

PROVISIONAL ATLAS OF THE
SEPSIDAE (DIPTERA)
OF THE BRITISH ISLES

REF
595.712.4

ADRIAN PONT



BIOLOGICAL RECORDS CENTRE

NATURAL ENVIRONMENT RESEARCH COUNCIL

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OF THE BRITISH ISLES

BY
ADRIAN PONT
BRITISH MUSEUM (NATURAL HISTORY)

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Foreword

The publication of Adrian Pont's handbook to Sepsidae, in 1979, enabled dipterists in the British Isles to study this small, but interesting family of flies. The mildly unsavory habits of the flies has not deterred the study; Mr Pont has been able to build up a very useful quantity of information on the occurrence of sepsids in the British Isles, both from his own research and study of collections, and from contributors to the Sepsidae Recording Scheme over a period of about 10 years.

No pretence is made that knowledge of the occurrence of sepsids is any way near to being complete, but the maps and brief accounts of each species are up-to-date and comprehensive. They allow authoritative assessments to be made of the ranges of species and of the commonness or rarity of species. This knowledge is fundamental to further study of the group. The Biological Records Centre's work on the data for Sepsidae was specially requested and supported by the Nature Conservancy Council.

It has been a pleasure to work with Adrian Pont on these data. It has also been a pleasure to see the use of museum collections, particularly those in Mr Pont's own care at the British Museum (Natural History), to provide information for currently active field naturalists. Let us hope that the further impetus to the study of sepsids, given by this provisional atlas, will enable dipterists to make the atlas out-of-date in a few years.

Monks Wood Experimental Station
September 1986

Paul T Harding
Biological Records Centre

Introduction

The family Sepsidae is a small group of flies (Diptera) belonging to the series of the Acalyptrata. These flies have no popular name, but in Europe there are vernacular names that refer to their wing-waving habit or to their scent. Worldwide, there are 21 recent genera and some 250 species, of which only 6 genera and 27 species are known from the British Isles. They are generally rather small, ant-like flies, with spherical heads, 'waisted' abdomens, dark shining bodies, and relatively few bristles or hairs. The only exception is Orvgma luctuosum, which is confined to the seashore and, like most littoral flies, is flattened, robust and bristly.

The standard work on the Sepsidae of the British Isles is the Royal Entomological Society identification handbook (Pont 1979). This was constructed on the sound foundations established by 2 outstanding, although outdated, European monographs, by Duda (1926) and Hennig (1949). Since the publication of this handbook, 2 species have been added to the British Isles list (Pont 1986). A general discussion of the zoogeography of European Sepsidae has been given by Zuska (1970), whilst a full catalogue of the Palaearctic species together with detailed distribution records has been published by Zuska and Pont (1984).

Adult sepsids occur in meadows, open woodlands, riversides and pond-margins, pastures and farms, and on the seashore (Orvgma). They are usually closely associated with their larval breeding sites although they sometimes occur far from any evident sources of larval food, especially in upland areas; and the generalist larval feeders (Nemopoda) occur almost everywhere. Saltella and some Sepsis are rarely found away from cow dung or cow manure, and many Themira are found only on water margins where there is an abundance of waterfowl droppings or well-trodden cow dung. Larval biology is discussed by Pont (1979), and brief summaries of adult and larval habits are given in the captions to the maps that follow.

Distribution

Sepsidae are well represented in all zoogeographic regions and, because of their close association with mammalian faeces, many species are very widely distributed. One species has been described from Baltic Amber of the Oligocene (Protorvgma electricum Hennig). In Britain, as in Europe, many species appear to have few natural constraints to their distribution and occur wherever there is a suitable food source for their larvae. Other species appear to have a distribution restricted by altitude or climate, and follow well-defined zoogeographic patterns: for discussion of these, see de Lattin (1967), whose terminology is followed here. All the species from the British Isles appear to belong to the arboreal fauna; however, Themira pusilla and T. germanica may be tundra elements.

In the genus Sepsis, neocynipsea is probably a Mongolian element and fulgens an expansive Holomediterranean element. The remaining Sepsis species are Siberian elements, species of the temperate deciduous zone; biflexuosa and thoracica are at the limit of their north-west range, and have not expanded beyond the extreme south of England. Meroplus minutus, Saltella sphondylii and Nemopoda nitidula are also Siberian elements, whereas the more northern N. pectinulata is a Mongolian element. Orvgma luctuosum is an amphi-Atlantic element.

The genus Themira is the most varied group zoogeographically. Five species are Siberian elements: annulipes, leachi, nigricornis, putris, minor (the latter extending furthest to the south). One is Mongolian: gracilis. Two are Adriatic-Mediterranean elements, expanding to the east and north-east: lucida, superba. One is Atlantic, confined to East Anglia and south-west Sweden: biloba. Two may possibly be of tundra or montane origin, but show a typically boreo-alpine disjunction: germanica, pusilla.

Sources of records

Because there has been such a history of widespread misidentification and misapplication of names in the Sepsidae, I have made very little use of the published literature on British distribution, preferring instead to rely on records and material identified since publication of my keys (Pont 1979). This may appear to be uncharitable towards the labours of the past, but will, I feel sure, result in a much more secure and reliable data base; and time that would otherwise have been spent poring through old and outdated papers has been spent making fresh identifications, from newly collected and older material.

Records contributed by myself were largely compiled when preparing my keys and were based on the revision of collections at: British Museum (Natural History), London; Royal Museum of Scotland, Edinburgh (Mr E C Pelham-Clinton, Dr M R Shaw); National Museum of Wales, Cardiff (Mr J C Deeming); Ulster Museum, Belfast (Mr R Nash); National Museum of Ireland, Dublin (Dr J P O'Connor); Hope Entomological Collections, Oxford (the late Prof G C Varley, Dr M W R de V Graham, Dr J W Ismay, Dr M J Scoble); Ipswich Museum (Dr A G Irwin); Castle Museum, Norwich (Dr J W Ismay, Dr A G Irwin); Canadian National Collection, Ottawa (Dr J F McAlpine); Hunterian Museum, University of Glasgow (Dr R M Dobson). I have also received records from Reading Museum and Art Gallery (Mr H H Carter), Doncaster Museum and Art Gallery (Mr P Skidmore), and City Museum, Sheffield (Mr D Whiteley). In addition, many Diptera recorders have contributed to the Sepsid Recording Scheme: Dr Paul Ardö, Mr E C M Assis Fonseca, Dr S G Ball, Mr J Biglin, Mr P J Chandler, Mr L Clemons, Mr J H Cole, Mr J Cooter, Dr R H L Disney, Dr C M Drake, Dr P Kirby, Dr B R Laurence, Mr J M Nelson, Mr R M Payne, Mr M N Pugh, Dr M G Randall, Mr D A Smith, Mr K G V Smith, Mr A E Stubbs, Dr P I Ward, Dr I M White and Mr P Withers.

The data

The complete data set, from which the maps in this atlas were compiled, is held on computer file at the Biological Records Centre. It consists of a total of 6127 records, each containing information on the location and date of the occurrence of the species concerned, and of the source of the record. Access to these data can be provided by the Biological Records Centre, with records being sorted by species and geographical location (eg vice-county or grid reference).

The data also exist, in manuscript form, on record cards held by the Biological Records Centre.

An analysis of the data by numbers and percentages of records and of 10 km squares for each species, is given in Table 1.

Table 1 Number of 10km squares (also expressed as percentage of total number of 10km squares in which sepsids have been recorded) and number of records (also expressed as a percentage of total records). Species are ranked according to the number of 10km squares in which they have been recorded.

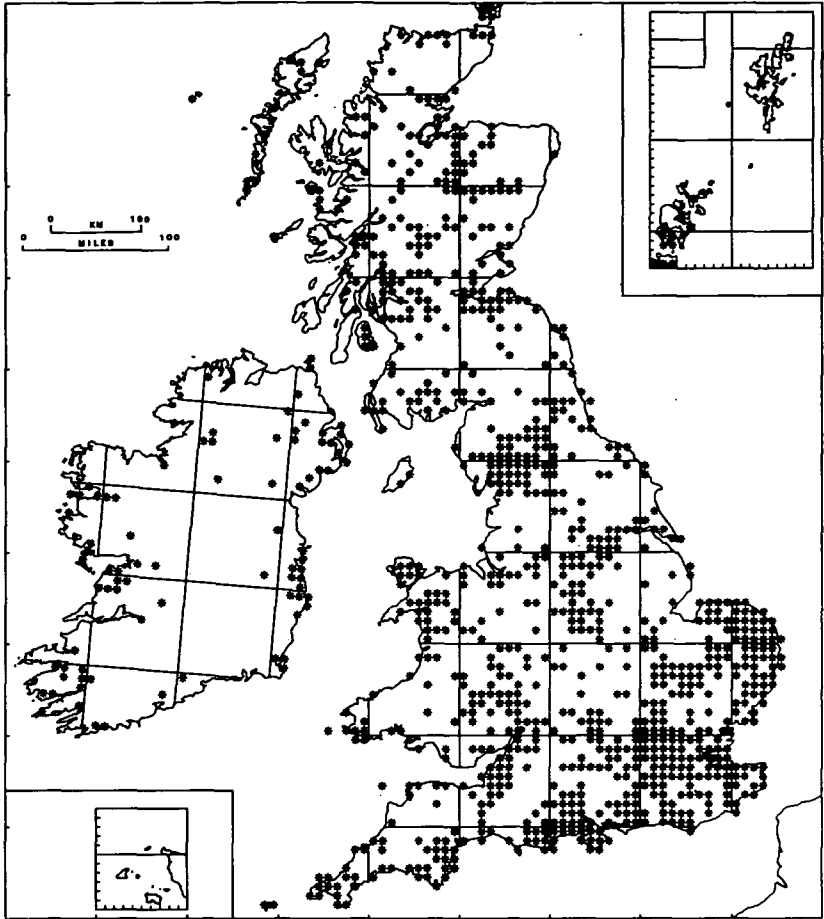
	10 km squares		Records	
	Number	% total coverage	Number	% total
<i>Sepsis cynipsea</i>	470	47.8	946	15.4
<i>Sepsis fulgens</i>	392	39.8	876	14.3
<i>Nemopoda nitidula</i>	348	35.4	885	14.4
<i>Sepsis punctum</i>	281	28.5	532	8.7
<i>Sepsis orthocnemis</i>	279	28.3	478	7.8
<i>Sepsis violacea</i>	209	21.3	364	5.9
<i>Sepsis flavimana</i>	186	18.9	333	5.4
<i>Themira putris</i>	159	16.2	289	4.7
<i>Themira annulipes</i>	143	14.5	221	3.6
<i>Themira lucida</i>	130	13.2	205	3.3
<i>Saltella sphondylii</i>	88	8.9	131	2.1
<i>Themira superba</i>	87	8.8	144	2.3
<i>Themira minor</i>	85	8.6	114	1.9
<i>Orygma luctuosum</i>	74	7.5	114	1.9
<i>Sepsis duplicata</i>	67	6.8	80	1.3
<i>Themira pusilla</i>	60	6.1	103	1.7
<i>Themira leachi</i>	49	5.0	79	1.3
<i>Sepsis neocynipsea</i>	36	3.7	51	0.8
<i>Sepsis thoracica</i>	31	3.1	48	0.8
<i>Meroplus minutus</i>	23	2.3	46	0.7
<i>Nemopoda pectinulata</i>	17	1.7	20	0.3
<i>Themira germanica</i>	13	1.3	26	0.4
<i>Sepsis biflexuosa</i>	8	0.8	11	0.2
<i>Sepsis nigripes</i>	6	0.6	7	0.1
<i>Themira nigricornis</i>	6	0.6	10	0.2
<i>Themira gracilis</i>	5	0.5	12	0.2
<i>Themira biloba</i>	2	0.2	2	<0.1
All species	983		6127	

