



Biogeography, Phenology & Status of Micropezids & Tanypezids in the UK (Diptera, Neriioidea & Diopsoidea)

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Keywords

NERIOIDEA; Pseudopomyzidae; Micropezidae; Micropezids; DIOPSOIDEA; Diopsidae; Tanypezidae; Strongylophthalmyiidae; Megamerinidae; Psilidae; Tanypezids; UK; Atlas; distribution maps; phenology; IUCN status

Summary

The Micropezid & Tanypezid Recording Scheme provides assistance with identification and recording via keys, an online research site, workshop, reports and online verification. UK records have increased as the author has collected and collated species occurrences from contributors. The 4,083 species occurrences published to NBN Atlas in April 2017 rose to 5,386 in September 2021. Many more are published on the NBN Atlas through other means.



Neria commutata Male (lateral aspect) from specimen (Illustration D. Sumner)

Data

The data is derived from NBN Atlas data (Open Data download) collated with additional material submitted to that GBG (in DwC compatible format) by the author together with a download from iRecord (following verification by the author completed on 9th September) and a download from iNaturalist at the same time. Arrangements for the latter to be uploaded to NBN Atlas are yet to be put in place. After validating this dataset (e.g. removing records placed in the sea) the total amounted to 9039 occurrences.

Sample size

Franklin (2009) proposes that 50 occurrences may be sufficient to draw meaningful conclusions from species distribution models. The study by Wisz et al. (2008) indicate poor levels of conclusions when occurrences are as low as 10. The sample size for this scheme is relatively low (Ball et al., 2021) and any statistic may similarly be unreliable on those taxa with only few occurrences (e.g. *Chamaepsila*) though more numerous taxa may result in informative species distribution modelling, for example BIOCLIM on *Micropeza lateralis* (Sumner, 2018e.)

UK Conservation status

The following species were listed in Falk, Ismay, & Chandler (2016) “A Provisional Assessment of the Status of Acalyptatrae flies in the UK”

<i>Pseudopomyza atrimana</i> (Meigen, 1830)	Scarlet-eyed Compost
<i>Cnodacophora stylifera</i> (Loew, 1870)	Montane Rudderred Strider
<i>Micropeza lateralis</i> Meigen 1826	Broom Stiliter
<i>Rainieria calceata</i> (Fallén, 1820)	Beech Échasseur
<i>Tanypeza longimana</i> Fallén, 1820	European Harlequin
<i>Strongylophthalmyia ustulata</i> (Zetterstedt, 1847)	Western Juggler
<i>Megamerina dolium</i> (Fabricius, 1805)	Bearded Fool
<i>Chyliza annulipes</i> Macquart, 1835	Conifer Tailcoat
<i>Chyliza extenuata</i> (Rossi, 1790)	Broomrape Tailcoat
<i>Chyliza nova</i> Collin, 1944	Sap Tailcoat
<i>Chyliza vittata</i> Meigen, 1826	Orchid Tailcoat
<i>Imantimyia nigrifrons</i> (Macquart, 1835)	Small Reed
<i>Chamaepsila clunalis</i> (Collin, 1944)	Peterkin’s Columbina
<i>Chamaepsila luteola</i> (Collin, 1944)	Armstrong’s Columbina

“Provisional” that is, upon the acquisition of sufficient species occurrence data to permit calculations as specified by the IUCN (2012.) Falk et al. write of this stating “*We have added the prefix p to indicate that this is very much a provisional assessment based on data which would be insufficient for a formal IUCN status review*”. We now have that data and are able to reassess the statuses more precisely, according to their proposed reassessment date of 2022 (p.1.)

Status

The text provided in Falk et al. remains unaltered. This paper does not seek to amend that part of the work but rather to augment it with more detail (principally in the form of distribution maps) and to revise status assessments based upon the above data. Thus removing the “p” prefix.

Interpreting the IUCN Red Data book

Maes et al. (2015) summarise the interpretation of the IUCN categories using the following criteria:

- Population size reduction
- Geographic range size
- Small population size & decline
- Very small population or restricted distribution
- Quantitative analysis of extinction risk

In view of the nature of the data, opportunistic data collected by a small recording

scheme (see Ball et al., 2021), the range of analyses are limited; only criteria A & B are feasible. Categories C-E would have required proactive studies on populations, methods not normally carried out by small recording schemes. Low numbers of records (~9k) also preclude corrections for recorder effort (Hill, 2012) which used datasets of 2M & 12M.

The IUCN instructions require that accounts accompanying status assessments provide documentation of rationales used. As follows:

A Calculable from 10km square changes (AOO change)

The IUCN documentation provides figures for changes over a 10 year period. These are shown on the maps and are readily calculable in GIS. It does not however provide a figure for the “near threatened” and “least concern” categories. These were estimated as follows.

The “least concern” category is set at 30%. The Carrot root fly (*Chamaepsila rosae*) is an agricultural pest which could not conceivably find its way into any kind of threatened category. It is collected by all dipterists by general sweeping and is invariably checked by them all whilst checking for other *Chamaepsila* spp. Recording effort is thus very consistent (until the time comes when they discard without recording.) This species shows a 24% decline between this centuries two decades.

The “near threatened” figure was set empirically at 40% thus any species showing a decline between 30% & 40% fall into this status category.

These last two categories of course have no relevance to formal conservation status and may be considered as categories of interest purely to Recording Scheme contributors. They will be dependent upon the volume of species occurrences available for analysis and recording effort so each scheme should devise their own (with rationale.)

B Calculable from occupied 10km squares (AOO)

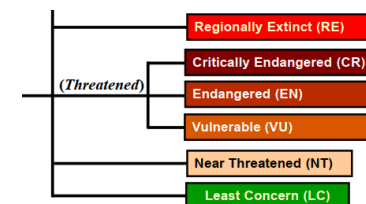
This criterion simply counts the number of currently occupied 10km squares.

Clearly 0 is regionally extinct and 1 is critically endangered. The Falk 1991 status specified 10 x 10km squares as a limit (“notable”) and thus provides a useful figure for “near threatened”. Interpolating provides the figures for “endangered” & “vulnerable”

The examples provided by IUCN are inappropriate, clearly 5,000 km² for endangered and 20,000 km² for vulnerable are unreasonable in the context of this region and the levels of recording effort.

Sample sizes are relatively small - which affects the significance of this figure - the AOO figure however is an indication of a measure of the sample size.

To arrive at a formal IUCN category these outcomes are taken along with other information and expert debate, conclusions drawn and results submitted for publication through official organizations.



This analysis presents results in the format A/B (AOO change/AOO) according to the above methodology (IUCN, 2019).

Revised status. Sumner 2021

The analysis produced the following:

	Falk et al. 2016	Sumner, 2021
<i>Pseudopomyza atrimana</i>	Data deficient	-/Vulnerable
<i>Cnodacophora stylifera</i>	pVulnerable	Endangered/Endangered
<i>Neria femoralis</i>		-/Endangered
<i>Micropeza lateralis</i>	pNationally scarce	-/-
<i>Rainieria calceata</i>	pEndangered	-/Vulnerable
<i>Tanypeza longimana</i>	pVulnerable	-/Vulnerable
<i>Strongylophthalmyia ustulata</i>	pEndangered	-/Critically endangered
<i>Megamerina dolium</i>	pNationally scarce	-/-
<i>Chyliza annulipes</i>	pNationally scarce	-/Vulnerable
<i>Chyliza extenuata</i>	pVulnerable	-/Vulnerable
<i>Chyliza nova</i>	pNationally scarce	Endangered/Endangered
<i>Chyliza vittata</i>	pNationally scarce	Vulnerable/Vulnerable
<i>Imantimyia nigrifrons</i>	Data deficient	-/Critically endangered
<i>Psilosoma lefebvrei</i>		Vulnerable/Vulnerable
<i>Chamaepsila atra</i>		-/Vulnerable
<i>Chamaepsila bicolor</i>		-/Endangered
<i>Chamaepsila buccata</i>		-/Vulnerable
<i>Chamaepsila clunalis</i>	pNationally scarce	-/Vulnerable
<i>Chamaepsila humeralis</i>		-/Endangered
<i>Chamaepsila limbatella</i>		-/Endangered
<i>Chamaepsila luteola</i>	pNear threatened	-/Regionally extinct
<i>Chamaepsila nigra</i>		Near threatened/Vulnerable
<i>Chamaepsila obscuritarsis</i>		Endangered/Vulnerable
<i>Chamaepsila pectoralis</i>		-/Critically endangered
<i>Chamaepsila persimilis</i>		Near threatened/Vulnerable

The analysis adds *Neria femoralis*, little known at the time of the 2016 review and *Chamaepsila pectoralis*, new to the UK list in 2021.

Several Psilidae, especially the *Chamaepsila* spp. are listed as they are recorded from a small number of sites. They are a difficult group and so may be overlooked, they maintain their number of sites across the decades (prefix “-”) however.

Delisted species include *Micropeza lateralis* due to extensive studies and *Megamerina dolium* which is nowadays not overlooked as much as it was and benefits from its being readily identified in the field and thus photographed more often.

Downgraded are *Rainieria calceata* now present in 9 x 10km squares and possibly in the process of expanding its range.

The Scottish specialties *Cnodacophora stylifera* and *Strongylophthalmyia ustulata* did not receive the attention in the 2011 to 2020 decade as they had in the previous decade.

One species, *Chamaepsila luteola*, has not been recorded this century and is thus considered Regionally extinct.

Chamaepsila unilineata was added to the UK list by Irwin (2016), it will be found amongst *C. pallida* specimens but UK recorders have yet to report this species.

Checklist of UK species

Nerioidea (Micropezids)

Pseudopomyzidae

Pseudopomyza atrimana (Meigen, 1830)

Micropezidae

CALOBATINAE

Calobata petronella (Linnaeus, 1761)

Cnodacophora sellata (Meigen, 1826)

Cnodacophora stylifera (Loew, 1870)

Neria cibaria (Linnaeus, 1761)

Neria commutata (Czerny, 1930)

Neria ephippium (Fabricius, 1794)

Neria femoralis (Meigen, 1826)

MICROPEZINAE

Micropeza corrigiolata (Linnaeus, 1767)

Micropeza lateralis Meigen 1826

TAENIAPTERINAE

Rainieria calceata (Fallén, 1820)

Diopsoidea (Tanypezids)

Tanypezidae

Tanypeza longimana Fallén, 1820

Strongylophthalmyiidae

Strongylophthalmyia ustulata (Zetterstedt, 1847)

Megamerinidae

Megamerina dolium (Fabricius, 1805)

Psilidae

CHYLIZINAE

Chyliza annulipes Macquart, 1835

Chyliza extenuata (Rossi, 1790)

Chyliza leptogaster (Panzer, 1798)

Chyliza nova Collin, 1944

Chyliza vittata Meigen, 1826

PSILINAE

LOXOCERINI

Loxocera aristata (Panzer, 1801)

Loxocera maculata Rondani, 1876

Imantimyia albiseta (Schränk, 1803)

Imantimyia fulviventris (Meigen, 1826)

Imantimyia nigrifrons (Macquart, 1835)

Imantimyia sylvatica (Meigen, 1826)

PSILINI

Psila fimetaria (Linnaeus, 1761)

Psila merdaria Collin, 1944

Psilosoma lefebvrei (Zetterstedt, 1835)

Chamaepsila atra (Meigen, 1826)

Chamaepsila bicolor (Meigen, 1826)

Chamaepsila buccata (Fallén, 1826)

Chamaepsila clunalis (Collin, 1944)

Chamaepsila humeralis (Zetterstedt, 1847)

Chamaepsila limbatella (Zetterstedt, 1847)

Chamaepsila luteola (Collin, 1944)

Chamaepsila nigra (Fallén, 1820)

Chamaepsila nigricornis (Meigen, 1826)

Chamaepsila obscuritarsis (Loew, 1856)

Chamaepsila pallida (Fallén, 1820)

Chamaepsila pectoralis (Meigen, 1826)

Chamaepsila persimilis (Wakerley, 1959)

Chamaepsila rosae (Fabricius, 1794)

Chamaepsila unilineata (Zetterstedt, 1847)

Stilt-legged

Scarlet-eyed Compost

STRIDERS

Brown-shouldered Strider

Dusty Rudder Strider

Montane Rudder Strider

Common Strider

Fingered Strider

Amber Strider

Bulbous Strider

STILTERS

Common Stilter

Broom Stilter

ÉCHASSEUR

Beech Échasseur

Stalk-eyed

European Harlequin

Western Juggler

Bearded Fool

Rust Flies

TAILCOAT FLIES

Conifer Tailcoat

Broomrape Tailcoat

Common Tailcoat

Sap Tailcoat

Orchid Tailcoat

REED FLIES

Black-faced Reed

Black Reed melanistic form of above

Yellow-faced Reed

Atlantic Reed

Small Reed

Yellow-shouldered Reed

Dusky Spectacle

Common Spectacle

Atlantic Pierrot

Katchit's Columbina

Roder's Columbina

Pugh's Columbina

Peterkin's Columbina

Claypole's Columbina

Sommer's Columbina

Armstrong's Columbina

Fleeman's Columbina

Verence's Columbina

Baldwin's Columbina

Pocket's Columbina

Foole's Columbina

Le Foi's Columbina

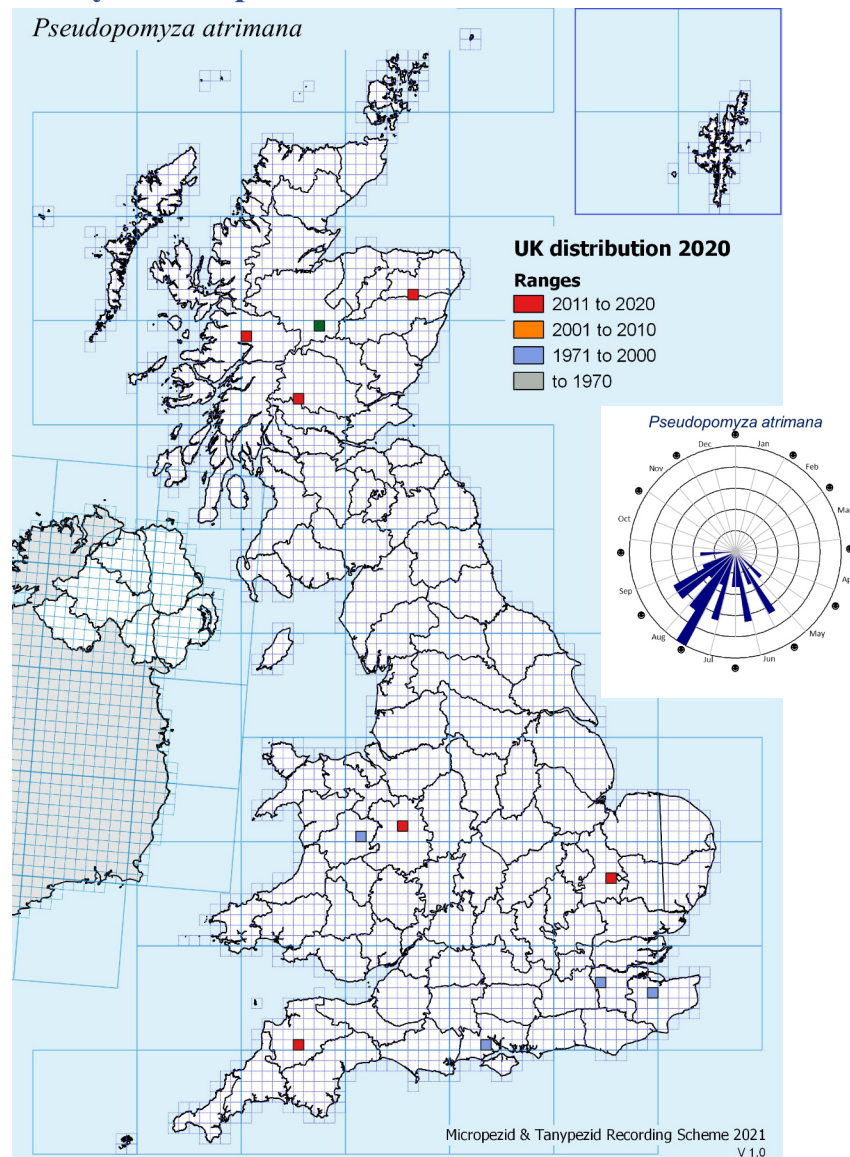
Carrot Rust

Dagonet's Columbina

Atlas & phenology

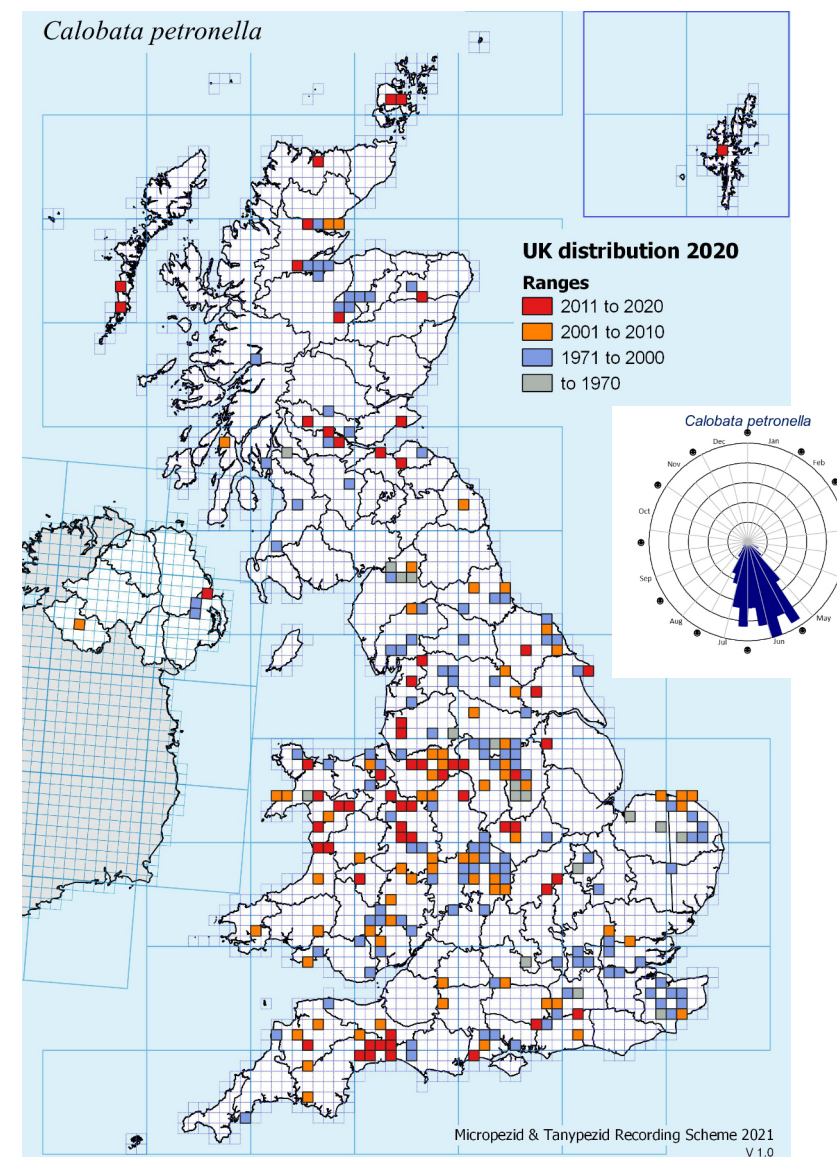
Pseudopomyza atrimana (Meigen, 1830)

