GMS News

Spring 2023

Weeks 1-9

Contents

Editorial

Looking back at last years' report there's a sense of déjà vu. Once more the sizzling weather and full moth traps make it easy to forget the cold and the miserable numbers of spring moths. Furthermore, Evan's analysis of the Quarter 1 results show that catches were below the long-term average for the fourth year in a row. Evan addresses questions that people may ask such as "Why does there always seem to be poor moth weather on a Friday?" and "How crucial is minimum night-time temperature?"
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So, we are all putting a lot of effort to trap and count moths each week, but is it worth it? Is anyone listening? The fact is that the Garden Moth Scheme has given rise to at least 12 peer-reviewed scientific papers and over 230 citations. This comes from the Academia website and it was suggested that I obtained more details but I have to confess that I found their website rather daunting.

Then David Baker asks how scarce is Scarce? And the answer appears to be, in some cases, not much. The opposite question is how common is Common? In the case of Common Fan-foot, again, not much.

Once more we return to declining moth numbers as I look back over 17 years of recording the common Orthosias in Wales and uncover a gloomy trend. It's interesting that Evan covered similar ground for the whole of GMS with slightly different outcome. Great minds and all that! Finally, you can cheer up by tackling Non-conformists' word-search.

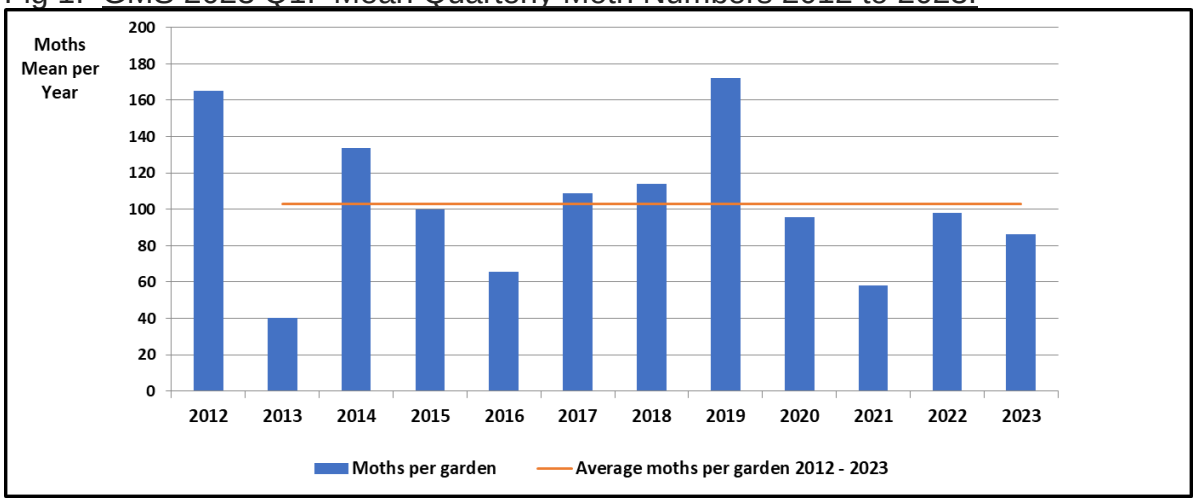
Overview GMS 2022 1st Quarter

Evan Lynn

On reading the recent comments from our coordinators, I was expecting this quarter to be equal or worse than the dismal showing in 2013:
East of England: Several observers are saying how dire it has been through March and April with at least one saying February was more productive.
East Midlands: Moths have been in short supply in my garden to date.
South East: Moths still very poor - only 10 on Saturday night and the same story from recorders who have sent their forms back so far.
Wales: Most numbers seem slightly down on last year but not by much and many recorders commented on how cold Friday nights seemed to have been.

Imagine my surprise when I plotted the results and found three years had even smaller catches (fig 1).

Fig 1. GMS 2023 Q1. Mean Quarterly Moth Numbers 2012 to 2023.

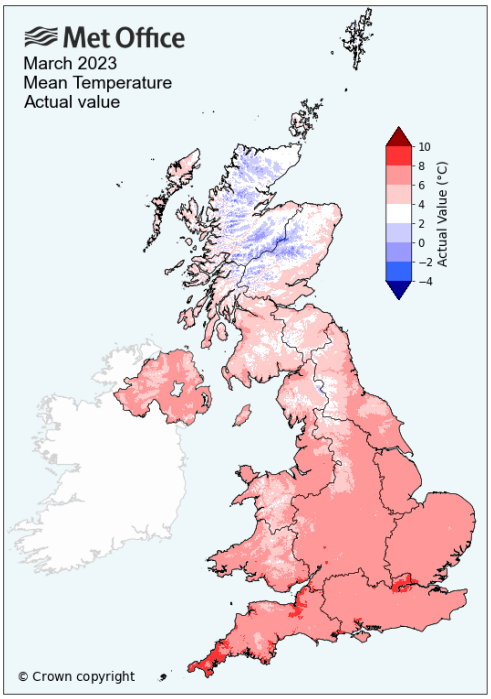


March started off cold and dry due to the dominance of high pressure until arctic air dramatically forced itself southwards bringing snow, often drifting in strong winds. Eventually this cold movement was stopped in the south of England by a northward influx of warm moist air which brought its own problems as it met the colder weather. Bristol airport was closed until the runways could be cleared. The Pennines and Yorkshire received lots of snow in places with some power lines being brought down and up to 40 cm of snow was reported in Sheffield. Ireland also did not escape with power outages. Then the rain started with flooding in South Yorkshire, Lincolnshire and Cornwall. Finally, the month ended with the south being battered by Storm Mathis coming up from France.

April was reasonably unsettled remaining cool apart from Scotland which was warmer and drier than normal. A blocking high pressure gave more settled conditions for a while. Then Atlantic weather fronts brought rain and winds to South Wales and Southern England when two low pressure areas fought for dominance with the systems sinking south over France where it became Storm Noa. The northern areas did not escape either with high winds near Carlisle and over the Pennines. Overall, the rainfall was three percent lower than the historical average with regional variations and the mean temperature was 7.8°C, 0.1 degree below the average. Some of this weather

can be seen in the following charts where March rainfall on the east coast varied between 25 and 100 mm while the west coast had between 100 and 300 mm, with lightning activity giving a guide to rain intensity.

Fig 2. Mean Temperature for March & April 2023 (with permission of the Met Office).



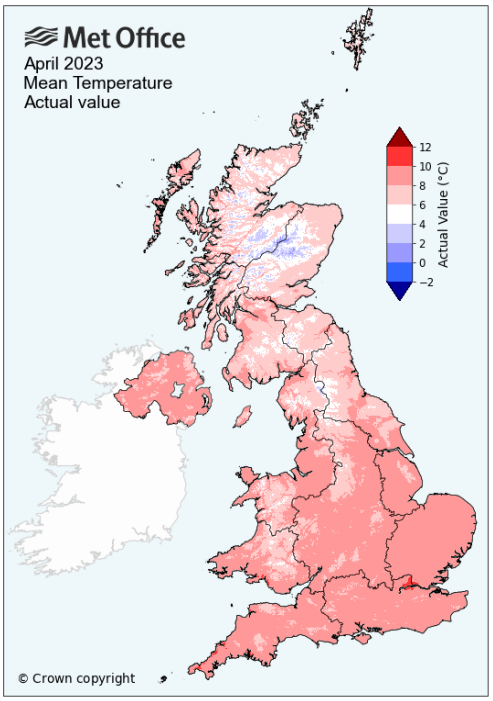
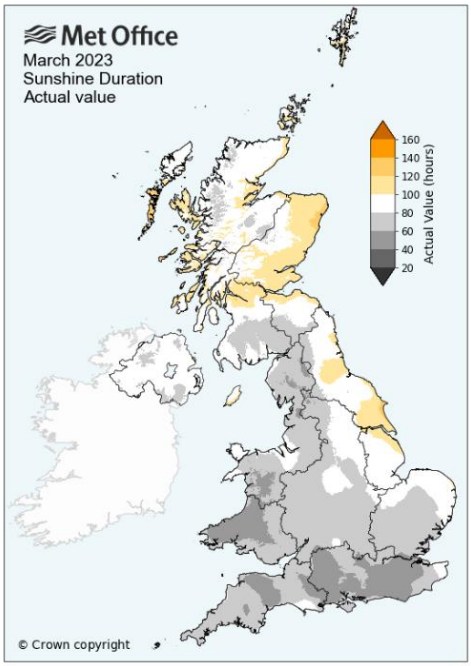


Fig 3. Hours of Sunshine for March & April 2023 (with permission of the Met Office).