Acknowledgements

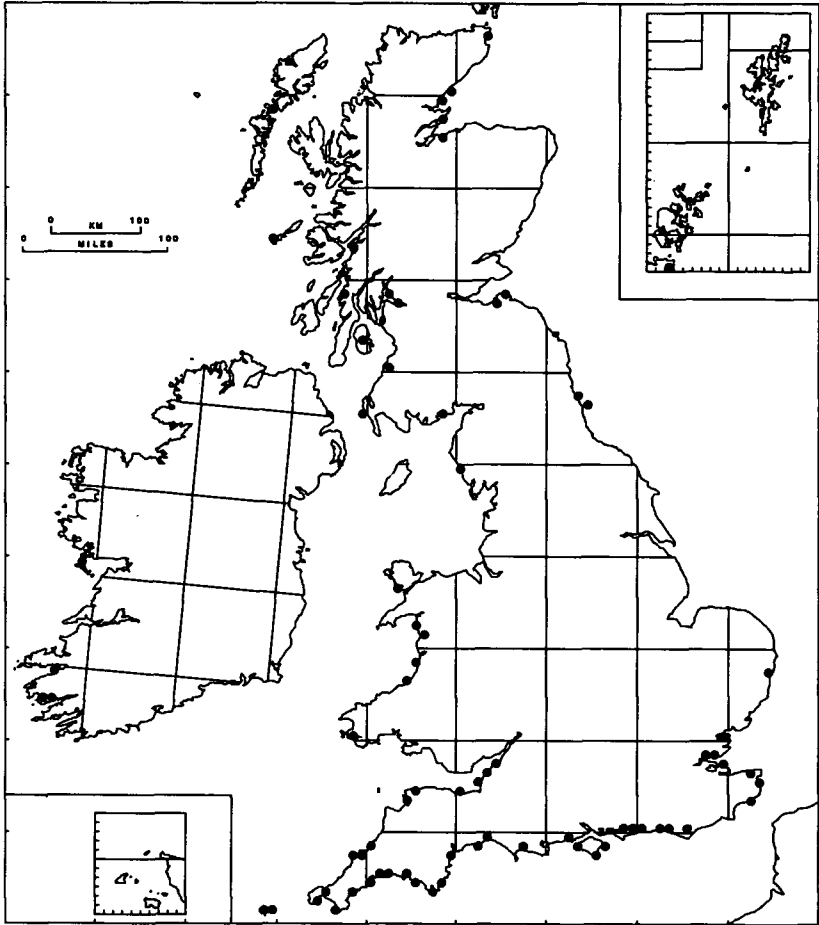
I am extremely grateful to all the recorders and curators listed above who have given such enthusiastic support to the Sepsid Recording Scheme. I also wish to thank Mr Paul Harding of the Biological Records Centre most warmly for his patience, encouragement and considerable help at all stages of this project; and John Bratton and the other staff of the Biological Records Centre of the Institute of Terrestrial Ecology for meticulously checking and processing my data.

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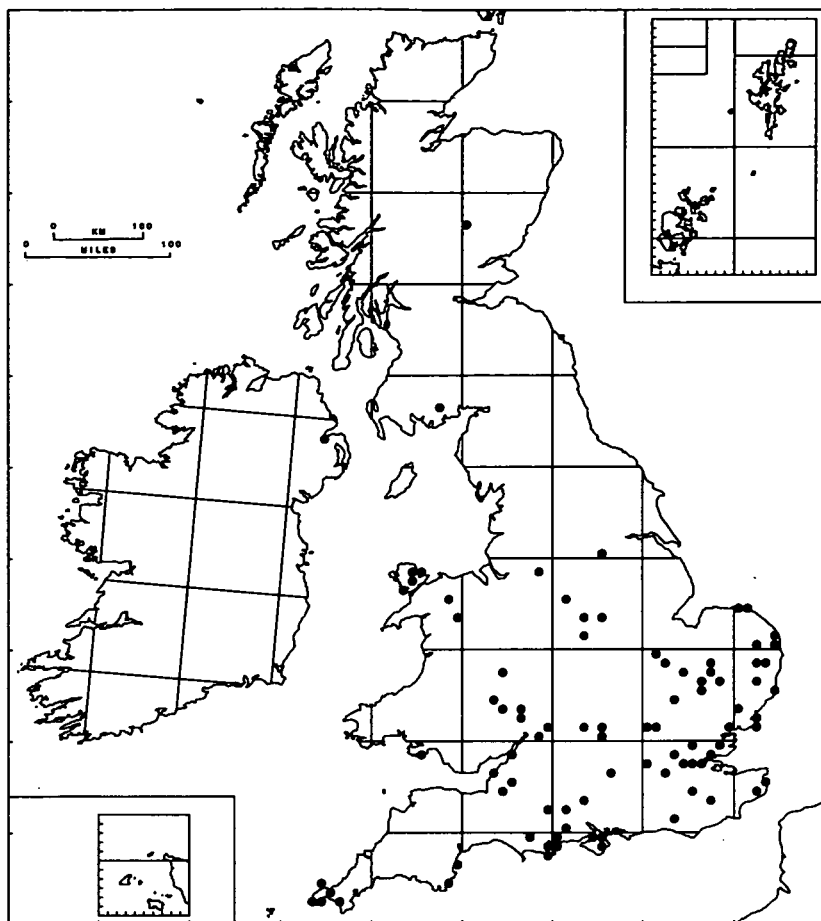


Map 1 Coverage map



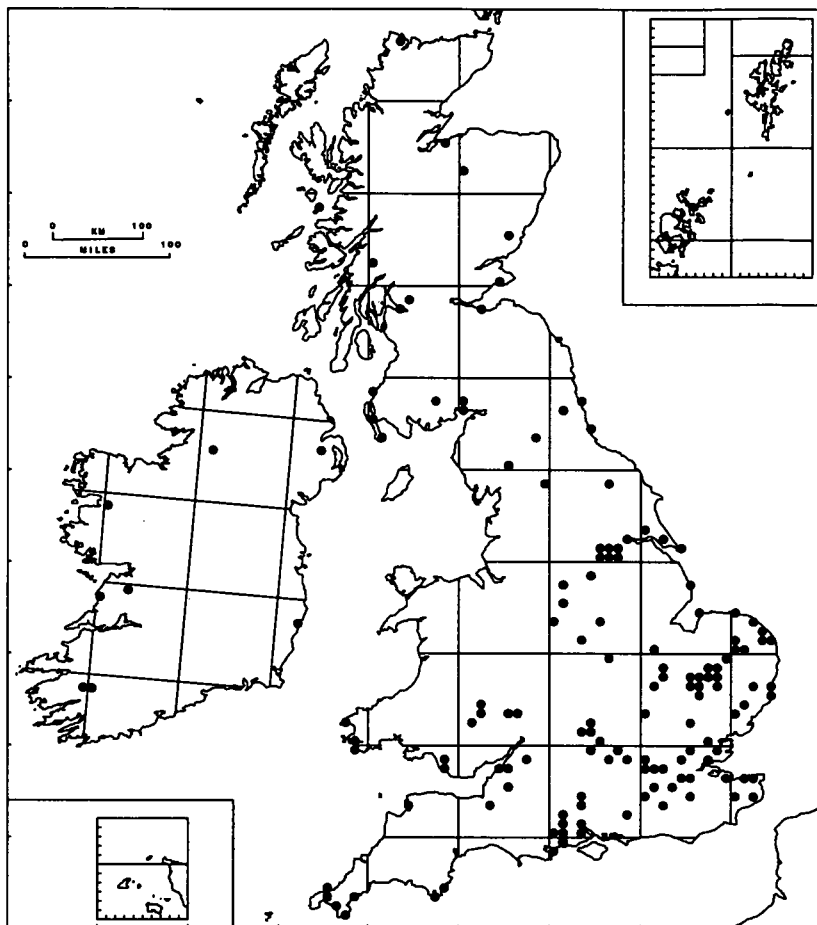
Map 2 ***Orygma luctuosum*** Meigen.

A seashore species restricted to beaches with abundant beds of wrack, in which the larvae breed. The adults do not fly readily, and when disturbed tend to burrow down into the wrack. Recorded during most months of the year. Known from the European coastline from Brittany (France) to the Kola Peninsula and Onega (USSR), also the Faroe Islands, Iceland, Greenland, and the north-east coast of North America (Labrador to Massachusetts).

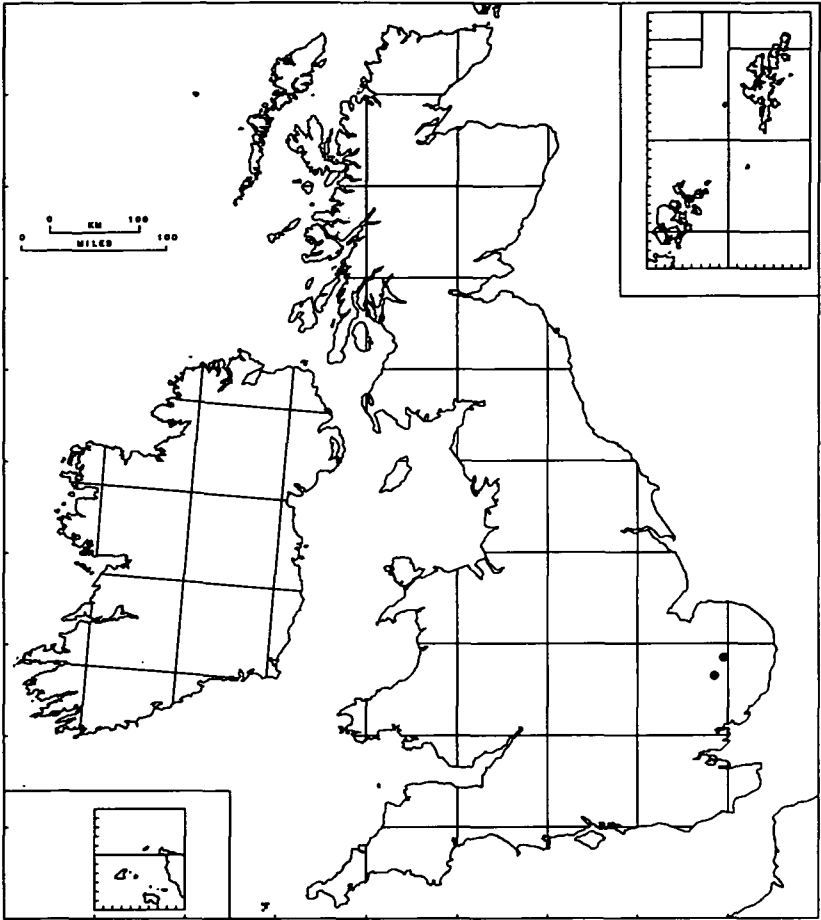


Map 3 *Saltella sphondylii* (Schrank).

