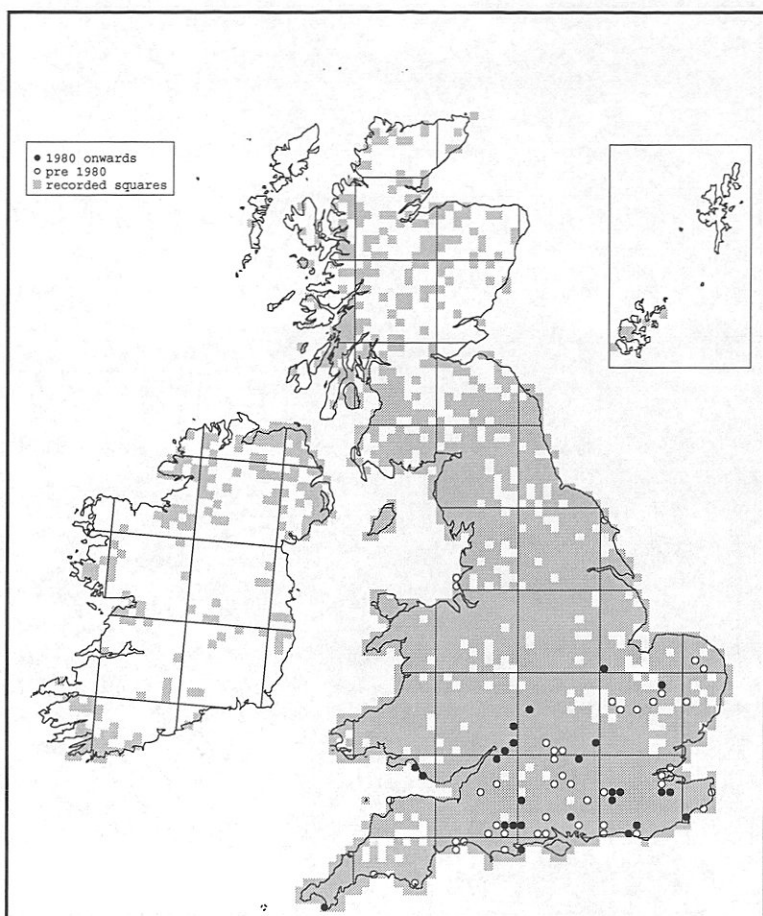
The larvae develop beneath the bark of dying and recently dead stems of grey and goat willows. Records prior to Fowler (1890) actually refer to *A. laticornis* and/or *A. angustulus*. It would appear to be confined mainly to the south-eastern English counties. For a long time it was known only from the New Forest, but it has since been found in a few old, coppice woods and on old, scrubby and wooded commons in Kent, Sussex and Surrey, and also more recently in Windsor Forest. As with so many poorly recorded species, it is difficult to determine whether this is the result of a genuine range expansion or increased abundance making the species easier to detect. There is also an old record for "Bewdley" which presumably refers to the Wyre Forest. Adults are active in June and July.



### ***Aphanisticus emarginatus***

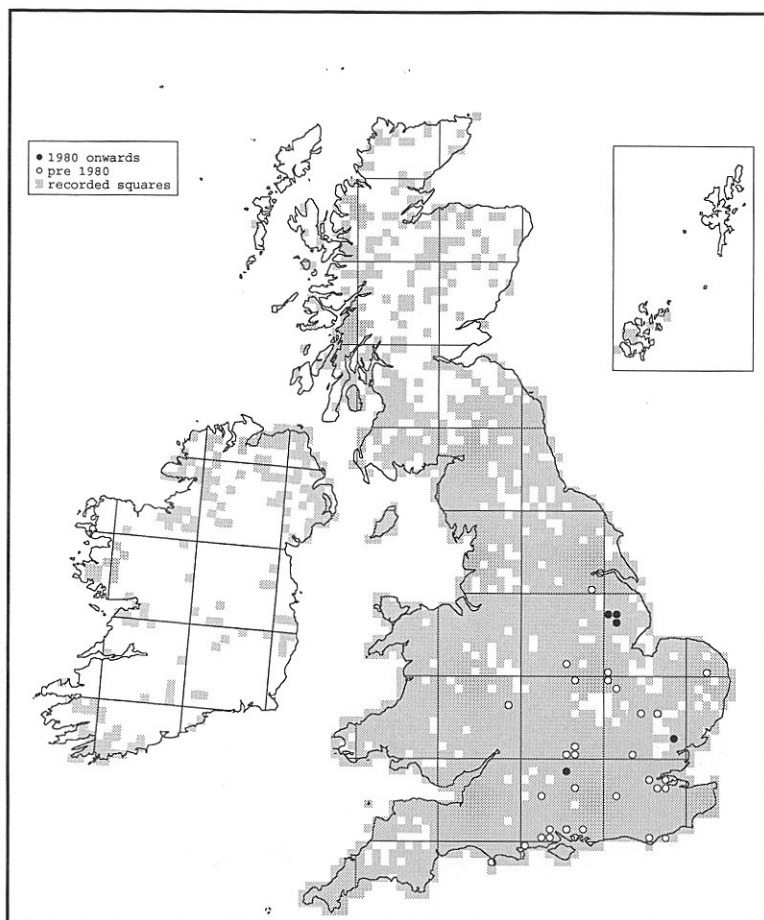
A little known species and apparently a great rarity – it was last reported in Britain in 1951. The larvae are reported to develop in the stalks of jointed rush. Adults over-winter and may be expected in suitable habitat all year round.





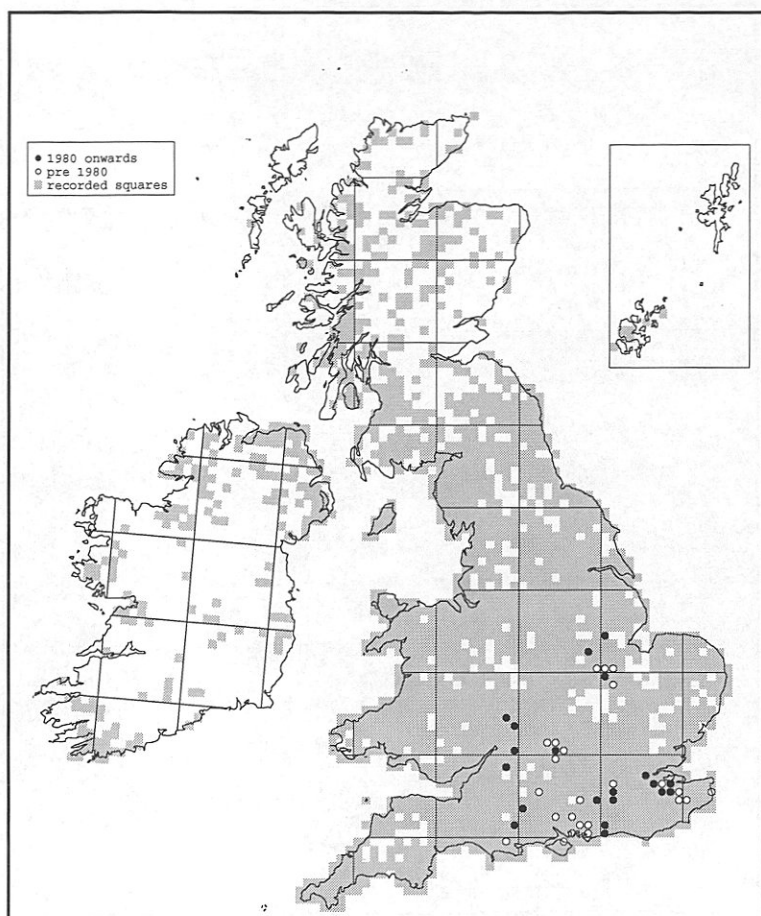
### *Aphanisticus pusillus*

Although most texts give wetlands as the habitat for this species, most records actually come from dry calcareous or base-rich grasslands where the presumed host is glaucous sedge (Alexander, 2000b). It is widely scattered across lowland England from the Lizard in Cornwall to Kent and northwards to the Soke of Peterborough. There are also old records from further north - Yorkshire and coastal dunes in Lancashire. Adults over-winter and may be found all year round.



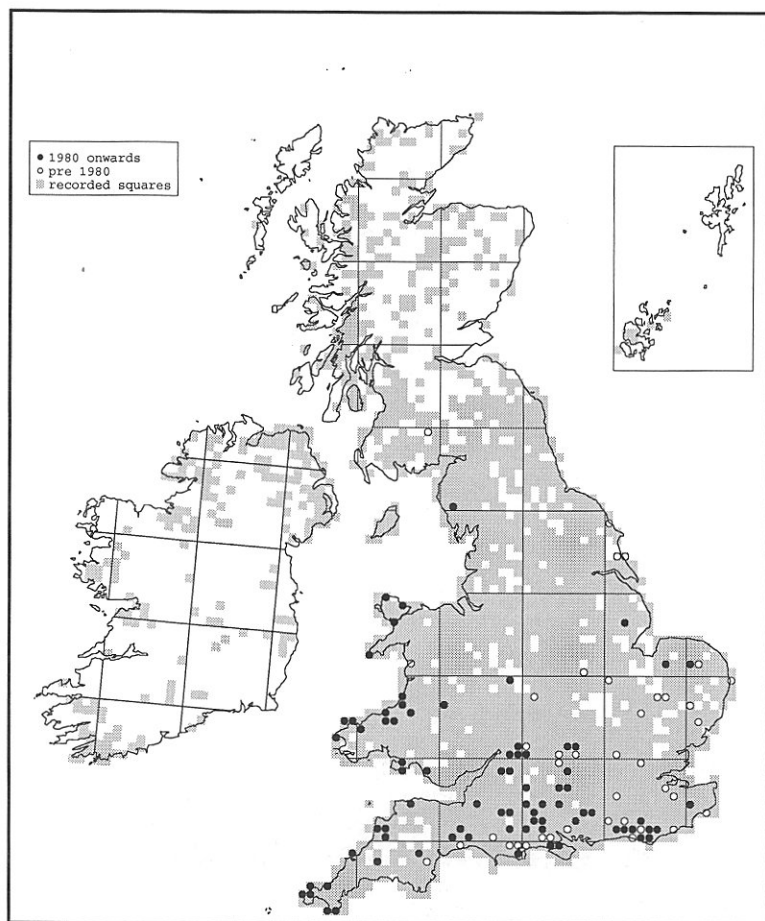
### ***Trachys minutus***

An elusive species that develops in leaf-mines on bushes of the broadleaved willows in ancient, semi-natural woodlands. The range formerly extended from Worcestershire and Hampshire in the west across to Lincolnshire and Kent. The majority of records are very old and it has almost certainly decreased in parallel with the decline in active coppice management. Many of its former sites are probably now too dark and shady for this southern, warmth-loving species. Adults over-winter and may be found all year round.



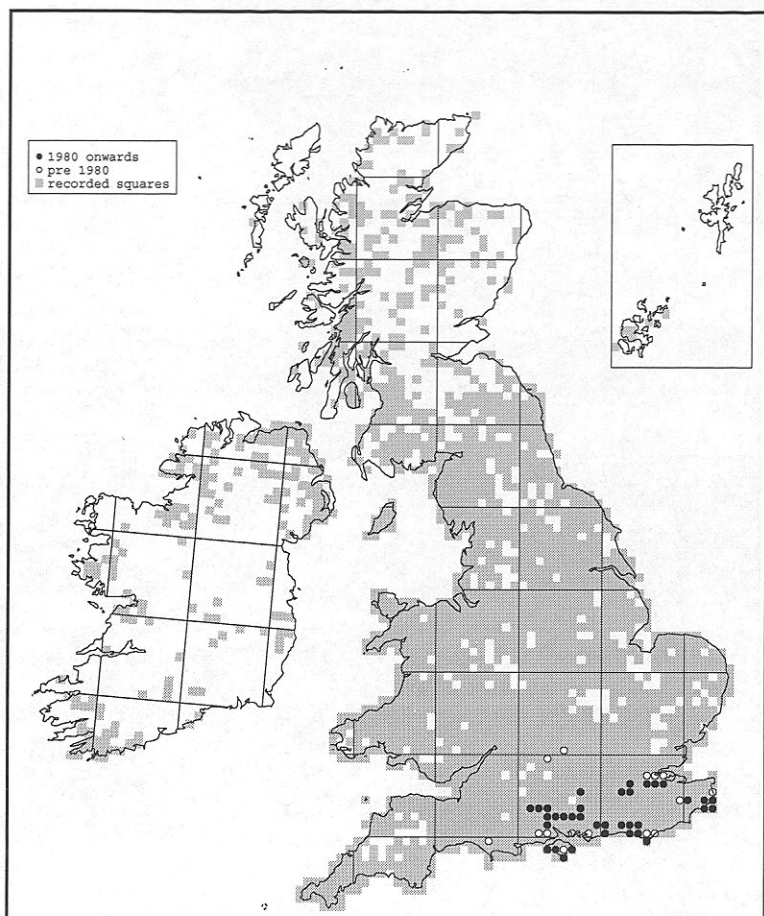
### ***Trachys scrobiculatus***

A speciality of scrub-invaded, old calcareous grasslands, wood-edges and ride-sides. The larvae develop in leaf mines on ground-ivy where it grows tall, pale and straggly in a rank but well-lit sward. Improved understanding of its habitat requirements and the current availability of suction samplers have meant that it is now more readily found when present. Nevertheless, its specialist habitat has undoubtedly decreased in availability, due partly to intensification of agriculture and forestry and also to well-intentioned conservation work to restore downlands by clearing scrub and increasing grazing. Adults over-winter and may be found all year round.



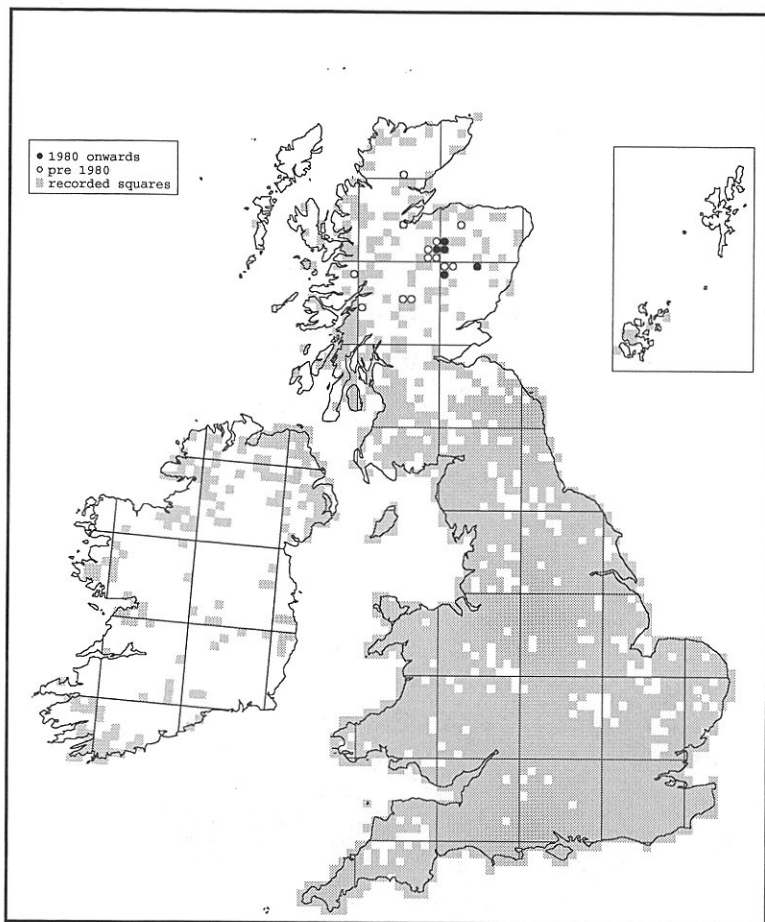
### *Trachys troglodytes*

The larval leaf-mines and shiny black egg spots on devil's-bit scabious leaves are distinctive (Alexander, 1989) and are the easiest way of finding the immature stages. It is most widespread on humid heaths, old calcareous pastures, and wet flushes, but may occasionally be found in old meadows and has been reported from woodland. Grazing seems to be important in maintaining the appropriate sward structure. Although mainly confined to the lowlands, it has been found in an upland valley mire on Bodmin Moor, Cornwall. It extends furthest north along the west coast, but the only Scottish record is an old one from Dumfriesshire. Adults over-winter and may be found all year round.