Scarlet-eyed Compost

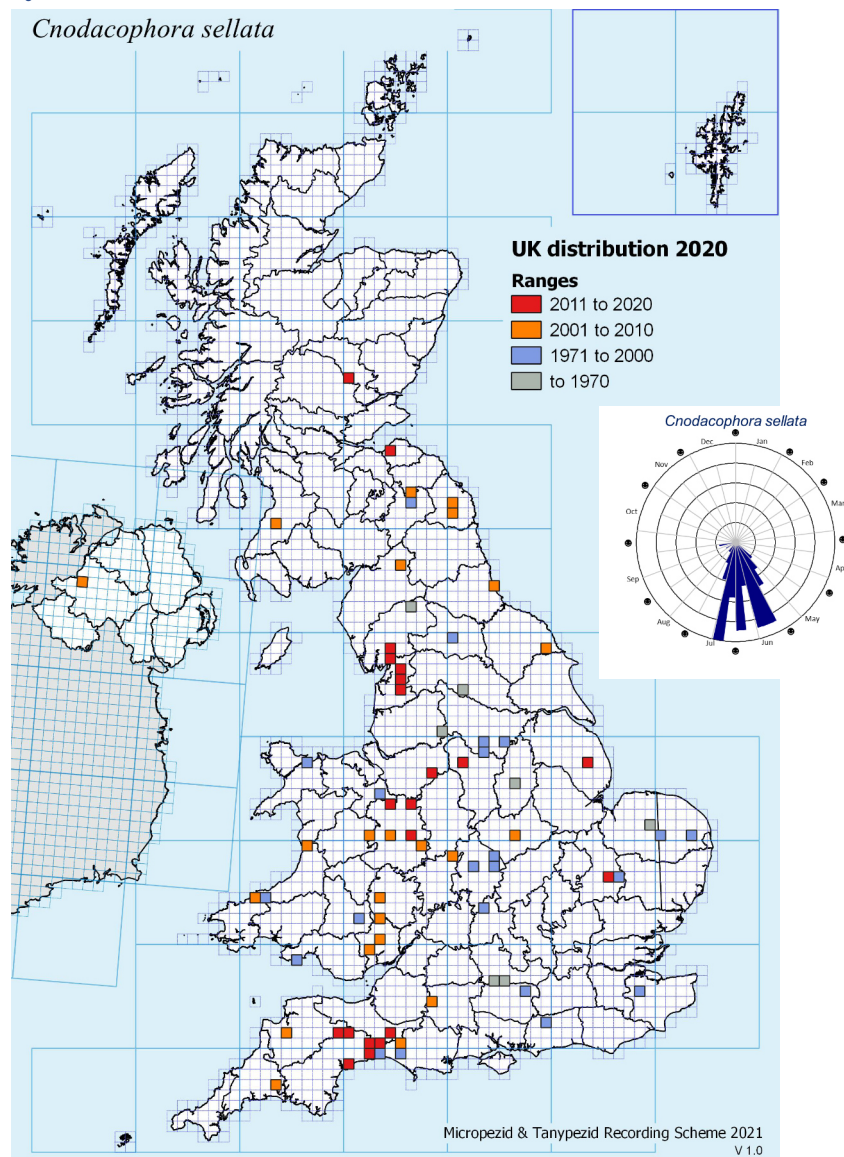


Calobata petronella (Linnaeus, 1761)

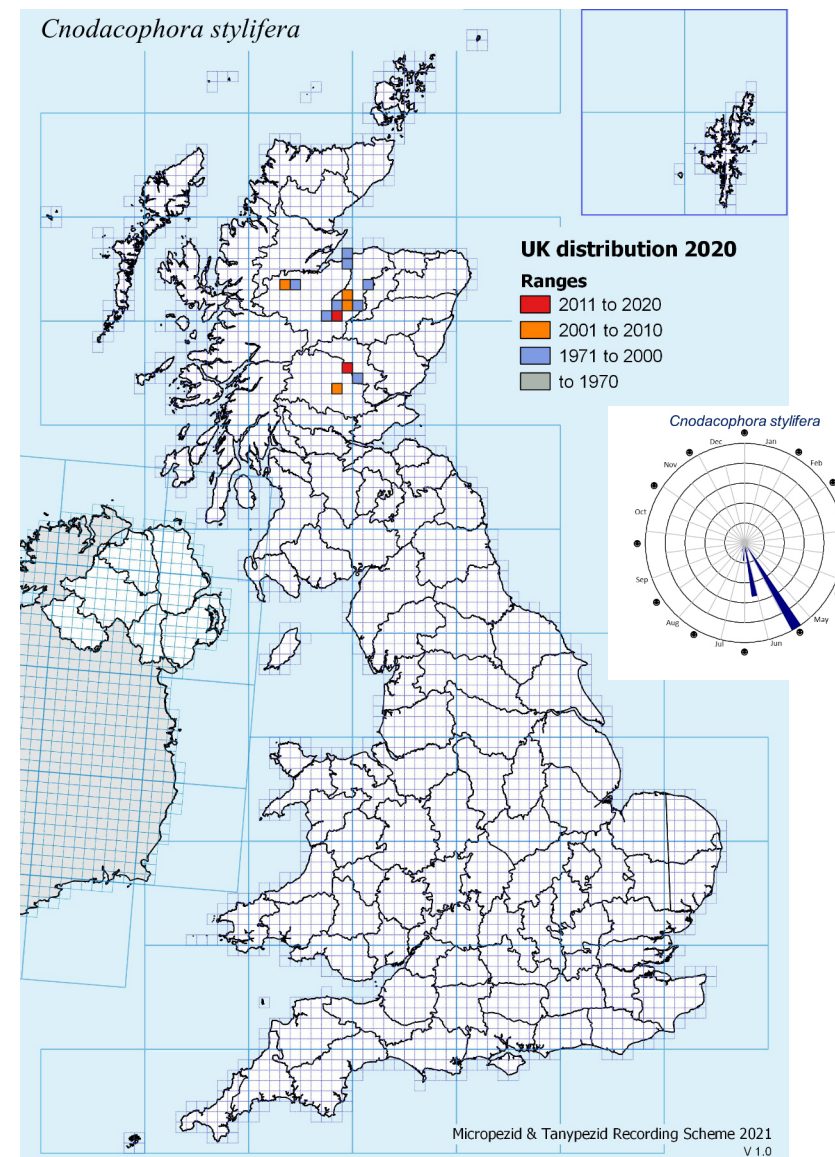
Brown-shouldered Strider



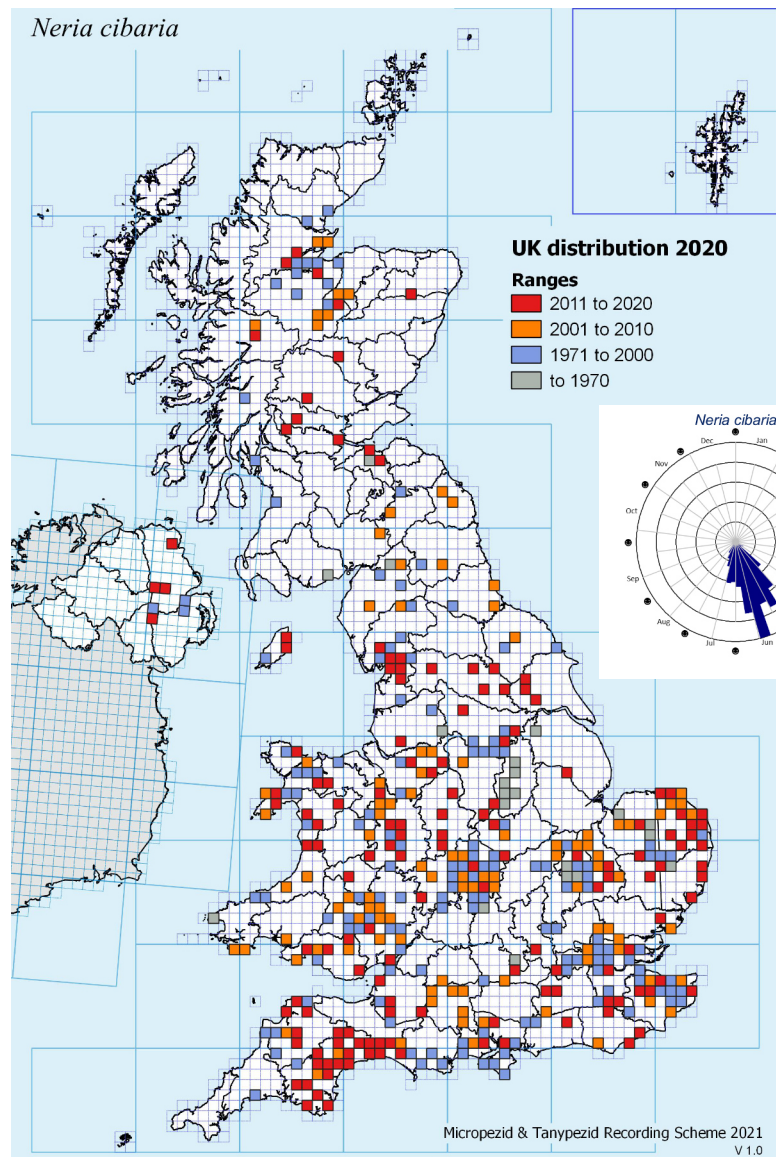
Cnodacophora sellata (Meigen, 1826) Dusty Ruddled Strider



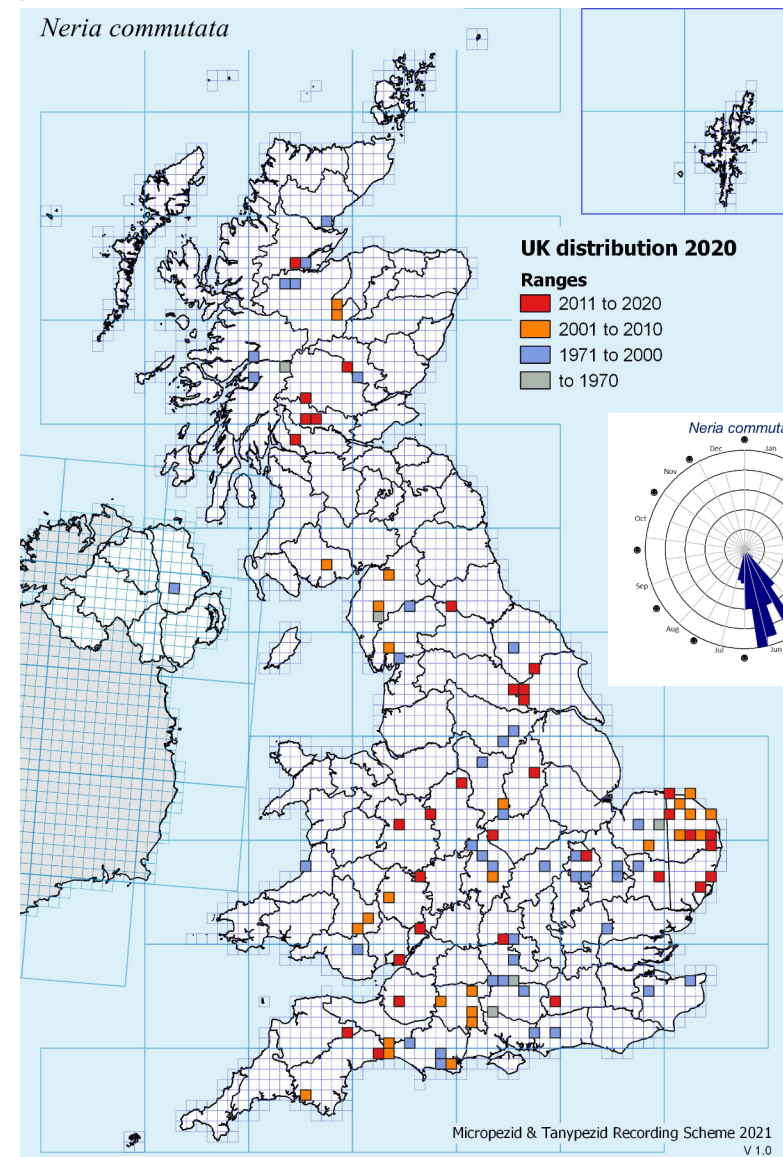
Cnodacophora stylifera (Loew, 1870) Montane Ruddled Strider



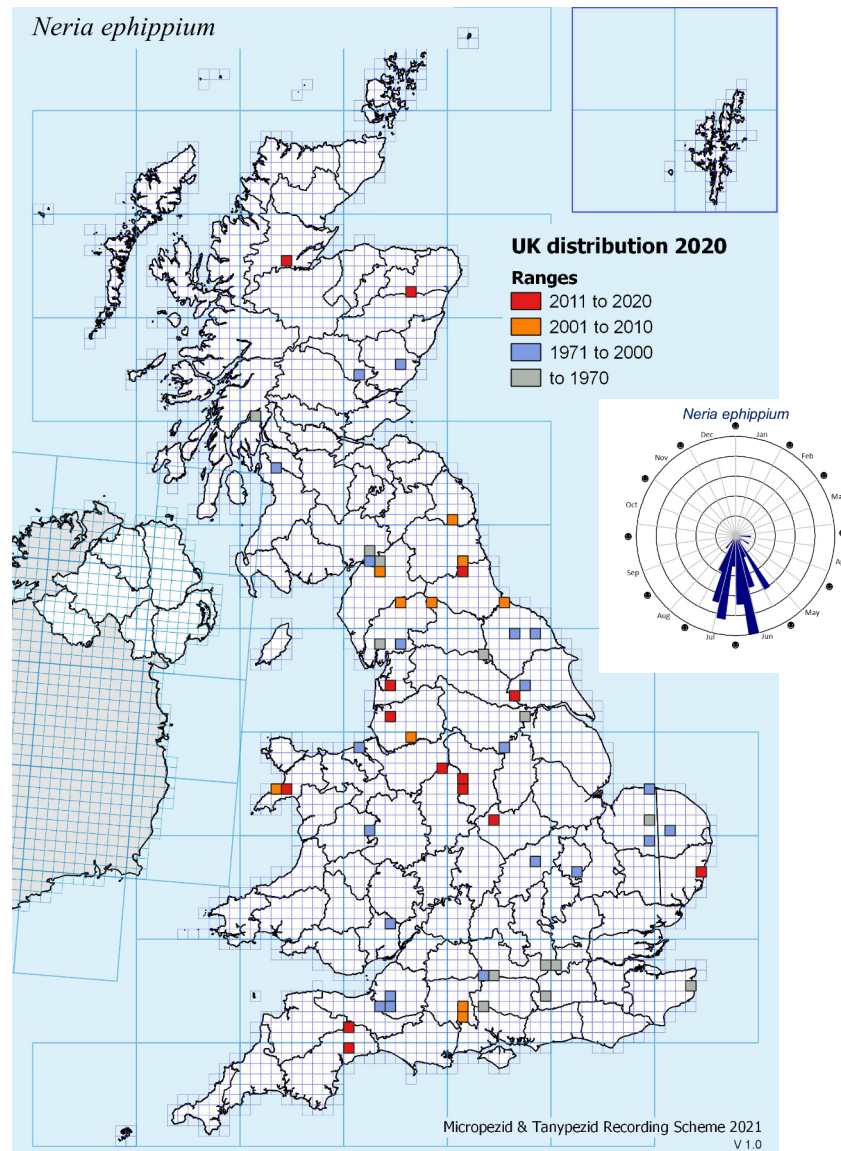
Neria cibaria (Linnaeus, 1761)
Common Strider