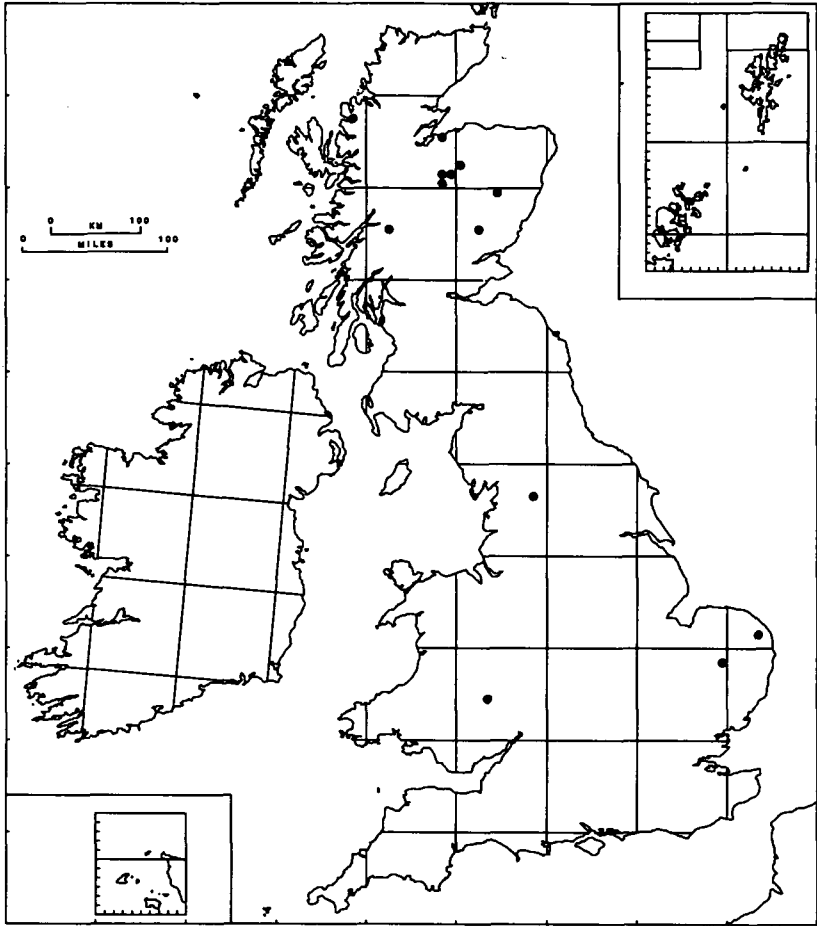
A pasture species, the adults on cow dung and seldom found far from this habitat; May to August. Larvae breed in cow dung. The species may have been overlooked in northern England and Scotland. Throughout Europe, from the Mediterranean to central Sweden and Finland, eastwards to Japan, and widespread in North America.



Map 4 ***Themira annulipes* (Meigen).**
 After *T. putris*, this is the most abundant and widespread species of *Themira* in the British Isles. Adults are common in damp habitats and along river banks; May to September. Larvae in soil, especially when enriched by cattle droppings, sewage overflows etc. Common throughout Europe, eastwards to Japan, and in eastern North America.

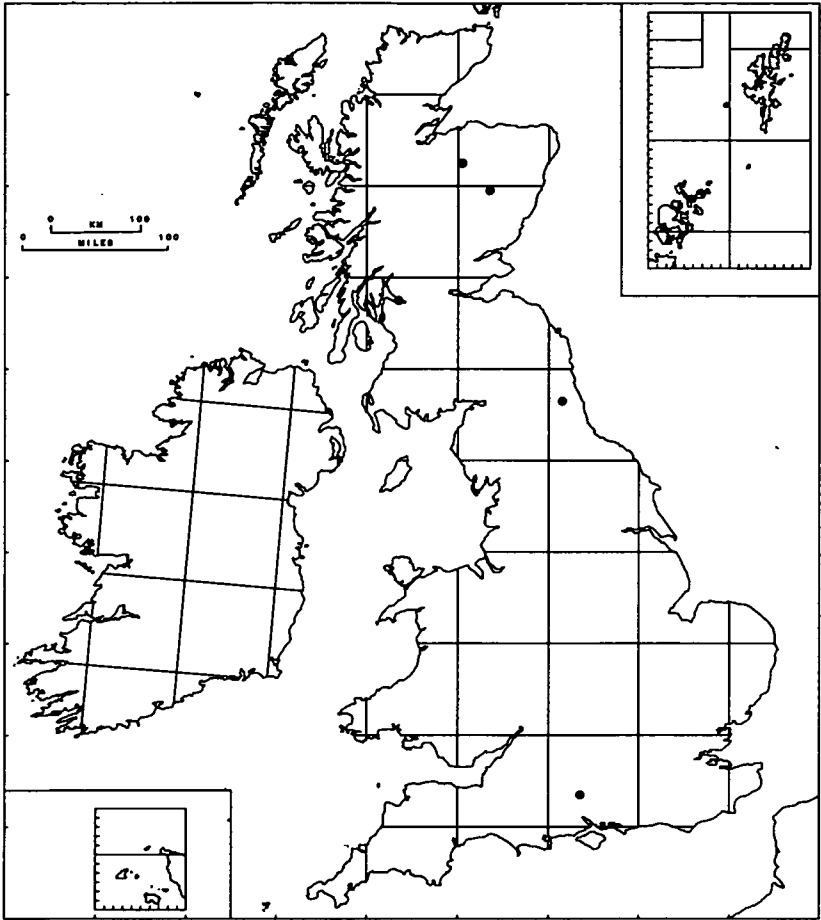


Map 5 ***Themira biloba*** Andersson.
 Recently added to the British Isles list (Pont 1986) and known only from East Anglia, where it was found associated with guano on a coot's nest; July. It may be found to be restricted to waterfowl droppings. Otherwise known only from Skane province (Sweden).



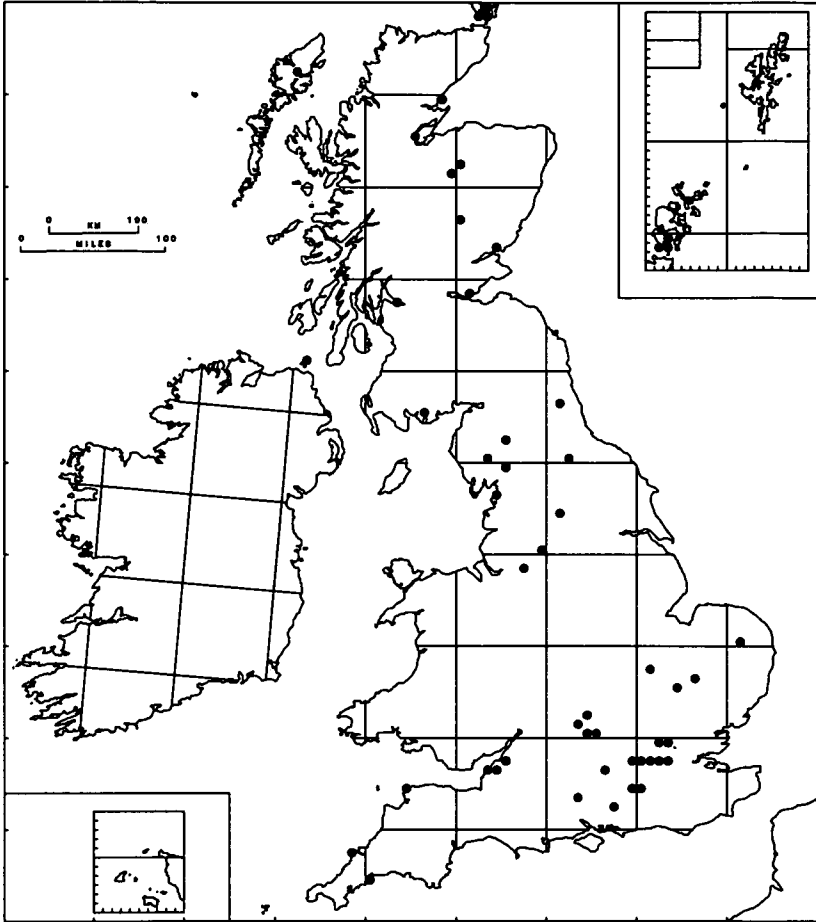
Map 6 ***Themira germanica*** Duda.

A northern species, with relict localities in Herefordshire and East Anglia; adults have been found on waterside vegetation around tarns and pools, June to September. Uncommon, in central and northern parts of western Europe (Netherlands to northern Sweden).

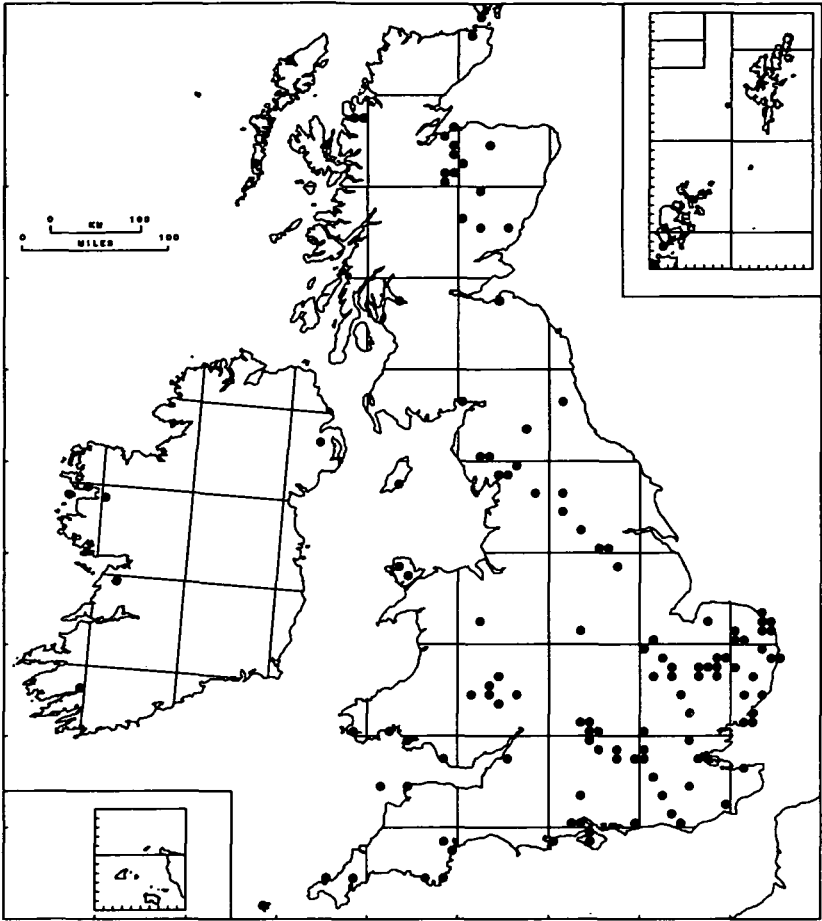


Map 7 ***Themira gracilis*** (Zetterstedt).