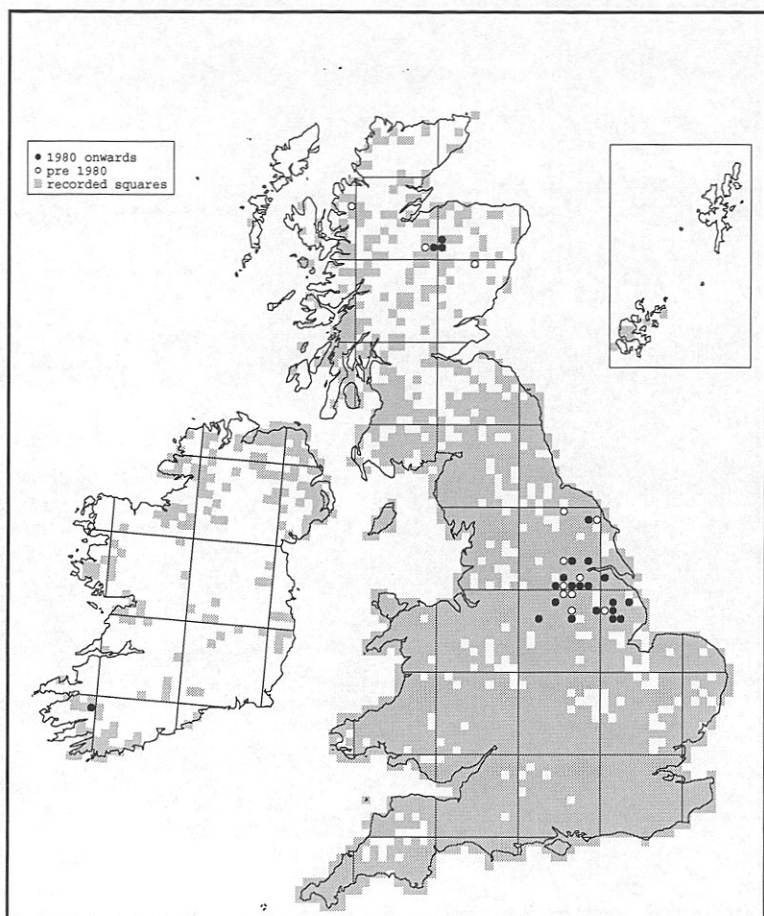
### ***Drilus flavesceus***

Widespread in grasslands and woodland edges on the chalk downs of southeast England. The larvae are specialist predators on molluscs. Adults are active from mid May until early July.



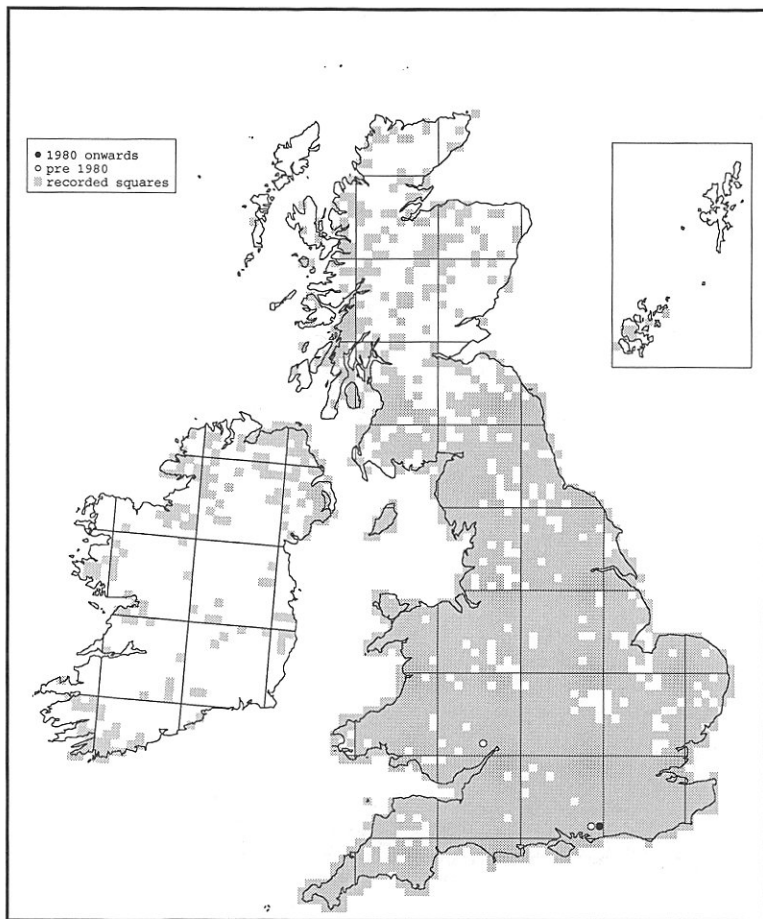
### ***Dictyopectera aurora***

A speciality of the woodlands of northern Scotland, mainly associated with native Scots pine forest. The larvae develop in decaying, standing or fallen pine timber. Adults fly in evening sunshine in May and June.



### ***Pyropterus nigroruber***

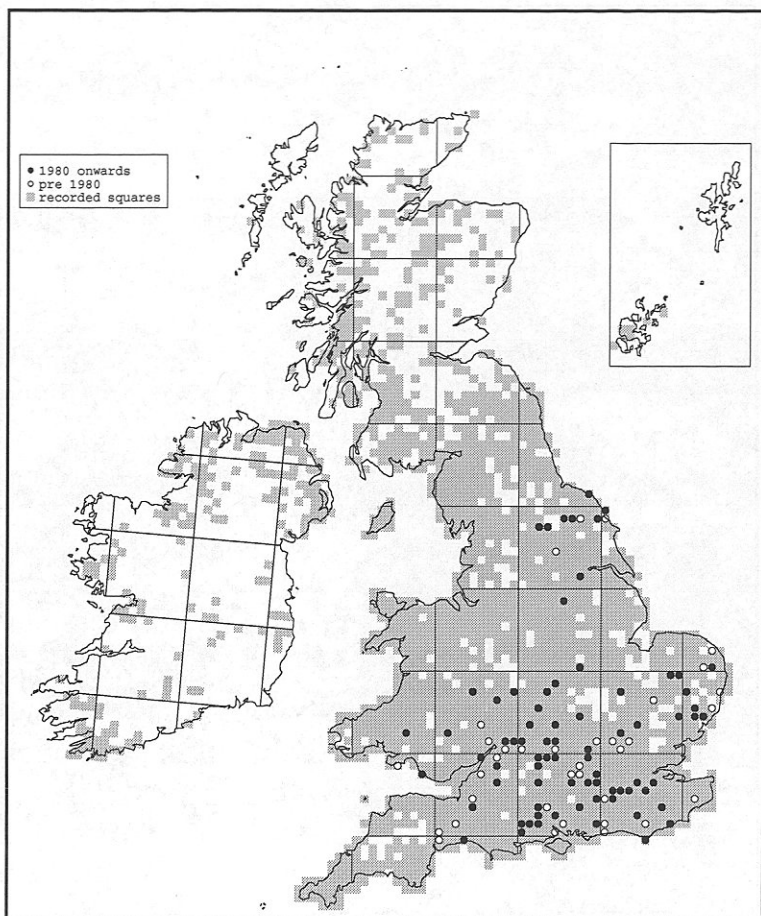
The larvae develop in the decaying heartwood of various broad-leaved trees, especially birch and beech. It is known mainly from three widely separated areas: i) a large spread of country in the northeast Midlands, ii) the Cairngorm Highlands of eastern Scotland, and iii) the Killarney Oakwoods of Co. Kerry. Adults are active in July and August.



### *Platycis cosnardi*

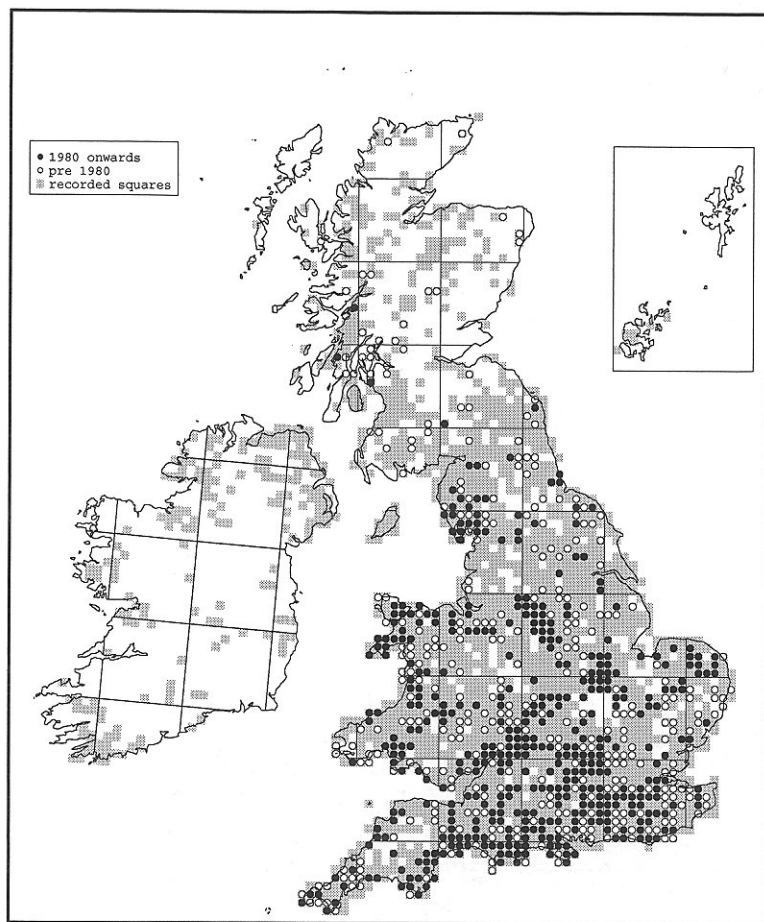
Only known from the Wye valley near Symonds Yat and the South Downs, where its appearances are very sporadic. It is almost certainly a native species of old growth beech. The larvae develop in the decaying heartwood of old beech hulks. All the records of adults are in May.





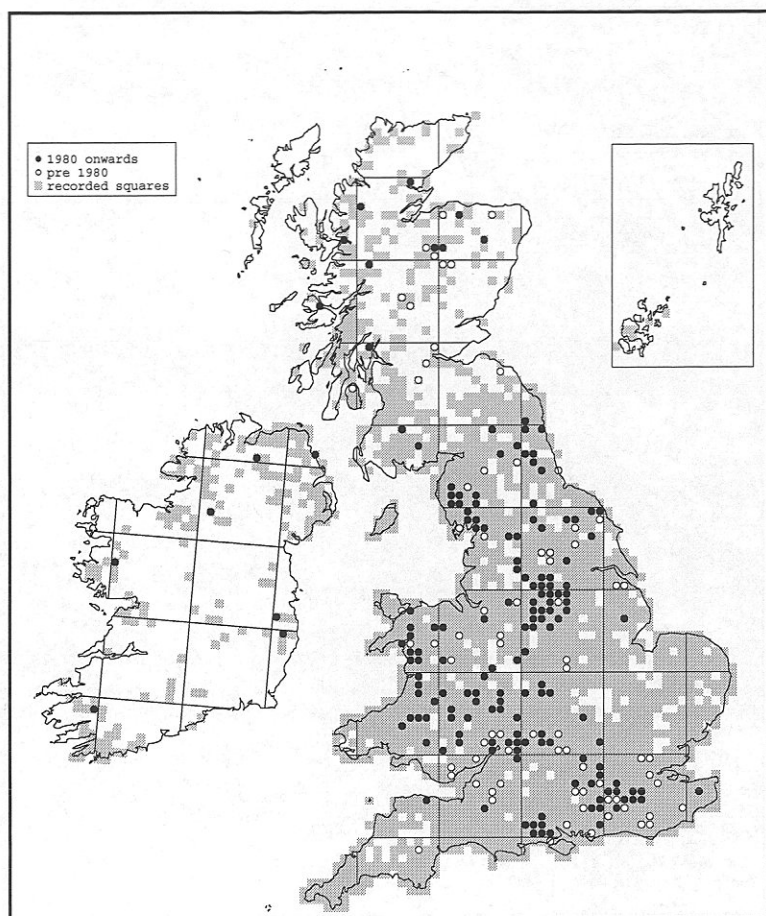
### ***Platycis minutus***

A speciality of ancient semi-natural woodlands and wood-pastures in the chalk and limestone districts of lowland England and southeast Wales. The larvae develop in the white-rotten heartwood of beech, ash and perhaps other tree species. It also occurs on more neutral soils, especially in the west of its British range. One curious record (not mapped) comes from the very sparsely wooded Land's End peninsula in Cornwall, where it is unlikely to be native. This record is most probably the result of an accidental introduction with firewood. Adults are active in August and September.



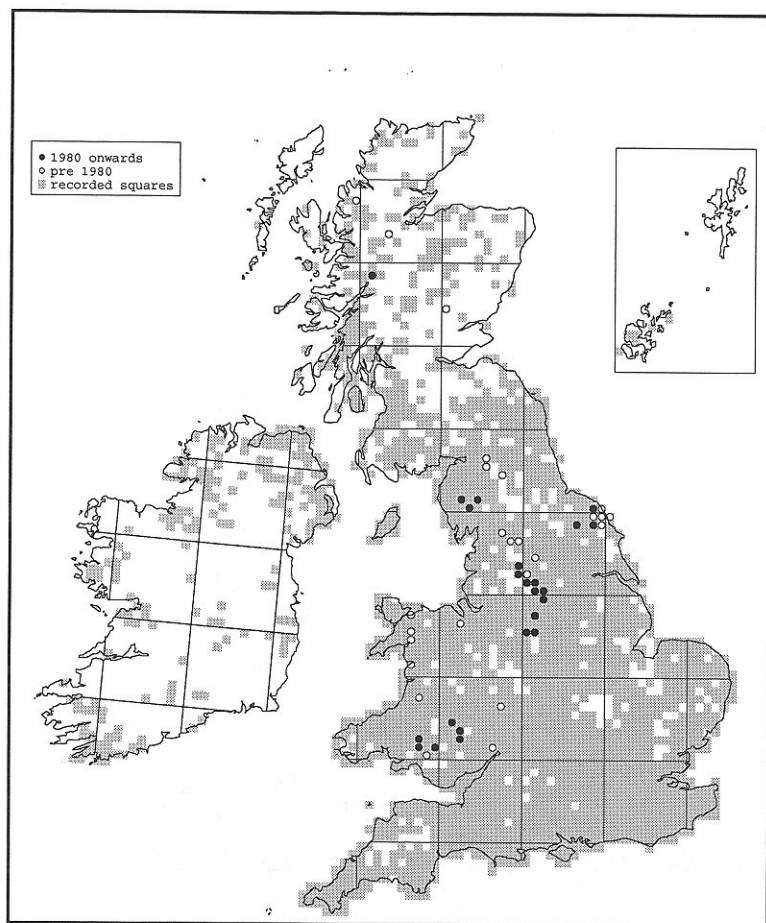
### ***Lampyris noctiluca* Glow worm**

The larvae are specialist predators on molluscs. It occurs very widely wherever snails are plentiful in the ground litter and there is open ground for the females to be visible for some distance when glowing. In particular it occurs at sites that are grass-dominated, on neutral to base-rich soils, and even in woods it tends to be confined to the grassier ride margins. It becomes increasingly scarce northwards from the Mersey/Wash line. Extends north up the west coast of Scotland, where the mild, damp climate results in an abundance of mollusc prey. Gardiner and Tyler (2002) suggest that the glow worm may be declining in Britain. Glowing females have been reported from mid June until early August.