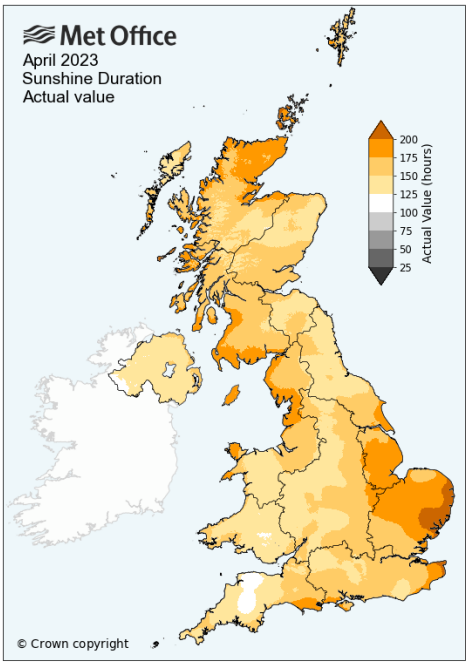


Fig 4. Total Rainfall for March & April 2023 (with permission of the Met Office).

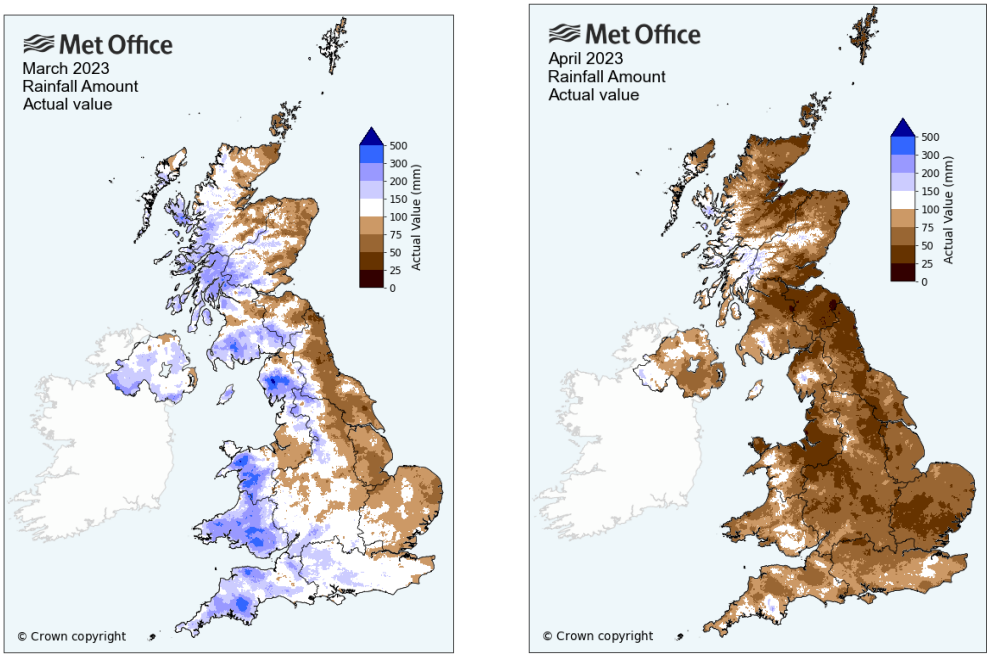
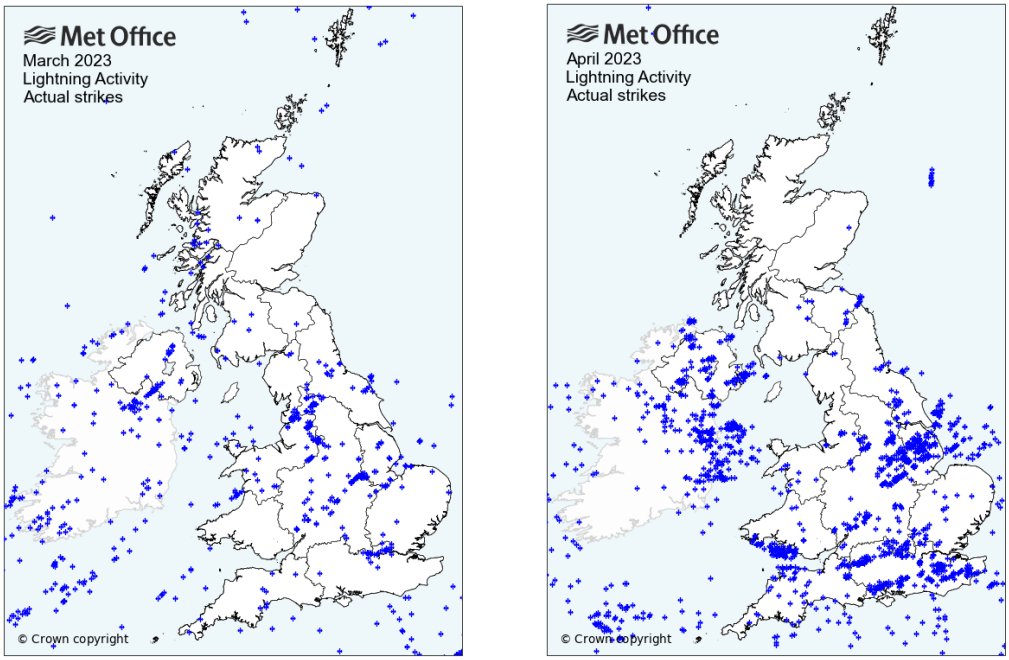
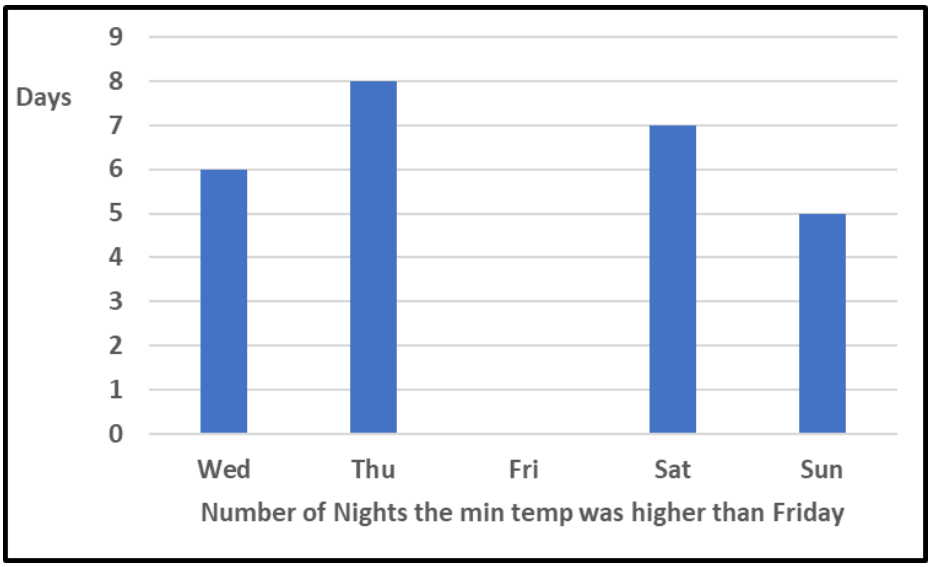


Fig 5. Lightning Activity for March & April 2023 (with permission of the Met Office).



Certainly, catches have been poor with a late spring holding back nature which sprang back up once temperatures rose slightly. Someone in Wales even postulated that Friday nights might be colder than the other possible nights. Plotting the temperatures would suggest not. The minimum temperatures for Friday and the two days either side were placed into a chart where Friday was given a value of one and then the temperatures for the other days were subtracted from this nominal figure. The result shows that the other nights were often colder (fig 6).

Fig 6. GMS 2023 Q1. Number of Nights that were colder than Friday



In only two weeks were the Friday nights the coldest, though tenths of a degree may be stretching the point slightly (table 1). Also, as mentioned in an earlier report the timing of the minimum temperature may be relevant. Only last week I noticed that the recorded minimum temperature was actually an hour after I had brought the trap indoors.

Table 1. GMS 2023 Q1. Table of Minimum Temperatures Wednesday to Sunday

Day	Wed	Thu	Fri	Sat	Sun
Week 1	3.2	2.0	**1.9**	2.5	1.7
Week 2	-3.3	-3.3	**-1.7**	-2.5	2.9
Week 3	-2.1	5.2	**5.2**	6.5	4.3
Week 4	7.1	6.1	**6.0**	5.4	2.8
Week 5	7.3	8.1	**7.3**	5.7	3.0
Week 6	5.0	5.0	**1.7**	2.8	5.0
Week 7	3.1	3.1	**3.8**	3.1	6.6
Week 8	5.1	3.7	**4.4**	4.1	5.4
Week 9	2.3	4.3	**7.3**	6.0	7.3
Mean Temp	**3.1**	**-0.2**	**4.0**	**3.7**	**4.3**

As to be expected with the earlier comments the number of empty traps was quite high with a marginal increase on those of last year, whilst the minimum temperatures show a high degree of interlacing (figs 7&8).

