

GMS News

Spring 2022

Weeks 1-9



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Editorial

As I write this, the sizzling weather makes it easy to forget the cold we all experienced at the beginning of spring. But even so the Big Spring Five (Hebrew Character, Common Quaker, Clouded Drab, Small Quaker and Early Grey) made their appearance in good numbers, if only briefly, in my garden trap.

Evan's analysis of the Quarter 1 results show that catches were the second worst in the last ten years but at least they were an improvement on the miserable 2021 results. Rather surprisingly, though, moth numbers didn't seem to correlate with minimum night-time temperatures. Clearly other factors are at work. The featured moth for the Spring Quarter is the Brindled Beauty which, whilst suffering a national long term decline, seems to have done well in Wales. I know that in my county of Breconshire and in my own garden the number of records has increased greatly over the past 20 years.

Next, one of our newer GMS recorders, John Austin, reflects on the numbers off micros in his trap compared with macro moths. He discusses the relative difficulty of identifying micros and suggests that true numbers might be higher if all micros were identified.

For some reason I seem to have received fewer articles than usual this quarter so I had to fall back on my own resources. The result is a look back at how moth illustrations have changed over time, judging by the material in my own collection. In passing it recalls times when scientific publications used the Latin language and also when shop prices were routinely quoted in guineas. We finish with Nonconformist's Crossword which this time I confess I haven't completed (sorry, Nonconformist).

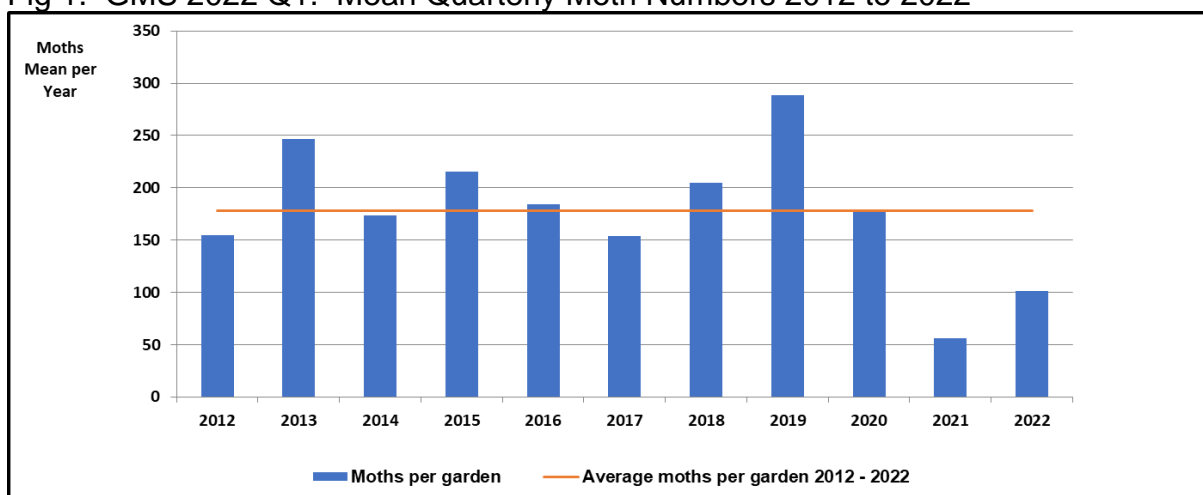
Overview GMS 2022 1st Quarter

Evan Lynn

The consensus of opinion was that the quarter started off slowly, but as Figure 1 shows there was a distinct improvement over last year but still not enough to challenge the previous 10 years.

Do not place too much emphasis on the 2021 numbers as we do not have the total and corrected numbers which are still being processed. Having said that there will probably not be too much change to the histogram unless, in the unlikely event, the missing recorders have large numbers of moths.