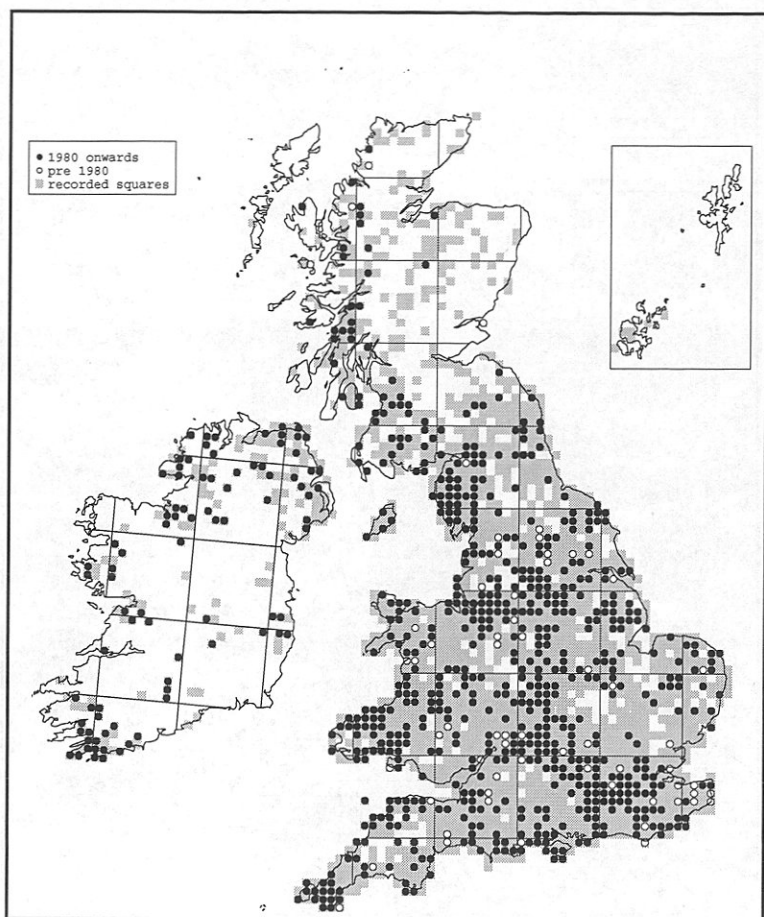
### ***Podabrus alpinus***

Most widespread in well-wooded areas of the hill country of northern and western Britain, although extending across the southern counties through the Weald. It is absent from East Anglia and much of the east Midlands. Most often found in structurally varied, open woodlands, and it is particularly attracted to pine. There are surprisingly few records from southwest England. In Ireland it is also associated with woodlands in upland areas. Adults are active from mid May until late July.



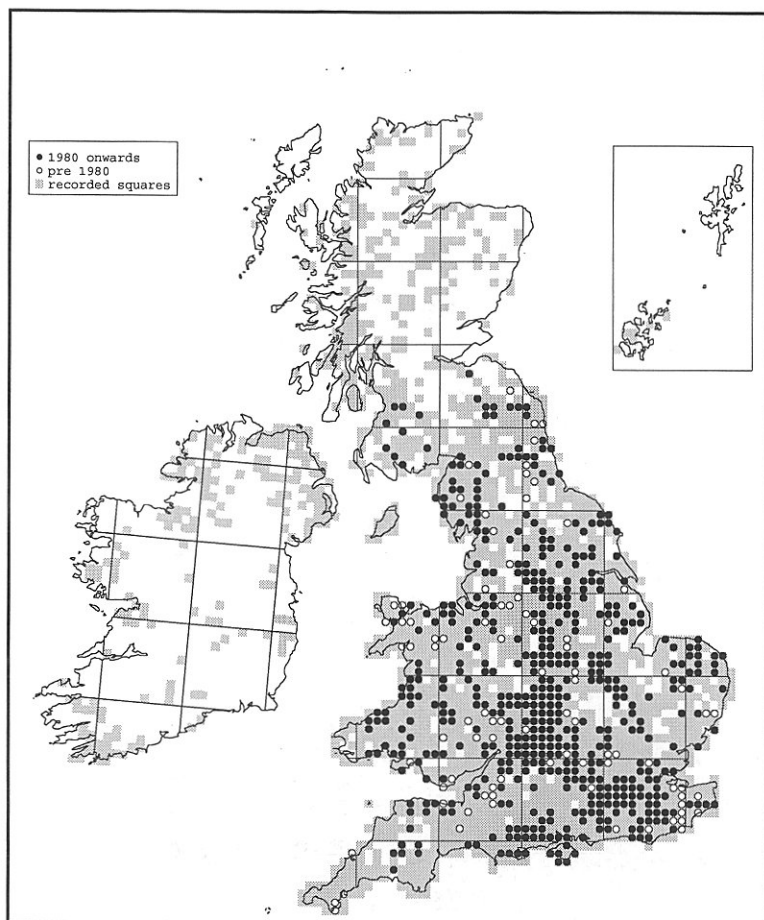
### ***Ancistronycha abdominalis***

An unmistakeable species, with metallic blue reflections to its black elytra. Associated with open woodland or wood edge, in the hill country of the north and west of Britain. The very patchy distribution, with concentrations around the Brecon Beacons, Pennines, North York Moors and southern Lake District, perhaps suggests that it occurs mainly in regions with base-rich soils. There are surprisingly few records from Scotland. It may have become extinct in North Wales. Adults are active from late May to mid June.



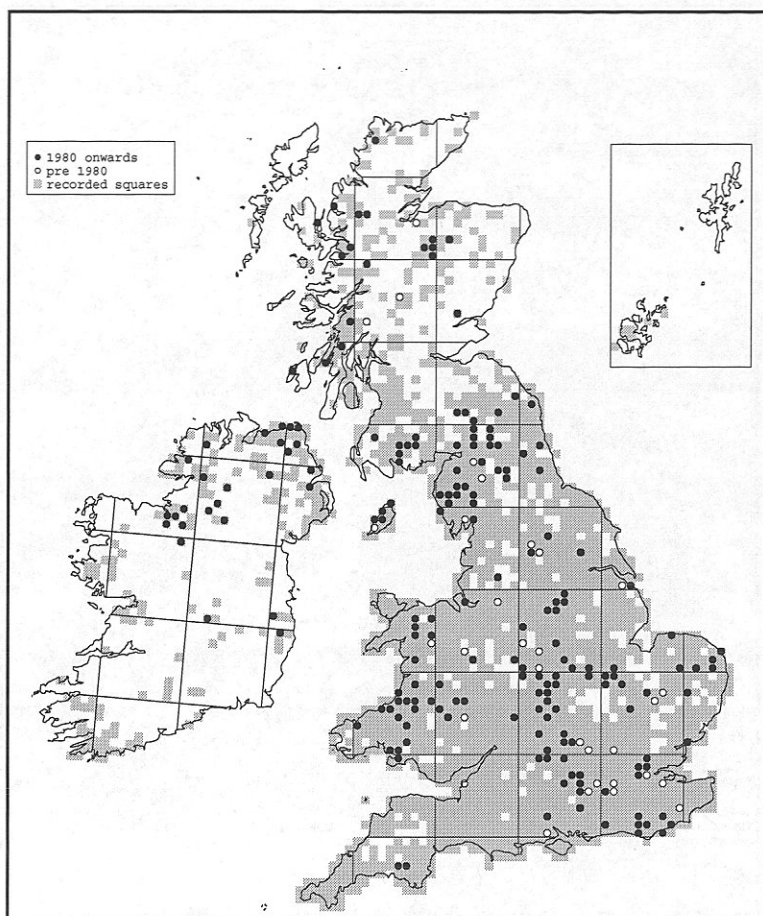
### *Cantharis cryptica*

One of the most widespread species in the lowlands, it is often confused with *C. pallida* and even small *C. rufa*. It occurs wherever there is tall vegetation, although generally where there is at least some woody growth such as woodland, hedges or scrub. Adults may be found from early May until mid August.



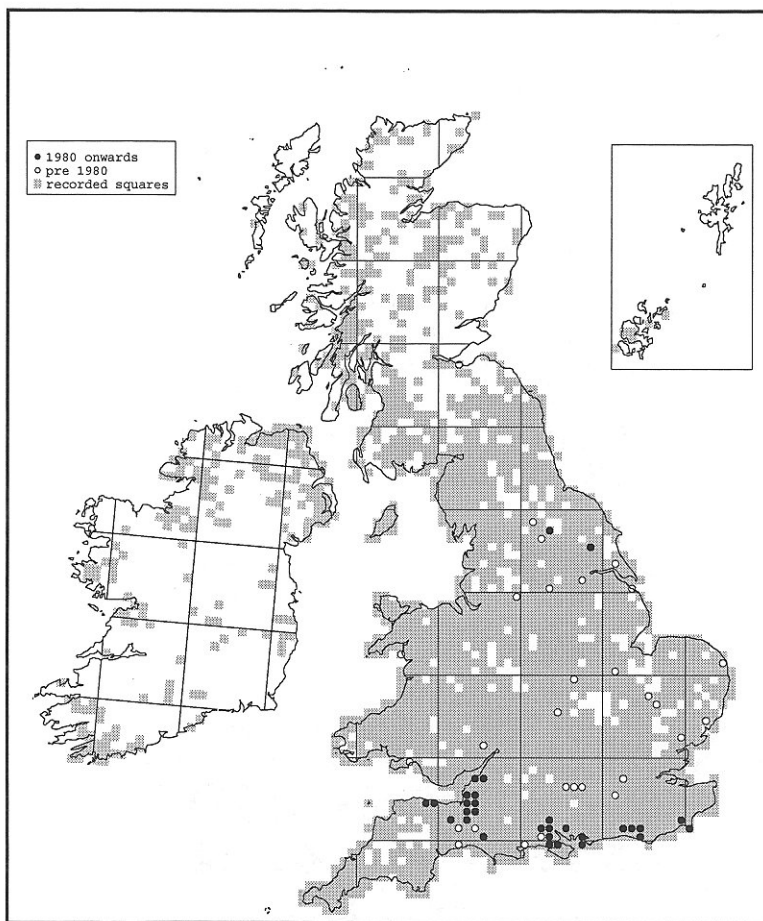
### *Cantharis decipiens*

This is primarily a species of lowland, broad-leaved woodlands in the north and west of its range, but it is much less restricted in the southeast where it may be found in a variety of habitats with some tree cover. Its status in northern Scotland needs clarification, as no voucher material has been available from this area. Adults may be found from late April until mid July, although probably for only four to five weeks in any one year in a particular district.



### ***Cantbaris figurata***

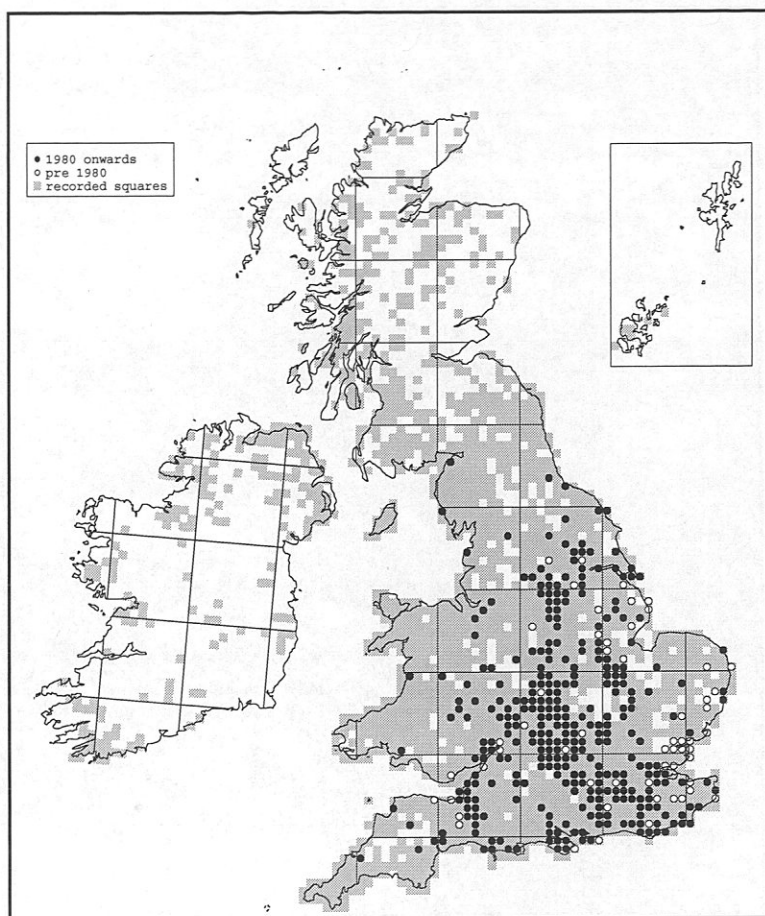
A very localised wetland species; especially numerous in rush-pasture but also found in tall waterside vegetation and damp woodlands with an open structure. Extends high into the uplands. In the southwest of England it has been confirmed only from the southern edge of Dartmoor. It is a particularly variable species - in size, colour and pattern, and is often confused with *C. decipiens* and *C. rufa*. Adults may be found from late May until the end of July.



### *Cantharis fusca*

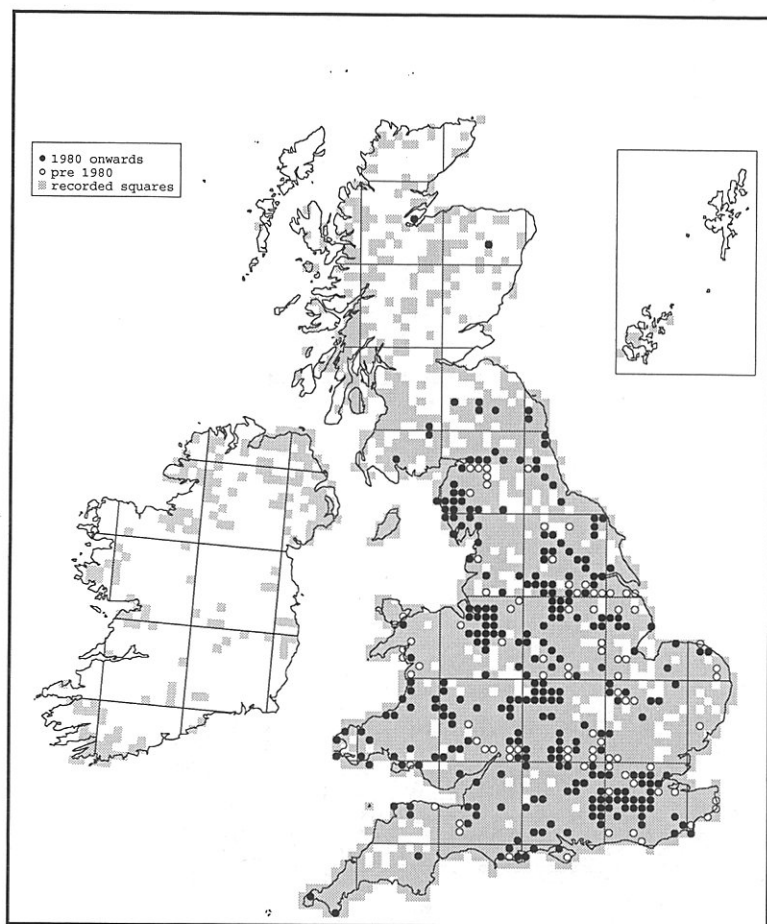
Usually found in small numbers in tall grassy vegetation on permanently damp or wet soils, such as lowland hay meadows and marshy grassland maintained by cutting or very light grazing, and also in the upper zone of saltmarshes. Also known from heavily fertilised grasslands although perhaps only close to where better quality habitats exist. It was probably always very localised in Britain, but was formerly much more widespread than it is now. Presently confined to a few southern coastal counties and parts of Yorkshire. Adults may be found in May and June.





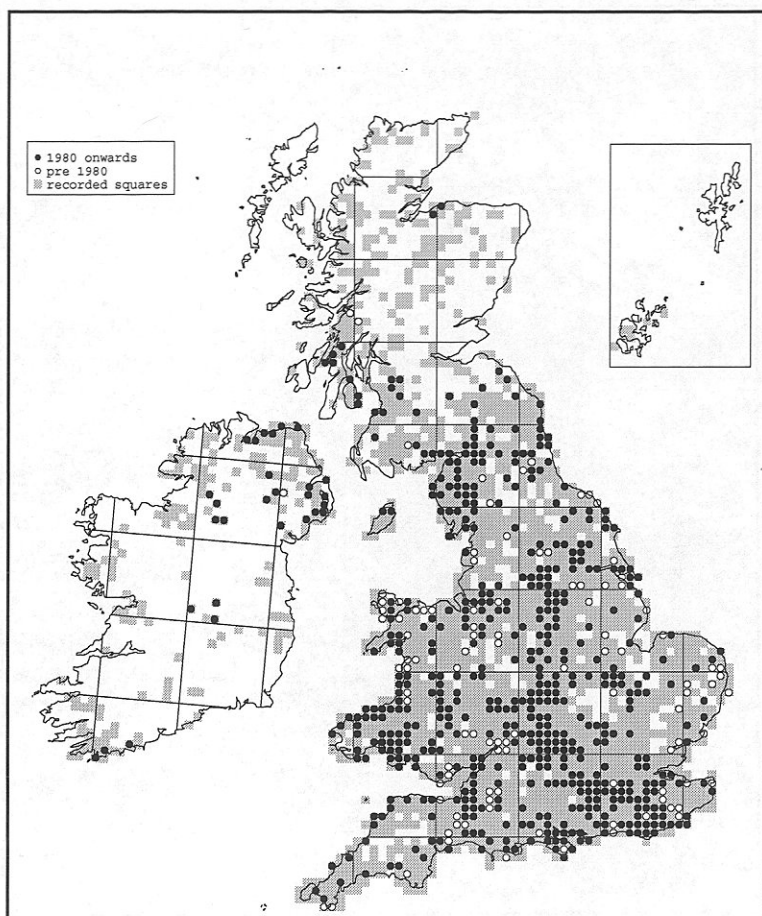
### ***Cantbaris lateralis***

Found in similar places to *C. fusca*, but much more widespread, occurring in hay meadows and open marshy vegetation. In late season it appears to spread very widely and may be found in just about any habitat at that time. Much more localised in the north and west. Adults may be found from late May until mid August.