Fig 7. GMS 2023 Q1. Average number of Empty Traps 2022 & 2023

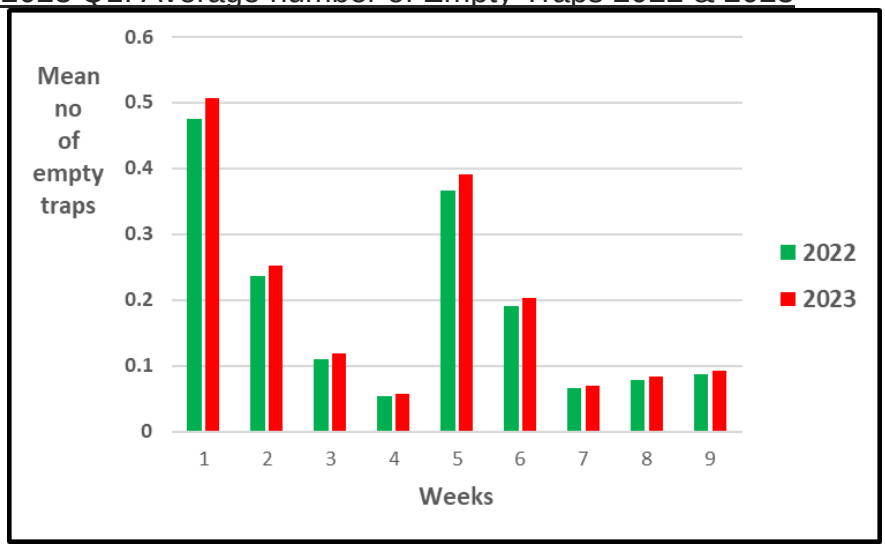
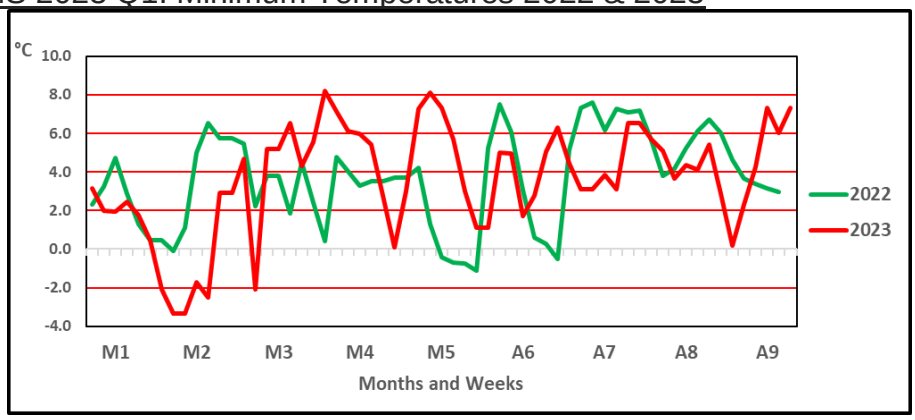
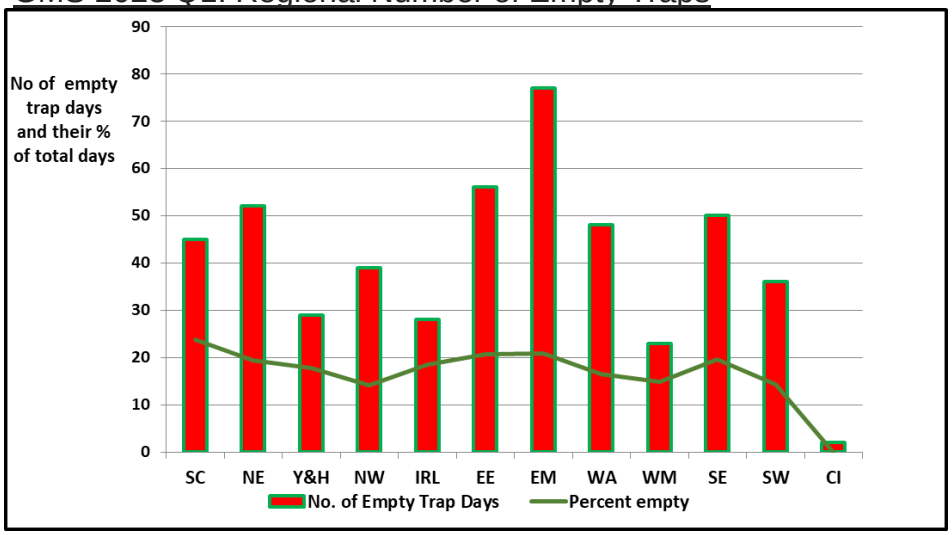


Fig 8. GMS 2023 Q1. Minimum Temperatures 2022 & 2023



The number of empty traps for this quarter was unevenly scattered throughout the area with no region escaping at least one nil result. The West Midlands, although lower than other regions, had a higher percentage perhaps not helped by one unfortunate recorder who had no moths at all in her trap this quarter (fig 9).

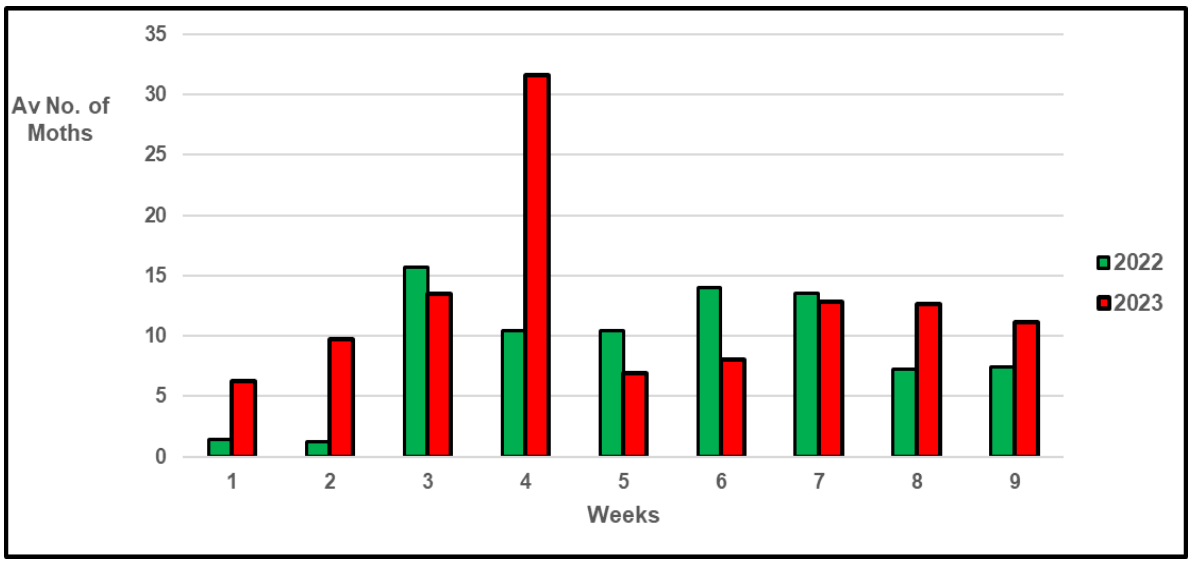
Fig 9. GMS 2023 Q1. Regional Number of Empty Traps



As was seen in Figure 1 the average number of moths is less than last year and the numbers for each week are seen in figure 10. One's immediate reaction is to blame this cold spring. While this is undoubtably the major factor, the previous two hot summers may have had a detrimental effect on larval survivability. Heatwaves play havoc with the already-declining insect numbers. Hot weather scorches the plants that insects feed on killing young larvae and the inevitable heavy thunderous downpours wash any remaining off the leaves. Another factor is the mild winters we have been experiencing which provide ideal conditions for fungi to attack overwintering pupae and larvae.

The lack of rain also affects the amount of nectar flowers can produce reducing the food supply for insects. For some inland areas this has also influenced the honey production for beekeepers. but the problem so far this year has been the cold spring and the resultant higher than normal demand for swarms to repopulate dead hives.

Fig 10. GMS 2023 Q1. Average No. of Moths 2022 & 2023



As mentioned, cold springs, hot summers and mild winters have all played their part over the last few years. Some may remember the bitterly cold winter's end, but by that time the damage had already been done.

The performances of the top 20 core moths are listed here in table 2 where it is apparent there have been losses right across the board with only a few species able to stem the tide.