Fig 1. GMS 2022 Q1. Mean Quarterly Moth Numbers 2012 to 2022

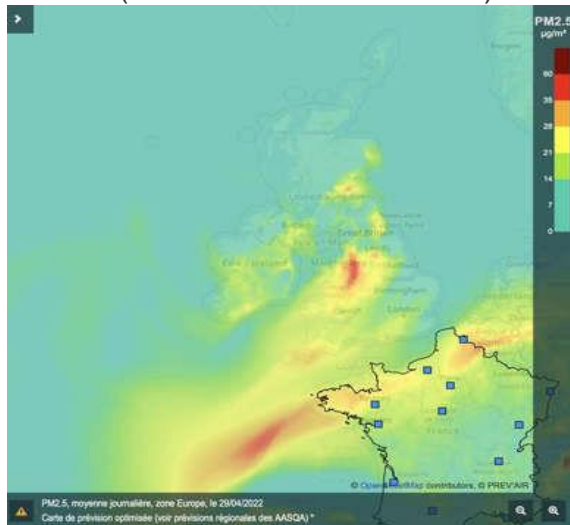


The weather for the first half of March was rather cold and unsettled with Aberboyne in Aberdeenshire recording -9.1°C on the 2nd. It then turned milder until the end of the month when cold and unstable conditions returned with snow in some areas. Unsettled weather continued into April with a minimum temperature of -8°C at Tulloch Bridge in Inverness-shire on the 1st, 62.4mm of rain at Achfary in Sutherland on the 4th and hurricane force gusts on the Isle of Wight on the 7th. Later on, high pressure moved in to give warmer sunnier conditions. The month ended with high pressure firmly in charge. Normally on the west coast this would produce anticyclonic gloom. Moist westerly winds would form a layer of continuous stratiform clouds that are unable to rise from under the lid of heavier descending warm air. This time, however, a cold blast of Arctic air swept in below this lid of high pressure to drop the air temperatures.

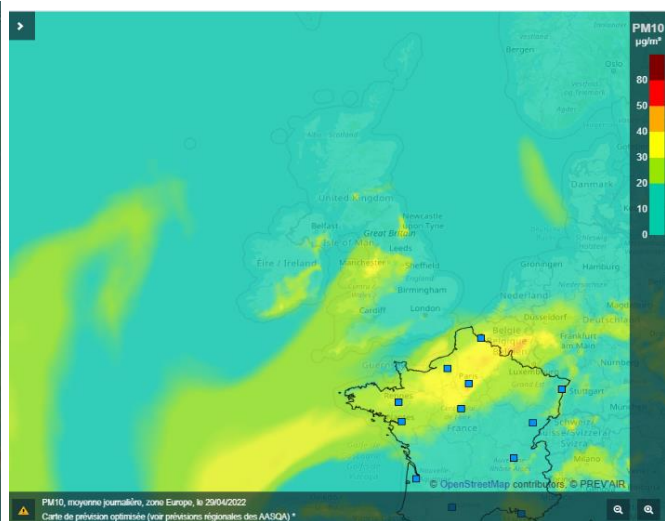
This east coast form of anticyclonic gloom excels in trapping strong concentrations of pollution produced from traffic and industry. The French pollution monitoring service, Prev'Air, produces charts showing the distribution of this pollution. Figures 2 & 3 show the distribution of micron sized particulate matter (PM) on April 29th. These are chemical and dust particles released from industrial activities, fires and vehicle exhausts, all of which were trapped under the high pressure bringing poor quality air close to the ground. Often, when the wind is from the east, Britain receives some continental pollution but in this case it is home brewed.

Fig 2&3 Prev'Air charts showing PM 2.5 and PM10 particles on April 29 2022.

PM 2.5 (dust & chemical aerosols)



PM 10 (fumes, fuels and smoke)



Some of this weather can be illustrated with the following Met Office charts:

Fig 4. Minimum Temperatures for March & April 2022 (with permission of the Met Office)