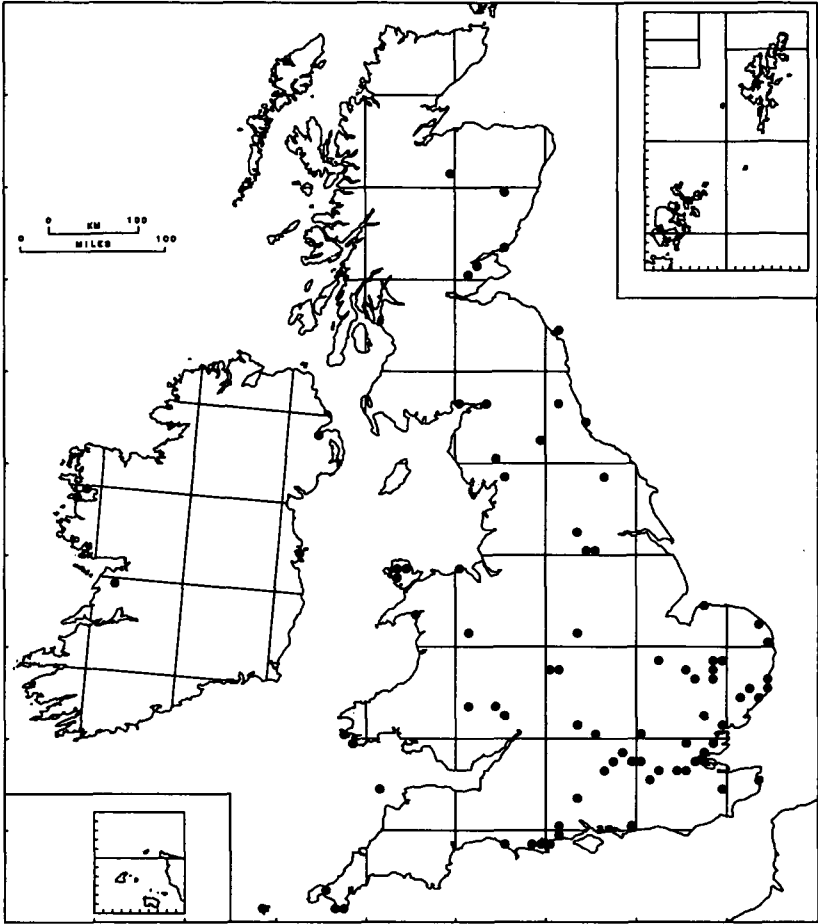
A northern species, with a single occurrence in north Hampshire; adults have been found at riverside cattle watering spots, where mud and dung are trampled in together; June to July. Rare, but widespread, in central and northern Europe, with a few more southern records from sphagnum moors, eastwards to the Amur province of the USSR.



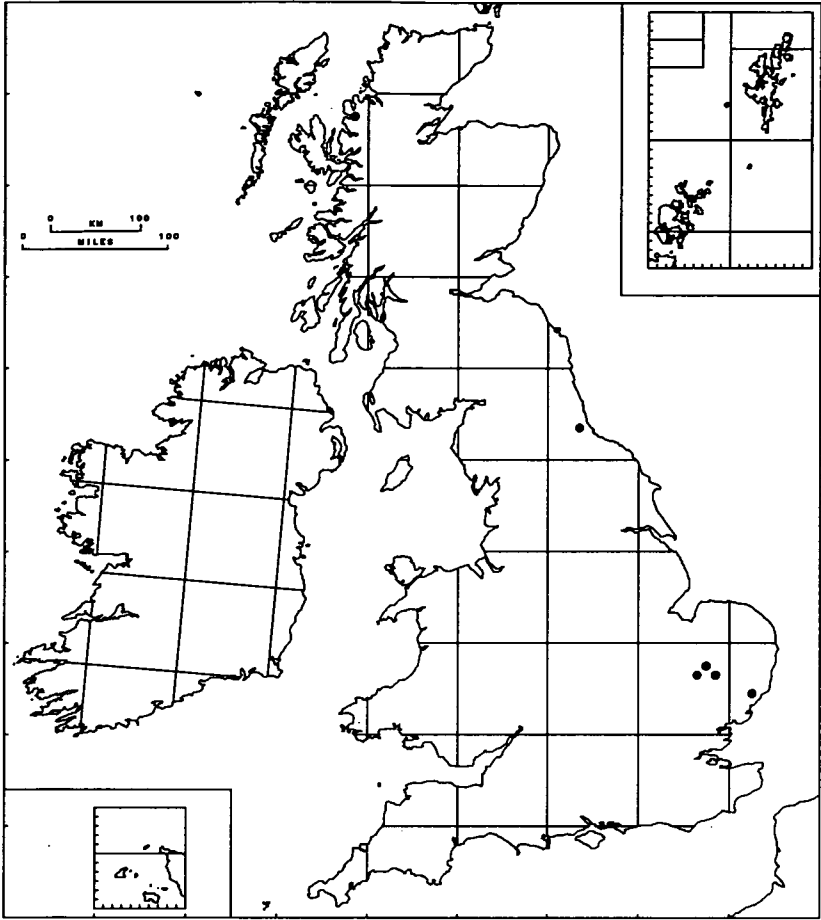
Map 8 ***Themira leachi*** (Meigen).
 Widely distributed, but not common. The adults are short-winged and active on foot amongst grasses, and may be overlooked; April to October. Larvae in manured soil, grass cuttings, and human excrement. Widespread through Europe, eastwards to Mongolia.



Map 9 ***Themira lucida* (Staeger).**
 One of the more widespread and common species of *Themira*. Adults are commonly found near water, in woodlands or meadows, and are often associated with waterfowl droppings; May to September. Throughout Europe, though less common in the south, east to the Moscow district (USSR).

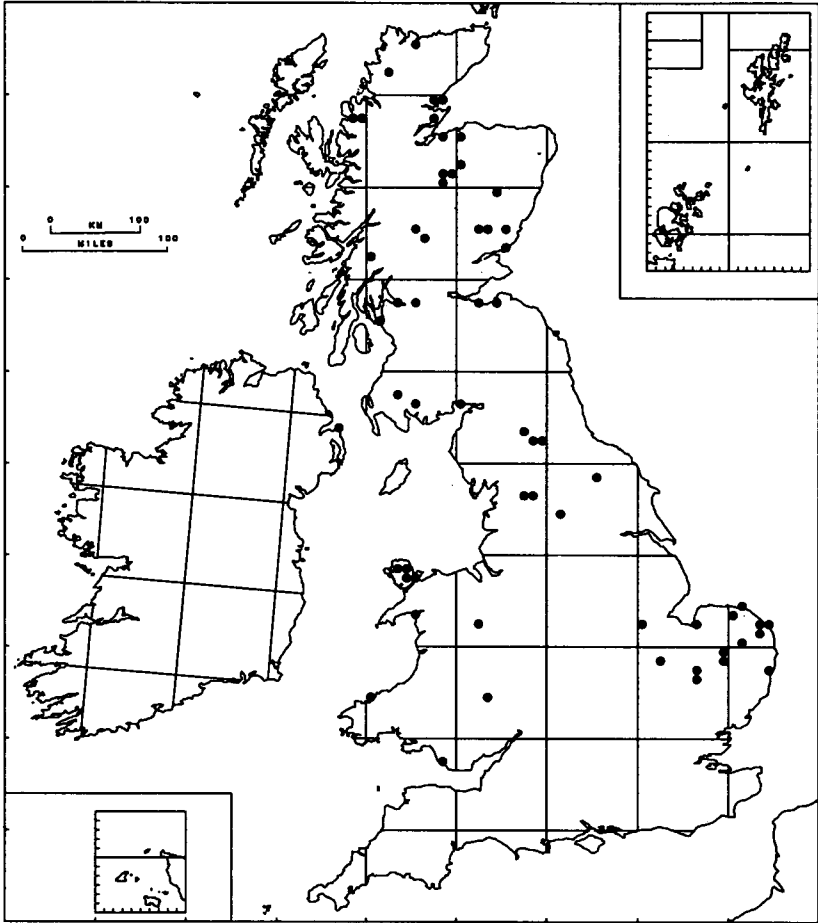


Map 10 ***Themira minor*** (Haliday).
 Common and widespread, but less common towards the north. Adults around rivers and streams; April to September. Larvae in cow dung, and in trampled dung and soil from cattle feeding-pens. Throughout Europe, common in the south, and the only *Themira* to occur in warm Mediterranean areas; Atlantic islands, North Africa, eastwards to Japan, and in North America (Idaho to Quebec to New York).

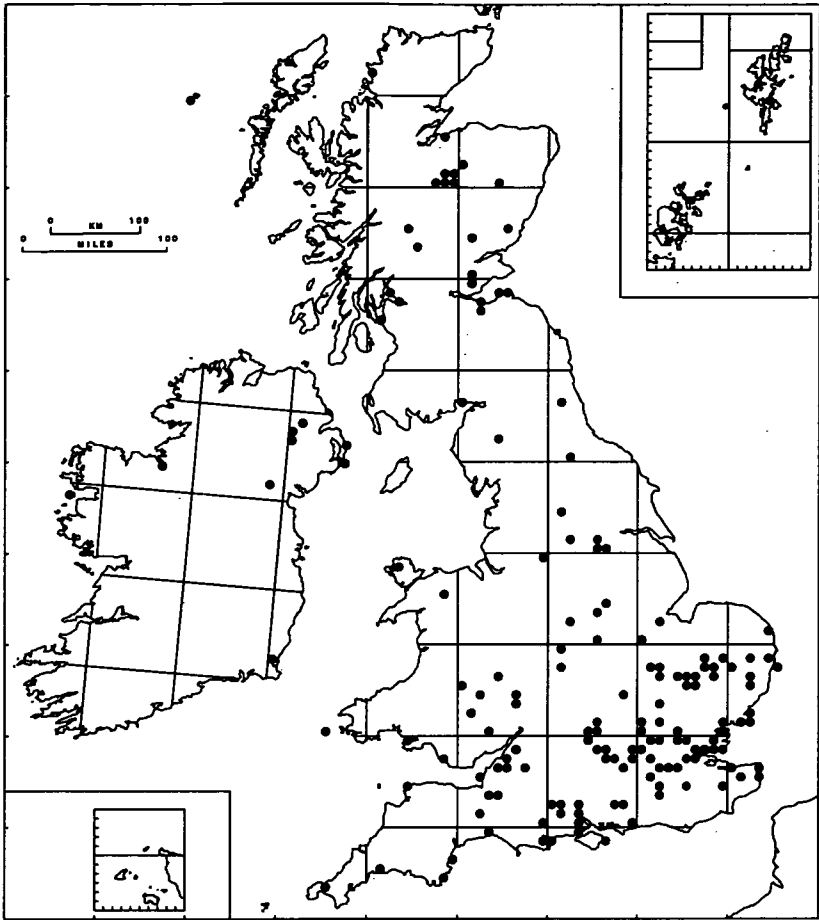


Map 11 *Themira nigricornis* (Meigen).