Table 2. GMS 2023 Q1. Top 20 Core Species

Position			Mean Per Trap			Catching Frequency (%. of gardens)		
2022	2023	Top 20 Species	2022	2023	Change			
			335 Gardens	314 Gardens		2022	2023	Difference
1	**1**	Hebrew Character	23.6	21.4	-2.3	97	**95**	-2
2	**2**	Common Quaker	19.3	17.7	-1.6	96	**92**	-4
4	**3**	Clouded Drab	8.7	8.9	0.2	77	**85**	8
3	**4**	Small Quaker	11.9	8.1	-3.8	85	**68**	-16
5	**5**	Early Grey	6.7	6	-0.6	87	**78**	-9
6	**6**	Brindled Beauty	2.3	2.2	-0.1	43	**39**	-4
13	**7**	March Moth	1.2	1.8	0.5	52	**47**	-5
7	**8**	Double-striped Pug	1.8	1.6	-0.2	54	**39**	-15
8	**9**	Oak Beauty	1.7	1.3	-0.4	38	**37**	-2
10	**10**	Twin-spotd Quaker	1.6	1.2	-0.4	47	**38**	-9
14	**11**	Early Thorn	1.1	0.9	-0.2	43	**32**	-10
19	**12**	Chestnut	0.7	0.9	0.2	39	**32**	-7
22	**13**	Dotted Border	0.5	0.8	0.3	42	**29**	-13
12	**14**	Lt Brn Apple Moth	1.3	0.7	-0.6	44	**30**	-14
15	**15**	Powdered Quaker	1	0.7	-0.3	31	**24**	-7
27	**16**	Shoulder Stripe	0.3	0.4	0.09	20	**17**	-4
33	**17**	Streamer	0.2	0.4	0.1	30	**19**	-11
20	**18**	Brimstone Moth	0.7	0.3	-0.4	30	**13**	-17
17	**19**	Muslin Moth	0.8	0.3	-0.5	32	**11**	-21
46	**20**	Swallow Prominent	0.1	0.2	0.1	21	**13**	-9

The second part of this table shows the percentage of gardens where a particular species was seen in a trap, but not the numbers or frequency. Table 3 shows the maximum number of this year's top 10 caught on a date in one trap. The largest value for each moth is highlighted – blue for 2022 and brown for 2023. Our congratulations to these recorders, and also to the unseen others, who caught nearly just as many.

Table 3. GMS 2023 Q1. Top 10 Core Species Maximum Catches 2022 & 2023

Species	**2022**	**Region**	**Date**	**2023**	**Region**	**Date**
Small Quaker	69	SC	28/03/2022	125	EM	16/04/2023
Common Quaker	71	WM	09/03/2022	78	NW	17/03/2023
Hebrew Character	65	SC	25/03/2022	30	NW	21/04/2023
Pale Brindled Beauty	5	SC	18/03/2022	32	SC	17/03/2023
Clouded Drab	24	WA	25/03/2022	31	NW	15/04/2023
Brindled Pug	32	SW	25/03/2022	24	NW	17/03/2023
Chestnut	7	SC	25/03/2022	21	NW	17/03/2023
March Moth	11	WM	03/03/2022	17	EE	16/03/2023
Powdered Quaker	22	WM	29/04/2022	15	NE	16/04/2023
Early Grey	21	WA	20/03/2022	11	Y&H	17/03/2023

The top 10 moths for each region are shown in table 4.Despite its fall in the ranks the Common Quaker is jousting with the Hebrew Character for top spot, apart from Ireland where it is relegated to fourth place.

Table 4. GMS 2023 Q1. Top 10 Regional Core Species

Scotland (21)	Mean	%	North East (32)	Mean	%	North West (32)	Mean	%
Hebrew Character	18.7	32	Hebrew Character	24.3	40.7	Common Quaker	29.6	25.6
Common Quaker	11.4	19.6	Common Quaker	10.7	17.9	Hebrew Character	29.6	25.6
Clouded Drab	7.6	13	Clouded Drab	6.8	11.4	Clouded Drab	28.1	24.3
Early Grey	3.5	6	Early Grey	5.3	8.9	Small Quaker	12.9	11.1
Pale Brindled Beauty	2.1	3.6	Small Quaker	3.2	5.3	Early Grey	12.9	11.1
Chestnut	1.8	3	Powdered Quaker	1.4	2.3	Brindled Pug	6.3	5.5
Mottled Grey	1.3	2.2	Mottled Grey	1	1.6	Twin-spotted Quaker	3.3	2.8
Double-striped Pug	1	1.6	Red Chestnut	0.8	1.4	Double-striped Pug	2.8	2.4
March Moth	1	1.6	Chestnut	0.8	1.4	March Moth	2.8	2.4
Twin-spotted Quaker	1	1.6	Brindled Pug	0.6	1	Chestnut	1.9	1.6
Yorks & Humber (20)	Mean	%	Ireland (18)	Mean	%	East of England (32)	Mean	%
Hebrew Character	24.8	31.7	Hebrew Character	29.6	30.3	Hebrew Character	15.3	3.5
Common Quaker	21.3	27.1	Clouded Drab	14.2	14.5	Common Quaker	14.3	3.3
Clouded Drab	9.6	12.3	Early Grey	10.7	10.9	Small Quaker	8.4	1.9
Early Grey	6.2	7.9	Common Quaker	10.6	10.9	Clouded Drab	7.2	1.6
Small Quaker	4.5	5.7	Early Thorn	3.9	4	Early Grey	4.2	1
Light Brown Apple Moth	1	1.2	March Moth	2.6	2.7	Double-striped Pug	2.6	0.6
Early Thorn	1	1.2	Powdered Quaker	2.3	2.3	March Moth	2.2	0.5
Brindled Pug	0.9	1.1	Red Chestnut	2.2	2.3	Brindled Beauty	1.8	0.4
Powdered Quaker	0.8	1	Water Carpet	1.8	1.9	Twin-spotted Quaker	1	0.2
Double-striped Pug	0.7	0.9	Early Tooth-striped	1.8	1.8	Shuttle-shaped Dart	0.9	0.2
East Midlands (43)	Mean	%	West Midlands (18)	Mean	%	Wales (35)	Mean	%
Hebrew Character	17.3	17.7	Common Quaker	28.7	31	Hebrew Character	22	19.4
Common Quaker	17	17.3	Hebrew Character	16.5	17.8	Common Quaker	19.2	17
Small Quaker	16.9	17.2	Clouded Drab	9.1	9.8	Small Quaker	12.4	10.9
Clouded Drab	10.6	10.8	Small Quaker	7.4	8	Clouded Drab	12.3	10.9
Early Grey	4.1	4.2	Early Grey	6.6	7.2	Early Grey	10	8.8
Brindled Beauty	2.3	2.3	Brindled Pug	3.1	3.4	Brindled Beauty	8.1	7.2
March Moth	2.1	2.2	Many-plumed Moth	2.3	2.5	Oak Beauty	3.2	2.8
Common Plume	1.7	1.8	Light Brown Apple Moth	1.8	2	March Moth	3	2.7
Oak Beauty	1.4	1.5	Common Plume	1.6	1.7	Double-striped Pug	2.1	1.9
Double-striped Pug	1.3	1.3	Brindled Beauty	1.6	1.7	Twin-spotted Quaker	1.9	1.7
South East (30)	Mean	%	Southwest (31)	Mean	%	Channel Islands (2)	Mean	%
Hebrew Character	13.2	24.6	Hebrew Character	28.9	29.7	Early Grey	50	20
Common Quaker	12.2	22.6	Common Quaker	20.4	20.9	Common Quaker	40	16
Small Quaker	5.3	9.8	Early Grey	7.2	7.4	Hebrew Character	36	14
Early Grey	4	7.4	Small Quaker	5.7	5.8	Clouded Drab	8	3
Clouded Drab	3.4	6.3	Clouded Drab	5.2	5.4	Shuttle-shaped Dart	8	3
Double-striped Pug	2	3.7	Brindled Beauty	4.2	4.3	Small Quaker	7	3
Brindled Beauty	1.7	3.2	March Moth	2.5	2.6	Waved Umber	6	2
Oak Beauty	1.3	2.5	Double-striped Pug	1.9	2	Angle Shades	4	2
Diurnea fagella	1	1.9	Brimstone Moth	1.8	1.9	Powdered Quaker	4	2
Light Brown Apple Moth	1	1.9	Dotted Border	1.8	1.9	Light Brown Apple Moth	2	1

All the trap nights and catches completed by the recorders are summarised in Table 5. The minimum and maximum moth numbers caught in this nine-week period vary

considerably, possibly reflecting location, type of trap and/or the individual micro-climates. The minimum catches range from 0 to 24 and the maximum between 154 and 611, while the trapping effort (Moth Trap Nights) is very high as per usual. As mentioned earlier some recorders have expressed concern of poor catches due to the cold weather this quarter.

The third section shows the preferred night for trapping. Although Friday is the official night three nights either side are acceptable as everyone hopefully has a life apart from mothing.