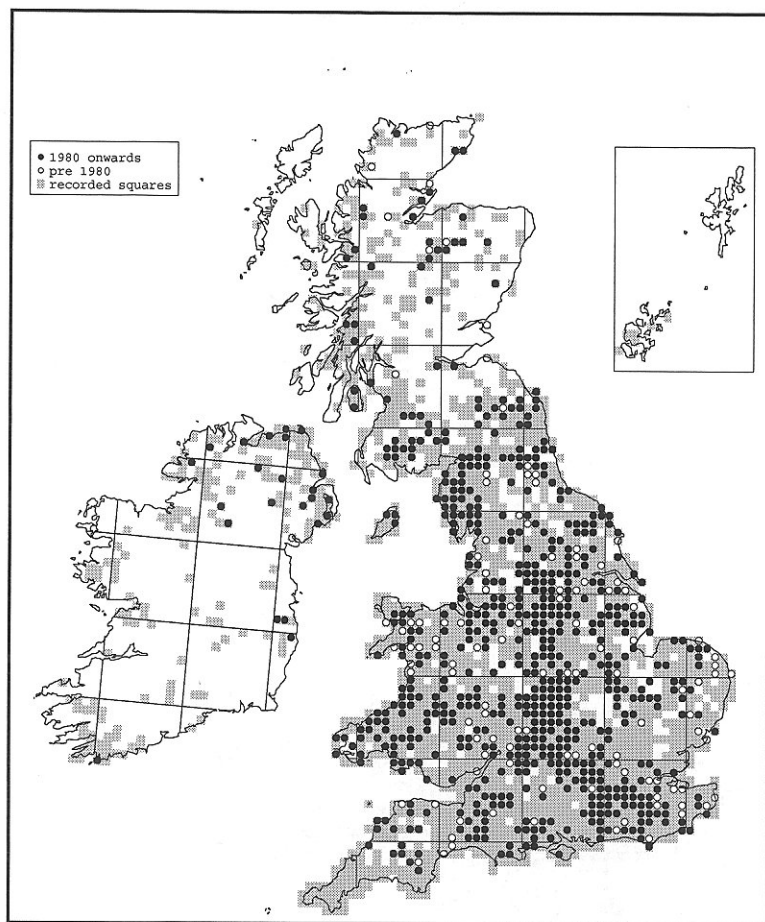
### *Cantharis livida*

This species is particularly associated with structurally varied, open, usually semi-natural, places across the lowlands, with mosaics of tall grassland, scrub and trees, such as open woodland, parkland and hedgerows. The key features are probably an open structure with tall grassy places and at least some trees and shrubs. 'Traditional' countryside seems to hold the largest populations, but it can occur in small numbers in unexpected situations, such as suburban gardens. Adults may be found from mid May until the end of July.



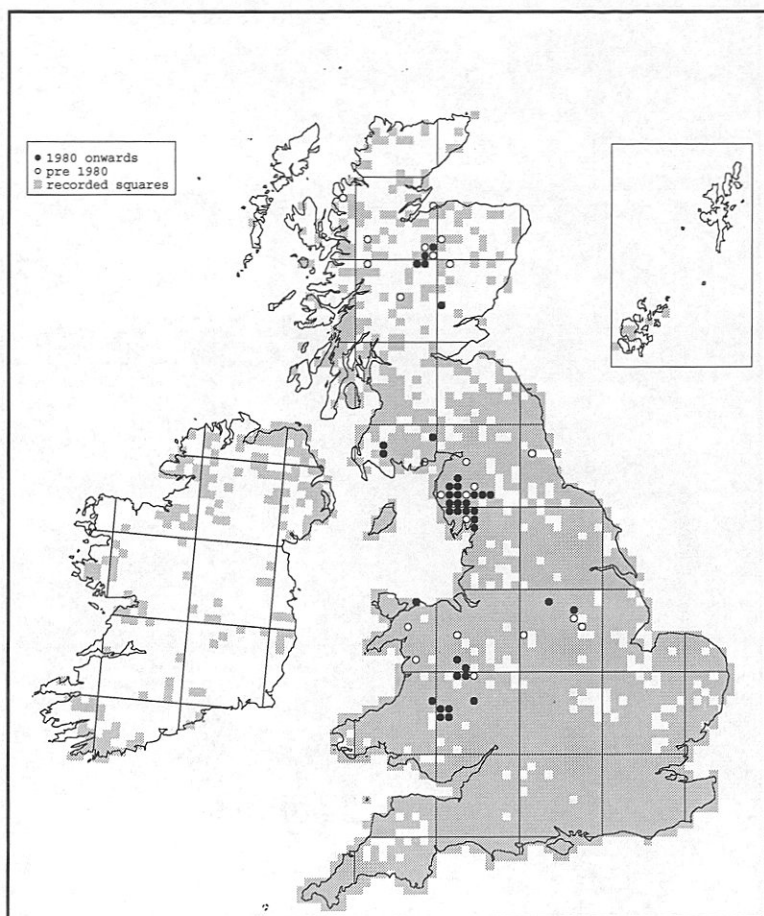
### ***Cantharis nigra***

This is a common and widespread species of lowland marshes, rushy pastures and damp hay meadows. It appears to be a fairly mobile species and can be found in apparently unsuitable habitats towards the end of its flight period. Adults may be found from late May to late July.



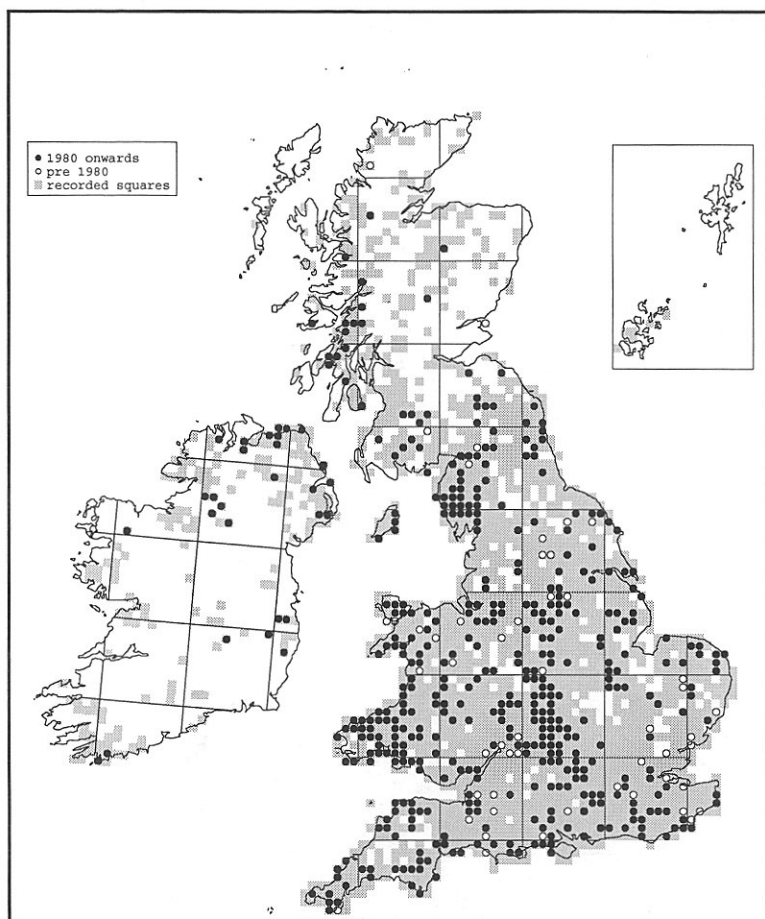
### *Cantharis nigricans*

Another species with poorly defined habitat preferences, which possibly favours damp habitats. In Ireland and parts of Scotland it is particularly associated with rough boggy places, with tussocky grasses and rushes, but in the English lowlands it is also a common inhabitant of open woodlands and scrubby places. Like many *Cantharidae*, it is curiously absent from the far southwest of England. It is variable, in particular in the extent of dark markings on the pronotum, and can be confused with other *Cantharis* with black elytra, especially when the dark pronotal markings are either very strong or virtually absent. Adults may be found from mid May into July.



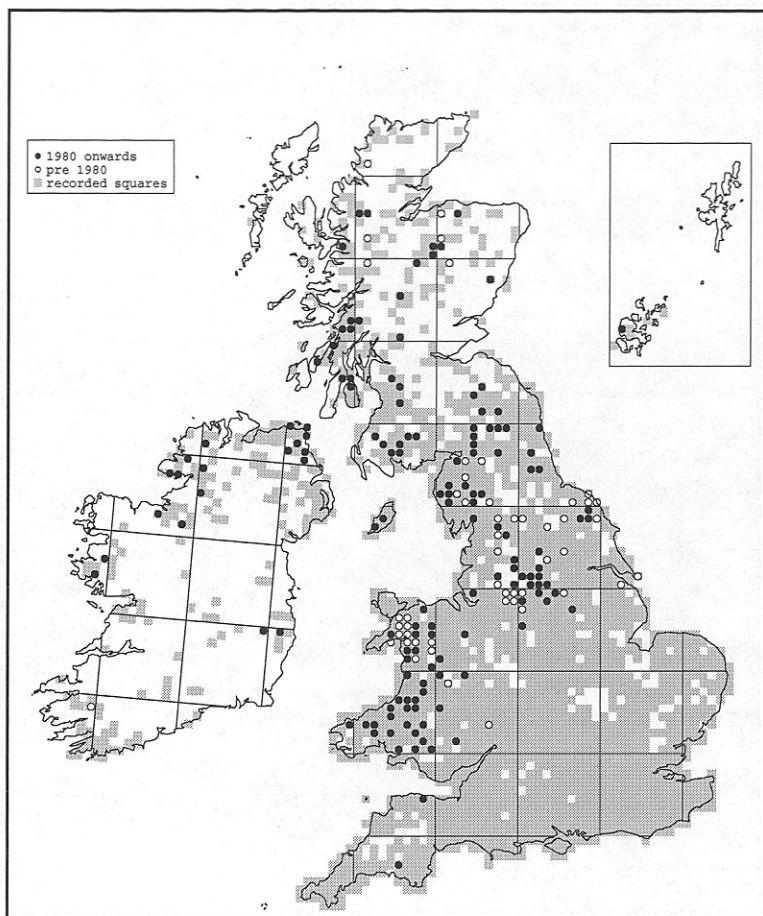
### ***Cantbaris obscura***

Associated with open woodland or the edges of woods, in the hill country of the north and west of Britain, including thinly scattered hawthorns on open hillsides. Like *A. abdominalis*, it has a patchy distribution, which is difficult to explain, with concentrations in east Wales, the Lake District and Speyside, but with a few lowland records, notably from Sherwood Forest. Adults may be found in May and June.



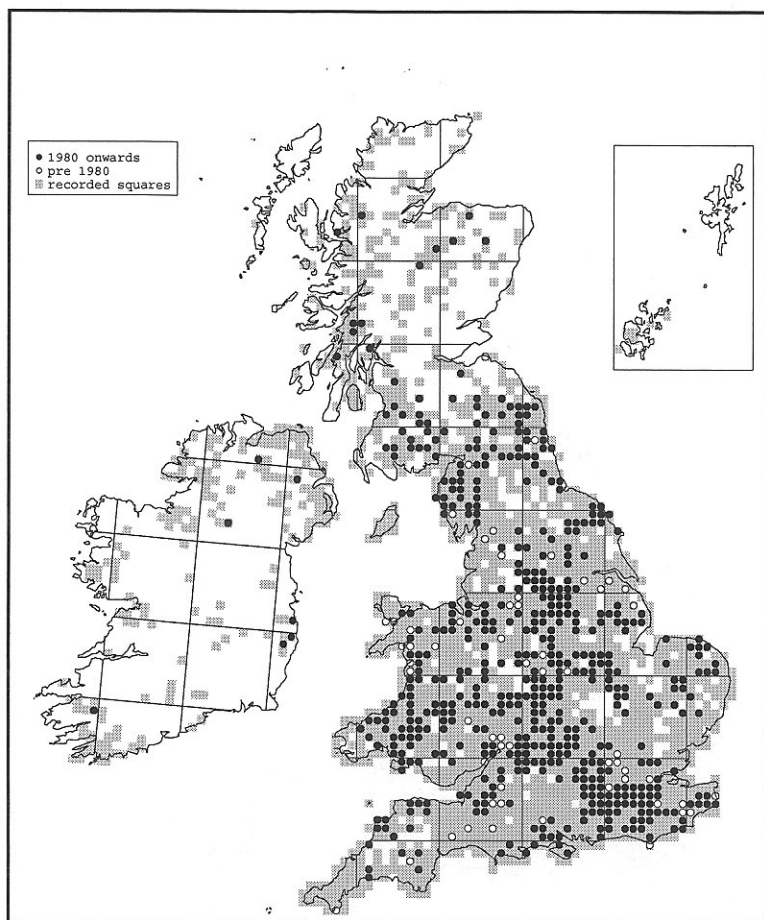
### *Cantharis pallida*

A widespread wetland species that occurs in all sorts of open marshy vegetation across the lowlands and which also extends into the uplands. Adults may be found from late May until early August.



### ***Cantbaris paludosa***

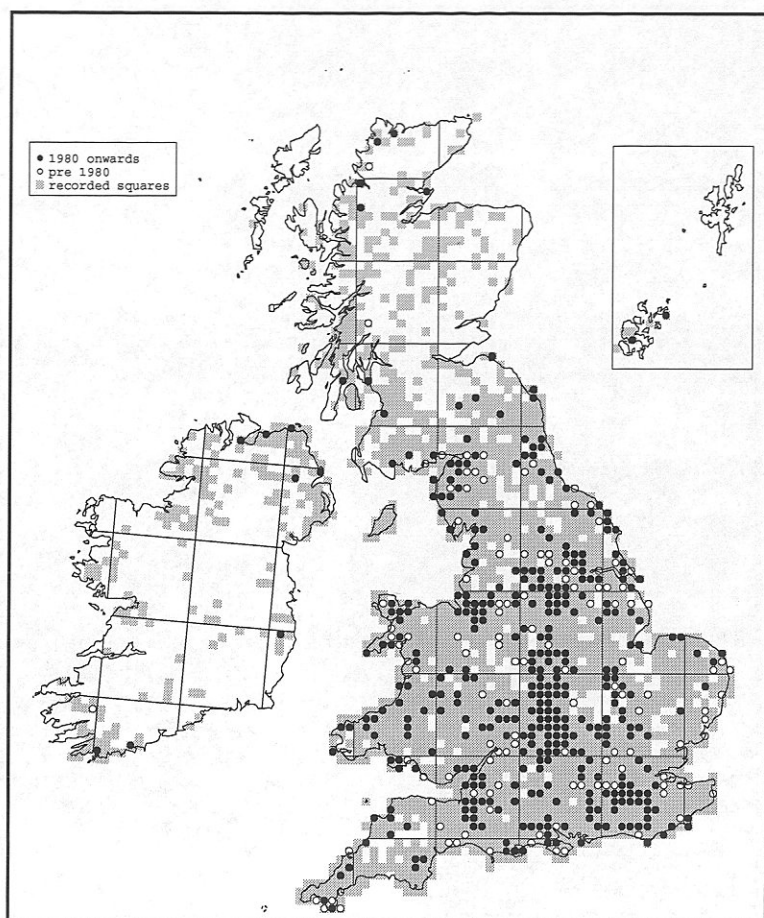
It is a species of acid peatlands that is widespread on the blanket bogs and valley mires of the hill country of the north and west of Britain, and widely across Ireland. There are only single records from Exmoor and Dartmoor in the southwest of England. Adults may be found from late May until mid July.