A rare species; adults are associated with carrion and only occur in spring, March to April. Larvae in dung (human, cow, chicken), manure, garden soil, and marsh debris. More abundant in mainland Europe; widespread in central and northern Europe, eastwards to Japan, and in North America (north-east USA).

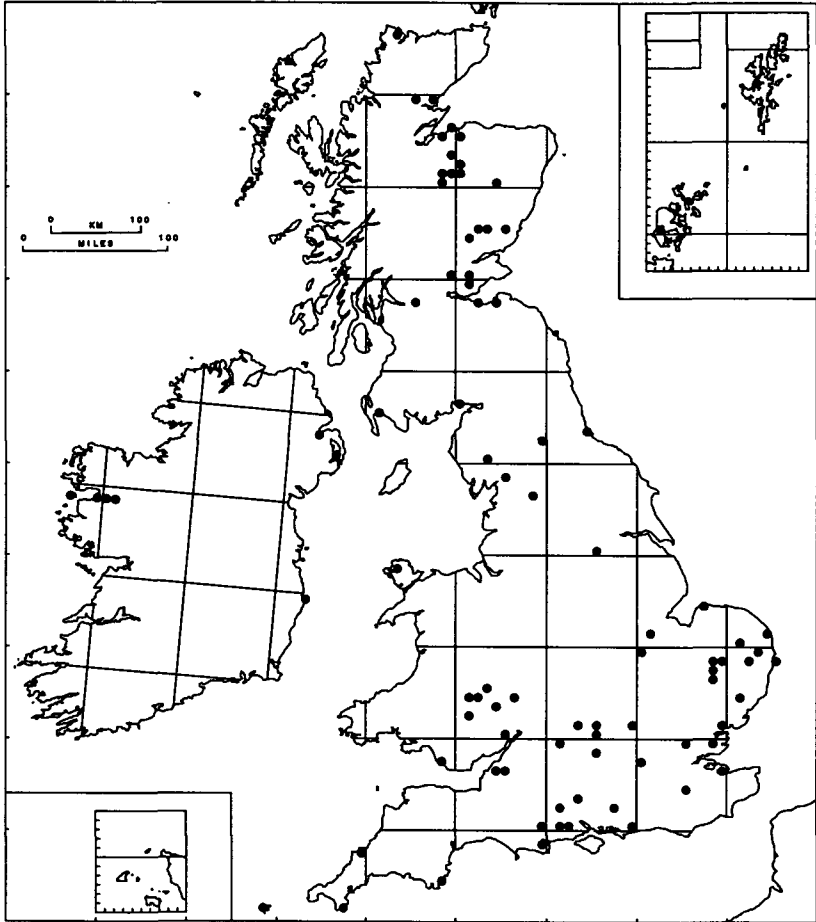


Map 12 *Themira pusilla* (Zetterstedt).
 More pronouncedly northern in distribution; adults associated with the dung of small mammals; May to August. With a very restricted range: northern Europe (Sweden, Finland, Iceland), USSR (Moscow), Asia (Mongolia), and North America (Alaska, Washington State).

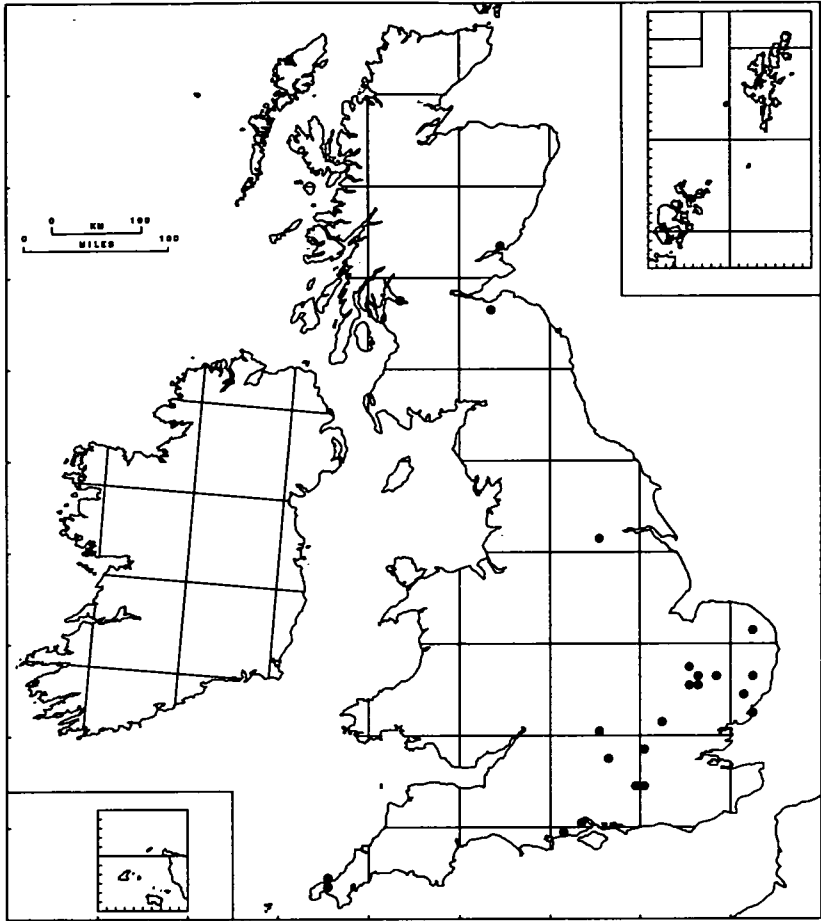


Map 13 *Themira putris* (Linnaeus).

The most abundant and widespread species of *Themira* in the British Isles, with great ecological tolerance, but less common towards the north. Adults especially common around rubbish tips, sewage plants and farm slurry; March to October. Larvae in cesspools, liquid and solid cow manure, rotting vegetation including algal masses, wet soil and mud, especially when contaminated with manure. Widespread in Europe, though less common in the south, eastwards to Japan, and in North America (British Columbia and California to Quebec and New York).

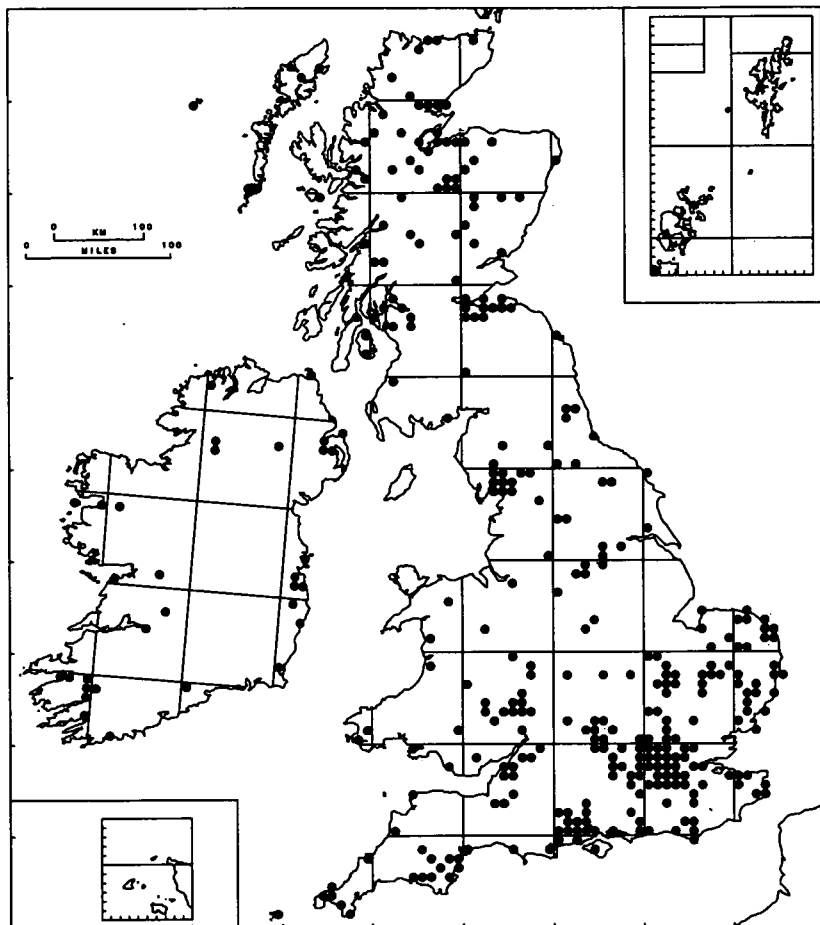


Map 14 ***Themira superba*** (Haliday).
 Widespread but not common; adults near water and often associated with waterfowl droppings; April to September. Throughout Europe, but less common in the south, eastwards to the Urals (USSR).



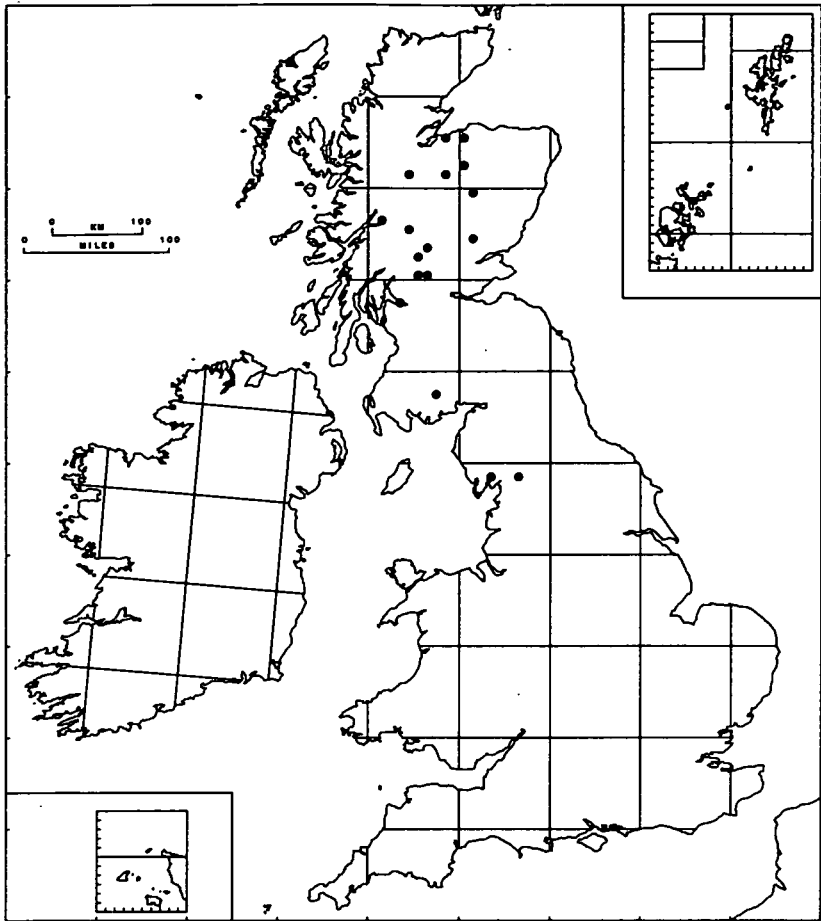
Map 15 ***Meroplius minutus*** (Wiedemann).