Table 5. GMS 2023 Q1. Regional Statistics

Region	Gardens	Moths			
		Total	Mean	Min	Max
SC	21	1226	58	13	282
NE	32	1915	60	4	224
Y&H	20	1566	78	24	253
NW	32	3702	116	1	403
IRL	18	1757	98	9	343
EE	32	2278	71	9	309
EM	43	4226	98	3	611
WA	35	3967	113	9	295
WM	18	1664	92	0	224
SE	30	1615	54	5	154
SW	31	3017	97	5	438
CI	2	182	91	87	95

Moth Trap Nights		
Possible	Actual	Percent
189	175	93
288	269	93
180	163	91
288	276	96
162	151	93
288	270	94
387	368	95
315	291	92
162	155	96
270	256	95
279	252	90
18	18	18

Weekday Trap Nights							
Night	Tues	Wed	Thurs	Fri	Sat	Sun	Mon
Days	24	33	174	1177	418	136	46
Percent	1	2	9	59	21	7	2

Among the *Orthosia* species, I was pleased to see an increase in the numbers of Small and Common Quaker and Clouded Drab in our trap. As these were the most numerous moths caught by us this quarter, I thought I would look at their numbers over the last 10 years together with their regional distribution.

They all suffered from the non-year of 2013 but only the Common Quaker has shown appreciable recovery peaking in 2014 and 2019 before another population crash. Interestingly the percentage of gardens visited followed to some extent the fortunes of these moths (figs 11 & 12).

Fig 11. GMS 2023 Q1. Average No. of *Orthosia* Species 2012 to 2023

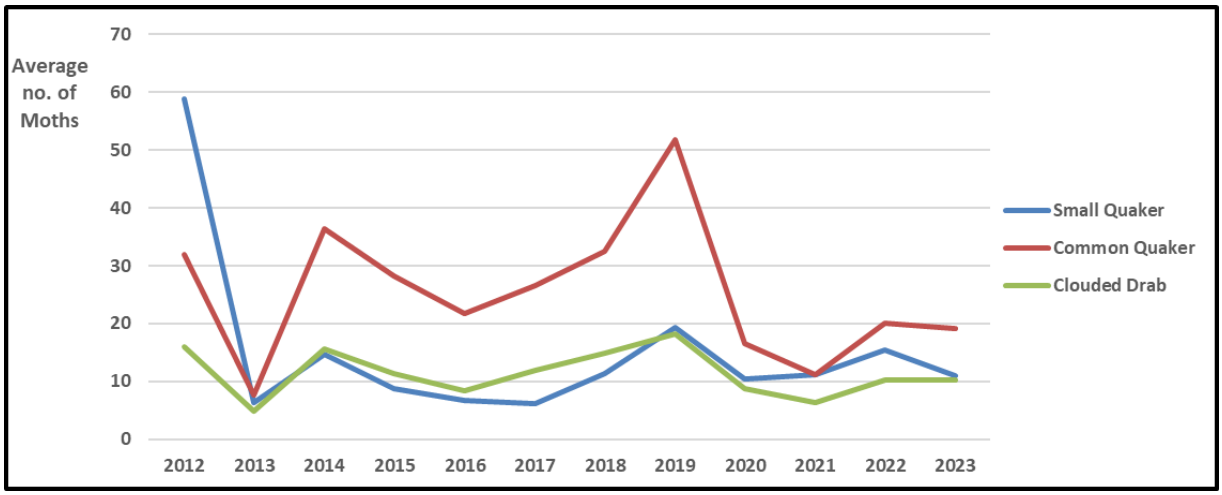
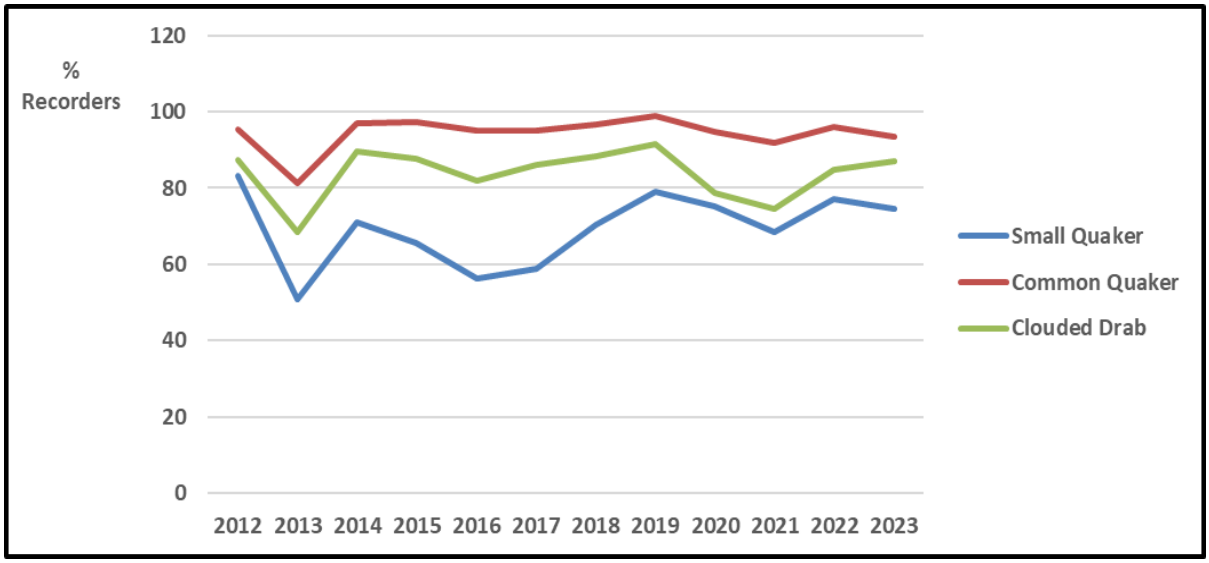


Fig 12. GMS 2023 Q1. Percentage of Recorders Catching *Orthosia* Species



The numbers caught vary throughout the regions depending upon both their abundance and the number of recorders. All these numbers have to be averaged so that their abundance can be compared without bias. Figure 13 shows the average number caught in each vice county and figure 14 shows the number of recorders giving an indication of their distribution. The coloured vice counties indicate the presence of GMS recorders. Coloured ones without symbols show either no *Orthosia* species were caught or the recorders did not send records in in time.