### *Cantharis pellucida*

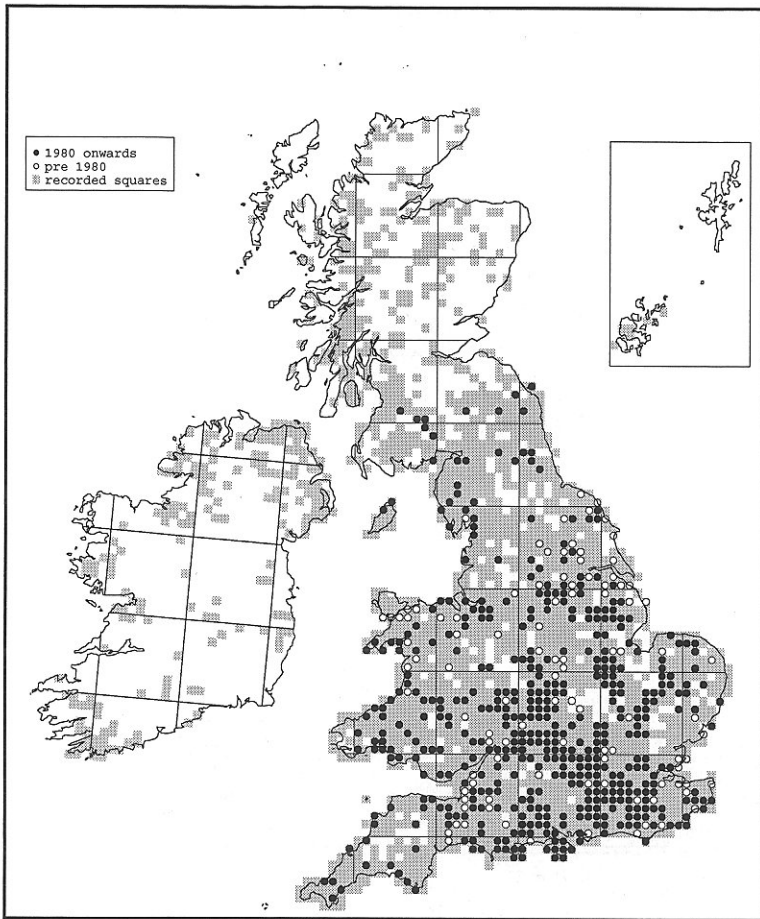
Mainly a species of lowland, broad-leaved woodland on neutral to base-rich soils, but it spreads widely into other habitats over much of the English lowlands. In the far west of Britain and in Ireland it is much more restricted to woodlands. Adults may be found from early May into July.





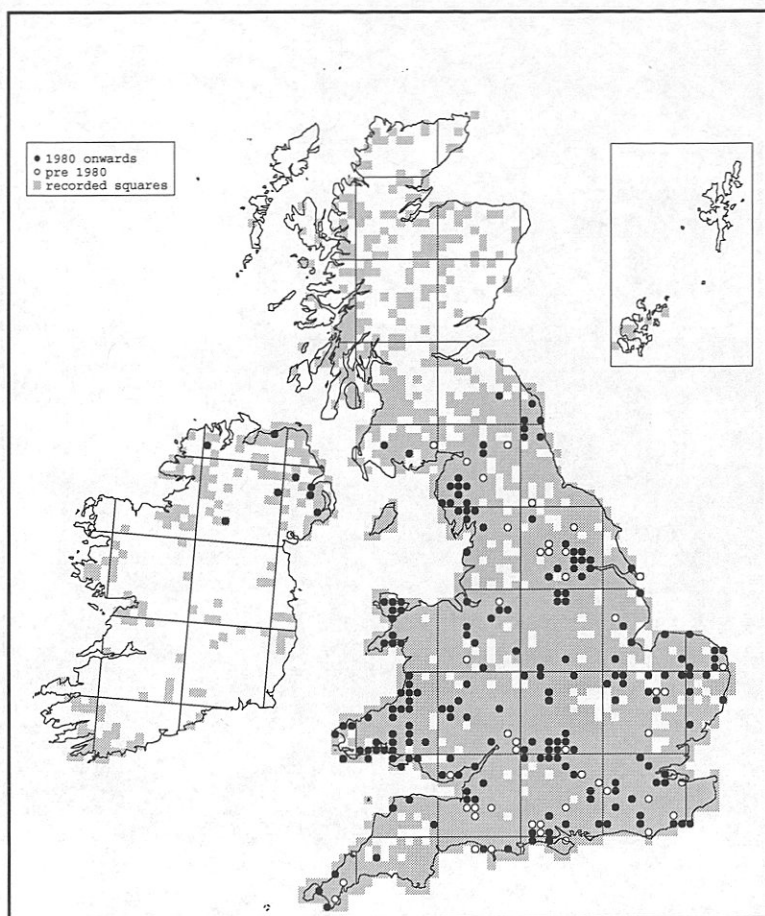
### ***Cantharis rufa***

Primarily a species of lowland, marshy situations, it occurs widely in other open habitats over much of the English lowlands. It is the only species that regularly occurs on saltmarshes. Adults may be found from mid May until mid July.



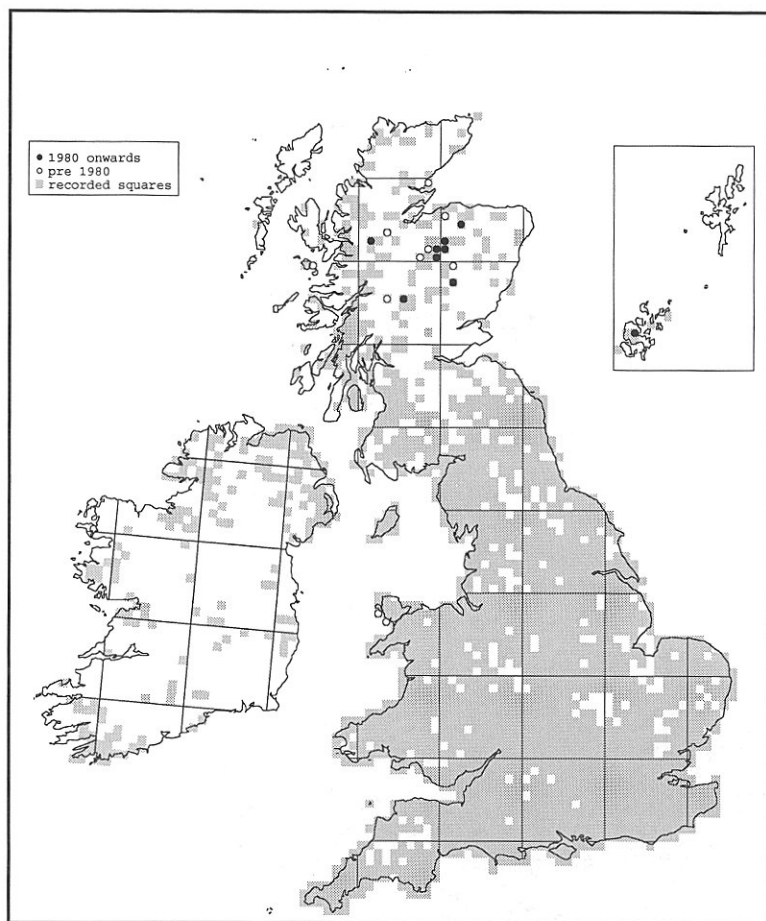
### ***Cantharis rustica***

Mainly a lowland grassland species, it is found in all manner of grassy places especially where the sward is tall and either un-grazed or only lightly grazed. It is also found in woodland where the ground vegetation is luxuriant. Its range is mainly southern in Britain, becoming increasingly scarce and localised in the north. Adults may be found from mid May until the end of June.



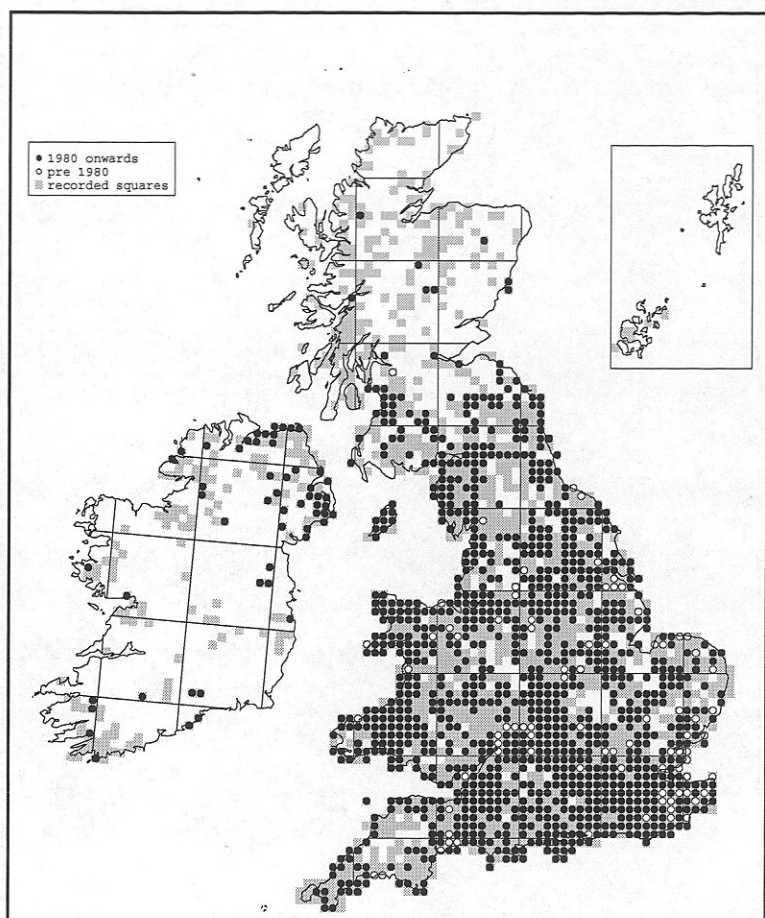
### ***Cantbaris thoracica***

It is widespread in fen and reed bed vegetation, and in marshes such as those around lowland lakes. All recent Scottish records are from the extreme south. Can be confused with the paler form of *C. nigra*. Adults may be found from June until mid August.



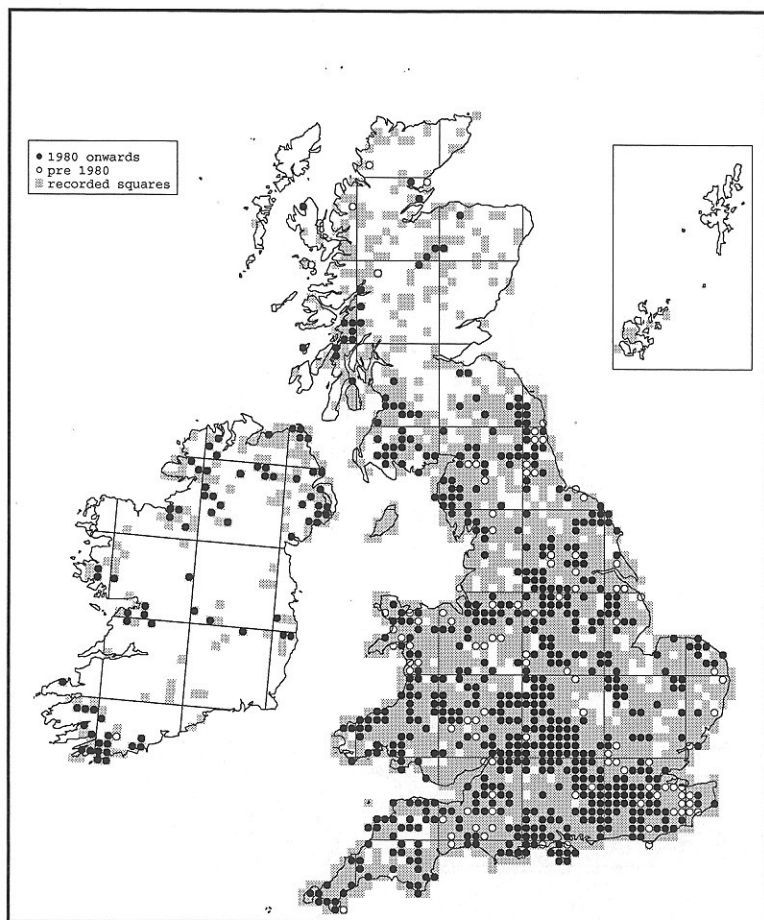
### ***Rhagonycha elongata***

Known mainly from the boreal woodlands of northern Scotland, but not exclusively from relict pine forest areas. Southern records need to be treated with caution as it is superficially similar to *Cantharis paludosa* and the dark form of *Cantharis nigra* – no English records have been validated with the recording scheme. Adults may be found from late May until early July.



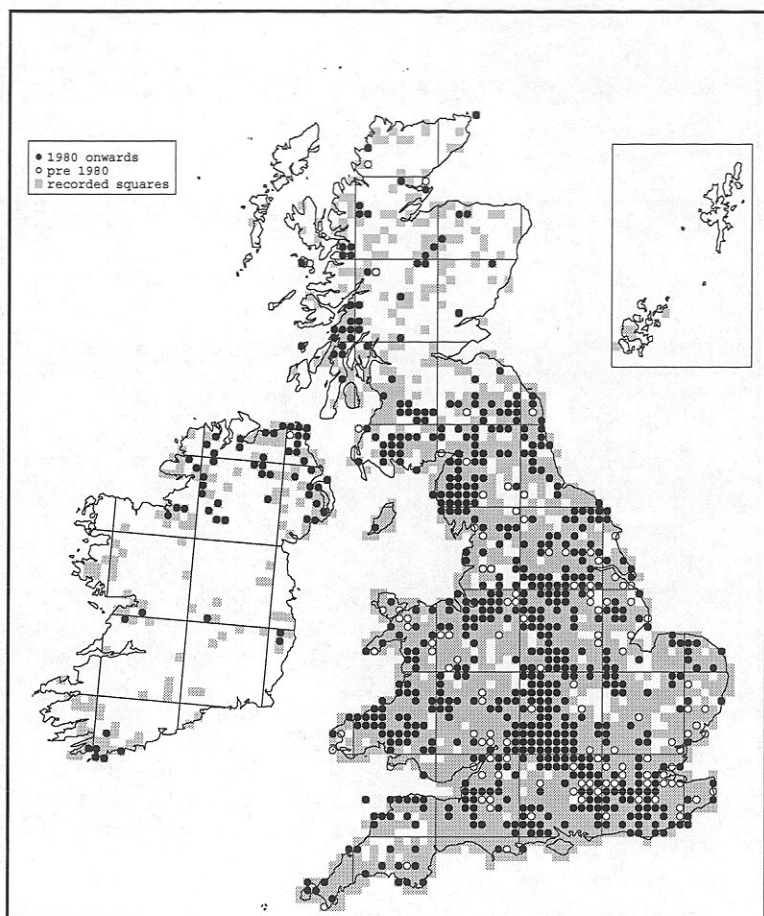
### ***Rhagonycha fulva***

The common soldier beetle of high summer throughout the lowlands of Britain and Ireland, although its distribution and abundance thins markedly northwards into Scotland. It is fairly ubiquitous in habitat, although presumably it needs tall, rank vegetation in open situations for larval development. Apparently often confused with other soldier beetles despite its distinctive markings - records from early summer are presumed to be such errors and are omitted from the map. Adults may be found from the end of June until early September, lasting about 8 weeks in any one year.