A rare species, with almost no recent records; attracted to pig slurry; April to September. Larvae in dung (cow, human, pig, rabbit), wet soil in cattle feeding pens, rotting vegetation, and small mammal and fish carrion. Widespread but little known in Europe, from Spain to Finland, eastwards to Japan, and in North America (British Columbia, Washington State and Utah to Quebec and Florida).



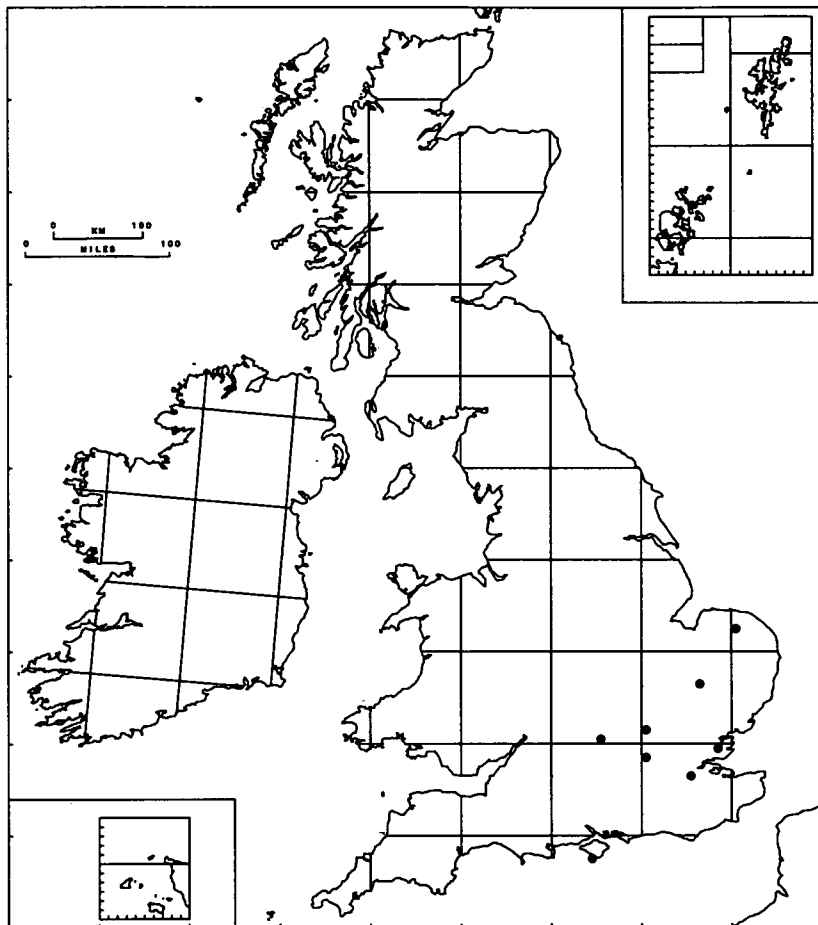
Map 16 *Nemopoda nitidula* (Fallén).

A very common and widespread species, shade-loving, in woodlands and occasionally damp meadows; often on carrion and excrement; February or March to October. Larvae in a wide range of organic substances, including dung (especially human), carrion, decaying fungi, rotting vegetation and rotten logs. Widespread and common in Europe, including North Africa, from the Mediterranean to the subarctic, eastwards to Japan; also in North America (Alberta to Quebec to Virginia) and Africa (Zaire).



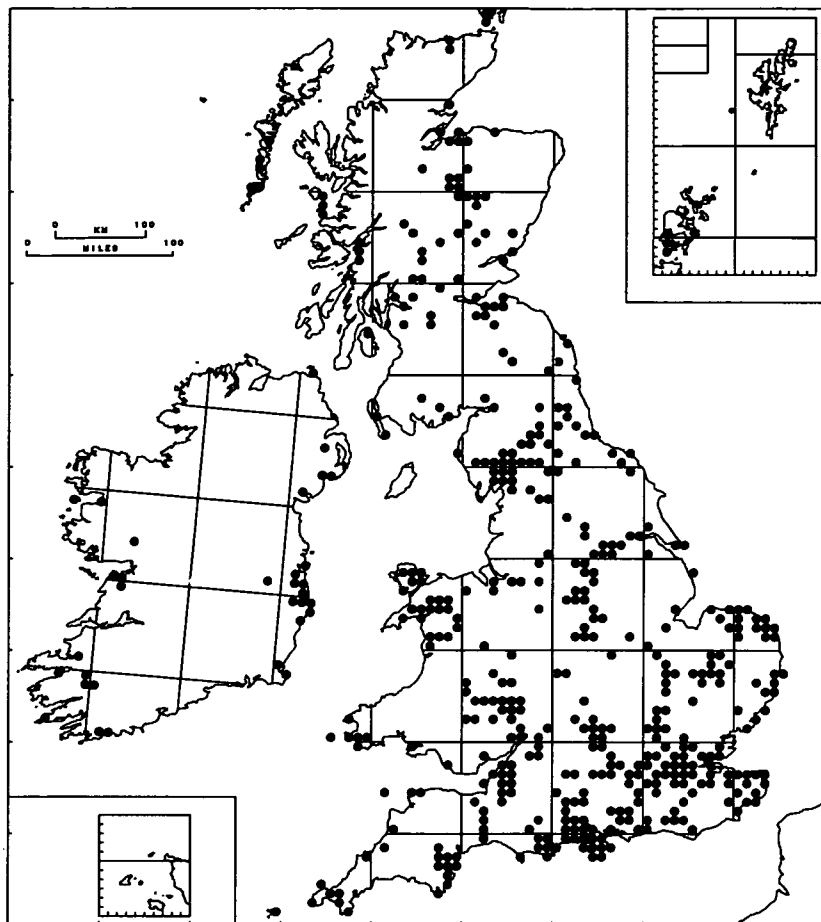
Map 17 *Nemopoda pectinulata* Loew.

A rare northern species which, at least in mainland Europe, occurs together with *N. nitidula*; June to September. Larvae reared from dung. Occurring in central and northern Europe, usually restricted to upland areas towards the south of its range, eastwards to Japan; also from Nepal.



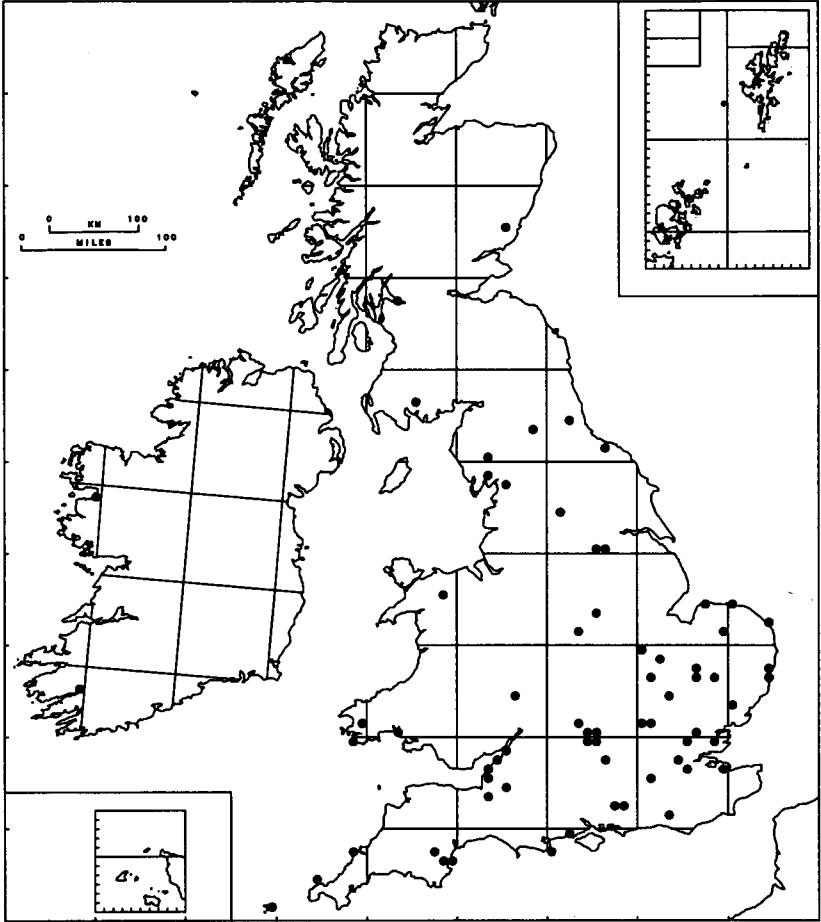
Map 18 *Sepsis biflexuosa* Strobl.

A rare species with very few recent records, all of which are from south-east England; May to September. Larvae in cow dung and from heaps of cow manure. Throughout Europe but with a more southern range, northwards to southern Sweden, North Africa, Atlantic islands, eastwards to Mongolia; also in North America (British Columbia and New Mexico to Quebec and New Jersey), Mexico, and introduced into Hawaii.

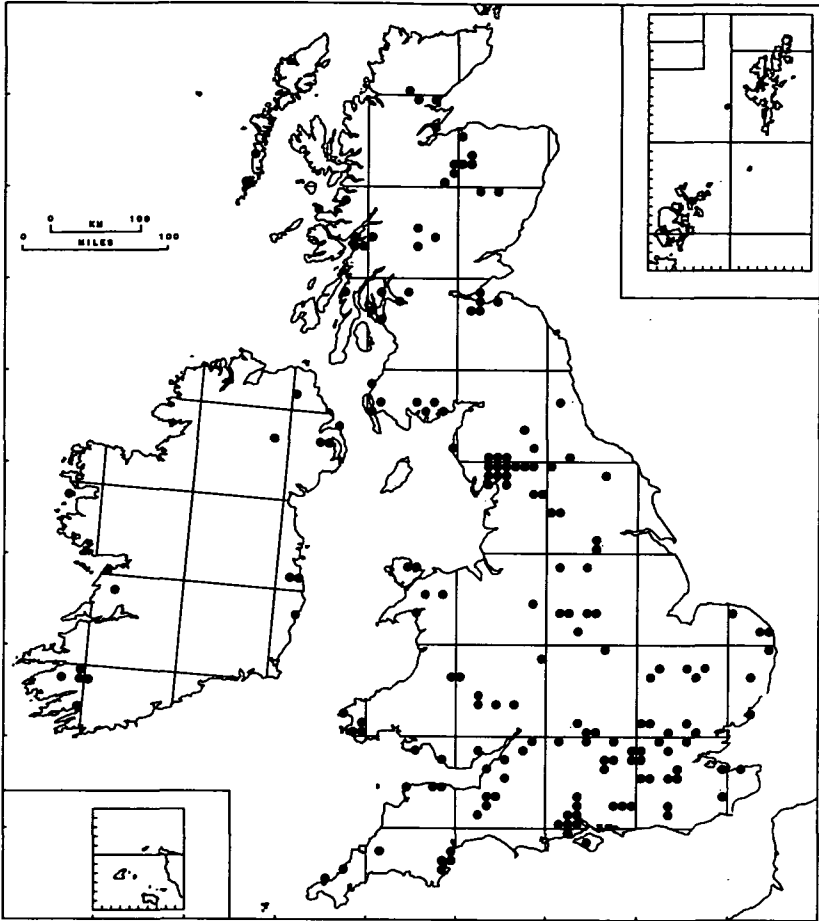


Map 19 *Sepsis cynipsea* (Linnaeus).