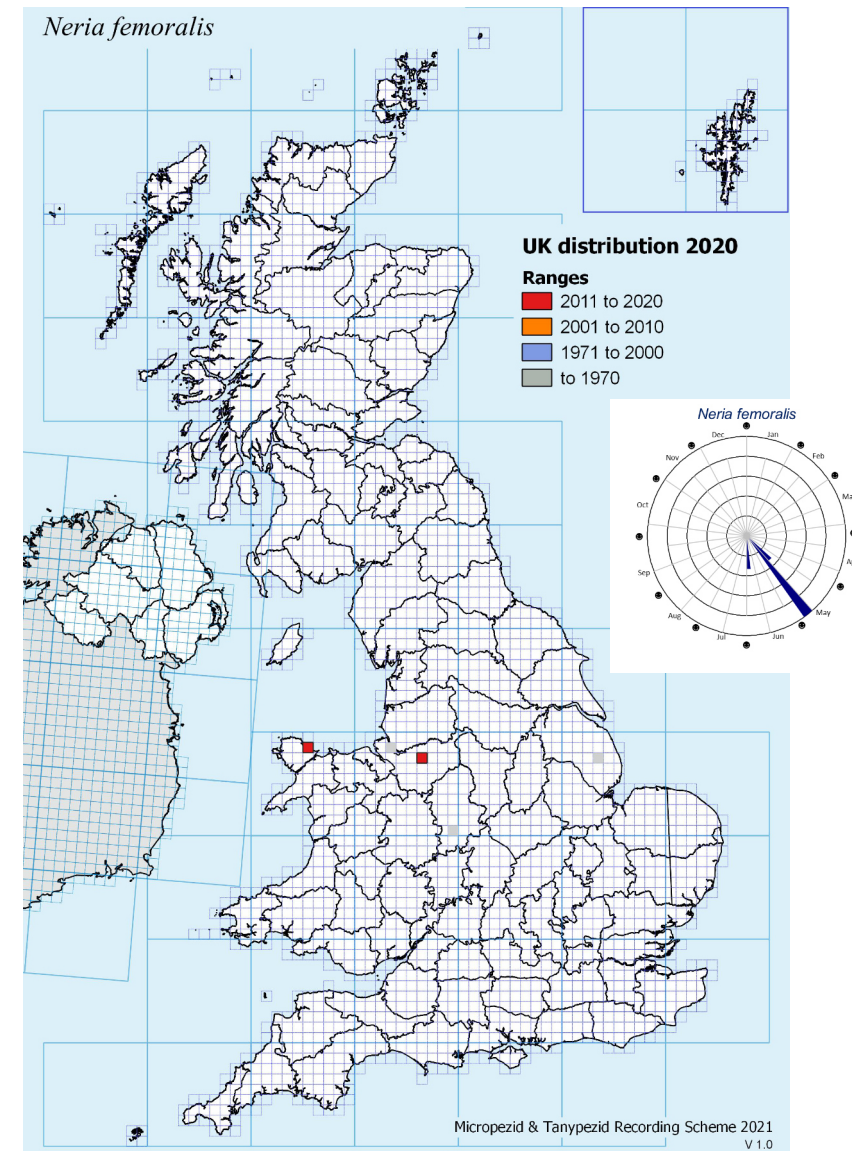
Neria commutata (Czerny, 1930)
Fingered Strider



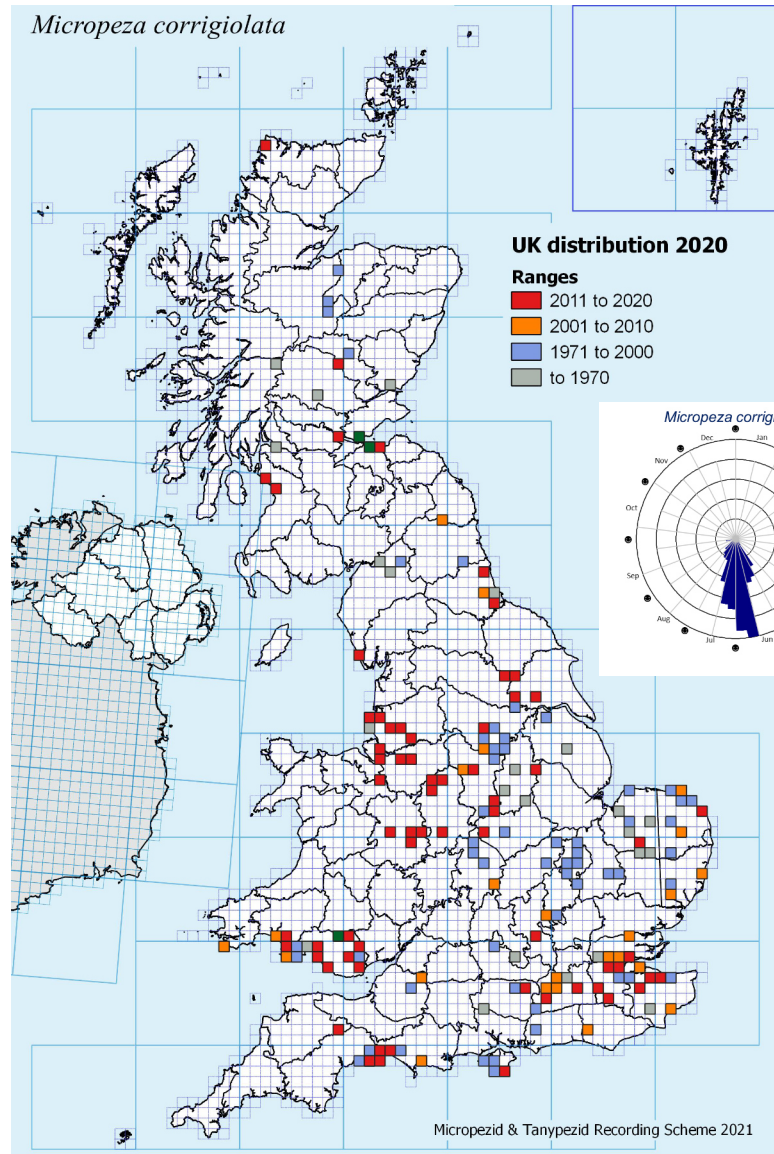
Neria ephippium (Fabricius, 1794)
Amber Strider



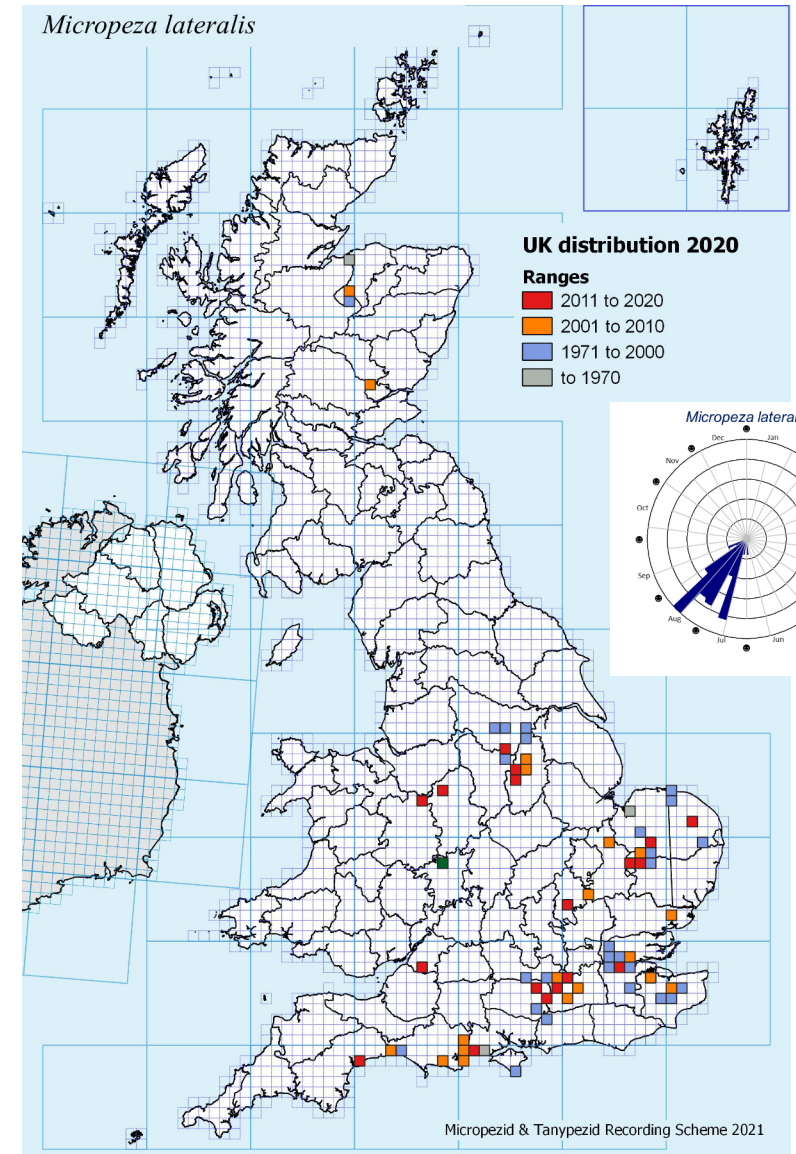
Neria femoralis (Meigen, 1826)
Bulbous Strider



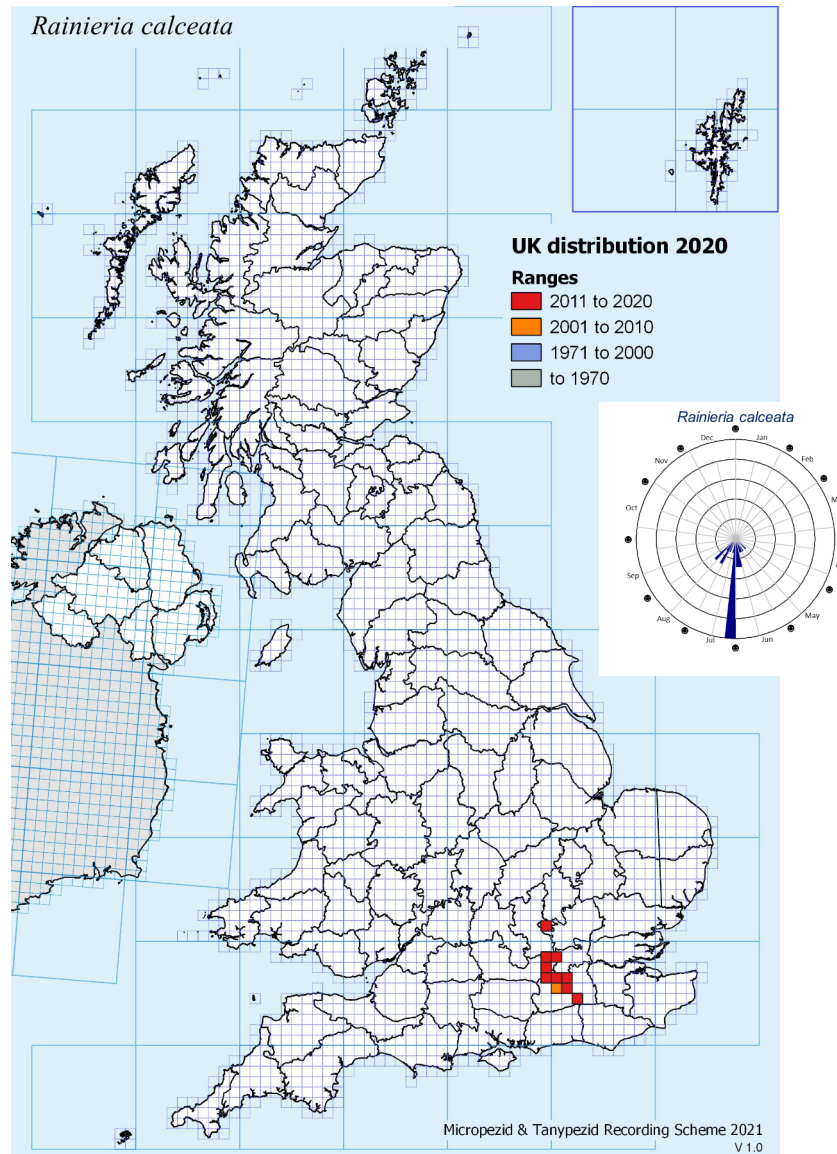
Micropeza corrigiolata (Linnaeus, 1767)
Common Stilter



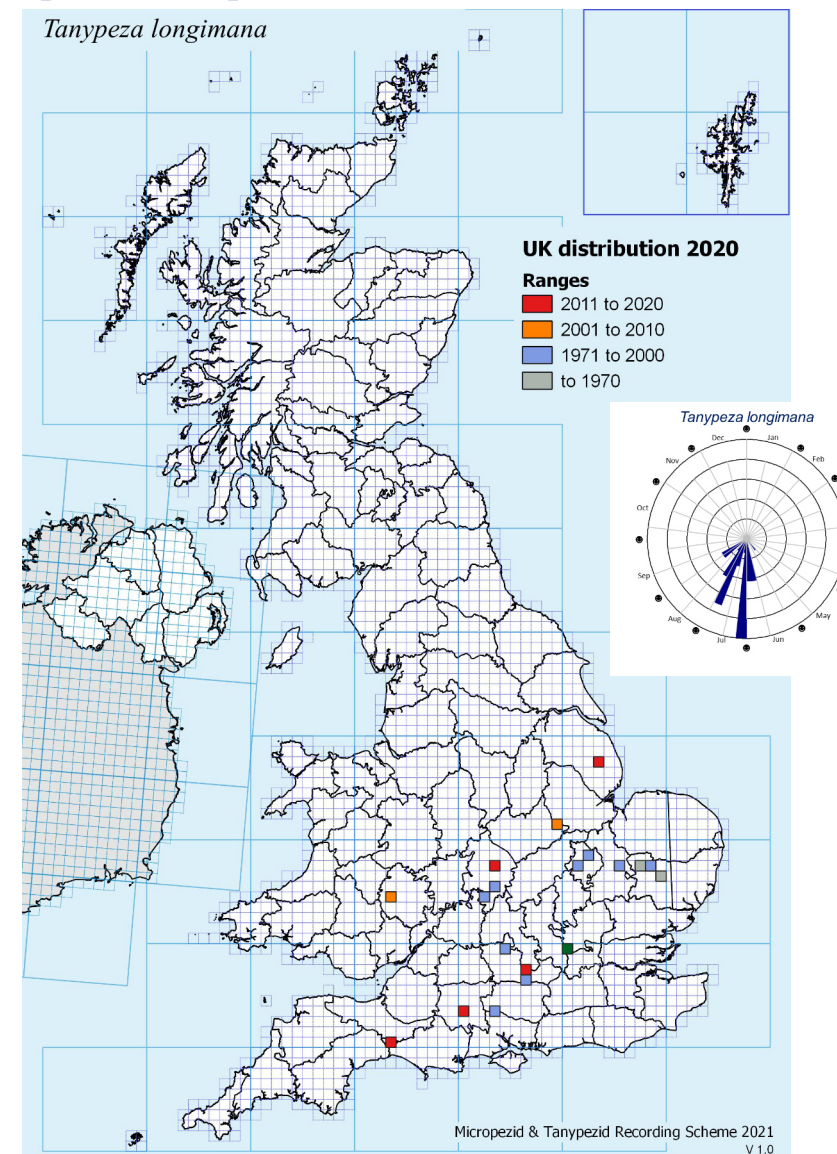
Micropeza lateralis Meigen 1826
Broom Stilter