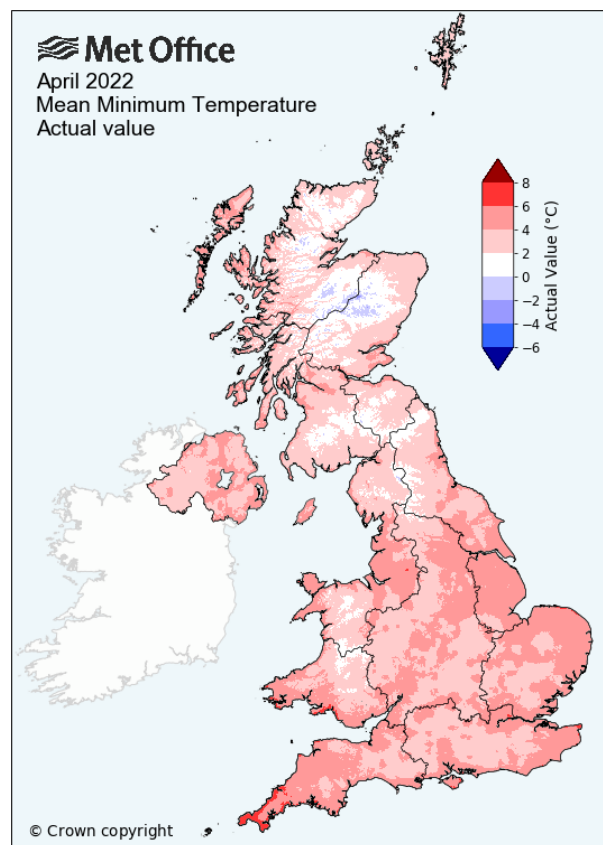
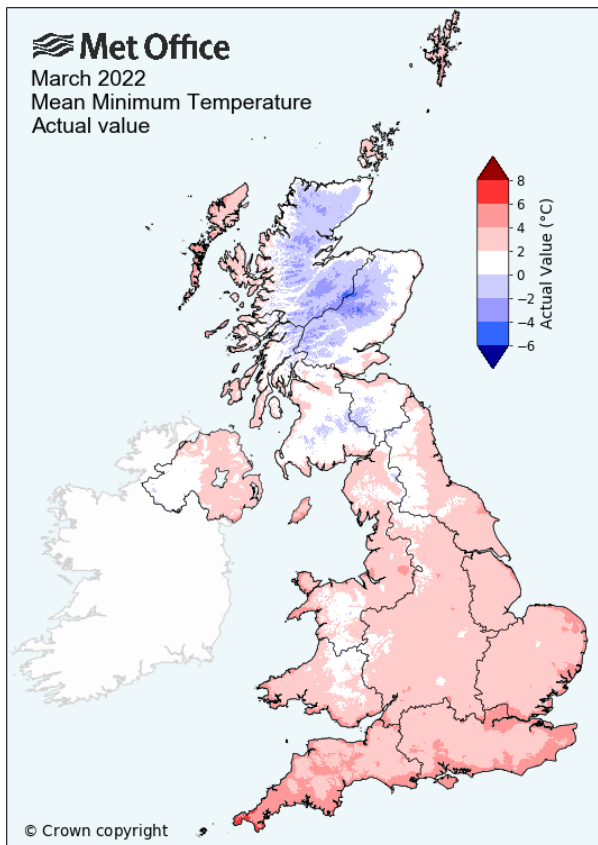


Fig 5. Total rainfall for March & April 2022 (with permission of the Met Office)