Fig 13. GMS 2023 Q1. Map of *Orthosia* Distribution

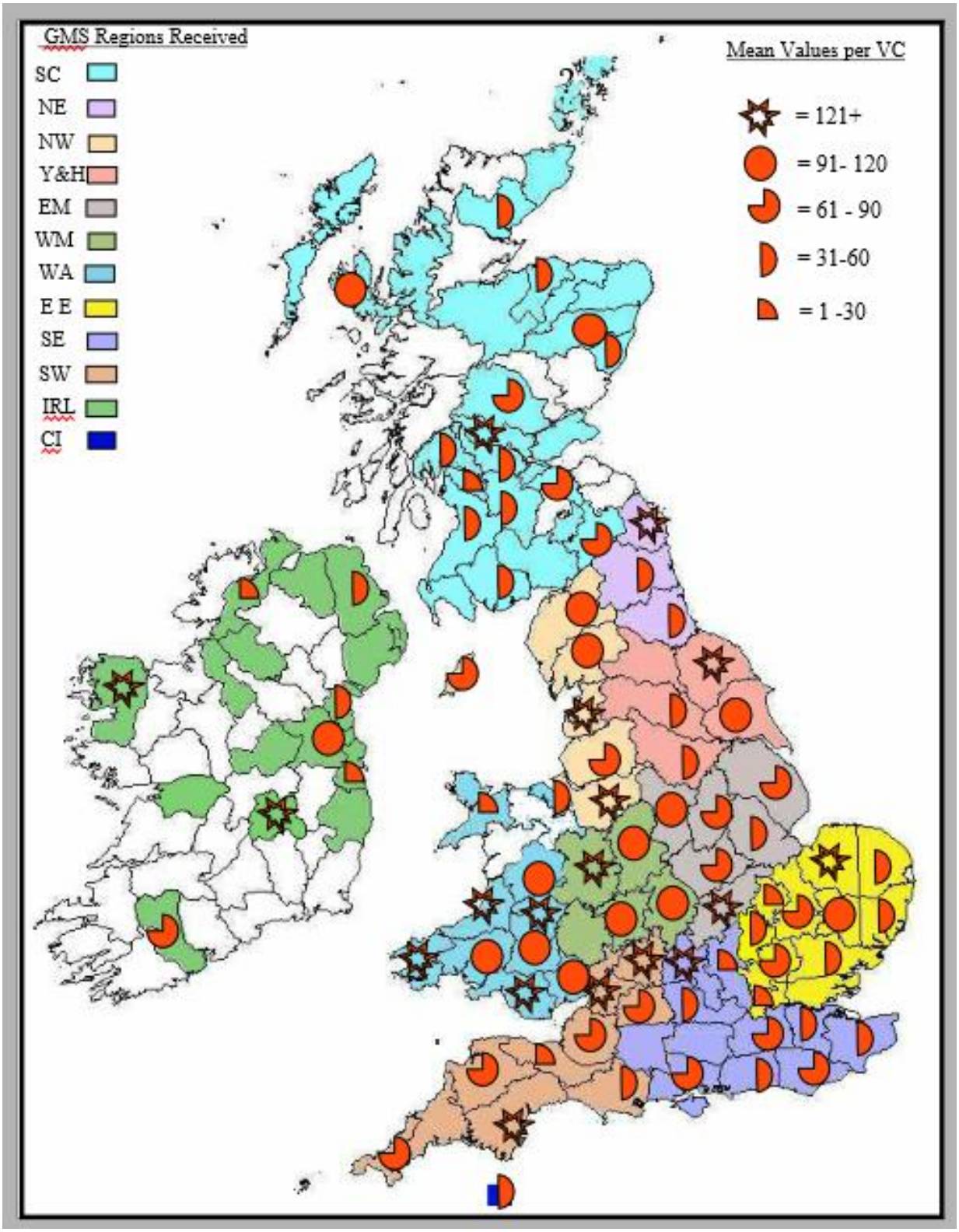
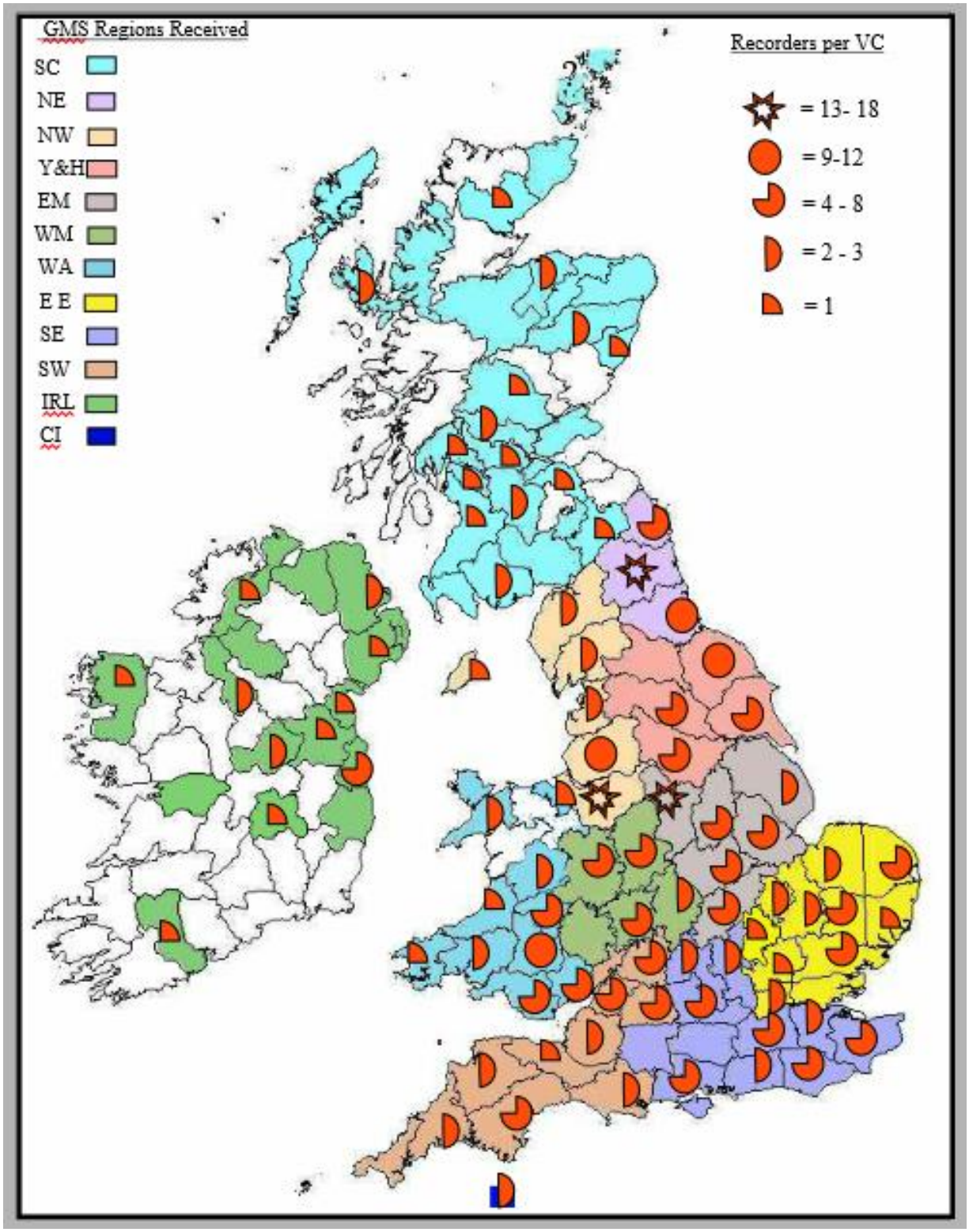


Fig 14. GMS 2023 Q1. Map of Recorders of These Moths



Additional Species

As mentioned in previous reports, one part of the form which is often ignored is the lower section where you are invited to add moths which are not on the core/regional list. The number of entries this quarter has been lower with micro moths being less active in the early part of the year. There were 235 rows of data coming from all of the regions giving a total of 355 moths of 75 species. Some of these may be duplicated several times when one recorder identifies it as the species whilst others record it as a sp. or an agg (table 6).

Once again, a pug tops the list, with Water Carpet followed by one of the lovely ”flying anchor” moths with Early Tooth-striped in fourth place.

Table 6. GMS 2023 Q1. Top 20 Additional Species

Latin/Vernacular	Total	SC	NE	Y&H	NW	Irl	Wa	WM	EM	EE	SE	SW
Oak-tree Pug	24	0	0	0	0	3	0	16	3	0	2	0
Water Carpet	24	0	3	0	10	0	6	1	3	0	1	0
Beautiful Plume	23	0	0	0	0	0	0	7	10	2	1	3
Early Tooth-striped	19	0	0	0	10	0	4	0	3	1	0	1
Frosted Green	18	1	1	0	3	0	4	3	1	3	2	0
Belted Beauty	18	0	0	0	0	18	0	0	0	0	0	0
Agonopterix heracliana	16	2	0	0	0	0	2	1	5	1	4	1
Grapholita jungiella	13	0	0	0	0	13	0	0	0	0	0	0
Acleris literana	11	1	0	0	0	0	1	2	3	0	4	0
Blossom Underwing	9	0	0	0	1	0	2	0	3	1	2	0
Puss Moth	8	0	0	0	1	0	7	0	0	0	0	0
Cream Wave	8	0	1	0	0	0	7	0	0	0	0	0
Agonopterix alstromeriana	7	0	0	0	0	0	0	1	0	3	0	3
Oak Nycteoline	6	0	0	0	0	0	0	5	0	1	0	0
Mottled Pug	5	0	0	0	0	0	0	3	2	0	0	0
Great Prominent	5	0	0	0	0	0	0	0	0	0	5	0
Dotted Chestnut	5	0	0	0	0	0	0	0	0	0	4	1
Waved Umber	4	0	0	0	0	0	0	4	0	0	0	0
Ruddy Highflyer	4	0	0	0	0	4	0	0	0	0	0	0
Depressaria daucella	4	0	0	0	0	0	0	0	0	0	3	1
Agonopterix arenella	4	0	0	0	0	3	1	0	0	0	0	0

Early Grey (*Xylocampa areola*)

This moth is a member of the Noctuid family and as its name suggests is one of the earliest moths to emerge in the spring, flying from March to May. Its scientific name is genus *Xylocampa* (*xylo* – wood and *campa* – a caterpillar from the cryptic larva which closely resembles a twig) and species *areola* (a small space demarcated by lines from the dark-ringed, pale stigmata).

It is resident and widespread in England, Wales, Isle of Man and the Channel Islands and is patchily distributed in Scotland, mainly in the west and central belt. It is also widely recorded in Ireland but more local in the north-west. Its distribution trend shows a significant long-term increase in range but a 15% reduction in abundance between 1970 and 2016 (Atlas of Britain and Ireland's Larger Moths).

Its forewings are ash-grey, rough in appearance and marbled with blackish-grey markings. The discal spots are pale and there is an additional oval joined to the first and also to the kidney mark in most cases. The ground colour is variable with often a pinkish flush, especially on the fringes.

It is found in woods, hedgerows and gardens and the foodplant of the larva is both wild and cultivated honeysuckle. It overwinters as a pupa underground in a strong cocoon. The egg is laid singly on a stem of the food plant. The larva is present between April and June, feeding at night and resting along a woody stem by day.