Rainieria calceata (Fallén, 1820)
Beech Échasseur

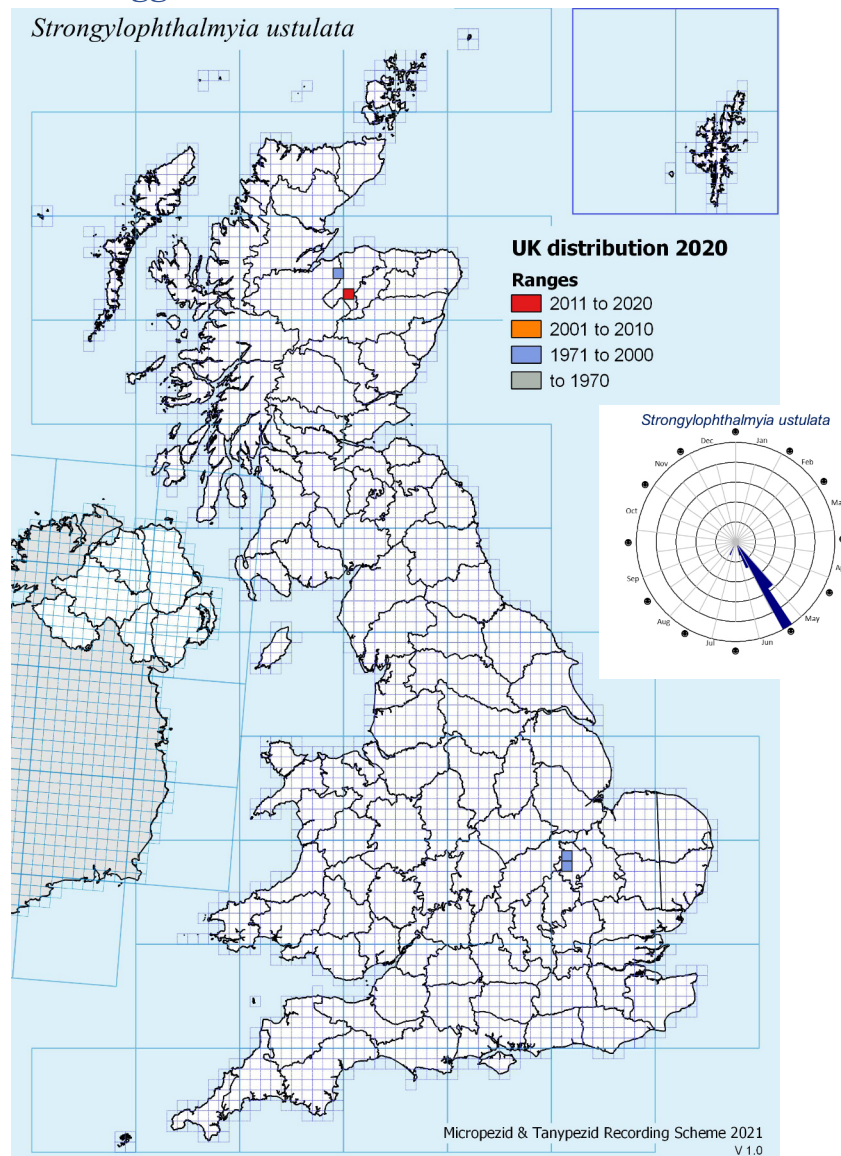


Tanypeza longimana Fallén, 1820
European Harlequin

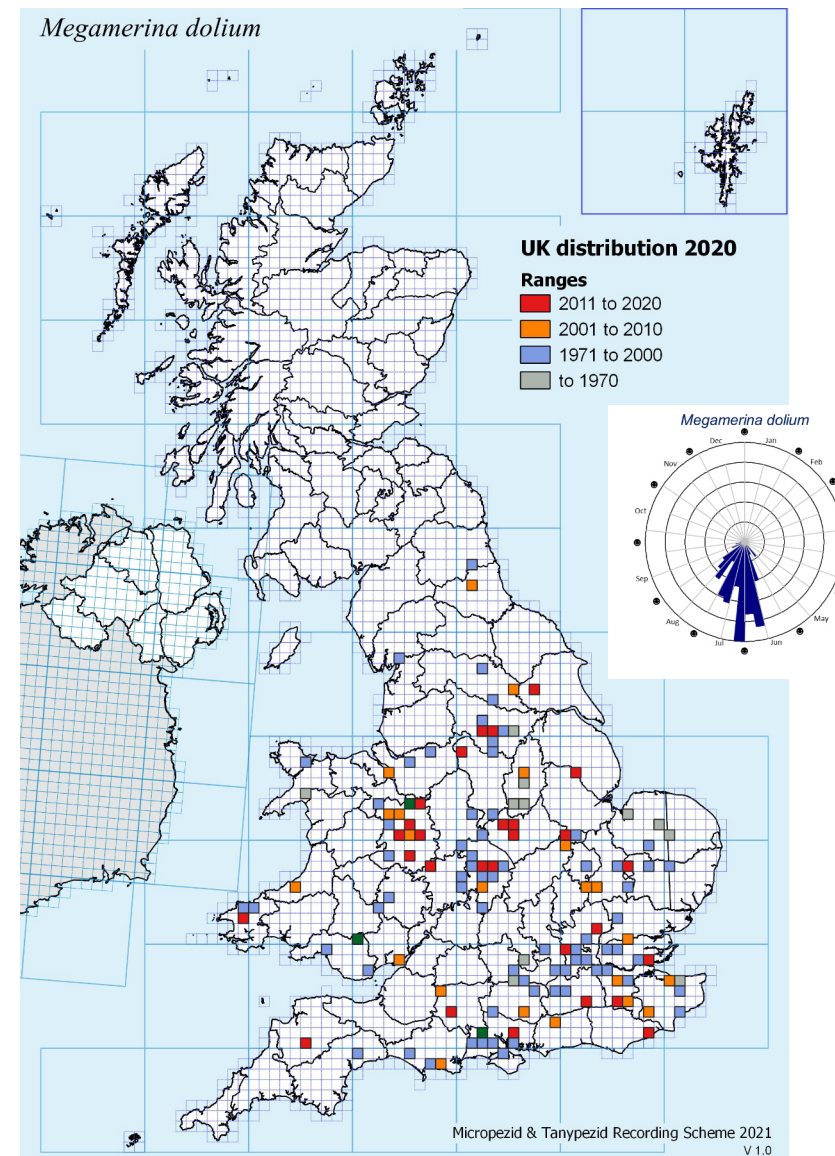


Green square is a 2021 record

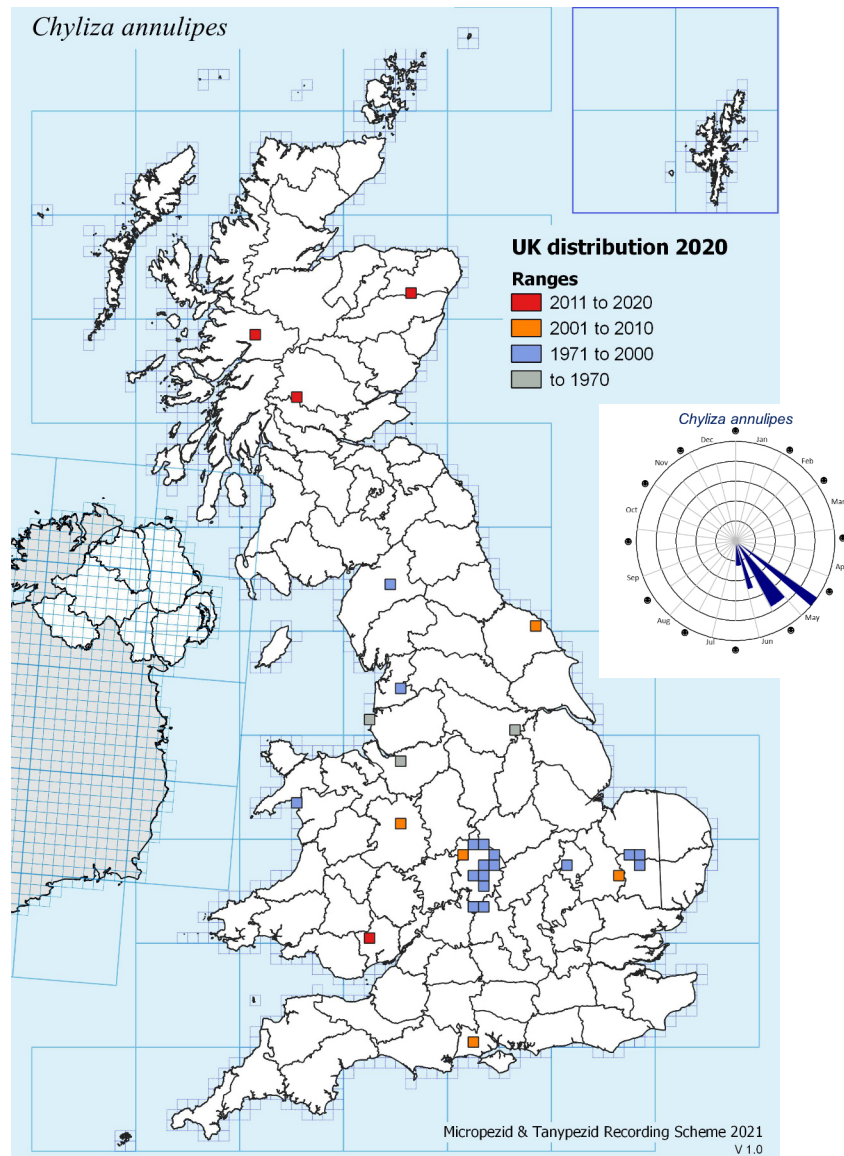
Strongylophthalmyia ustulata (Zetterstedt, 1847)
Western Juggler



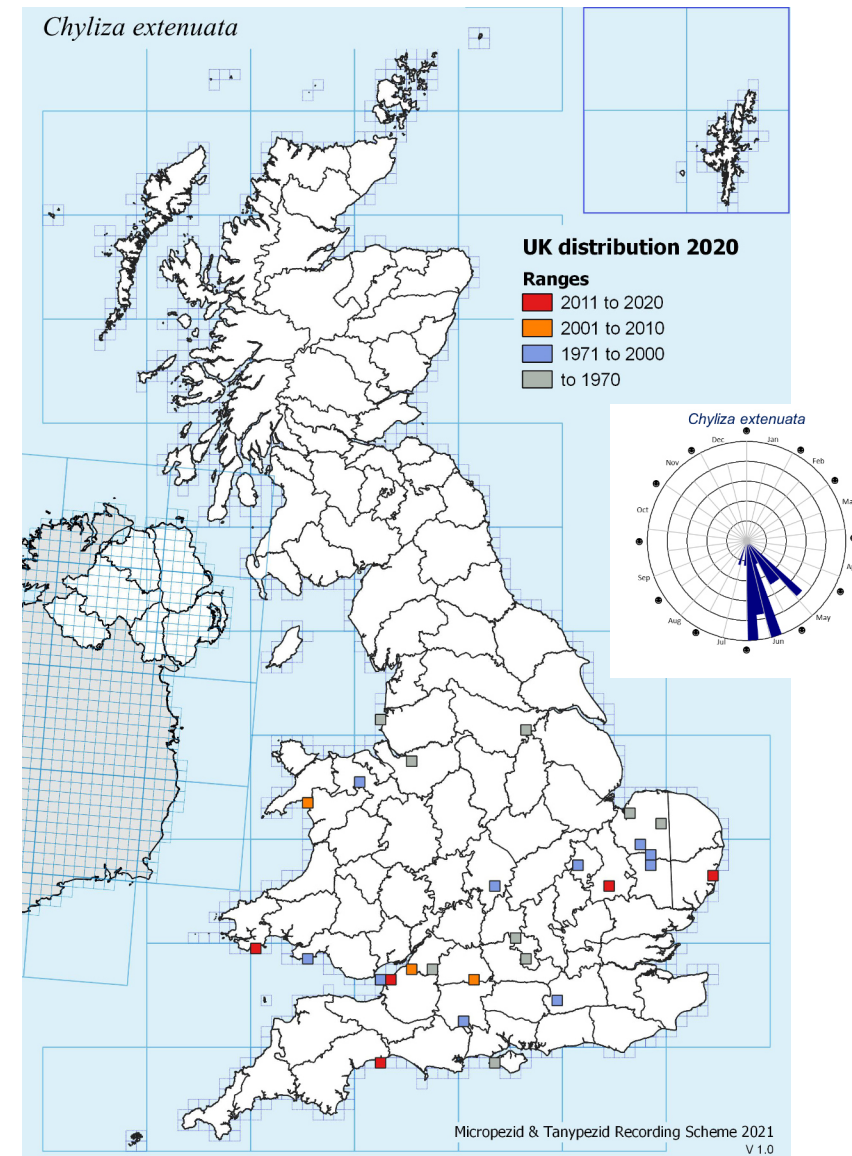
Megamerina dolium (Fabricius, 1805)
Bearded Fool



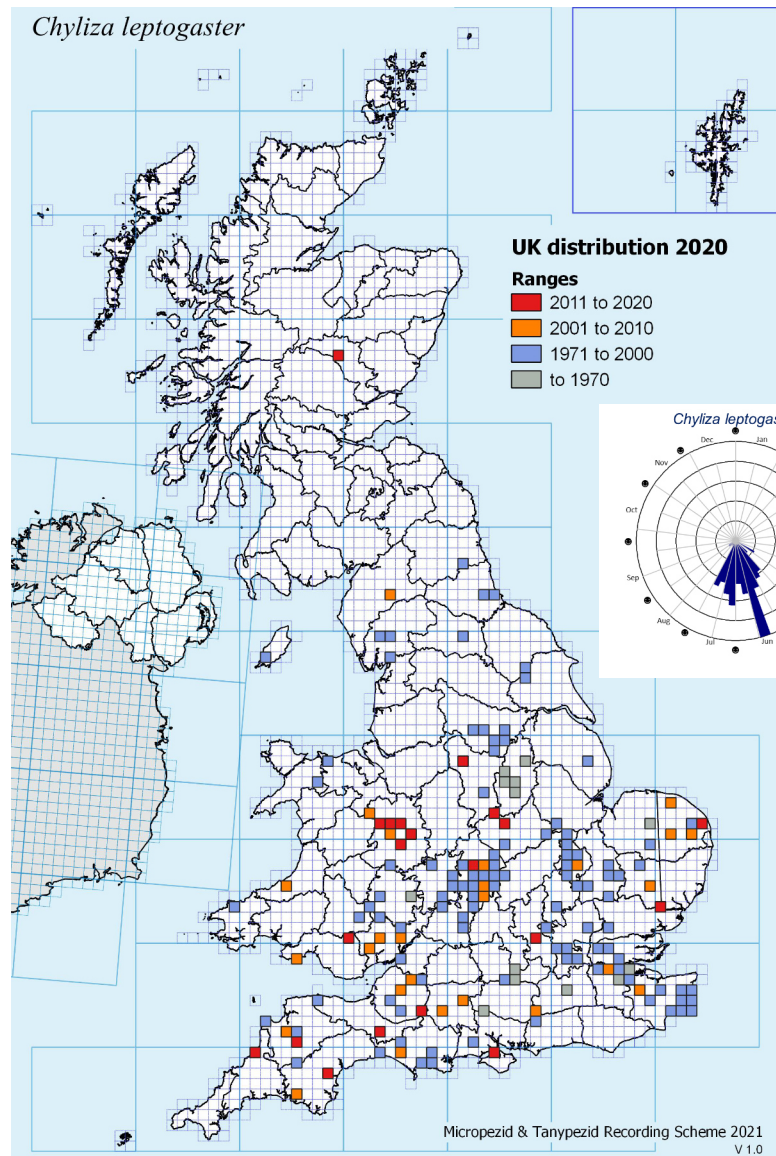
Chyliza annulipes Macquart, 1835
Conifer Tailcoat



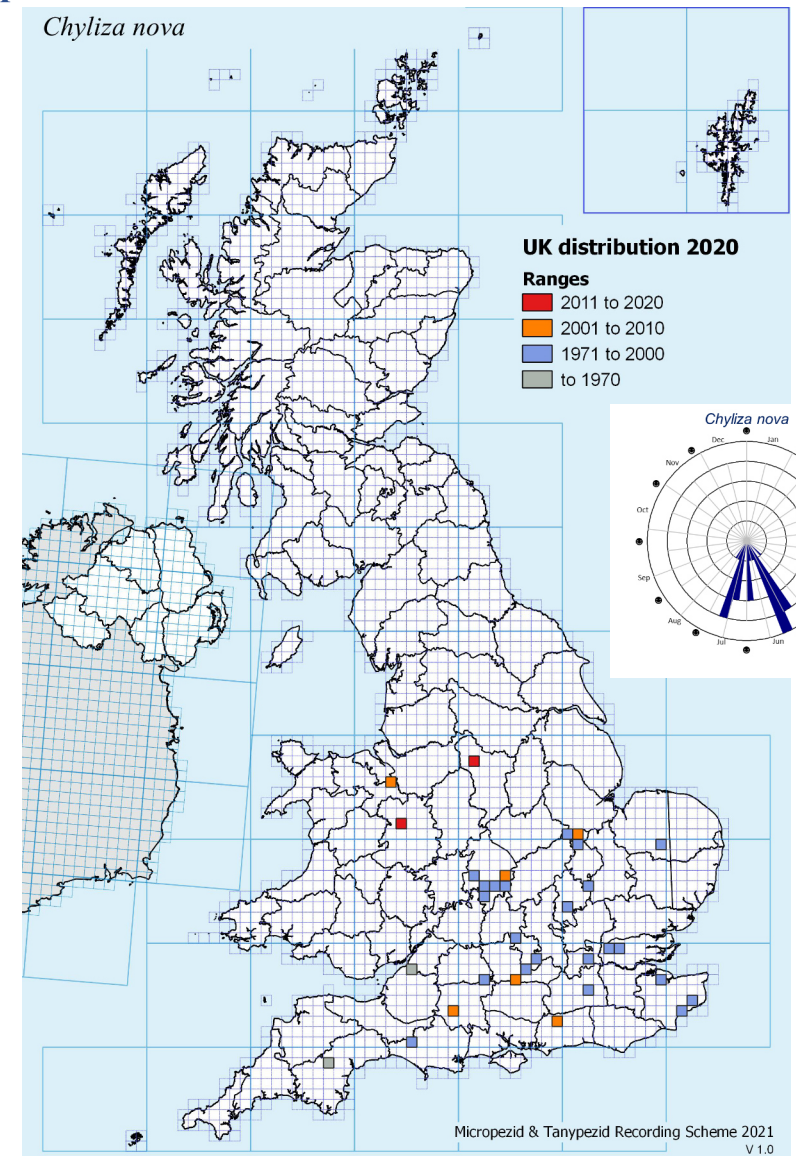
Chyliza extenuata (Rossi, 1790)
Broomrape Tailcoat



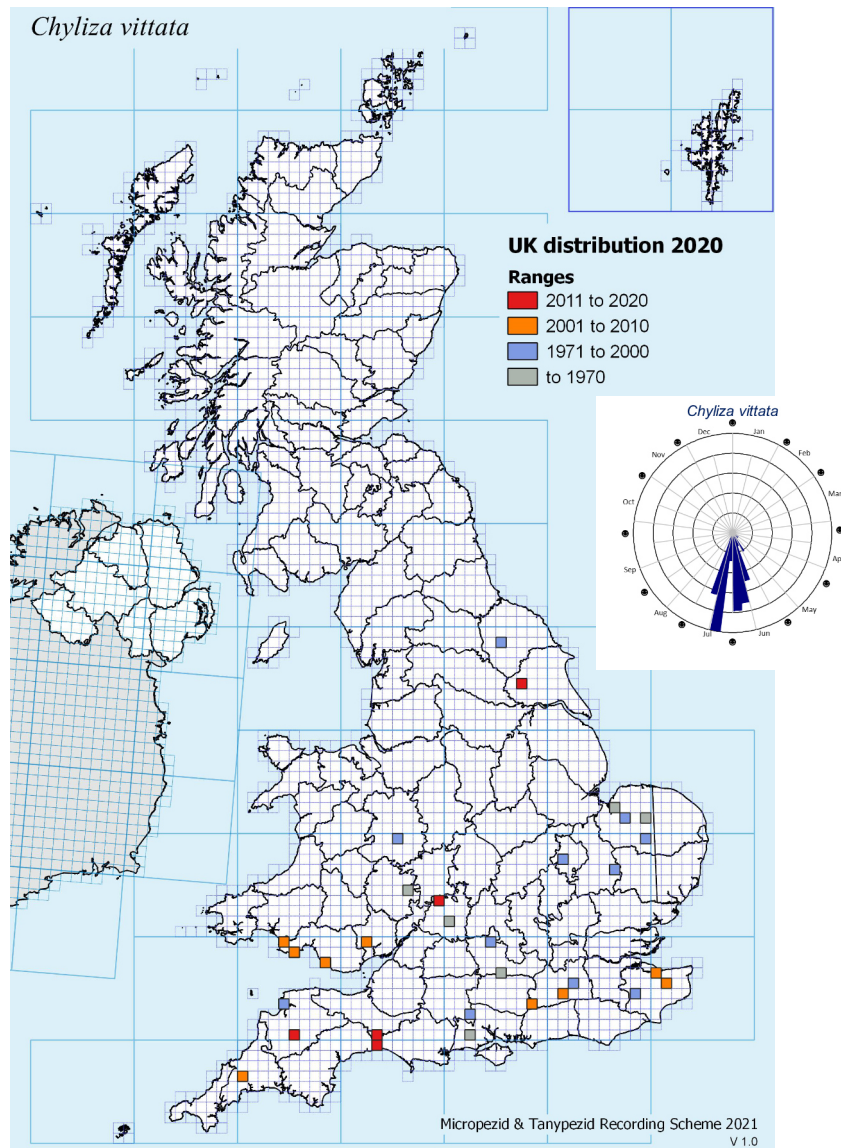
Chyliza leptogaster (Panzer, 1798) Common Tailcoat