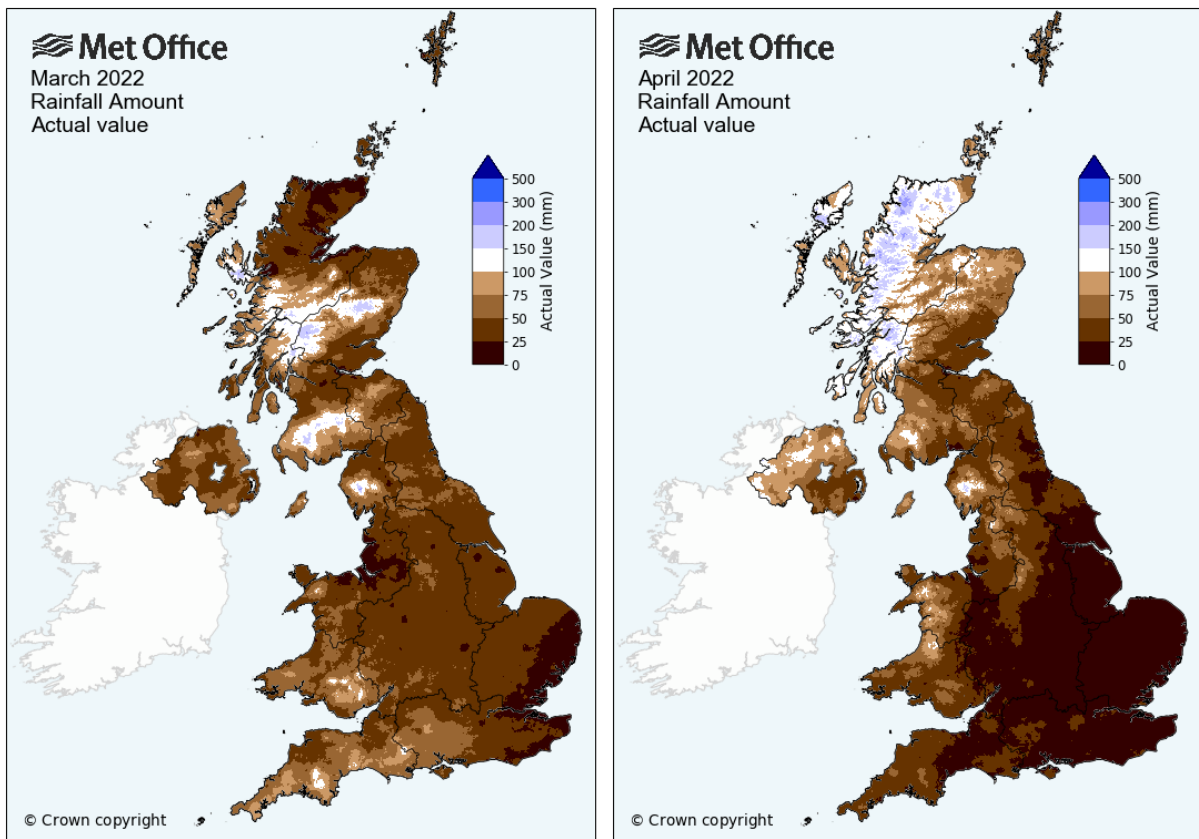
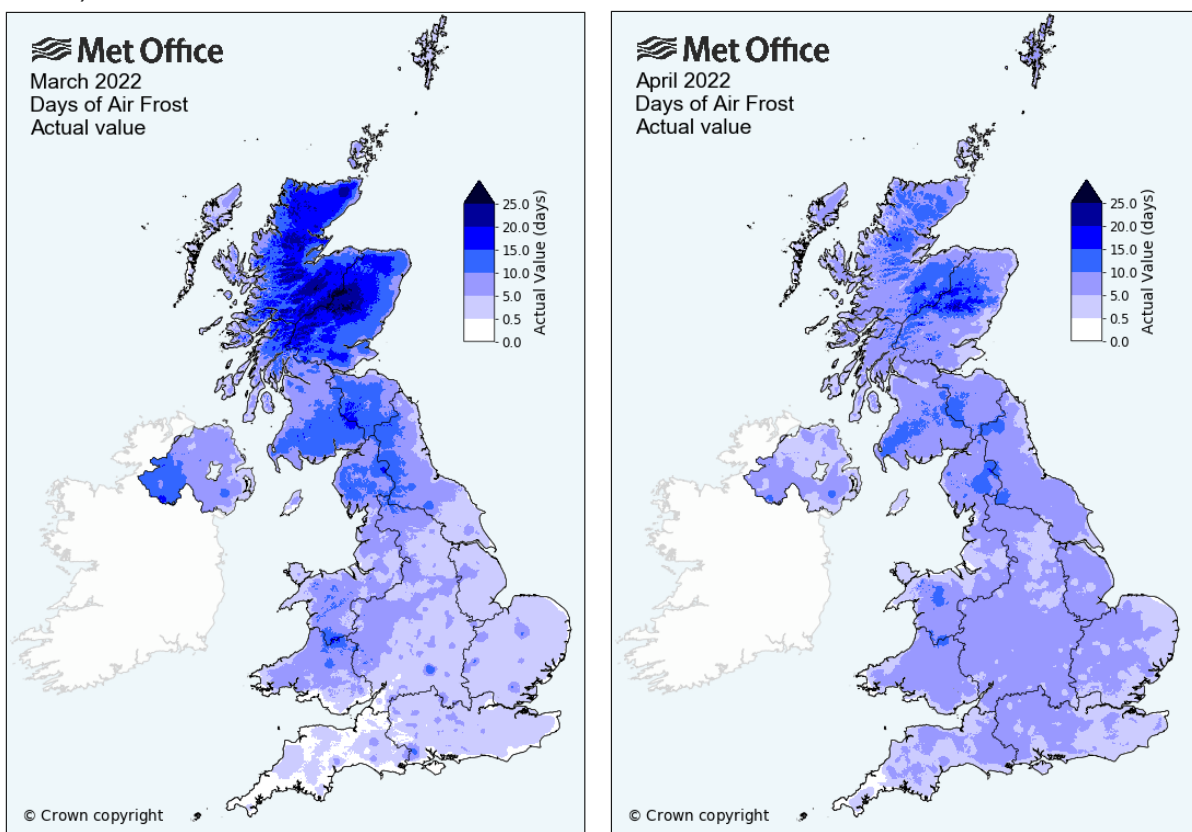
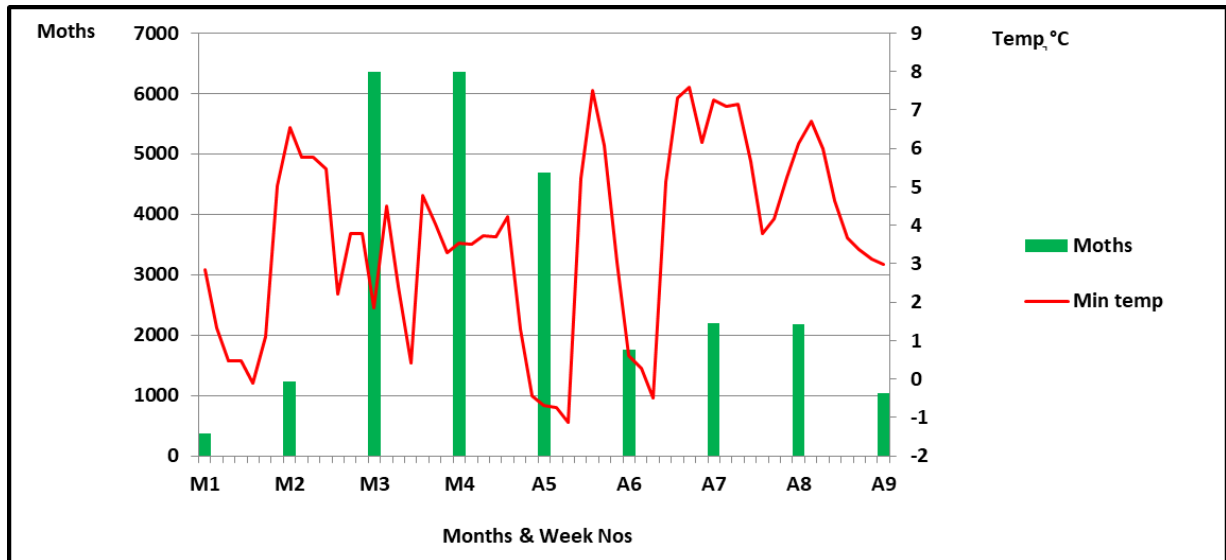