Fig 15. GMS 2023 Q1. Flight period of the Early Grey

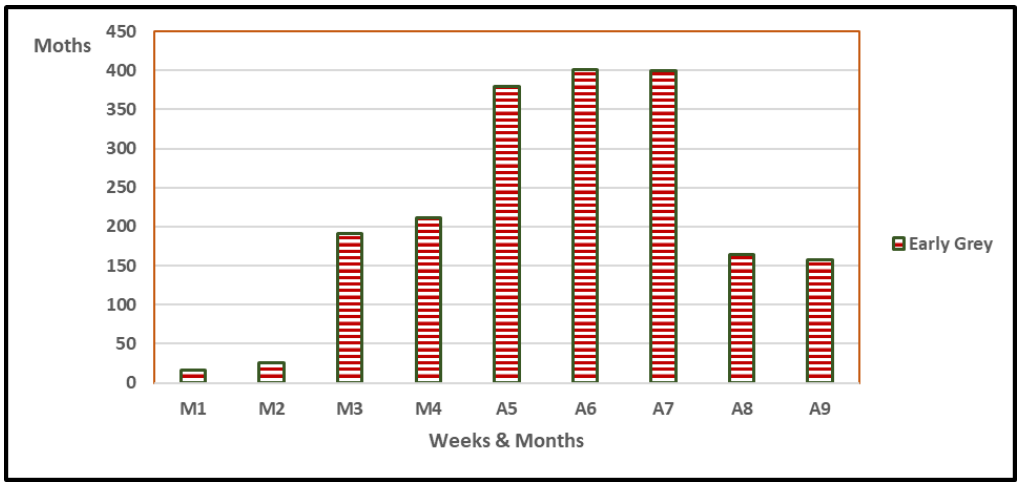


Fig 16. GMS 2023 Q1. Mean number of Early Grey 2017 to 2023

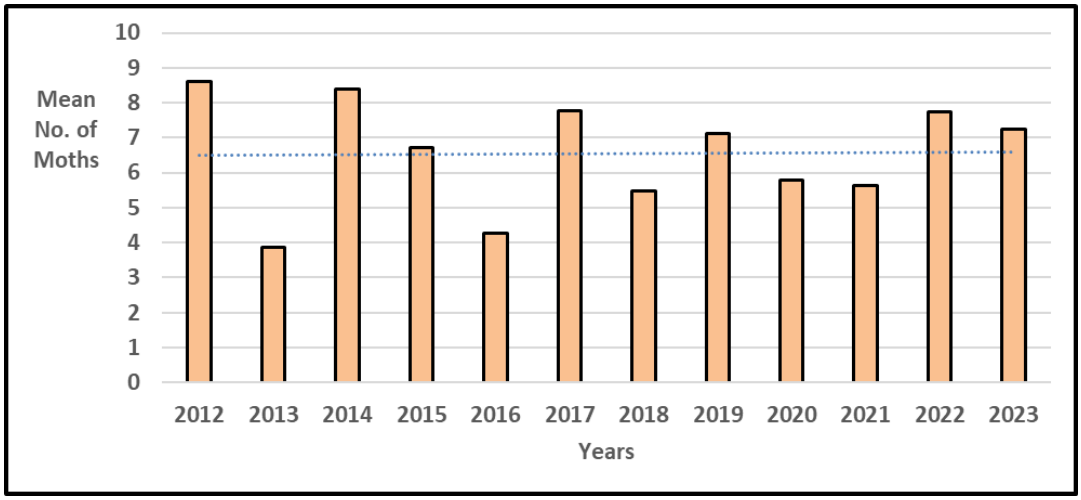
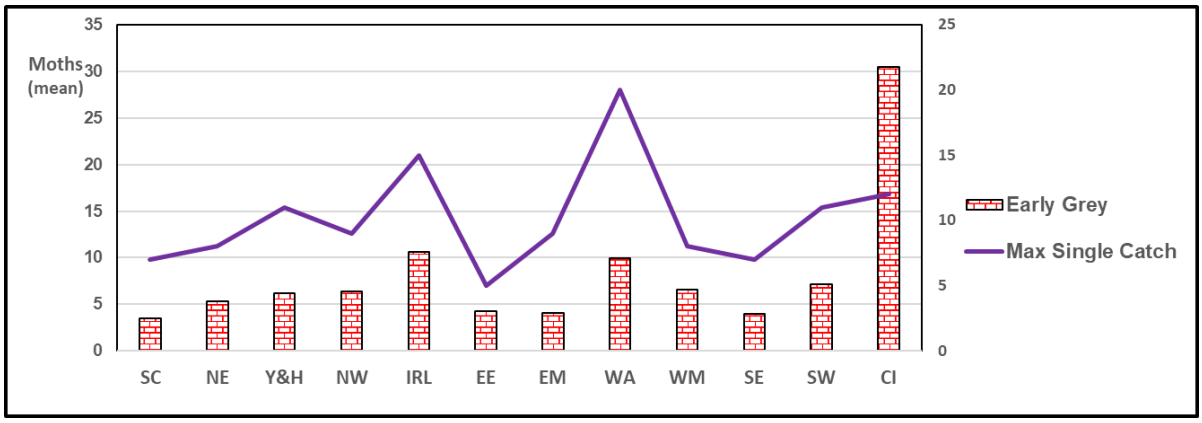


Fig 17. GMS 2023 Q1. Regional Distribution of the Early Grey



A Scarcity of Moths ?

David Baker

The majority of my recording group in God's Own County have now commented on the scarcity of moths in the first quarter of 2023. This is certainly reflected in my garden catch.

Immediately before these comments, on 23 April, I received an e-mail from a pal who was holidaying adjacent to the Wood of Cree in Galloway, Dumfries. This e-mail contained an attachment which showed an image of a **Scarce Prominent**. New to me!!

This prompted me to look to see how many moths carried the name "Scarce". Surprisingly I found that there are twenty-one macro species of which I have only seen four.

Scarce Prominent

Scarce Silver-lines

The first of my own “scarce” sightings was in 2003 when I recorded a Scarce Silver-lines and I have now recorded 15 visits from this beautiful moth.

In 2006 a **Scarce Bordered Straw** visited my garden. Further representatives of this migrant species have returned twice, in 2021 and 2022. Who knows, one may also make another welcome visit this late-Autumn.

Scarce Bordered Straw (2006)

Scarce Bordered Straw (2021)

Since 2013 I have had 66 sightings of the **Scarce Footman** which, although classed in the well used Field Guides as widespread, appears to have only become rated as “ uncommon and local” within Yorkshire this century.

Another species which is rated as widespread is the **Scarce Umber**, a moth of open woodland, which has avoided my trap for 24 years but made a welcome appearance in November 2022.

Scarce Footman

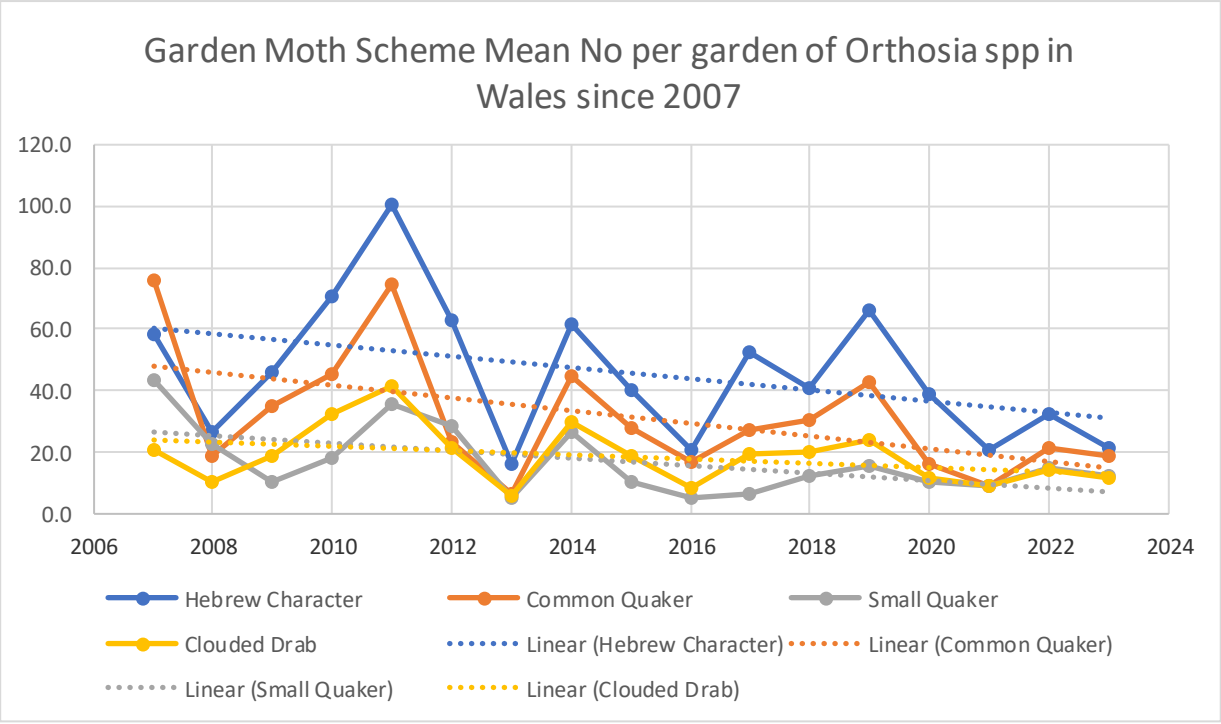
Scarce Umber

My query now is: How many of our recorders see far more of these so-called scarce species than I have managed over the last 24 years? And: just how scarce is SCARCE??