The most abundant and widespread species of *Sepsis* in the British Isles. The adults are very common on fresh cow dung and are not often found far from this habitat; March to October. Their elaborate courtship and reproductive behaviour has been analysed by Parker (1972a, b). Larvae in cow dung, in upland areas even in sheep dung. Common in Europe from Finland to North Africa, eastwards to Japan.

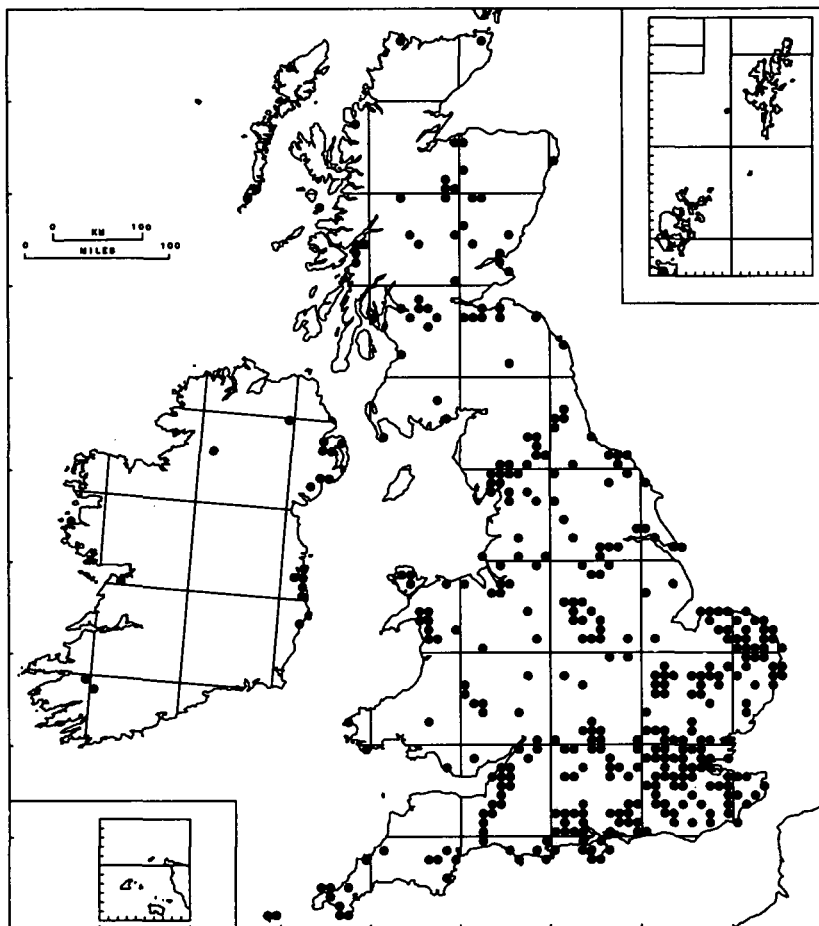


Map 20 ***Sepsis duplicata*** Haliday.
 A widespread and locally common species, absent (or possibly overlooked) from Scotland. Adults are found only on fresh cow dung; April to August. Larvae in cow dung. Central and northern Europe, eastwards to Moscow (USSR); Japan.



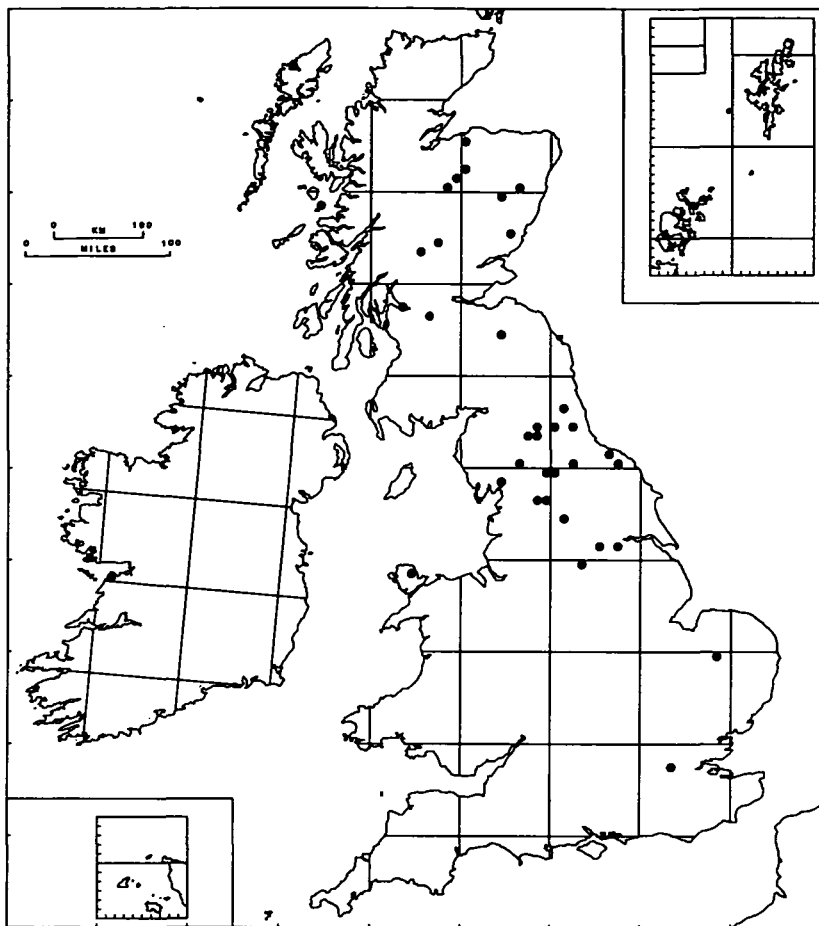
Map 21 - *Sepsis flavimana* Meigen.

A common and widespread species. Adults often occur on fresh cow dung, but are by no means restricted to this habitat; April to September. Larvae in cow dung. Common throughout Europe, northwards to the subarctic zone, eastwards to Japan, and in North America (Alaska, Michigan).



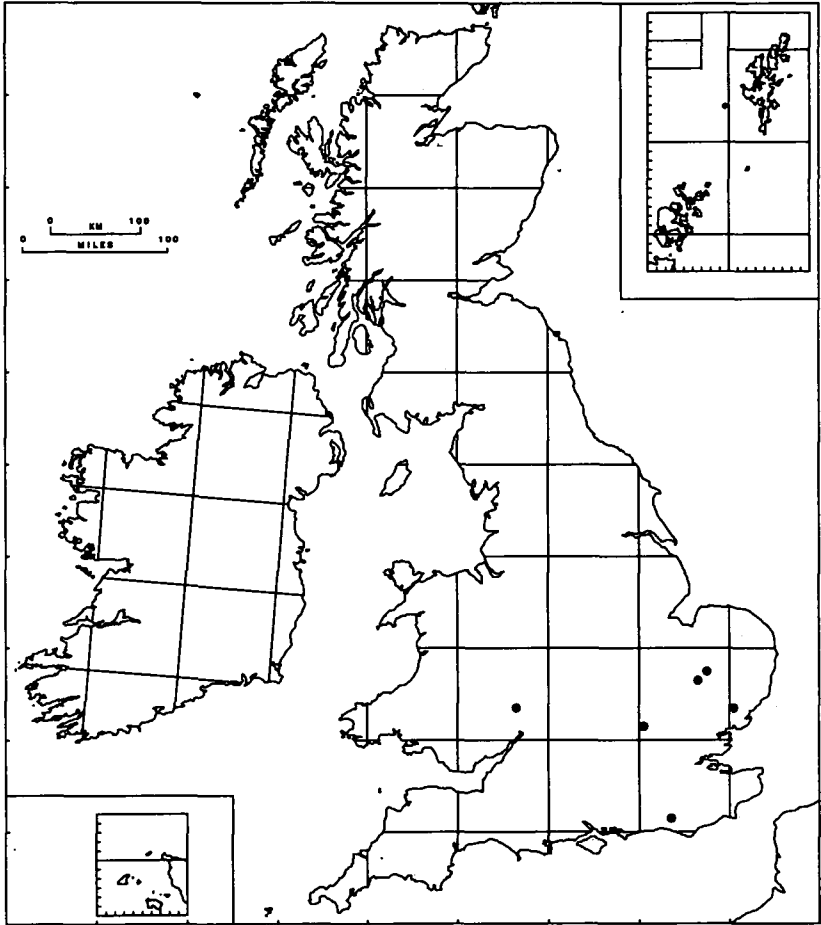
Map 22 *Sepsis fulgens* Meigen.

One of the most abundant and widespread of the British Isles species of *Sepsis*, with great ecological tolerance and often occurring far from obvious sources of mammal dung; February to November. Their enigmatic swarming behaviour has been discussed by Pont (in press). Larvae in dung (cow, pig, horse, poultry), manure, and pig swill. Common throughout Europe, North Africa, the Middle East, eastwards to Soviet Middle Asia.