Fig 6. Number of days with air frost for March & April 2022 (with permission of the Met Office)



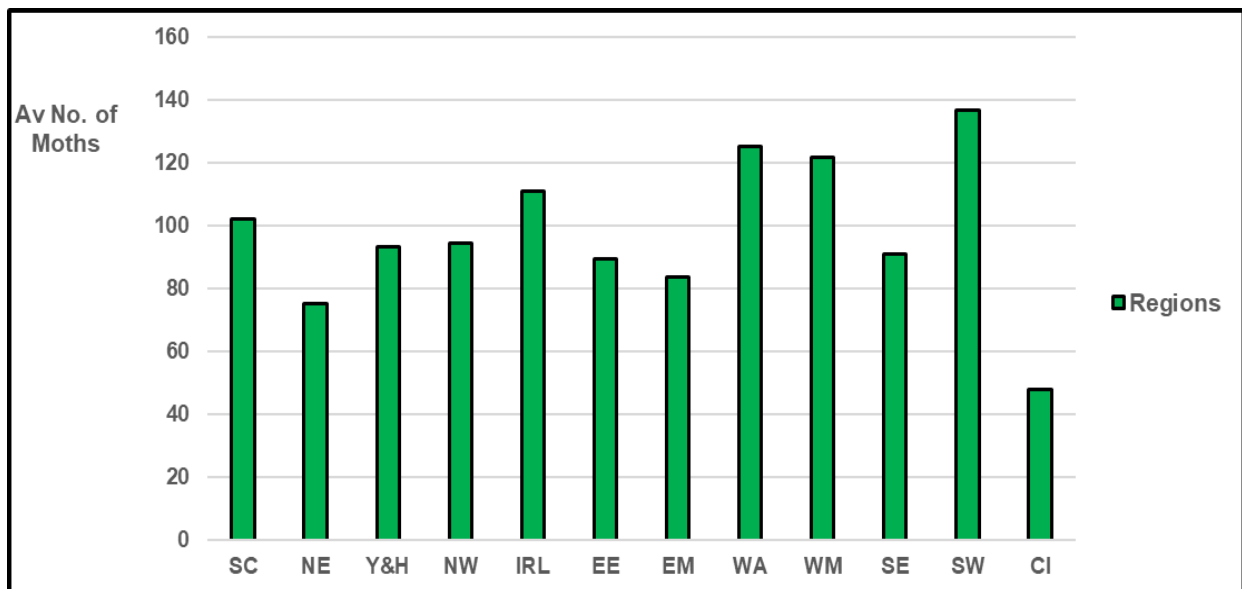
As said earlier, the year got off to a slow start. Certainly figure 7 portrays this until the third week when catches soared dropping when the minimum temperatures drop. Luckily in week & the temperatures rose from below 0°C to over 7°C for that night.