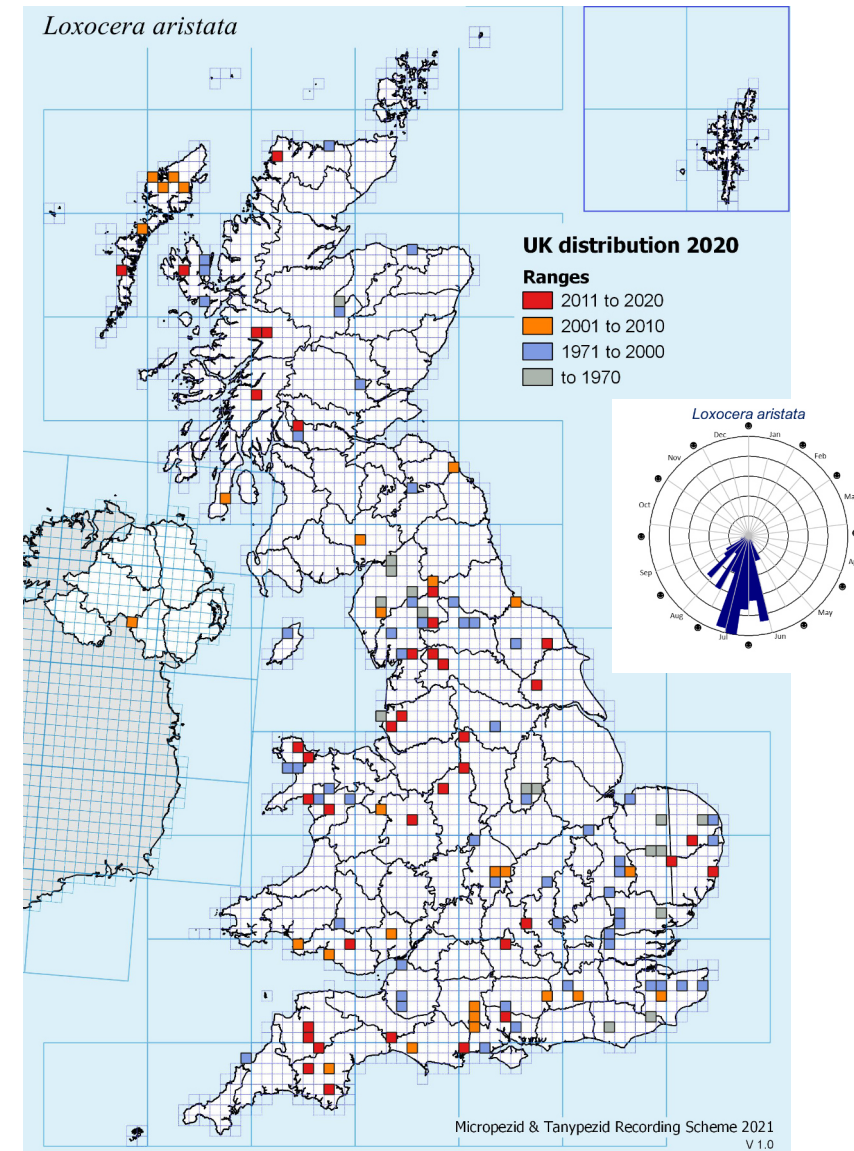
Chyliza nova Collin, 1944 Sap Tailcoat



Chyliza vittata Meigen, 1826
Orchid Tailcoat



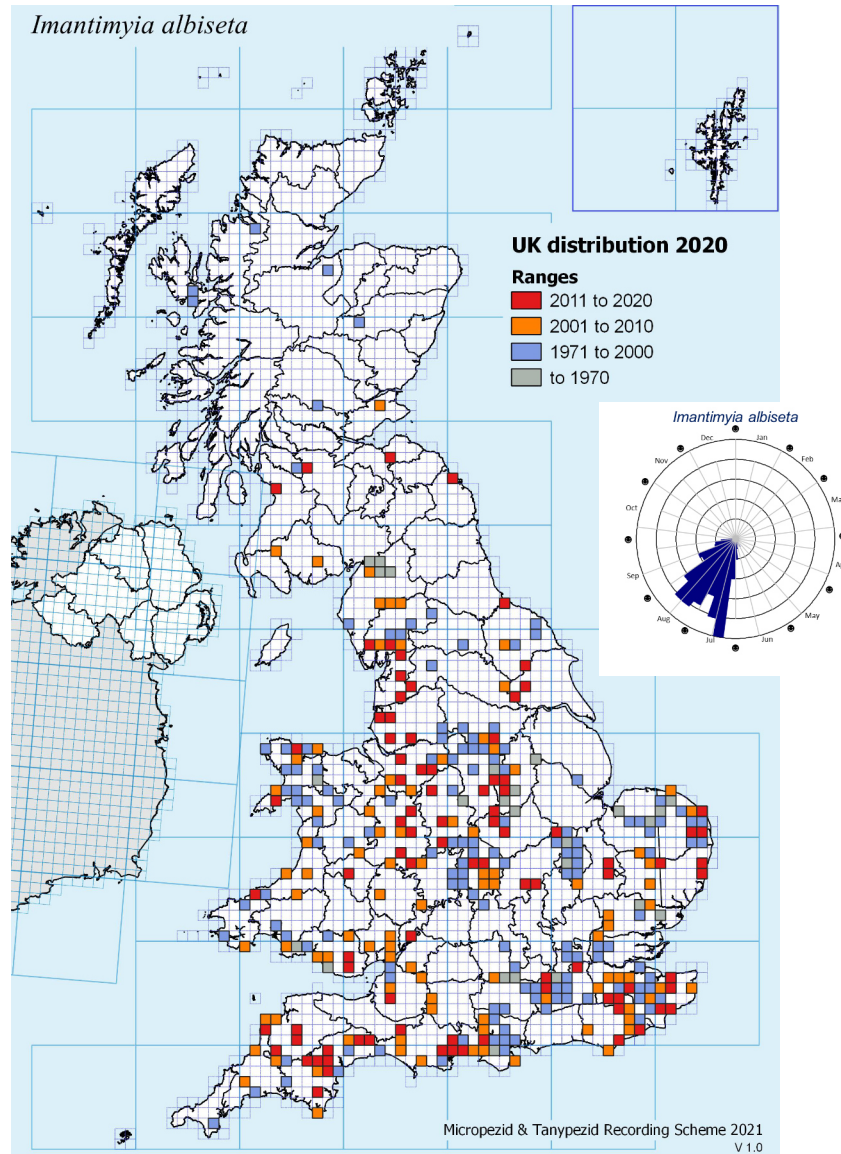
Loxocera aristata (Panzer, 1801)
Black-faced Reed



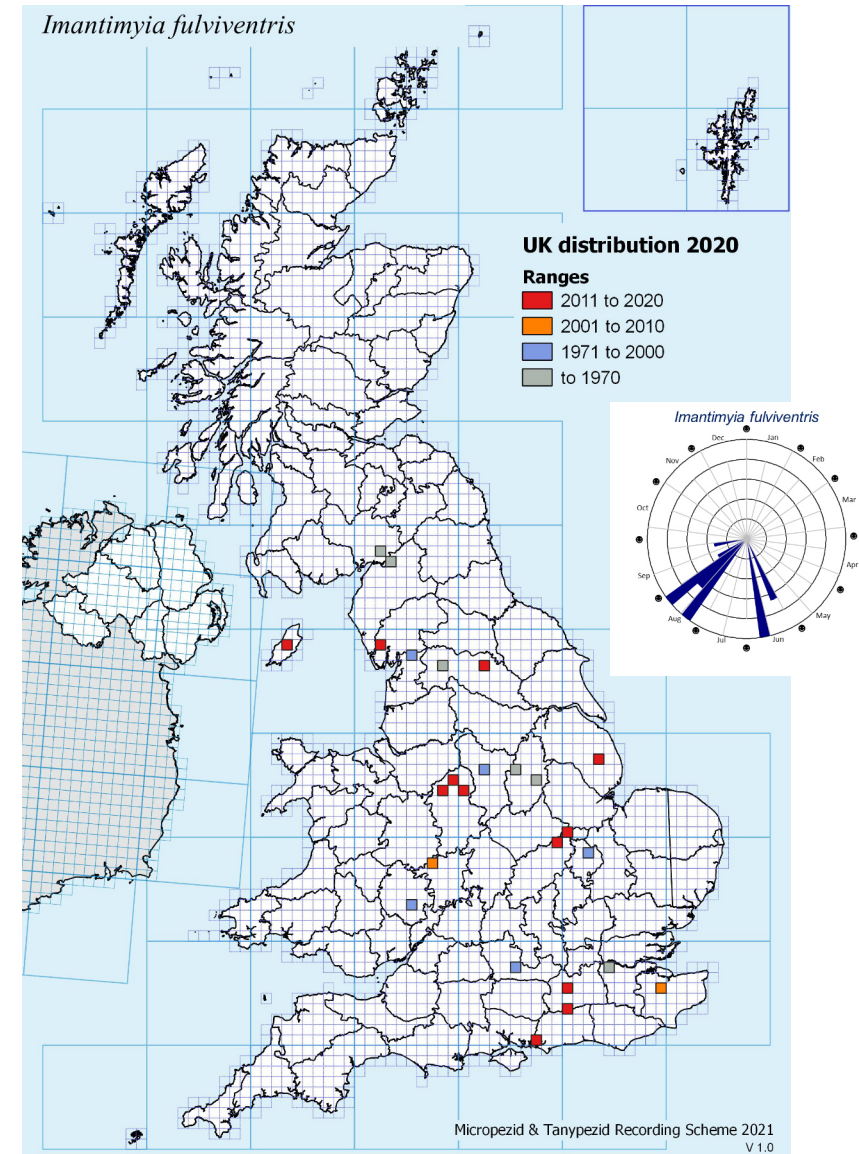
Loxocera maculata Rondani, 1876

Black Reed (melanic form of the above)

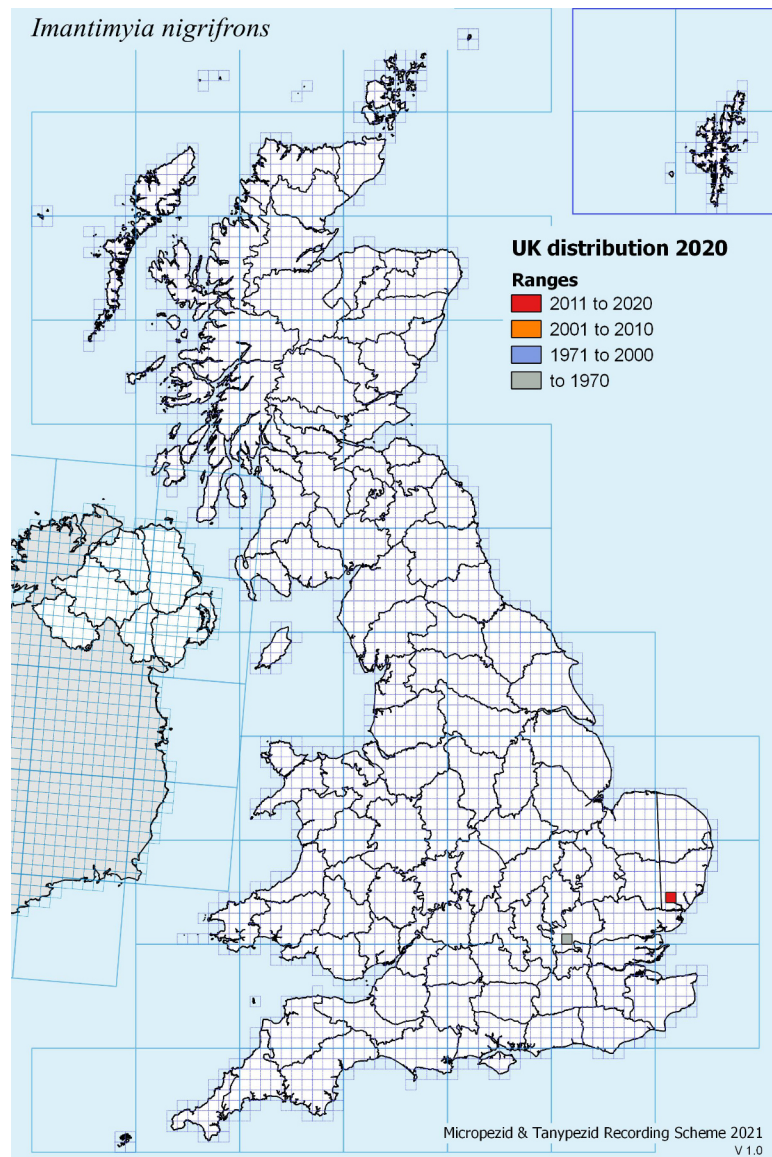
Imantimyia albiseta (Schrank, 1803)
Yellow-faced Reed