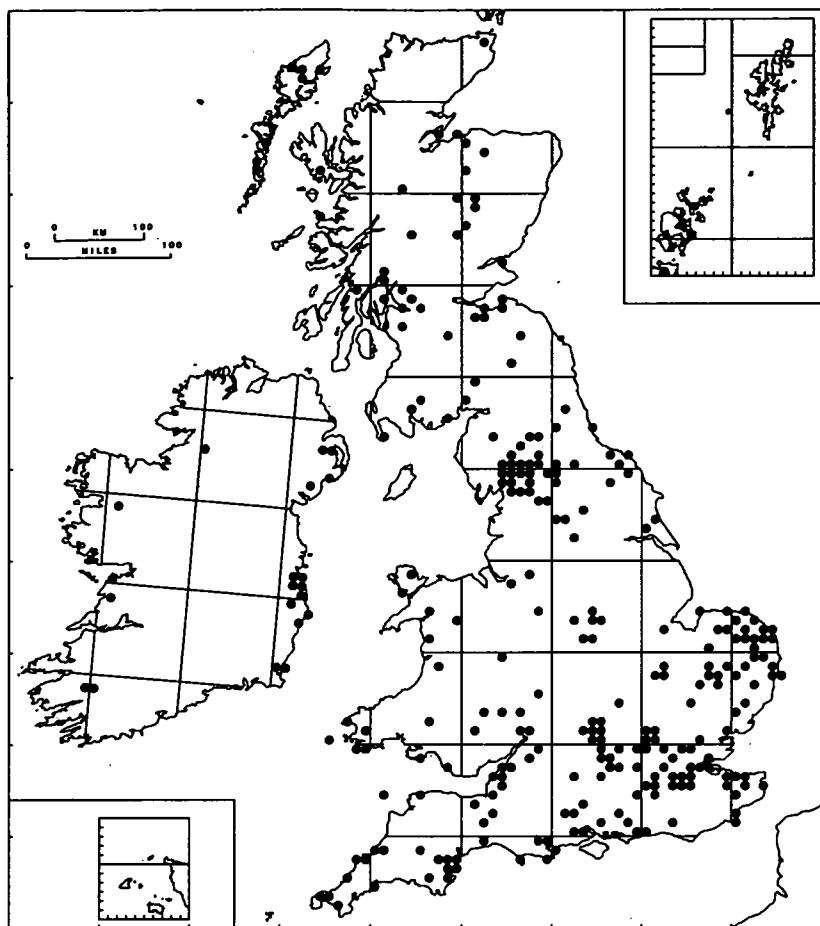
Map 23 *Sepsis neocynipsea* Melander & Spuler.

An uncommon northern and upland species, with relict localities in East Anglia and south London; April to September. Larvae in cow dung and small mammal droppings, and allegedly also in small carrion. Upland areas of central Europe (but apparently absent from Scandinavia), eastwards to Japan; in North America (Alaska and California to Quebec and Alabama), and Mexico.



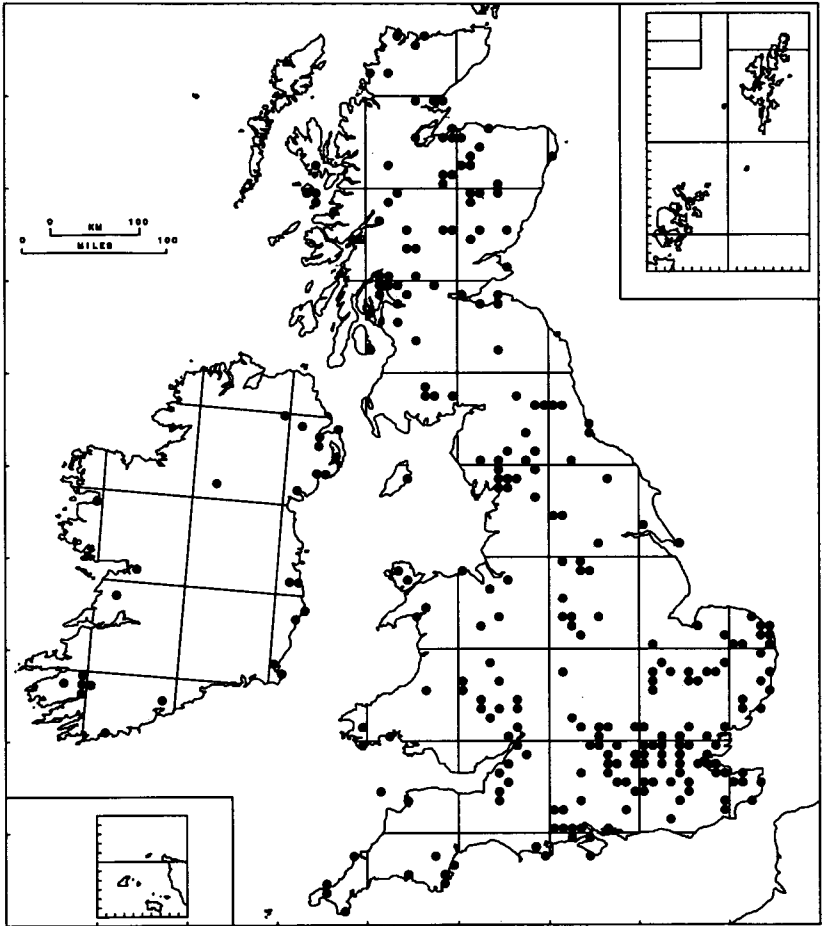
Map 24 *Sepsis nigripes* Meigen.

The rarest of the British Isles species of *Sepsis* and only recently re-instated as a British species (Pont 1986). It has not been collected since 1951. Adults occur on cow dung; May to July. Larvae in cow dung. Only a few localities known, from Poland, Germany, Austria, Hungary and Japan.

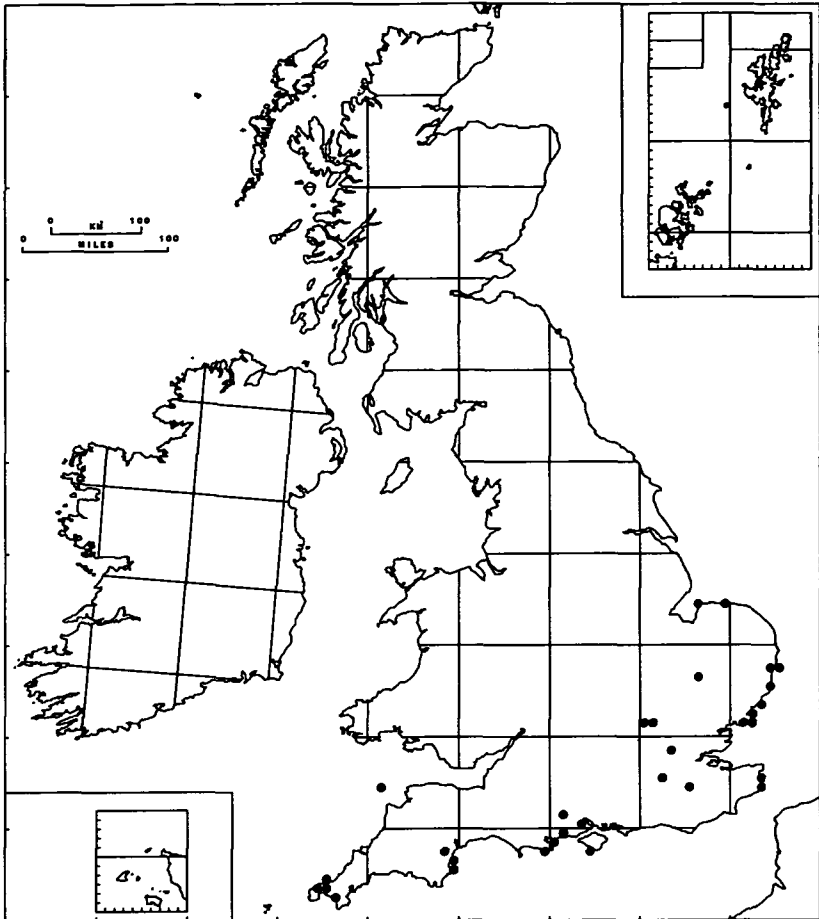


Map 25 *Sepsis orthocnemis* Frey.

A common and widespread species. The adults are sometimes found on cow dung, and are most abundant in early spring and autumn; February to October. Larvae in cow dung. Common throughout Europe, from Lapland to Algeria, eastwards to the Maritime province (USSR).

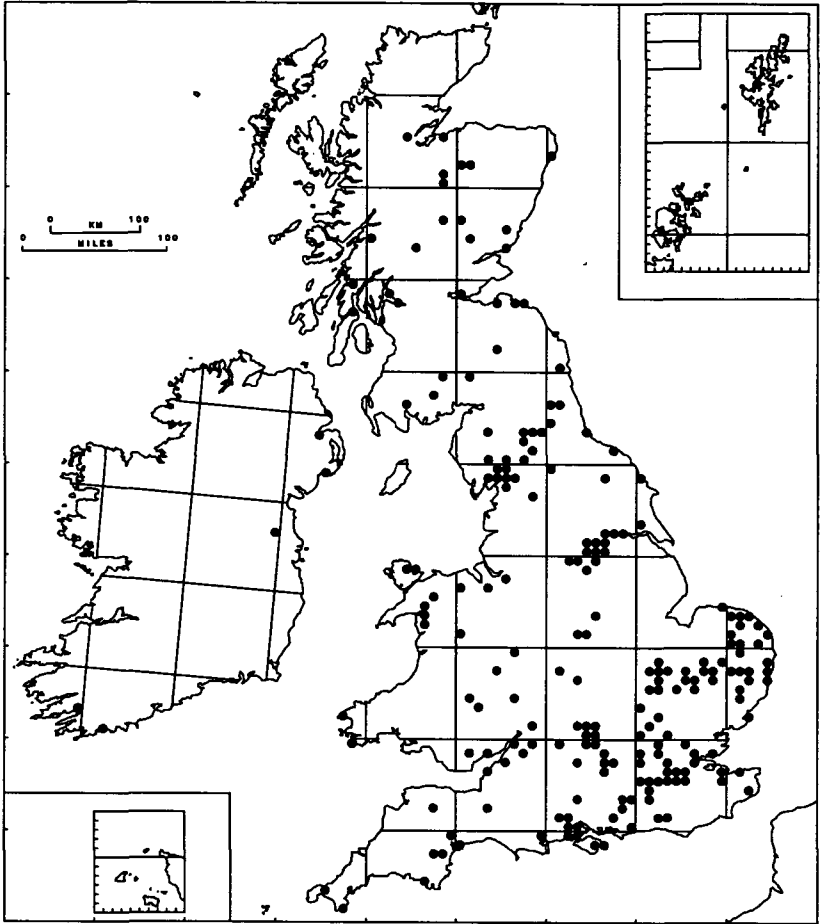


Map 26 *Sepsis punctum* (Fabricius).
 A common and widespread species, often in pastures; March to October. Larvae in cow dung, but also in pig, human and small mammal dung. Common throughout Europe, North Africa, Atlantic islands, eastwards to Japan; possibly in North America (Alaska to Quebec to Mexico), but the conspecificity of Palaearctic and Nearctic populations still requires confirmation.



Map 27 *Sepsis thoracica* (Robineau-Desvoidy).

An uncommon species, restricted to southern England and usually close to the coast. Adults occur on fresh cow dung and also on horse dung, and are markedly heliophilic; July to October. Larvae in cow dung. A tropical and subtropical species, common throughout Europe and extending northwards only to Denmark, southern Sweden and Moscow; North Africa, Atlantic islands, eastwards to Japan; Oriental and Afrotropical regions, and Hawaii.



Map 28 *Sepsis violacea* Meigen.

A common and widespread species, often associated with poultry; otherwise predominantly a meadow species; February to October. Larvae in poultry dung, also cow, horse and pig dung. Common throughout Europe, North Africa, eastwards to Japan.