How have the common Orthosia species done in Wales?

Norman Lowe

The Garden Moth Scheme has been monitoring the numbers of common moths for 17 years now, and this is starting to become long enough to enable trends to be established. In order to generate findings likely not be accepted as significant by the statisticians it is necessary that the numbers involved are high. For that reason, I thought I'd take a look at the Big Spring 4 (Hebrew Character, Common Quaker, Small Quaker and Clouded Drab) in Wales and I have to say that I got a bit of a shock



The chart shows that for all 4 species the trend line from 2007 to 2023 is down, though of course there are variations due to weather conditions and other causes.It is striking that the four chart lines follow each other quite closely. So, 2011 was the best year for

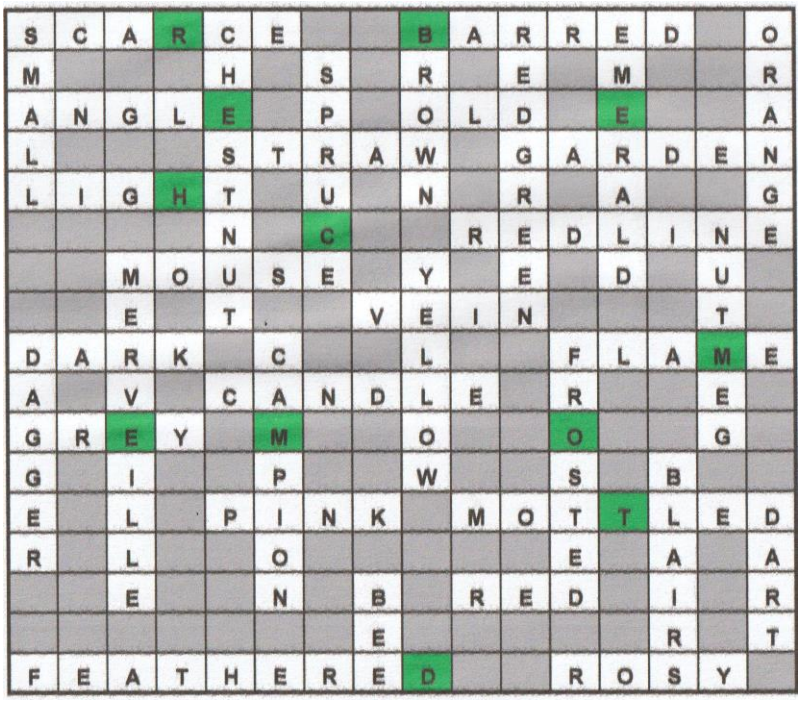
all 4 species and 2013 was the worst. But numbers over the last 3 years have been consistently low.

What do people think? Are moth numbers going down for some species, and possibly up for others?

Puzzle Corner

Nonconformist

The solution to Autumn-catch Puzzle 2022

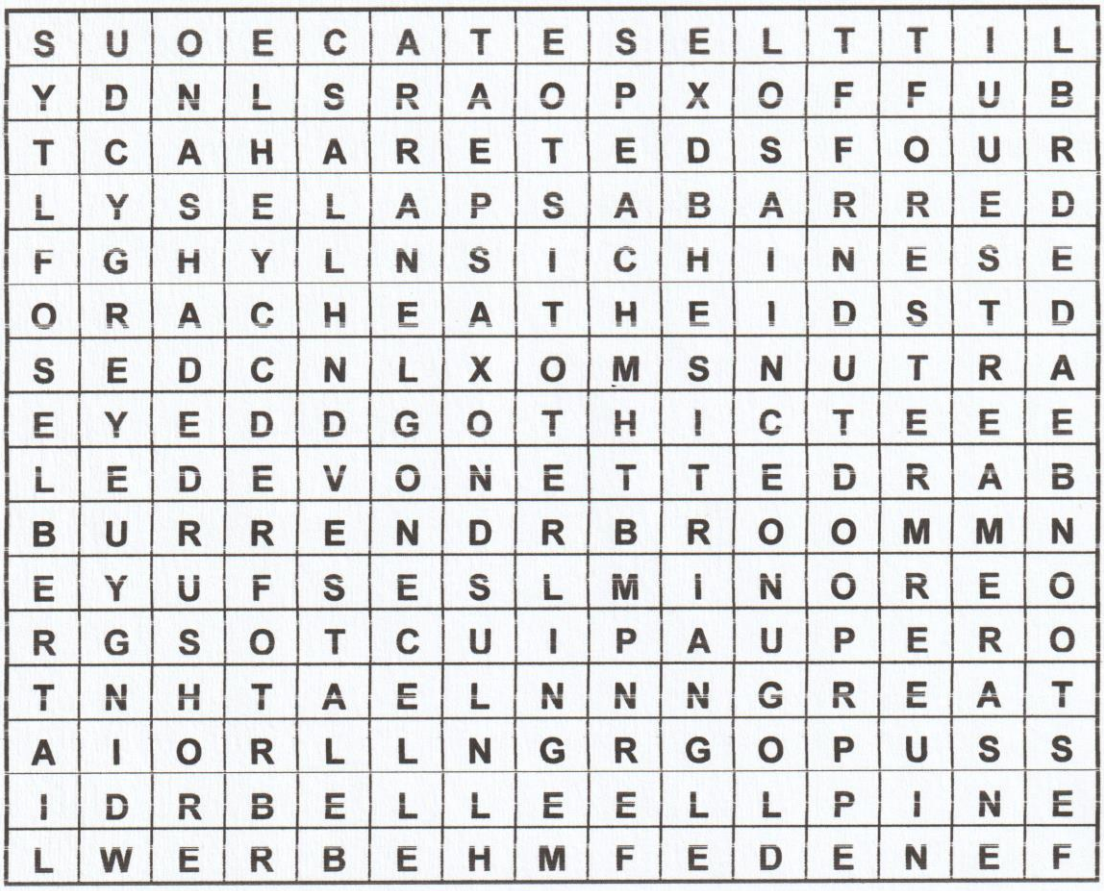


The hidden answer is:- DECEMBER MOTH

Moth Word Search No.5

The word square below contains either the whole, or a part, of the common name of a macro-moth on our British list. The names can be either horizontal, vertical or diagonal and even reversed. They are 3 letters or longer.

There are not many squares whose letters are not used to form one of these names. Find these and the letters in these squares form the name of another well-known moth. Let's see if you can find the sixty-nine names, without repeats, plus the surprise hidden one. Be lucky and remain sane!



S	U	O	E	C	A	T	E	S	E	L	T	T	I	L
Y	D	N	L	S	R	A	O	P	X	O	F	F	U	B
T	C	A	H	A	R	E	T	E	D	S	F	O	U	R
L	Y	S	E	L	A	P	S	A	B	A	R	R	E	D
F	G	H	Y	L	N	S	I	C	H	I	N	E	S	E
O	R	A	C	H	E	A	T	H	E	I	D	S	T	D
S	E	D	C	N	L	X	O	M	S	N	U	T	R	A
E	Y	E	D	D	G	O	T	H	I	C	T	E	E	E
L	E	D	E	V	O	N	E	T	T	E	D	R	A	B
B	U	R	R	E	N	D	R	B	R	O	O	M	M	N
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T	N	H	T	A	E	L	N	N	N	G	R	E	A	T
A	I	O	R	L	L	N	G	R	G	O	P	U	S	S
I	D	R	B	E	L	L	E	E	L	L	P	I	N	E
L	W	E	R	B	E	H	M	F	E	D	E	N	E	F

Communications & Links.

GMS Website - http://www.gardenmoths.org.uk/ - the Communications section gives information on the regional coordinators; the Downloads section provides access to Identification Guides, Annual Reports and Newsletters, as well as all the regional recording forms and instructions.

Facebook Page - https://www.facebook.com/GardenMothScheme - we now have over 2500 'Likes'!
Facebook Group - https://www.facebook.com/groups/438806469608527/ - currently with more than 2700 Members (not all active GMS participants) – open membership – all recording forms, instructions and micro-moth identification guides are available in the Files section.

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