Imantimyia fulviventris (Meigen, 1826)
Atlantic Reed

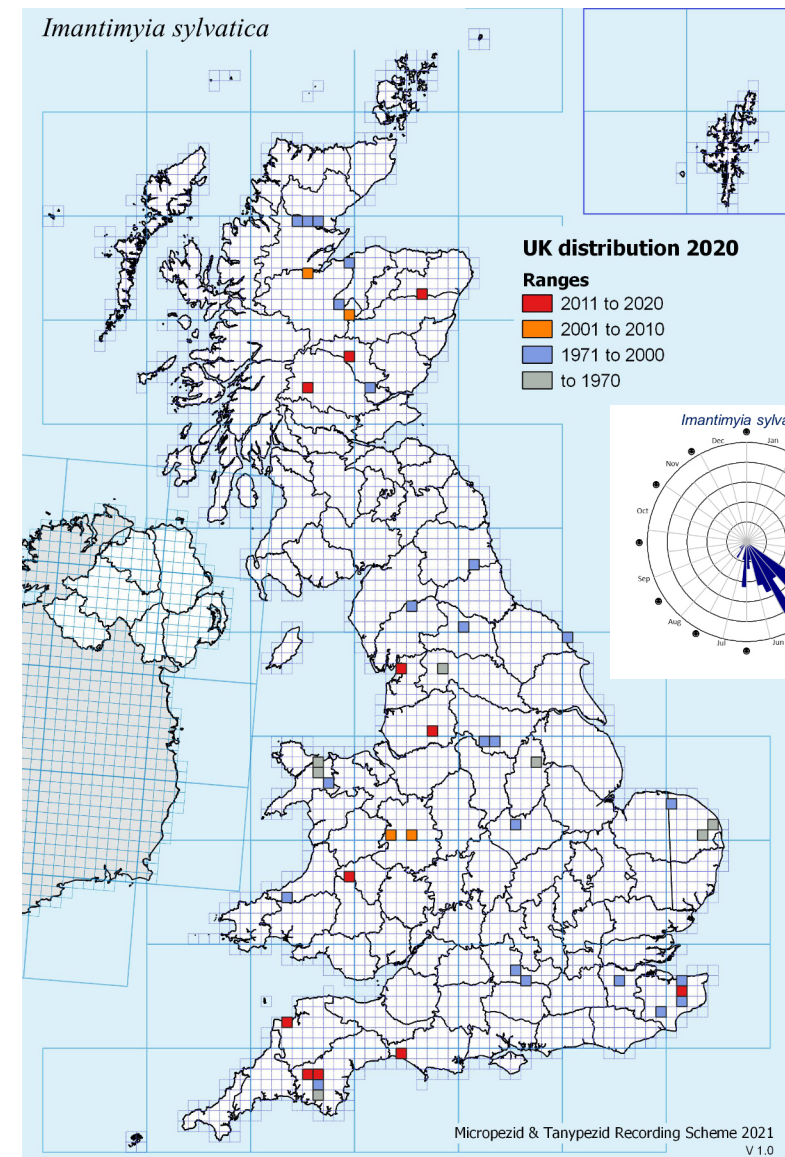


Imantimyia nigrifrons (Macquart, 1835)
Small Reed

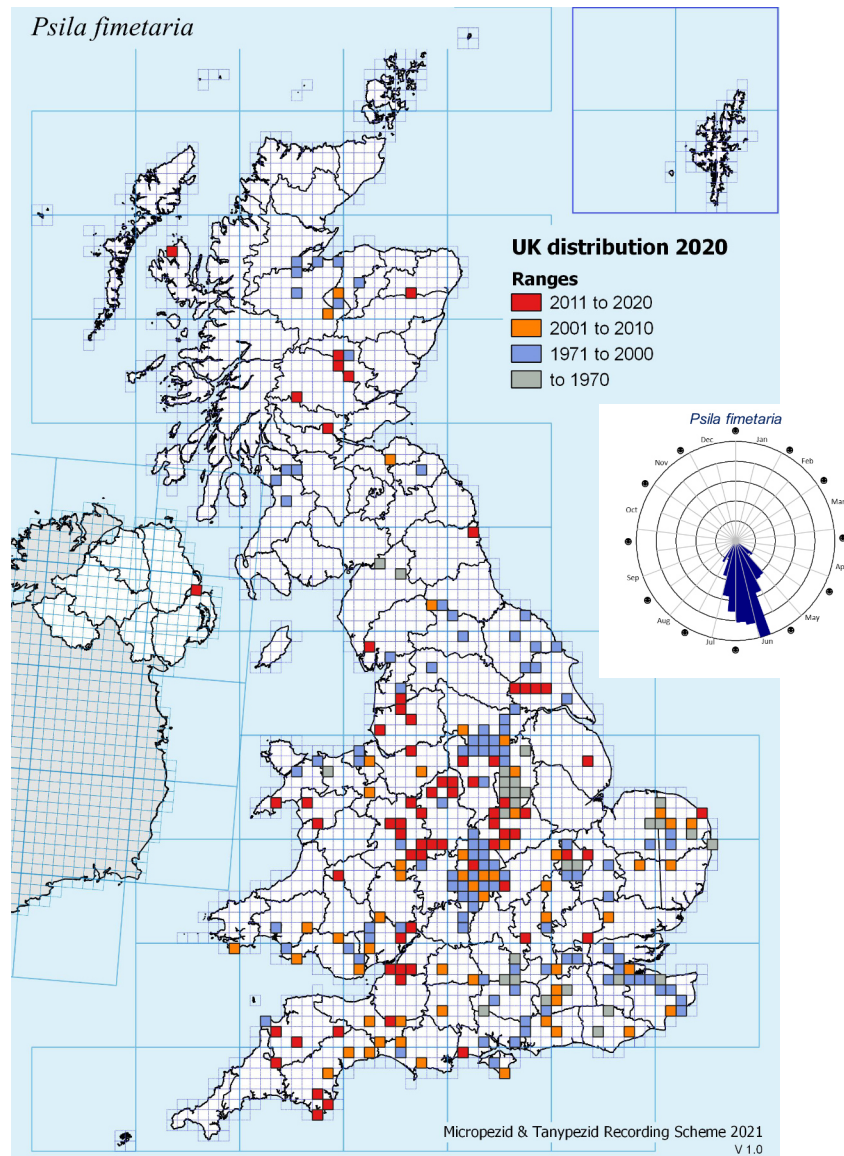


One dated record only, 15/8/2019

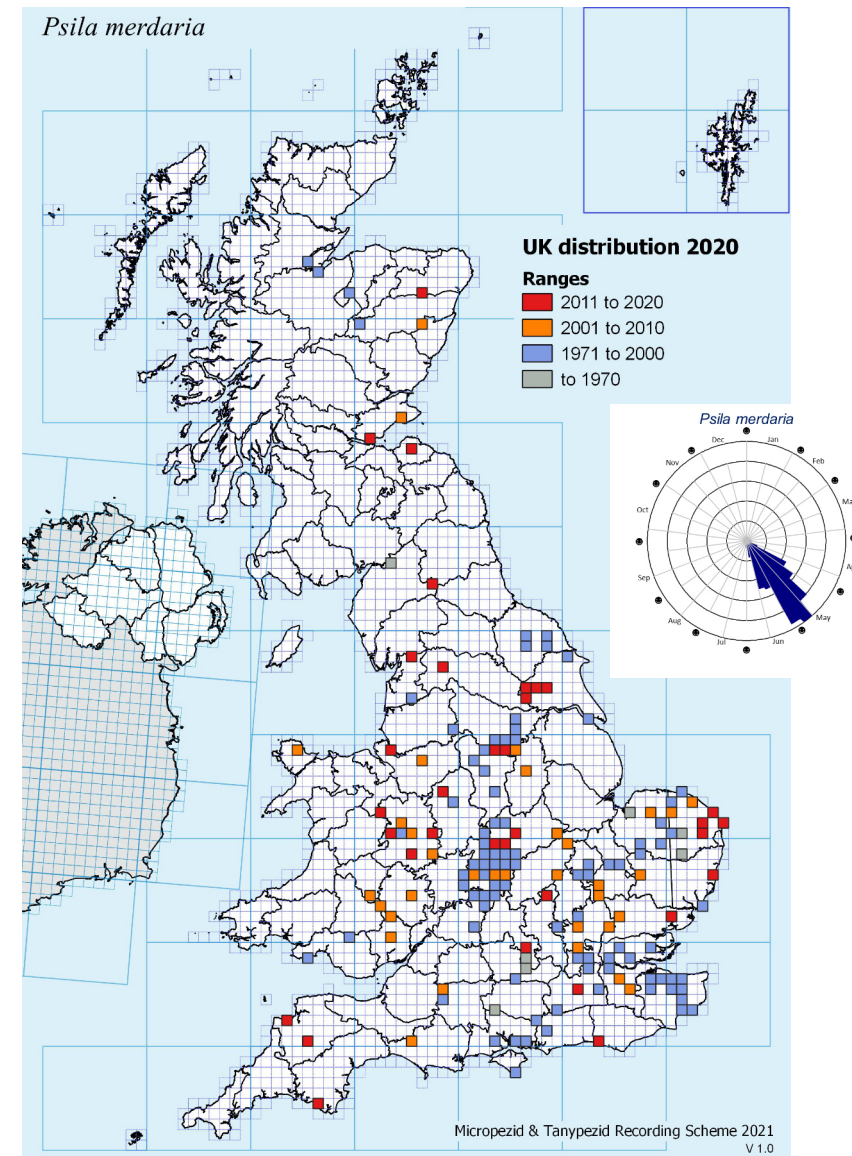
Imantimyia sylvatica (Meigen, 1826)
Yellow-shouldered Reed



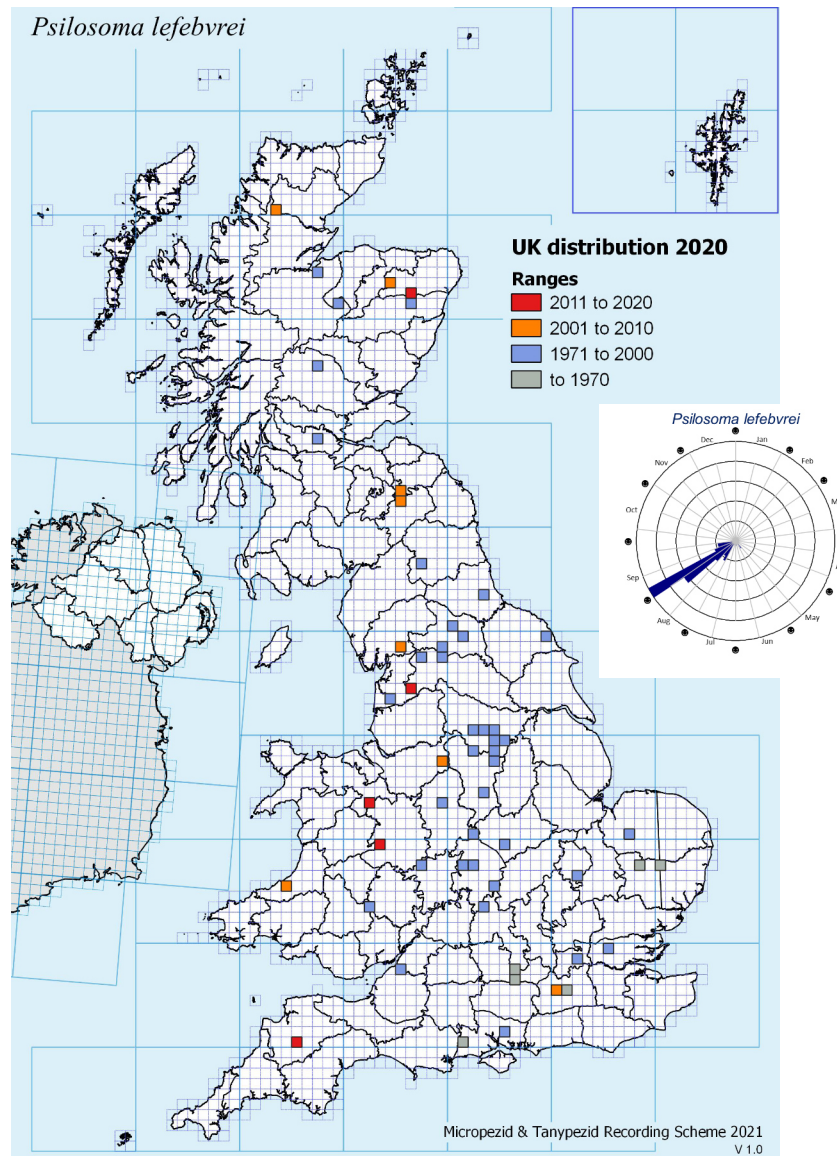
Psila fimetaria (Linnaeus, 1761)
Dusky Spectacle



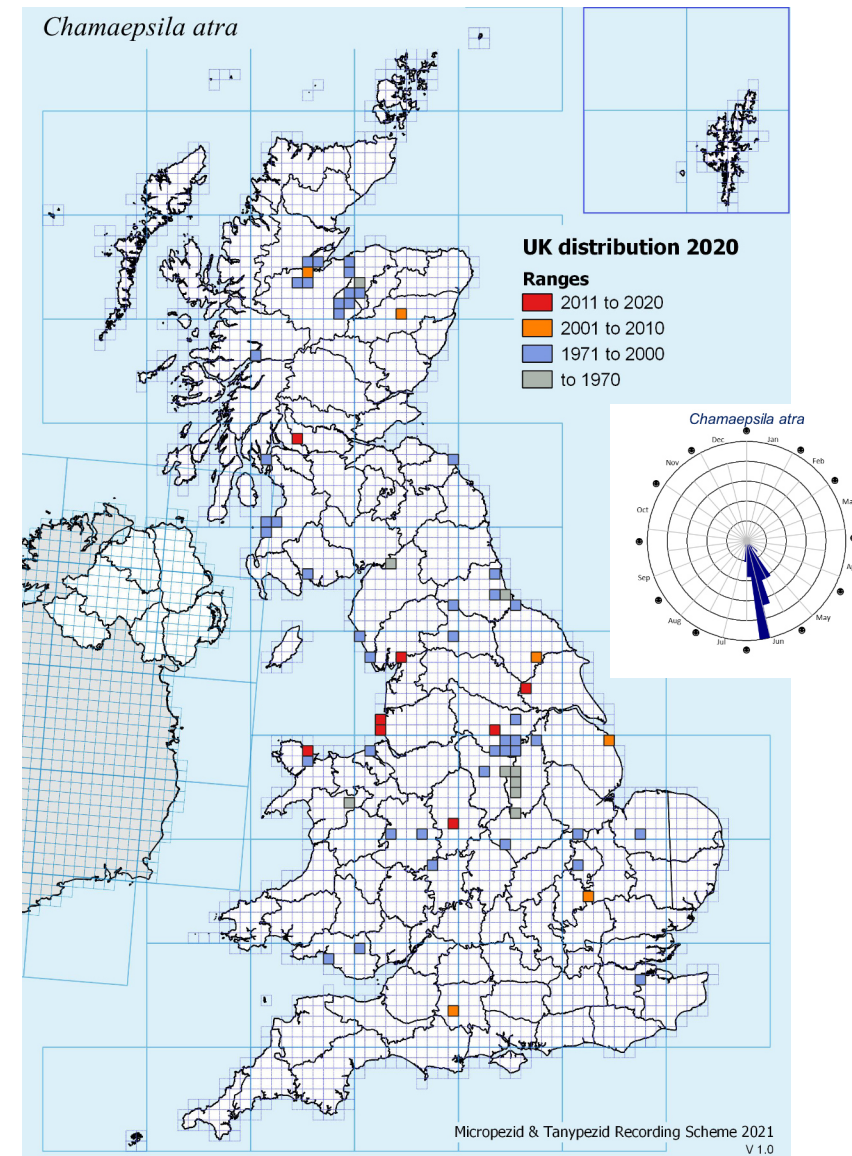
Psila merdaria Collin, 1944
Common Spectacle



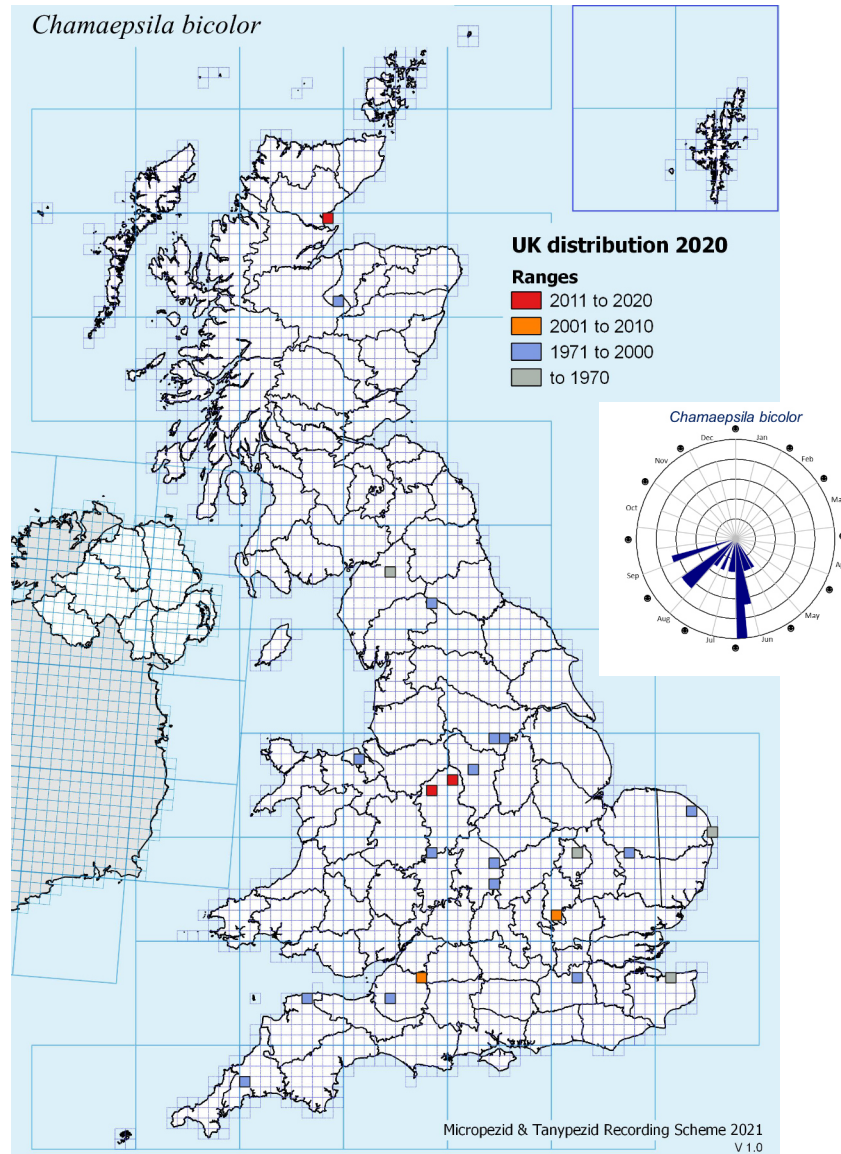
Psilosoma lefebvrei (Zetterstedt, 1835)
Atlantic Pierrot



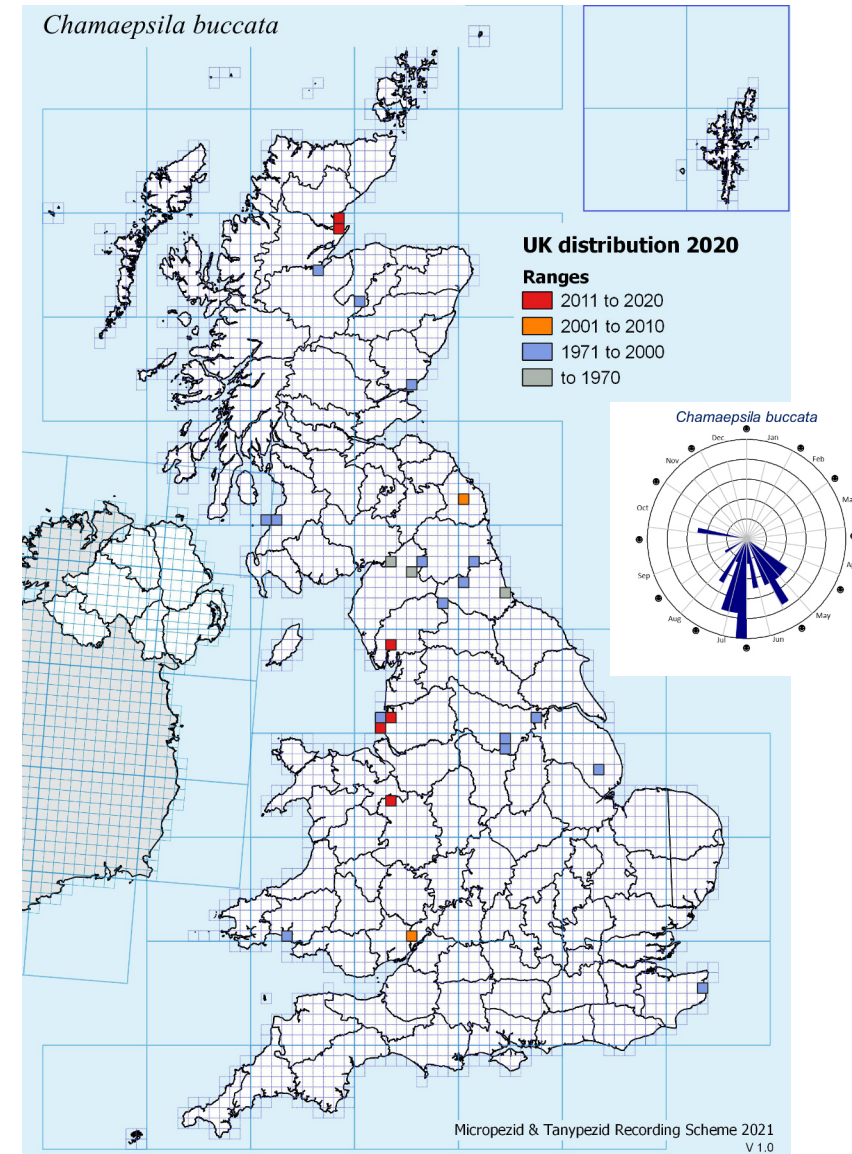
Chamaepsila atra (Meigen, 1826)
Katchit's Columbina