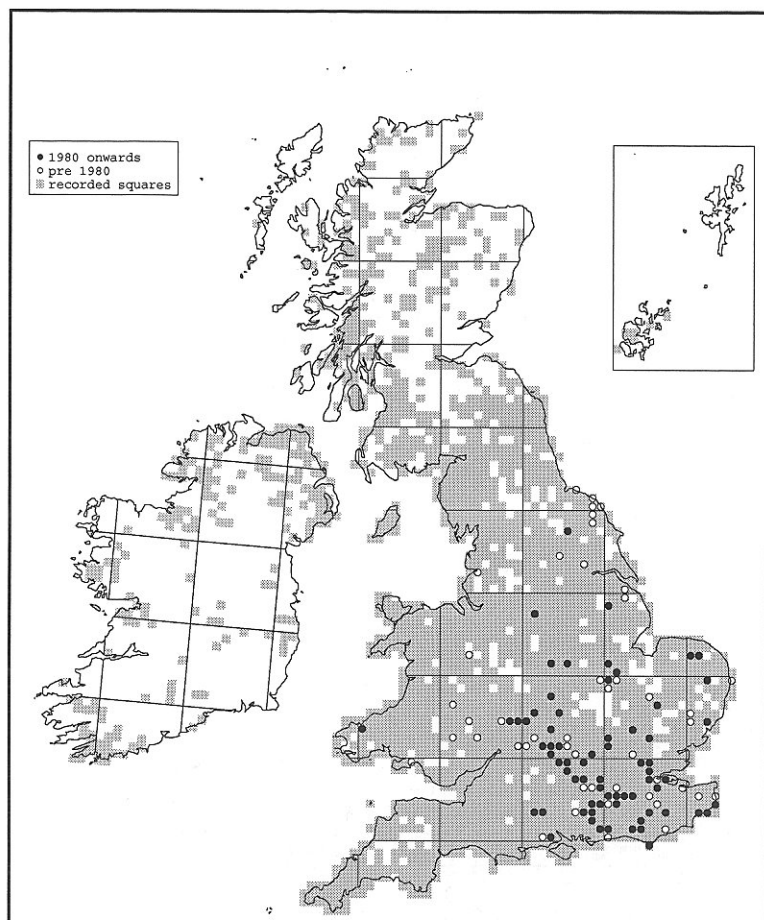
### ***Rbagonycha lignosa***

This is a common and widespread species. The adults live amongst the foliage of trees and shrubs where they feed on animal and plant material. Adults may be found from early May until the end of July.



### ***Rhagonycha limbata***

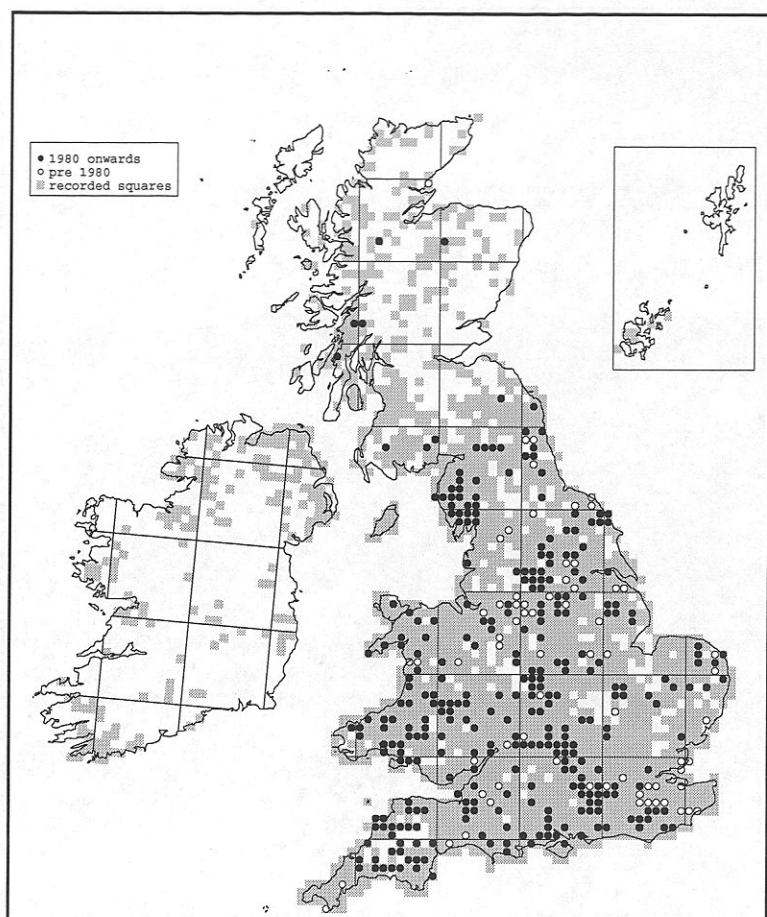
This species is common and widespread in open semi-natural grasslands on dry, free-draining soils; also occurs less frequently in other situations. Adults may be found from early May until the end of July.



### ***Rhagonycha lutea***

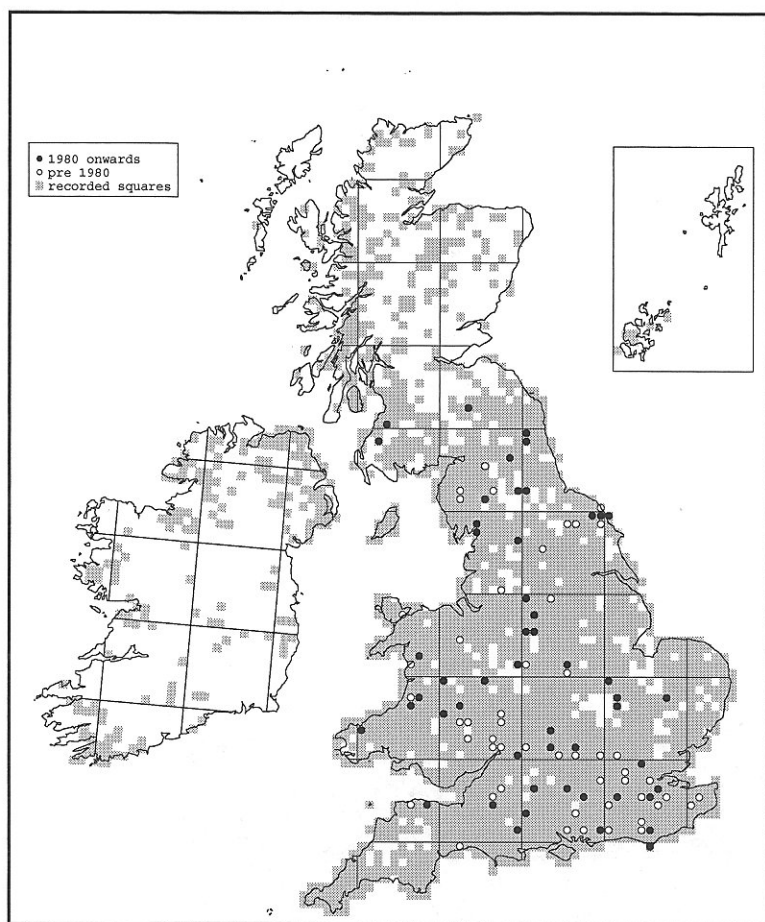
A species of open, well-structured woodland, wood-edges and scrub, the adult beetle lives amongst the canopy foliage. It is concentrated in central and south-eastern England, but with more scattered populations in the north and west, including an old, unlocalised record from Co. Donegal, which is not mapped. Regarded by Fowler (1890) to be 'not uncommon' suggesting that it may have declined following the cessation of coppicing. This species is the most likely identity of early season records incorrectly attributed to *R. fulva*, although the black head of *R. lutea* is distinctive. Adults may be found from early June until mid July.





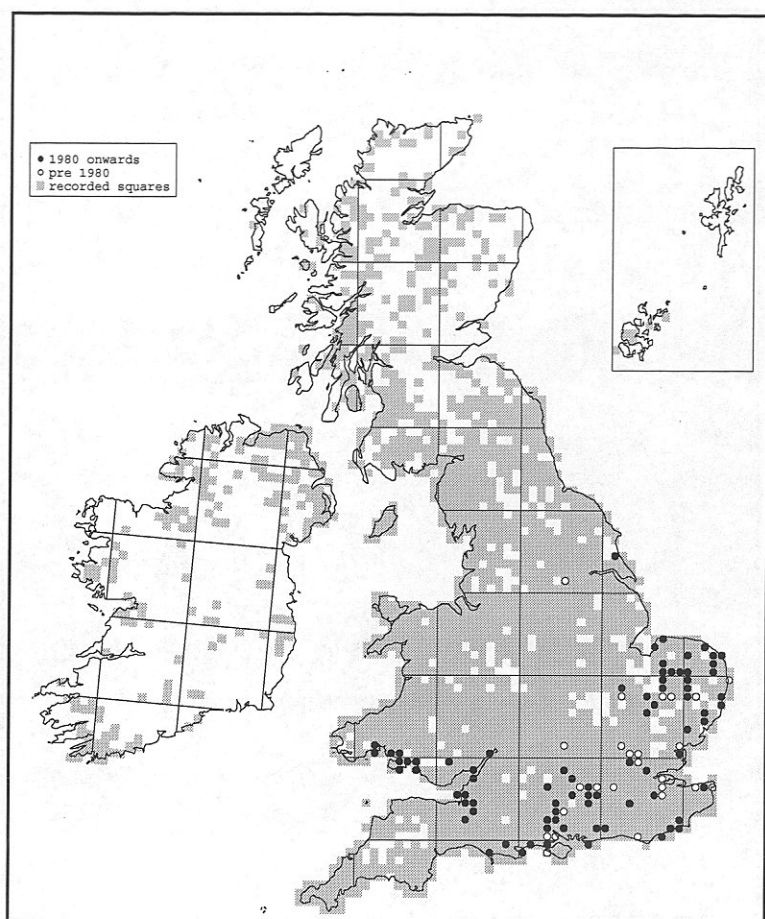
### ***Rhagonycha testacea***

This is a widespread species of wet woodlands and scrubby marshes, although it has a restricted occurrence in Scotland. Adults may be found from mid May until the end of July.



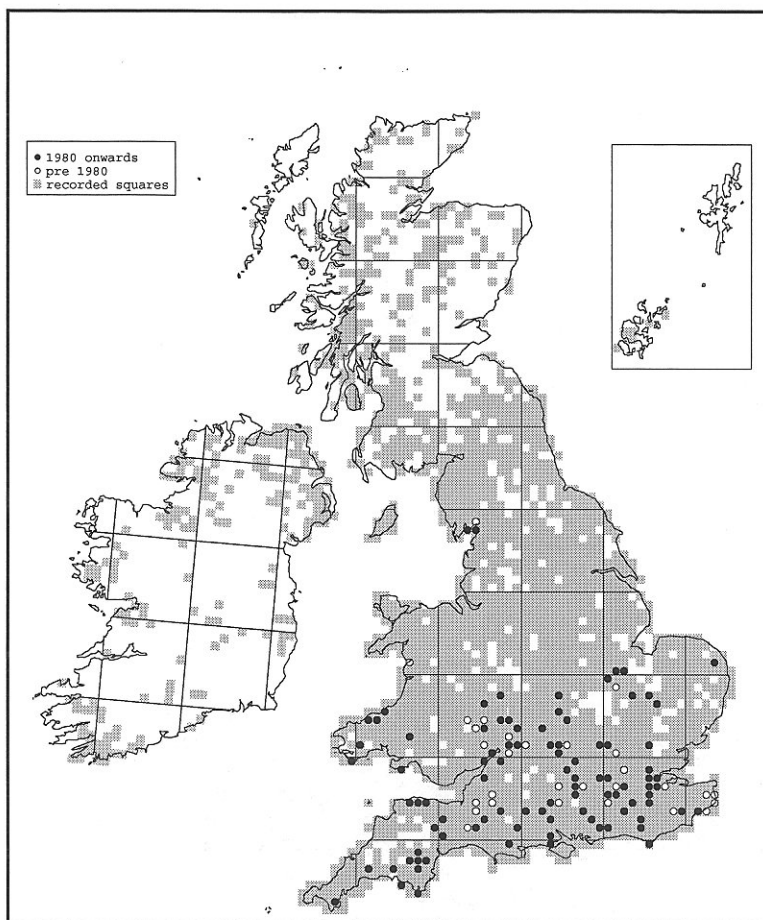
### ***Rhagonycha translucida***

Like *R. lutea*, this is a species of open, well-structured woodland and wood-edge, the adult beetle living amongst the canopy foliage, but very thinly scattered throughout its range. Possibly more a species of old wood-pastures than of former coppice woodlands. It was considered by Fowler (1890) to be 'rare', in contrast to *R. lutea*. There is an old, unlocalised record from Co. Kerry, which is not mapped. Can be confused with the superficially similar *Cantharis livida*. Adults may be found in June and July.



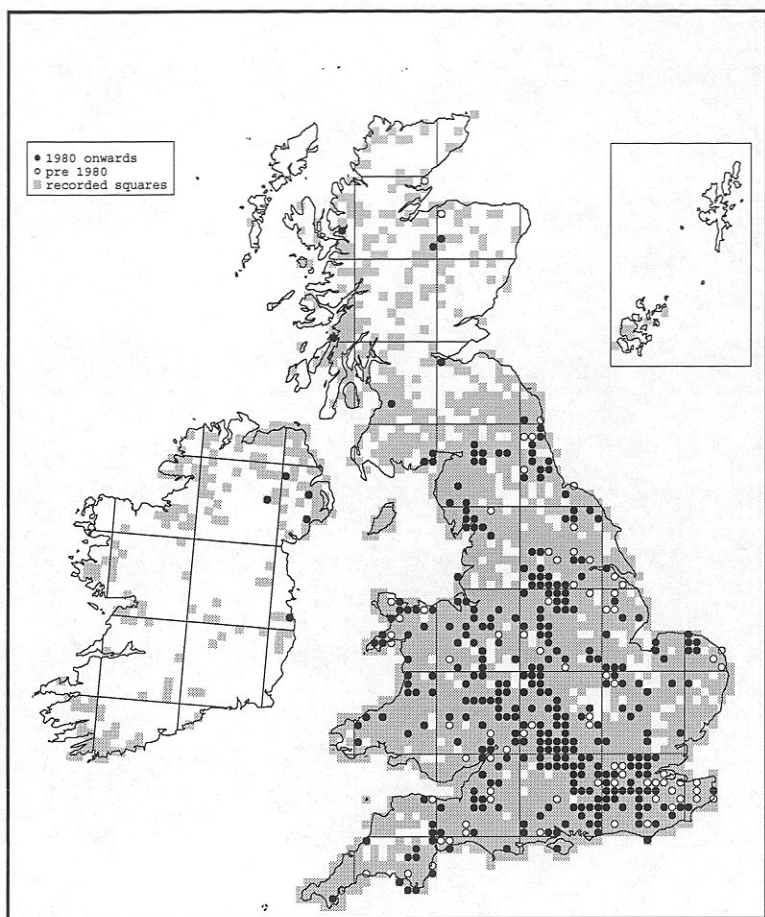
### *Silis ruficollis*

A species of fens and reed beds, it is much more restricted than *Cantharis thoracica*. It appears to have returned to the west in recent years, but it is unclear whether local extinctions had occurred and were followed by re-colonisation, or whether the species merely declined to very low population levels. It is known from sub-fossil remains from the early Neolithic period in the Somerset Levels (Girling, 1984), but was not re-discovered there until 1968. In south Wales it was known in the 19th century (Stephens, 1830), but then was not seen for nearly 100 years. It is now locally common in both areas. An old, unlocalised record from southeast Ireland is not mapped. Adults may be found from mid June until the end of July.



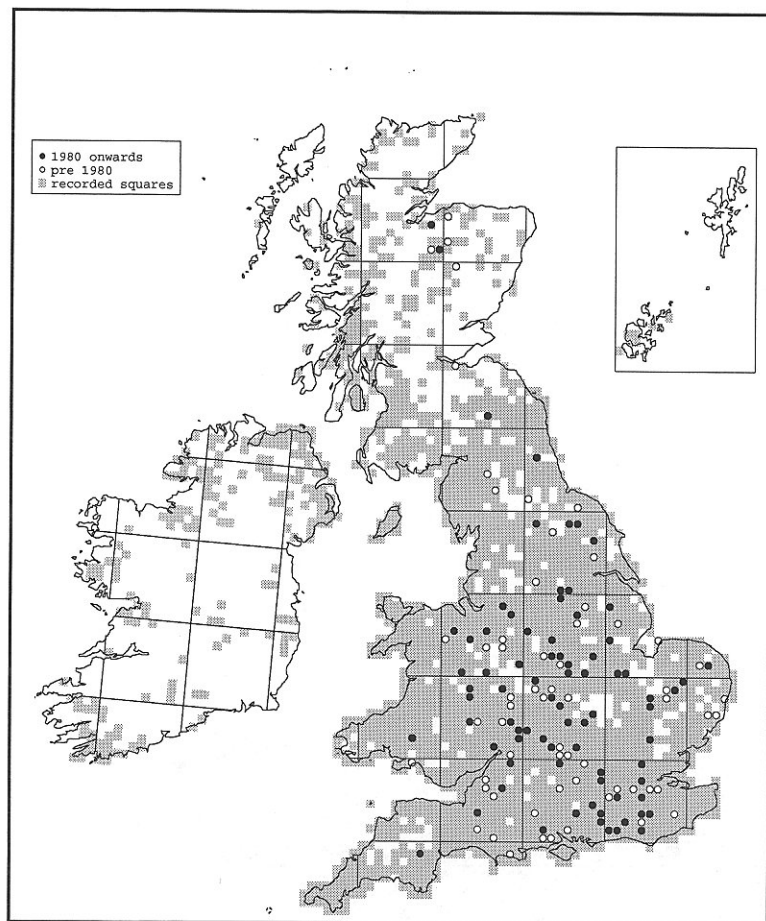
### ***Malthinus balteatus***

This species is a speciality of wooded habitats on soils where the water table is regularly high. These include alluvial floodplain woodland, seepage woodland and even the wooded lower fringes to chalk downs in southern England. It occurs mainly in southern England and south Wales. Its northern outpost, some 200km further north, is in a well-known biodiversity hot spot on Carboniferous limestone in the north of Morecambe Bay. There is an old, unlocalised Irish record, which is not mapped. Adults may be found from early June until August.