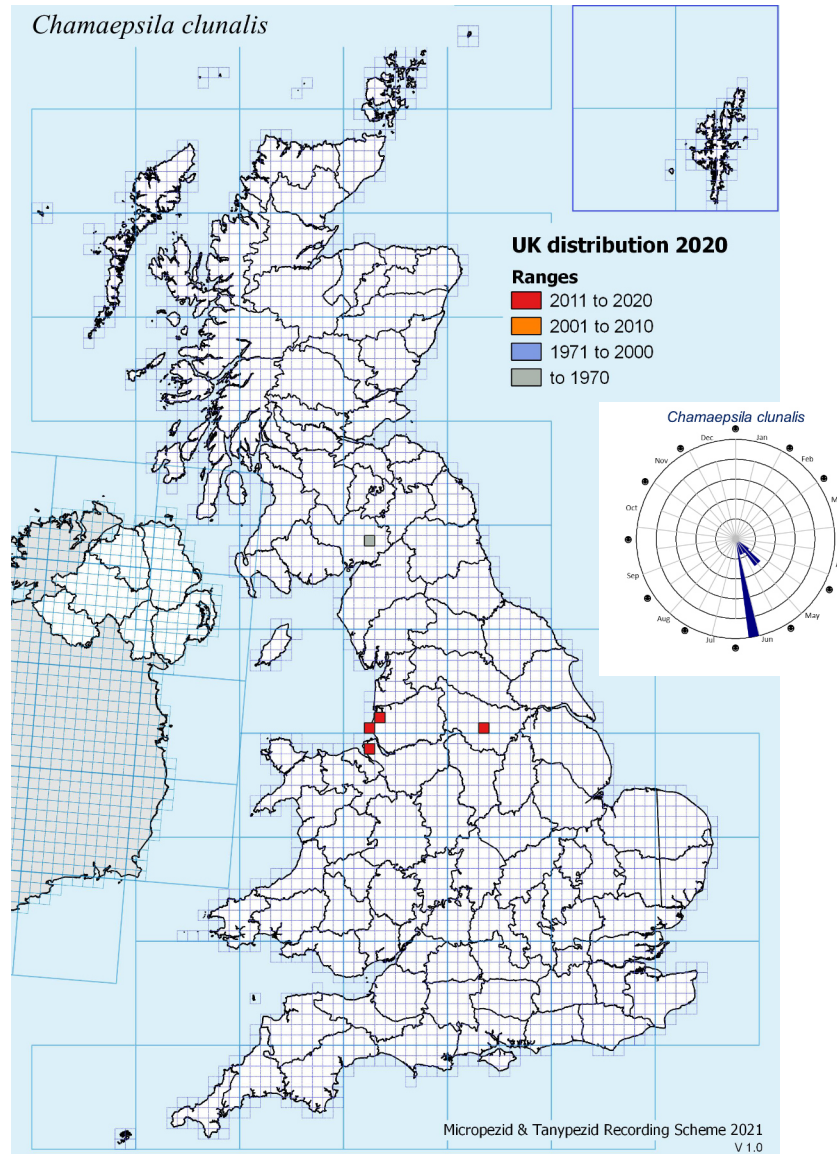
Chamaepsila bicolor (Meigen, 1826)
Roder's Columbina



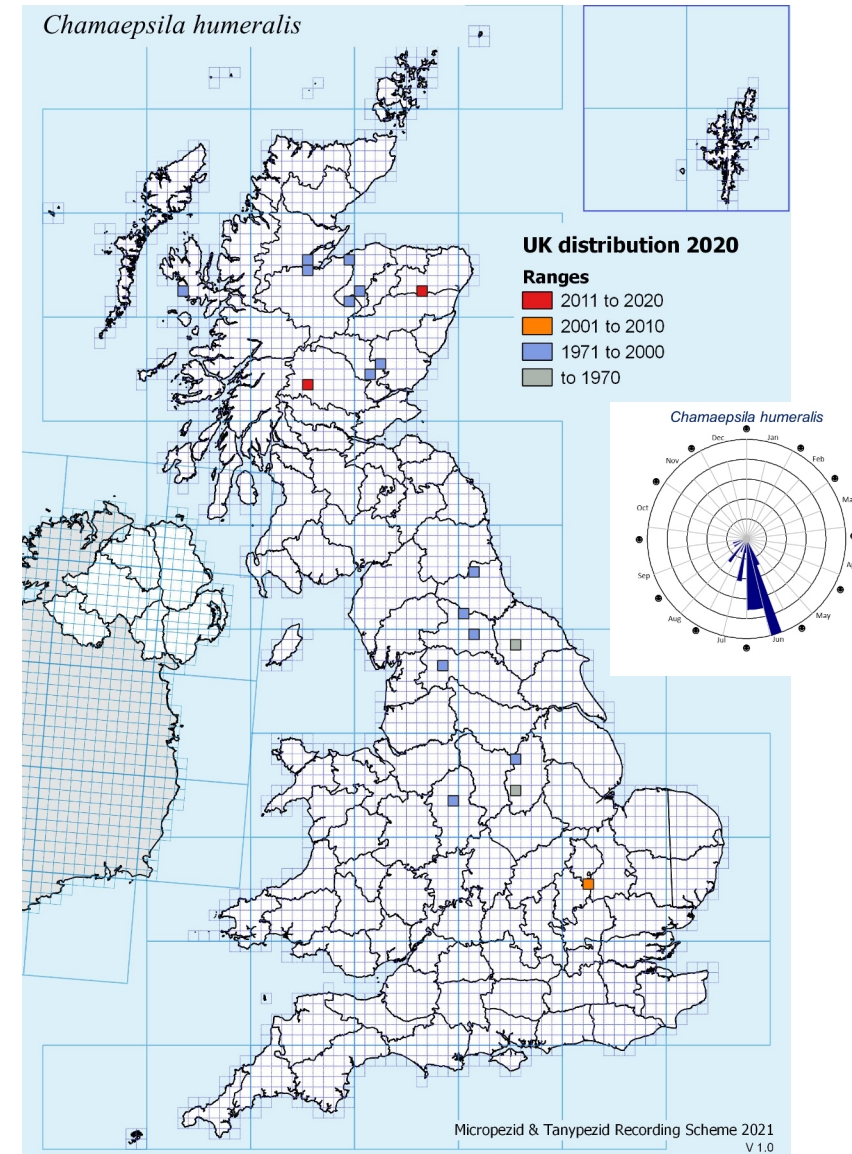
Chamaepsila buccata (Fallén, 1826)
Pugh's Columbina



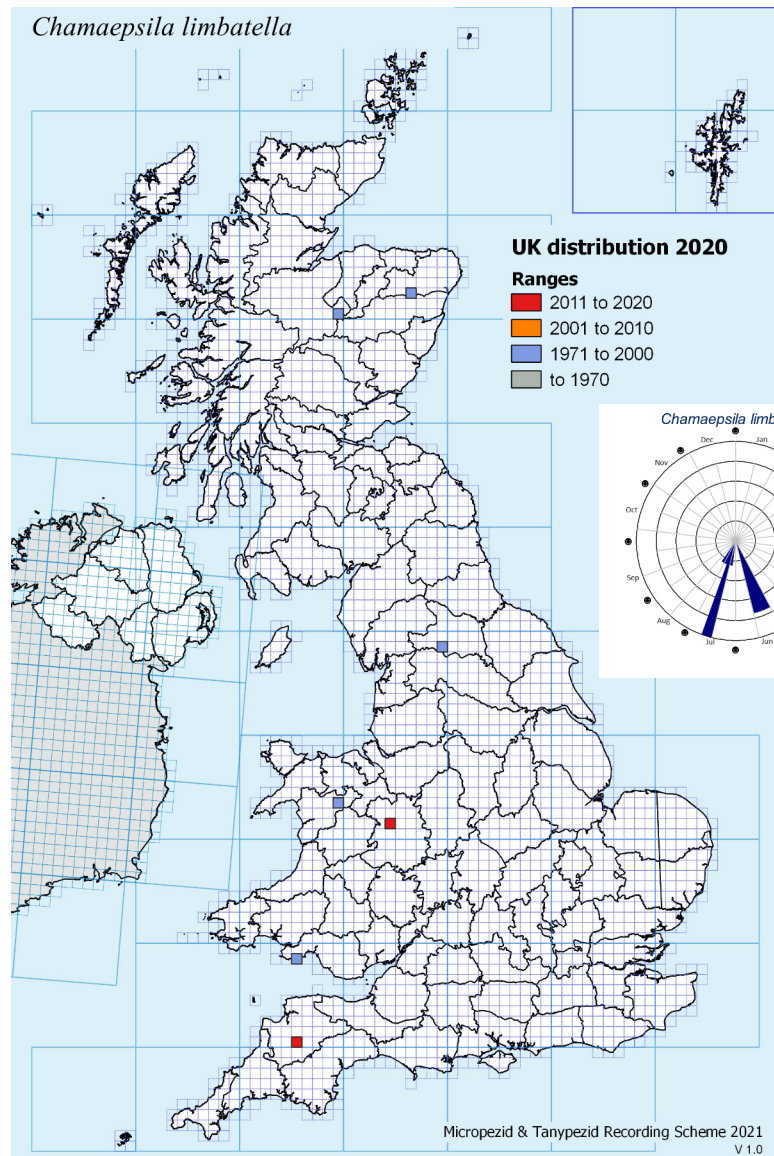
Chamaepsila clunalis (Collin, 1944)
Peterkin's Columbina



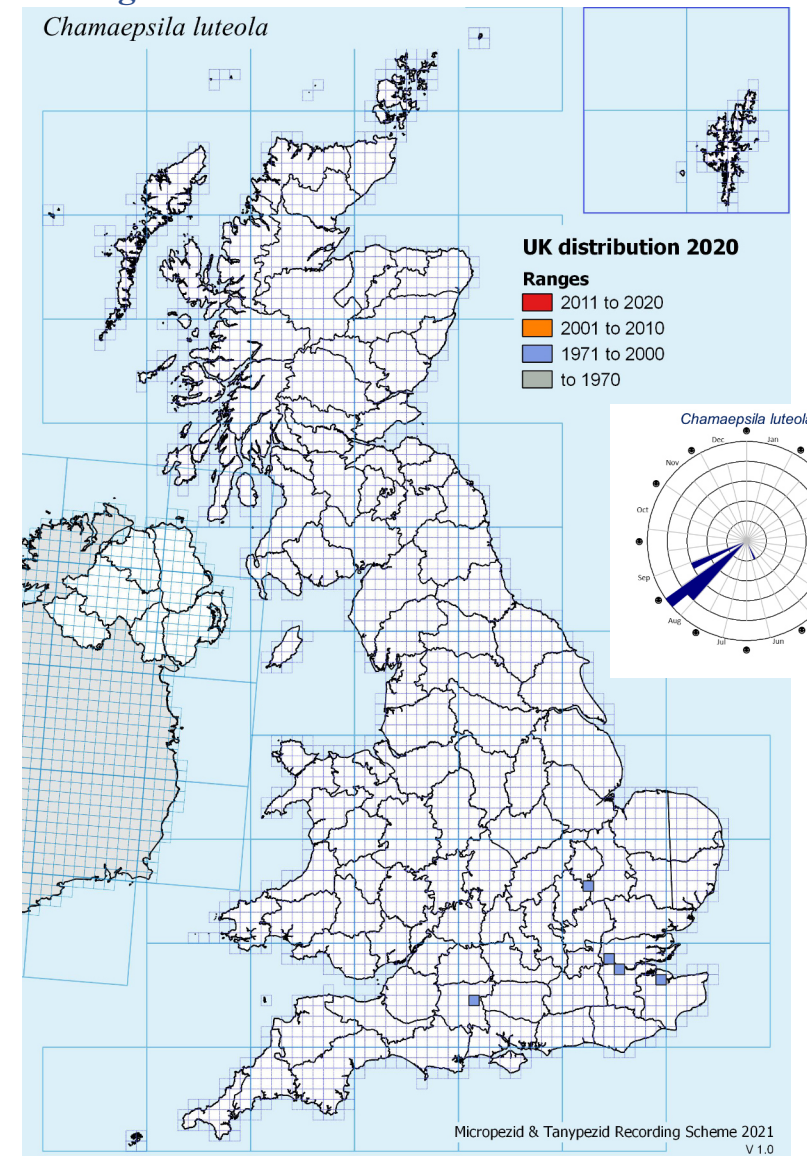
Chamaepsila humeralis (Zetterstedt, 1847)
Claypole's Columbina



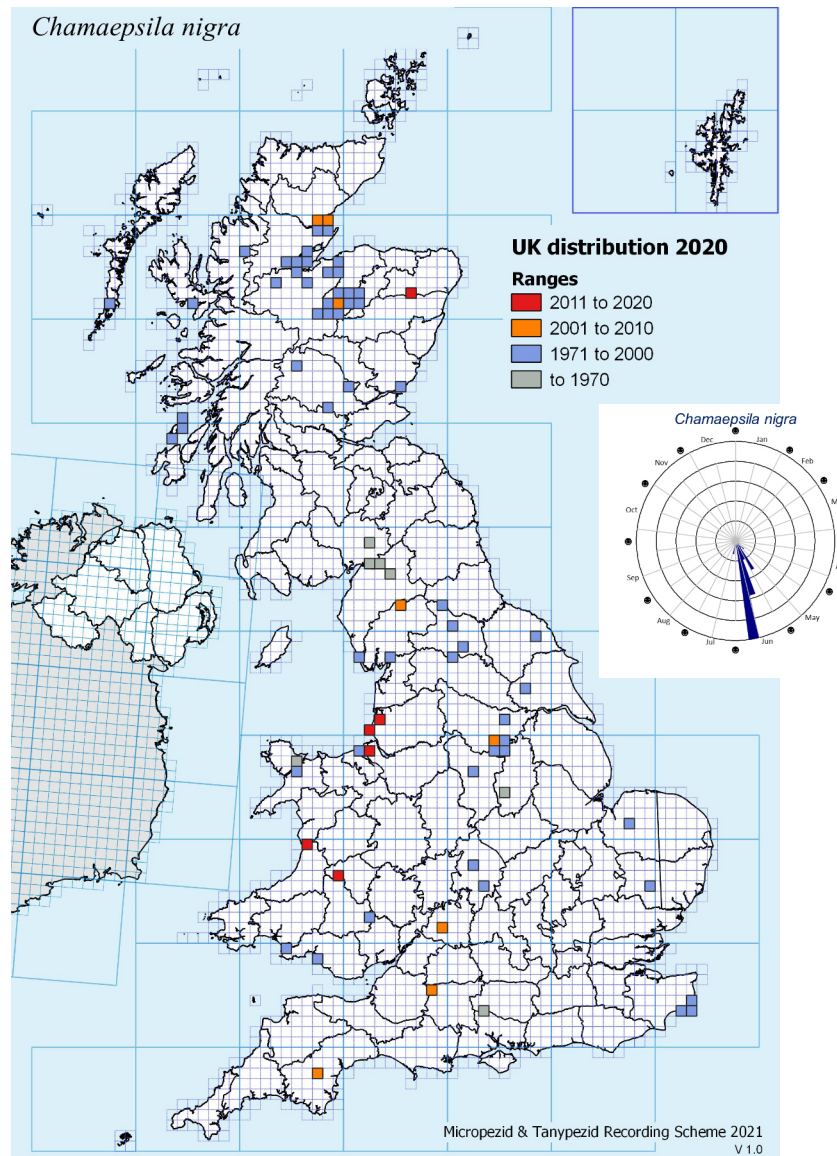
Chamaepsila limbatella (Zetterstedt, 1847)
Sommer's Columbina



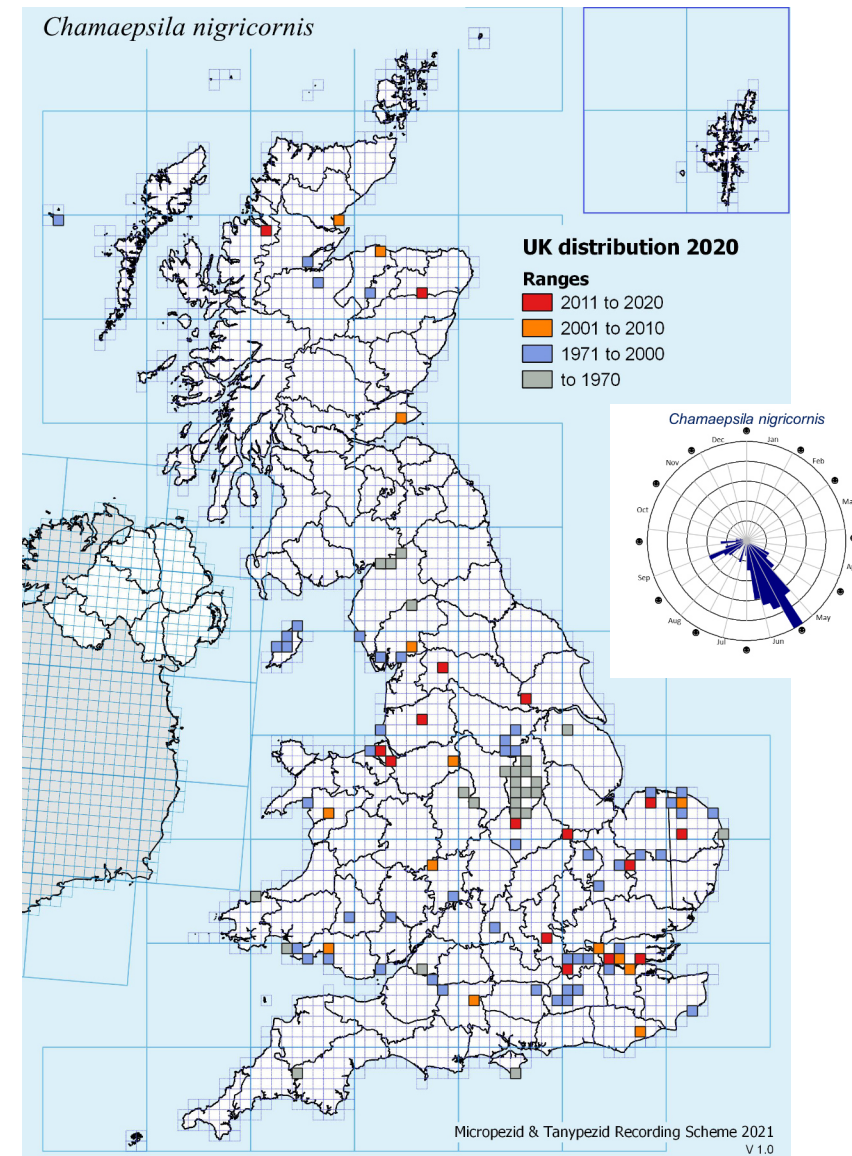
Chamaepsila luteola (Collin, 1944)
Armstrong's Columbina



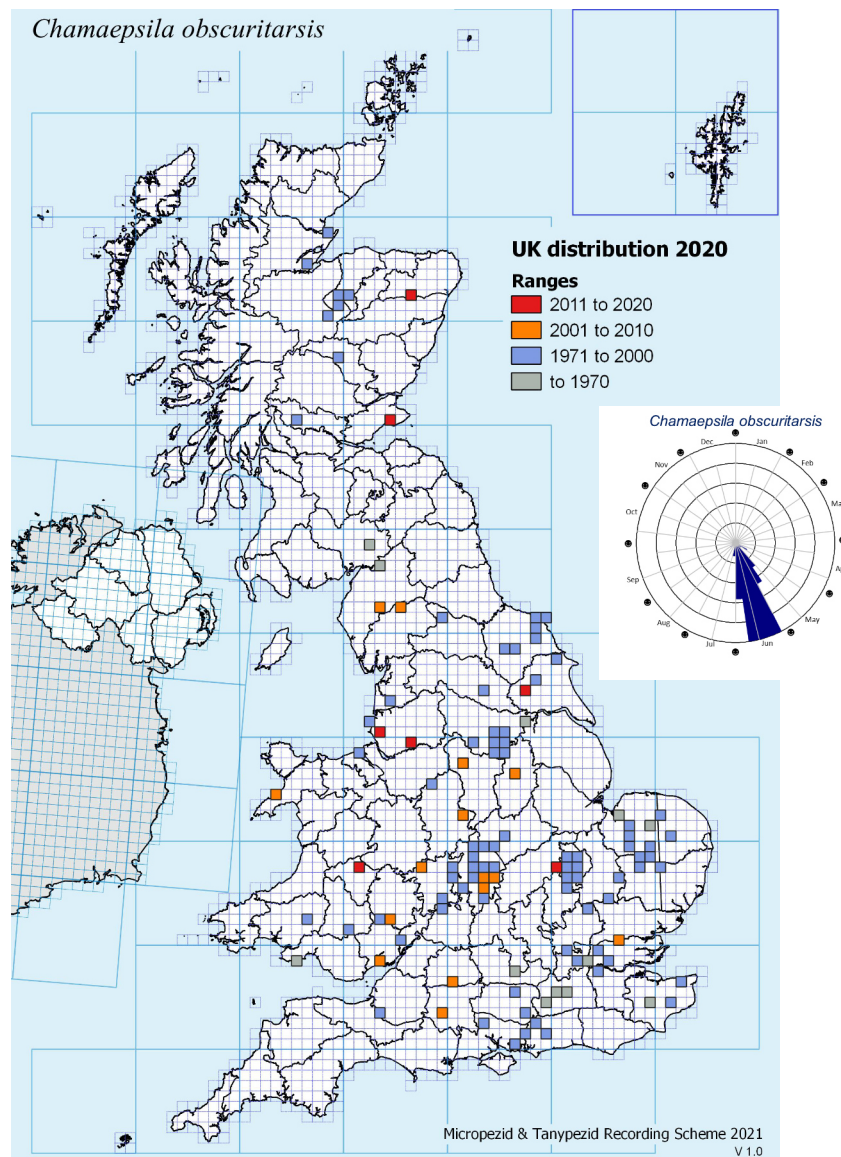
Chamaepsila nigra (Fallén, 1820)
Fleeman's Columbina



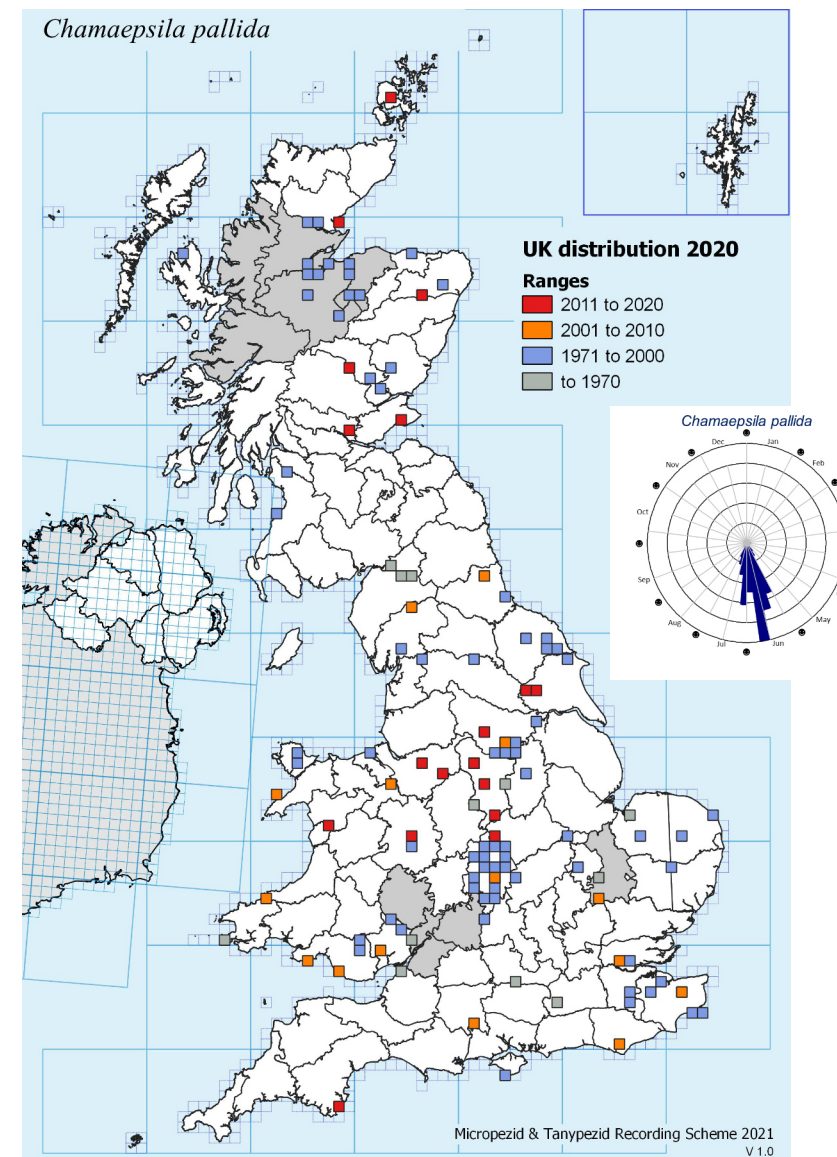
Chamaepsila nigricornis (Meigen, 1826)
Verence's Columbina



Chamaepsila obscuritarsis (Loew, 1856)
Baldwin's Columbina

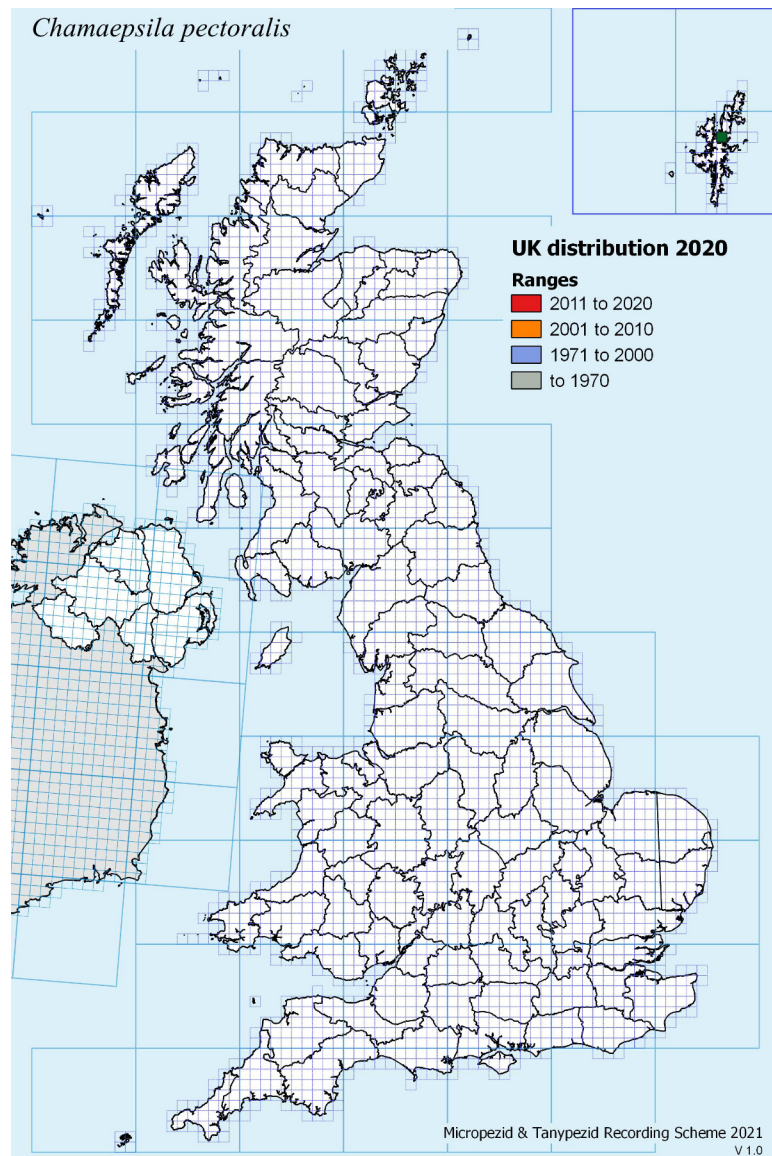


Chamaepsila pallida (Fallén, 1820)
Pocket's Columbina



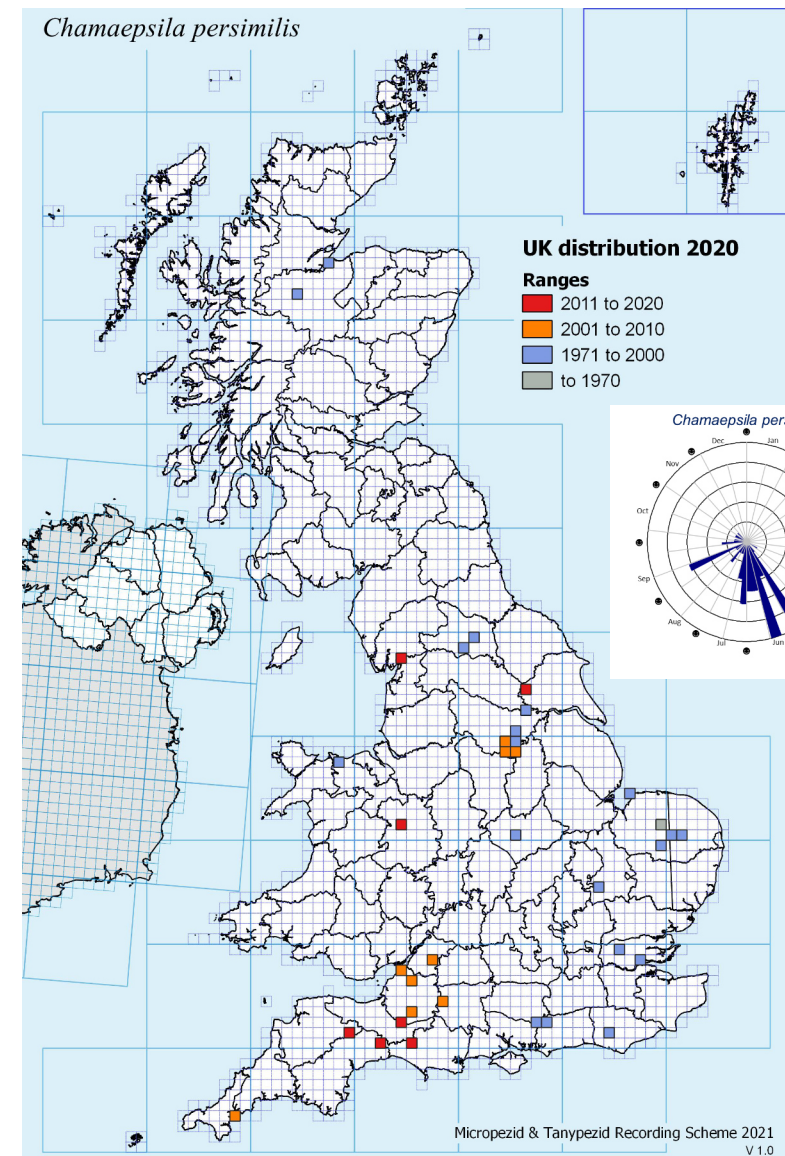
Chamaepsila unilineata (Zetterstedt, 1847) (Dagonet's Columbina) was reinstated into the UK list by Irwin (2016.) *Ch. pallida* specimens should be re-examined, the above map is likely to be a mixture. Grey Vice Counties indicate regions where errors are most likely.

Chamaepsila pectoralis (Meigen, 1826)
Foole's Columbina



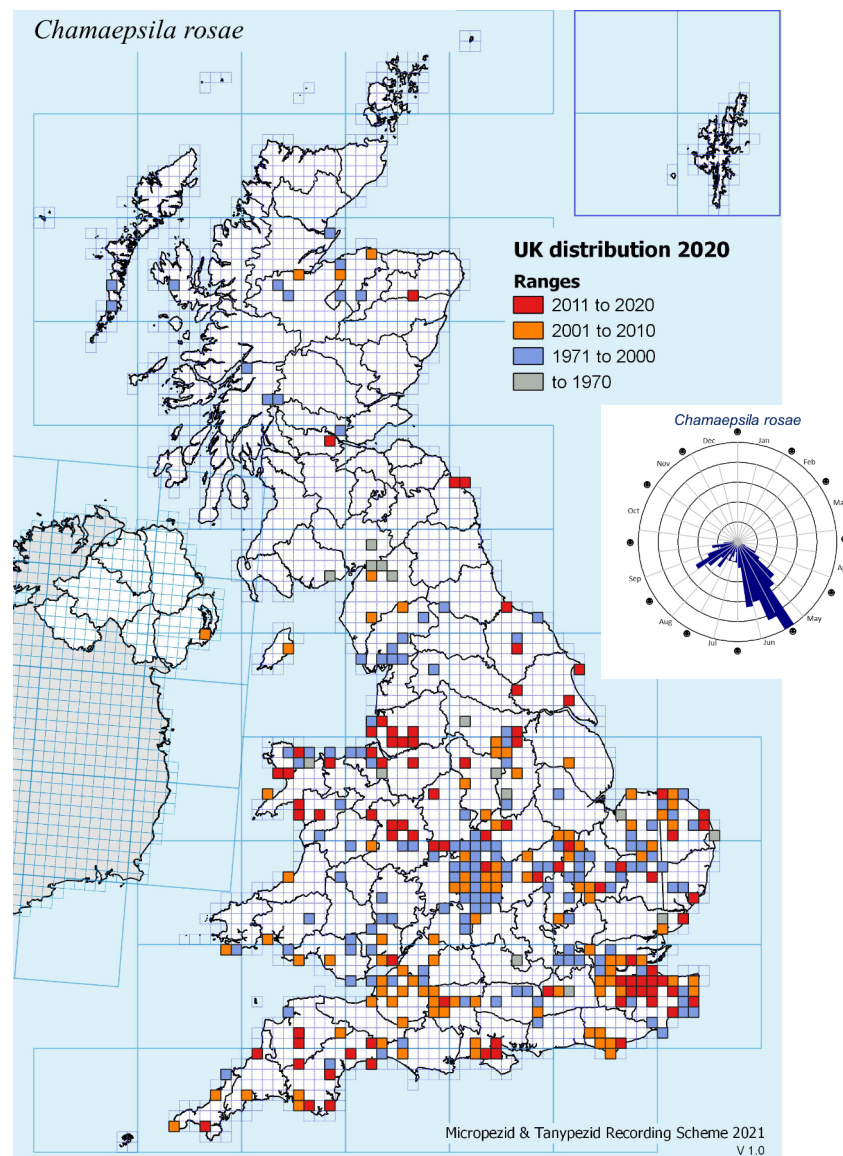
Added in 2021 (green square), taken on 7/6/21. Present only in Shetland so far but other material should be re-examined

Chamaepsila persimilis (Wakerley, 1959)
Le Foi's Columbina



Chamaepsila rosae (Fabricius, 1794)

Carrot Rust



Methods

The prepared datasets were structured according to a format compatible with Darwin Core. Required fields for the above analysis were the taxon name, grid reference, year and a means of excluding unverified records. For the fantail phenology diagrams the date in Excel format (not DwC format) was also required.

The records were imported into QGIS as a .csv file, copies made therein in order to filter according to year ranges and then analyses performed using FSC QGIS plugin (Burkmar). The resulting layers for each taxon provided the maps and the numbers used in the status calculations.

The UK map displays are according to EEA standards (Lillethun et al., 2011)

Identification

Keys to the identification of the above are listed on the Micropezid & Tanypezid research site at <https://micropezids.myspecies.info/node/235>

Further guides to identification from photographs are published in the Scheme's newsletters at <https://micropezids.myspecies.info/node/292>

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Data resources

This document and the spreadsheet containing the data used to calculate the IUCN figures may be downloaded from:

1. Spreadsheet data & calculations: <https://micropezids.myspecies.info/node/291>
2. Open Data (NBN Atlas): <https://registry.nbnatlas.org/public/show/dr940>

Sumner, D. P. (2016). Diptera Recording Scheme: Nerioidae & Diopsoidea. Occurrence Dataset. <https://doi.org/10.15468/mwjnku>

Revisions

Layout & specifications according to Dipterists Forum's Online Publishing guidelines (Bulletin 88). Data resources according to Pensoft guidelines at <https://bdj.pensoft.net/about#Data-publication>

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Version 2: Revision arising from misidentifications

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