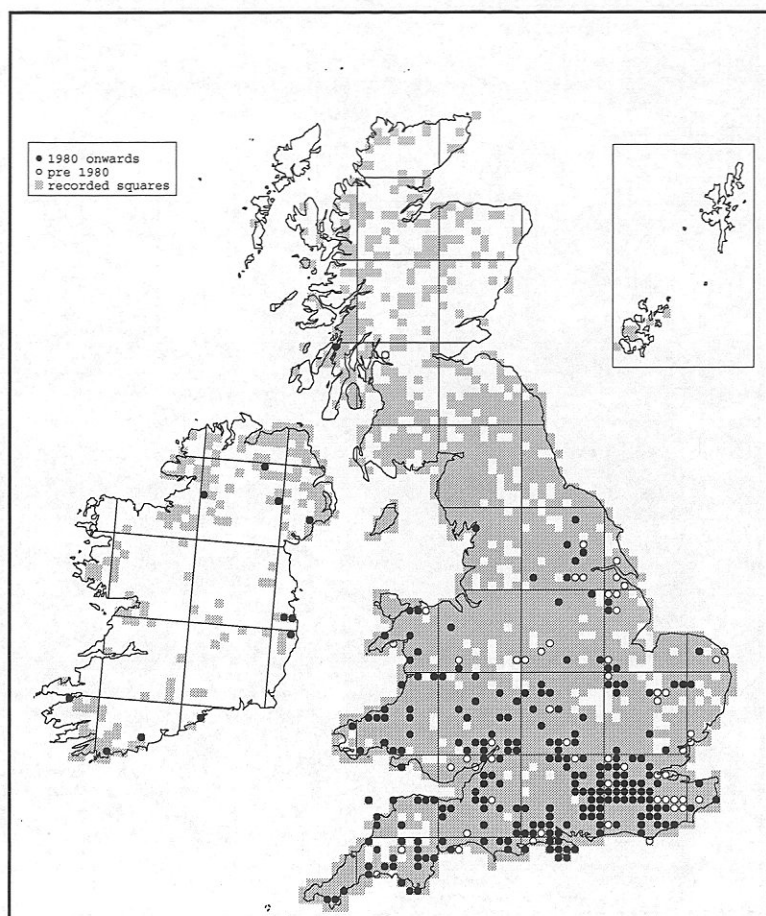
### ***Malthinus flaveolus***

One of the most widespread Malthininae, it is found in most lowland countryside that includes trees and shrubs, including hedgerows and scrubby hillsides. Adults may be found from the end of May until the end of August.



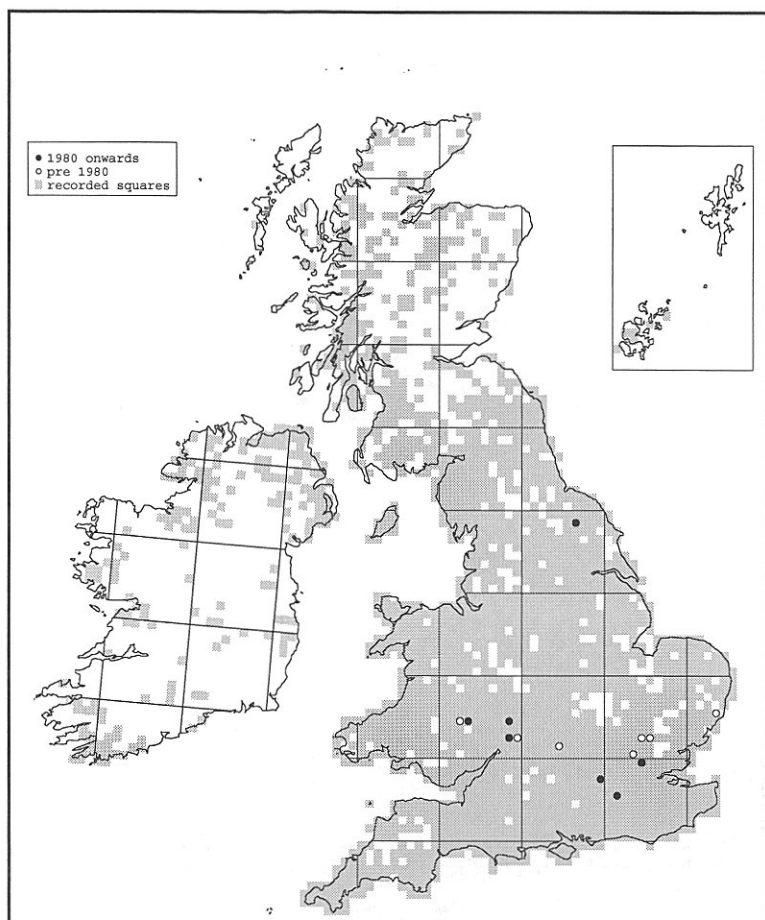
### ***Malthinus frontalis***

This is a widespread species, albeit sparsely so. It appears to be strongly associated with large, old, native broadleaved trees and the larvae may develop in decaying heartwood. It is found mainly in old wood-pastures and parkland, but also typically along well-wooded riverbanks and other places with old trees. Found mainly in the lowlands, there is a cluster of records in Speyside. Although still regularly found, its range does appear to have thinned considerably in recent decades. Adults may be found from early June to early August.



### *Malthinus seriepunctatus*

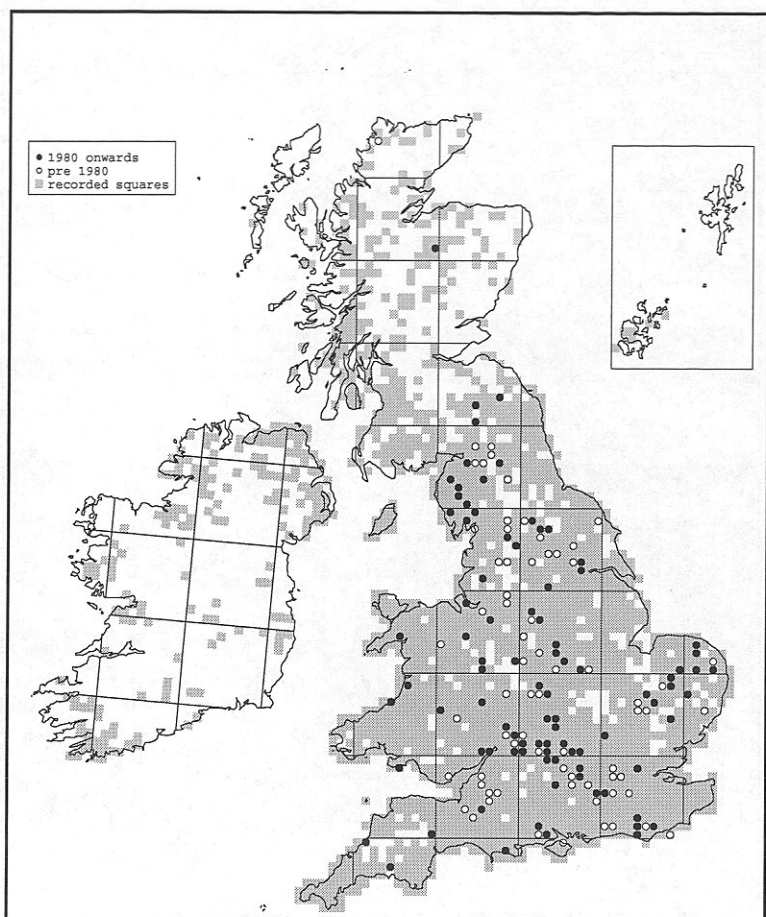
Widespread in broadleaved woodlands over much of southern Britain, thinning out north of the Mersey/Wash line, but with a scatter of localities along the western Scottish coast. Adults may be found from late April until mid August.



### ***Malthodes crassicornis***

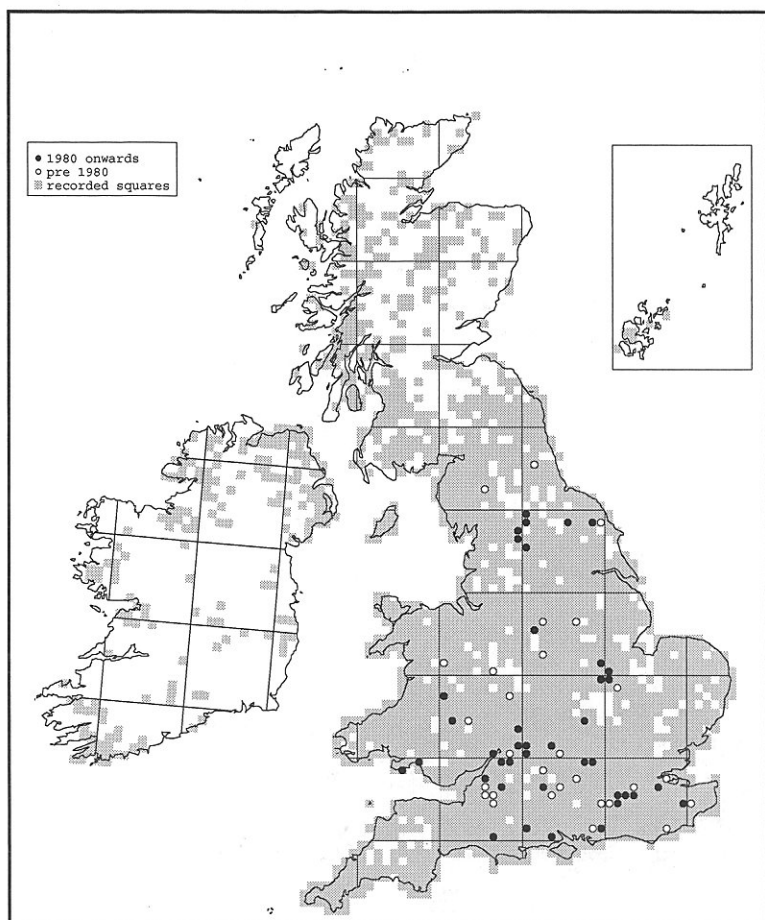
It develops in the red-rotting heartwood of old, open-grown oaks in relict, old lowland forest and ancient wood-pastures. The site list reads like a *Who's Who* of classic sites including Windsor and Epping Forests and the ancient parks of Moccas, Duncombe, Blenheim and Staverton. Adults may be found from mid May until late June.





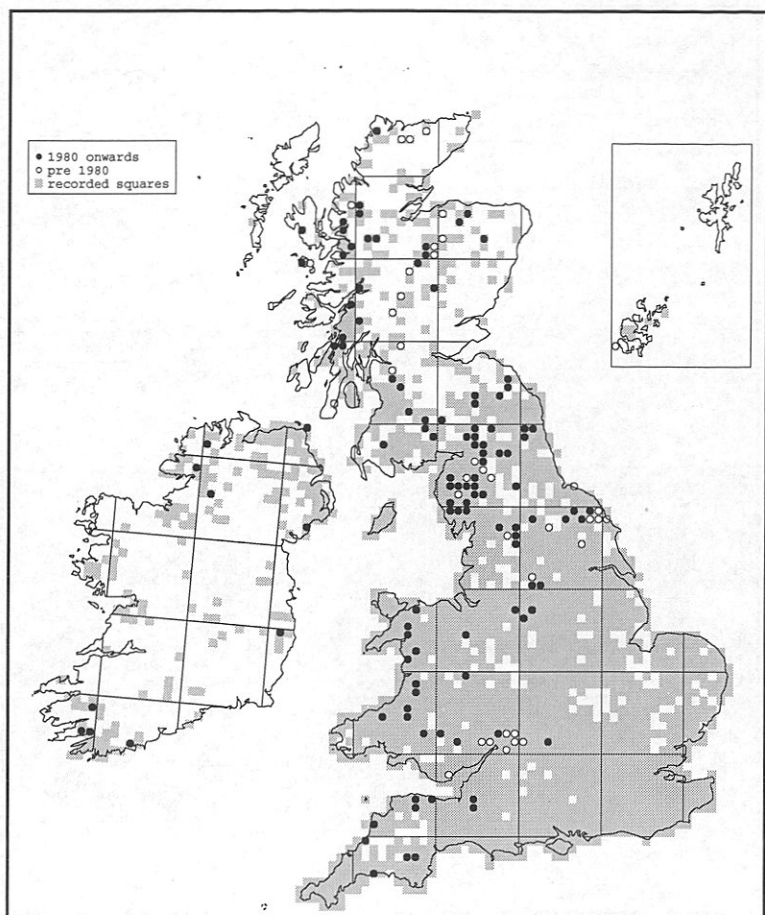
### ***Malthodes dispar***

This is a speciality of wet woodlands, including carr, as well as stands of willow on alluvial floodplains. There are very few Scottish records and only one old, unlocalised Irish record, which is not mapped. Adults may be found from early June to early August.



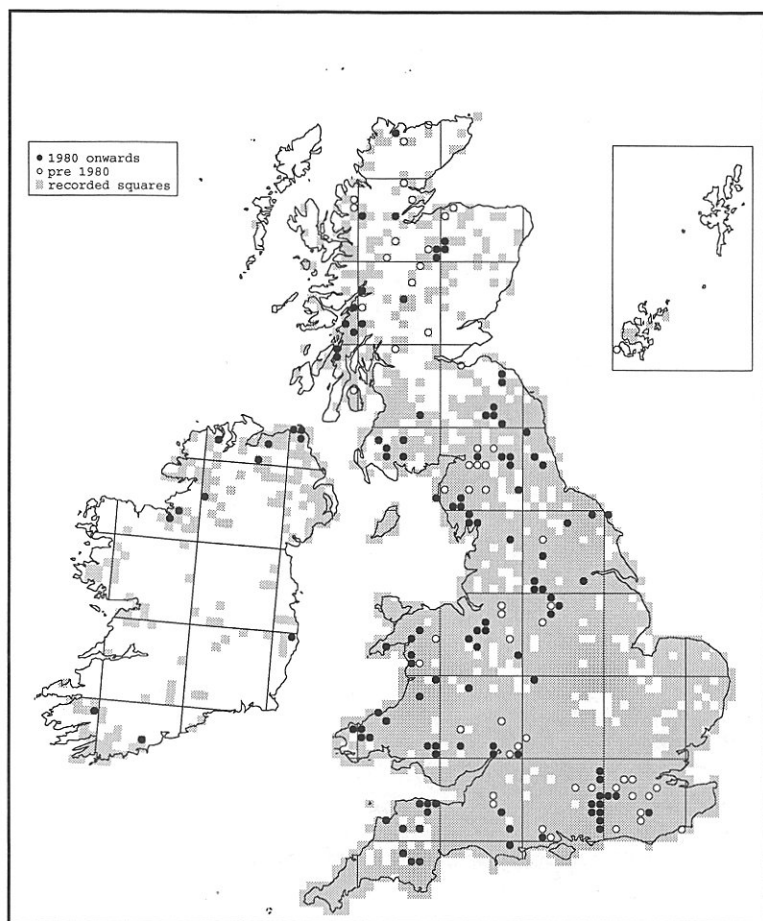
### ***Malthodes fibulatus***

It appears to be confined to broadleaved woodlands on chalk and limestone, including secondary and plantation woodlands, although perhaps only where close to longer-established stands. Adults may be found from mid May to mid June.



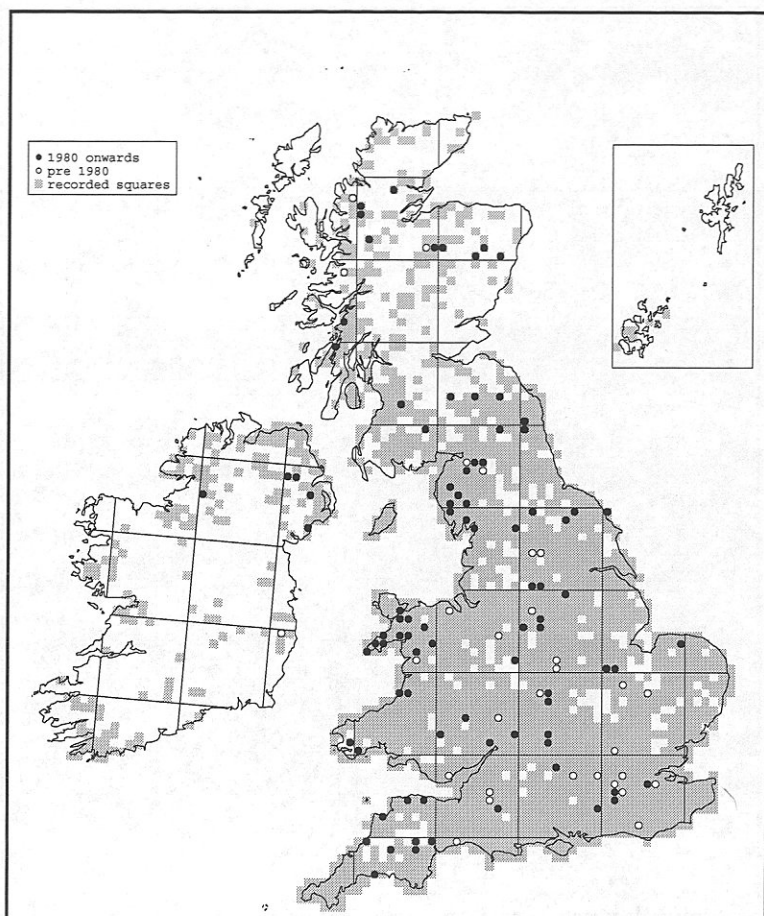
### ***Malthodes flavoguttatus***

Widespread in the wooded areas of the hill country of northern and western Britain, even extending into open heathland. Occurs on acid as well as calcareous soils; it is widespread in the woodlands of the Cotswold Hills for instance. The sites in Ireland are also hill country woods and adjoining heather covered hillsides. Adults may be found from late May to early August.



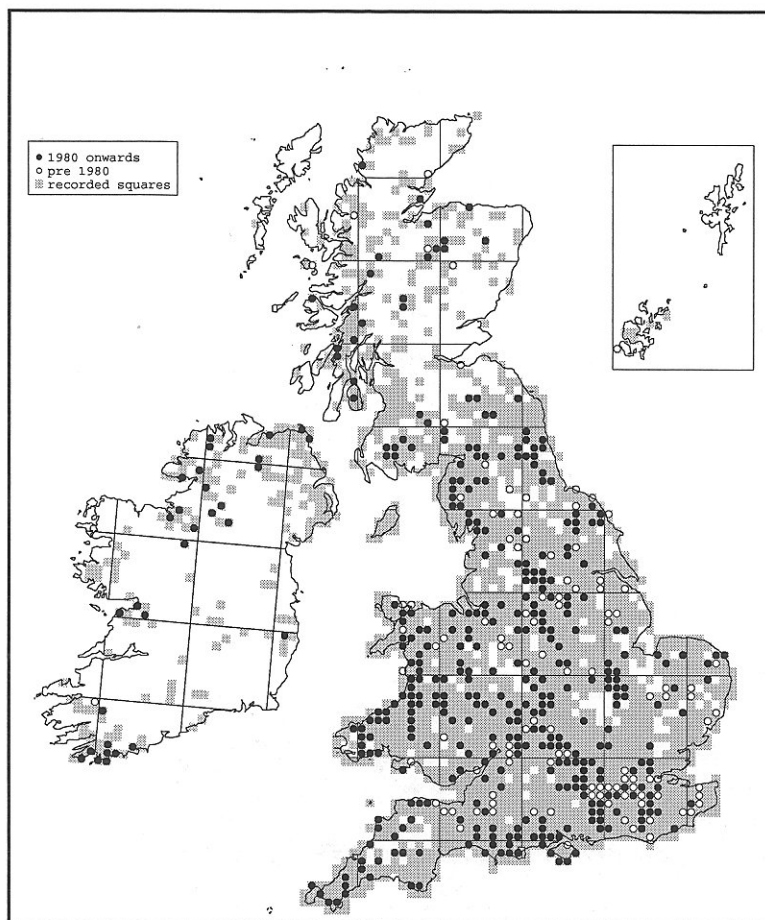
### ***Malthodes fuscus***

This species is widespread in the wooded areas of the hill country of northern and western Britain and across the Weald in the southeast. Reports from a few localities in the east Midlands and East Anglia have not been substantiated. Sites in Ireland are also predominantly hill country woods. Adults may be found from late May until the end of July.



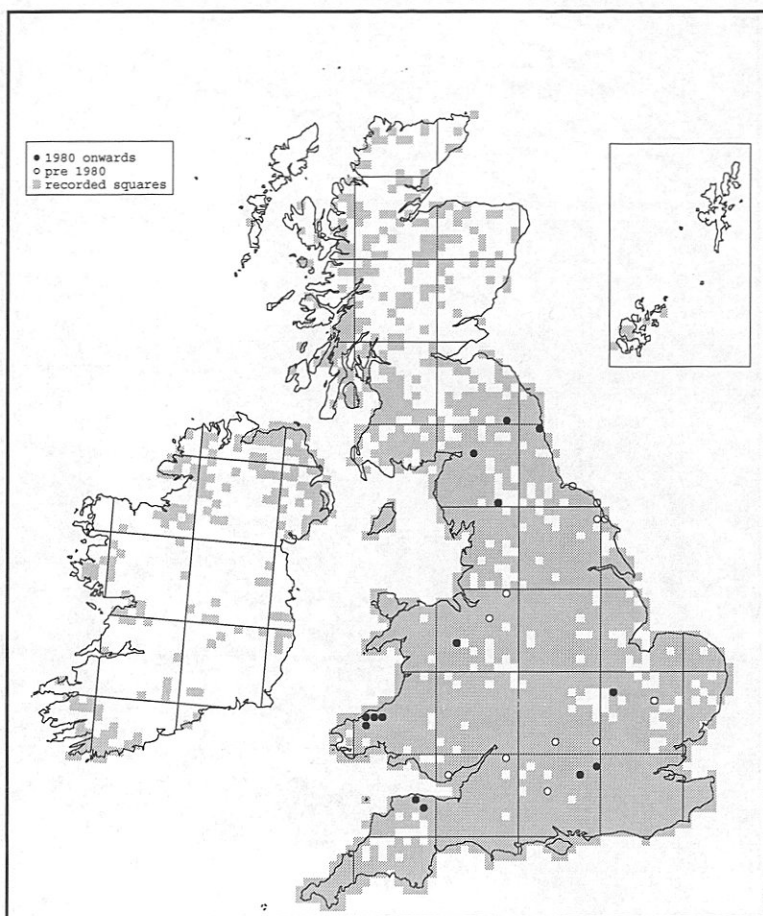
### ***Malthodes guttifer***

A very sparsely distributed species, although associated with a wide range of wooded situations including, in Britain, clumps of grey willow or goat willow in damp pastures. Most often found, however, in semi-natural oak and birch woods on acid soils. Damp soils may be important. Adults may be found from mid May until the end of July.



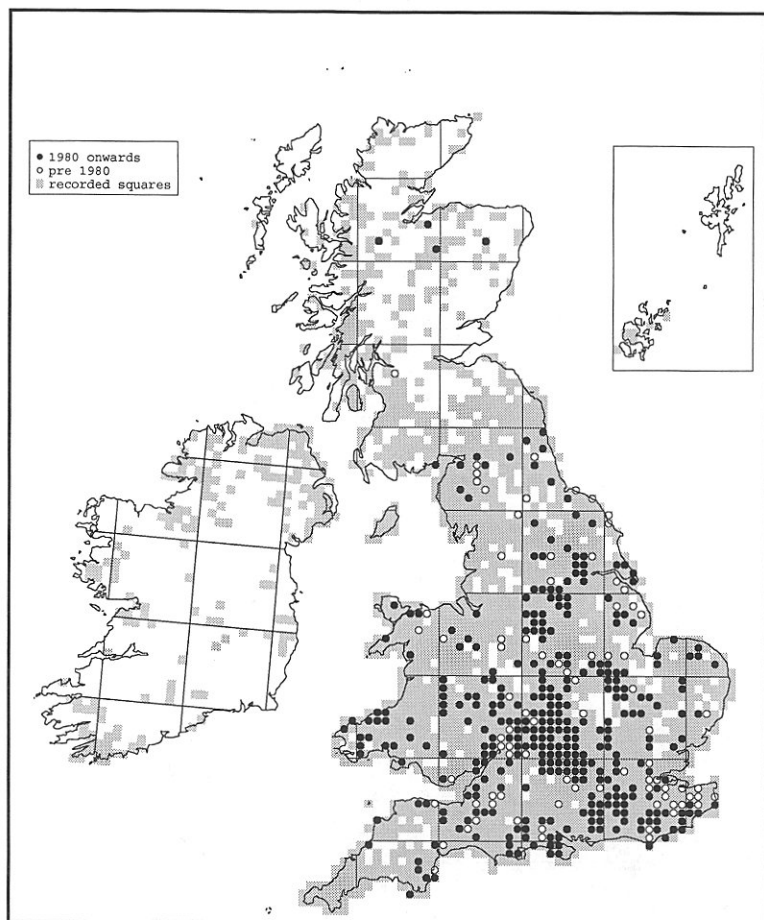
### ***Malthodes marginatus***

This is the commonest and most widespread species of the genus, found in most wooded situations throughout Britain and Ireland. Adults may be found from early May until the end of August.



### ***Malthodes maurus***

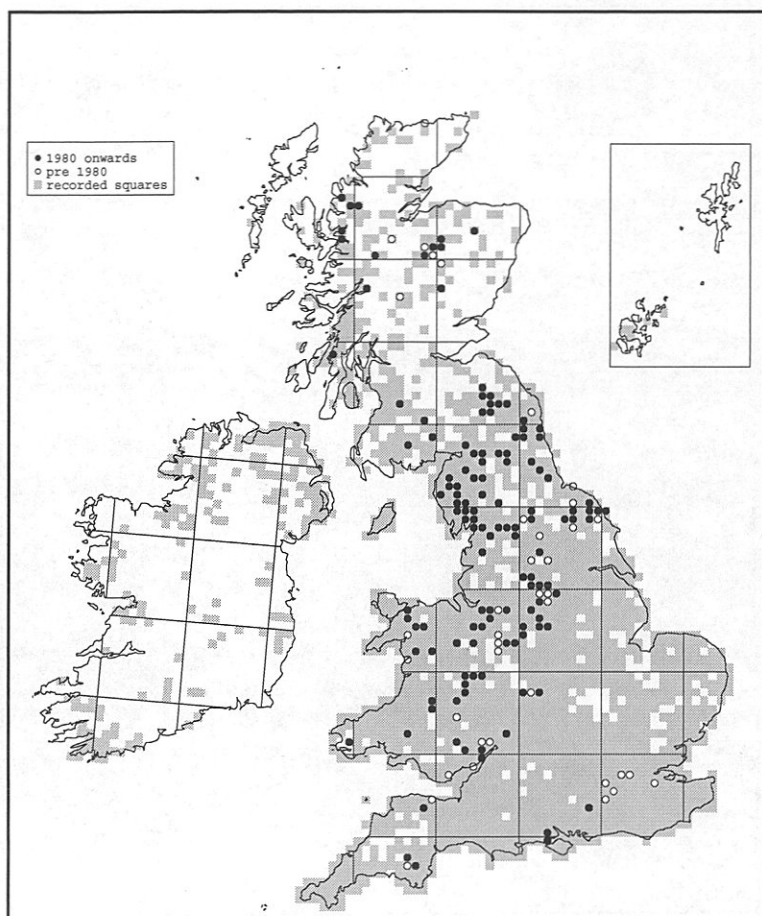
This appears to have always been a very rare species and its distribution and habitat associations remain unclear. Many of the recent records are from well-wooded country along river valleys. Adults may be found from early May until the end of July.



### ***Malthodes minimus***

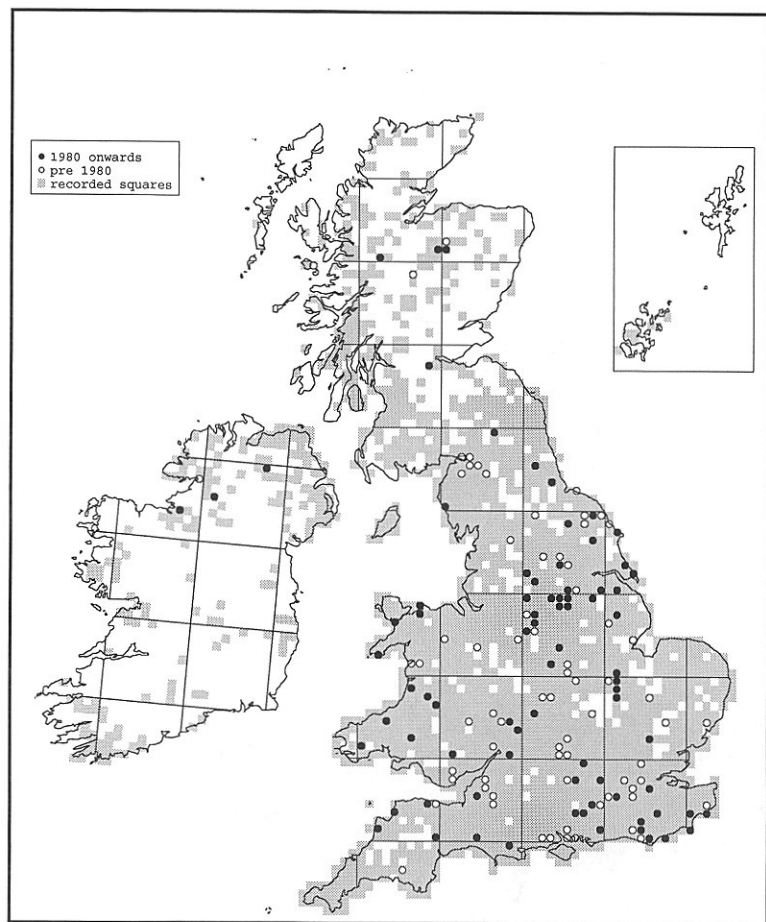
Common and widespread in well-wooded country throughout southern Britain, but sparse in the north. It is particularly abundant in woods on chalk and limestone. Adults may be found from mid May to early August.





### ***Malthodes mysticus***

It is widespread and often abundant in the wooded areas of the hill country of northern and western Britain, even extending locally into open, heather covered hillsides. There are also very localised, relict populations in the New Forest and elsewhere in southeast England. This beetle is mainly a feature of woodlands on acid soils, but it does occur locally in limestone areas, such as the North York Moors. Fowler (1890) described it as 'rare', which is not the case today and may have been mistaken then, reflecting poor knowledge of northern Britain. Adults may be found from late May until the end of August.



### ***Malthodes pumilus***

A sparsely distributed species, it is believed to develop in the heart-rot of large old trees because many localities are ancient wood-pastures and well-wooded riverbanks. It can be swept in large numbers, for instance, beneath the canopy of old oaks in Moccas Park (J. Cooter, pers. comm.). However, it also occurs quite regularly on calcareous grassland sites in southern England, albeit usually those with some scrub. Adults may be found from mid May until the end of July.

## ***GLOSSARY OF PLANT NAMES***

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Ash	<i>Fraxinus excelsior</i>
Beech	<i>Fagus sylvatica</i>
Birch	<i>Betula</i> spp.
Devil's-bit scabious	<i>Succisa pratensis</i>
Glaucous sedge	<i>Carex flacca</i>
Goat willow	<i>Salix caprea</i>
Grey willow	<i>Salix cinerea</i>
Ground-ivy	<i>Glechoma hederacea</i>
Hawthorn	<i>Crataegus</i> spp.
Jointed rush	<i>Juncus articulatus</i>
Oak	<i>Quercus</i> spp.
Scots pine	<i>Pinus sylvestris</i>
Willows	<i>Salix</i> spp.

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