Fig 7. GMS 2022 Q1. Number of Moths and Minimum Temperature



When looking at the regional mean number of moths caught there could be a relationship to the overall weather patterns with westerly regions faring a little better . (fig 8).

Fig 8. GMS 2022 Q1. Regional Average No. of Moths



As well as the weather one must also consider the locations of these gardens as some regions may have more gardens away from streetlights. Therefore, each region will have varying numbers of recorders who catch many moths and those who catch less. A comparison of these can be seen in Table 1 where Yorkshire & Humberside and the Northwest are compared. Both have comparable mean numbers (94), but very different numbers of recorders. It would appear that although the Northwest has double the number of recorders it has 13 percent more recorders who caught fewer than 10 moths in the whole quarter and less in the next two size classes thus evening out to the eventual average number.

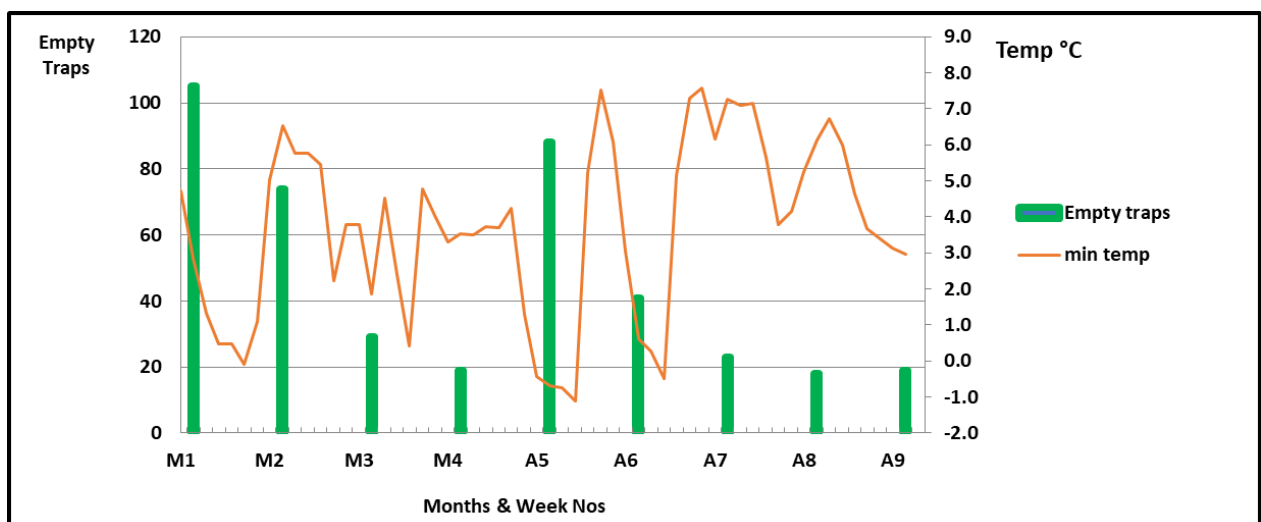
Table 1. GMS 2022 Q1. North West and Yorkshire & Humberside Garden Percentage Size Catches

Y&H Recorders (20)	Rec	Rec	Rec	Rec	Rec	total
Size class (no. of moths)	≤10	≤50	≤100	≤500	>500	1821
No. of Recorders	0	7	6	7	0	20
Percentage	0	35	30	35	0	

NW Recorders (40)	Rec	Rec	Rec	Rec	Rec	Total
Size class (No. of moths)	≤10	≤50	≤100	≤500	>500	3779
No. of Recorders	5	12	9	14	0	40
Percentage	13	30	23	35	0	

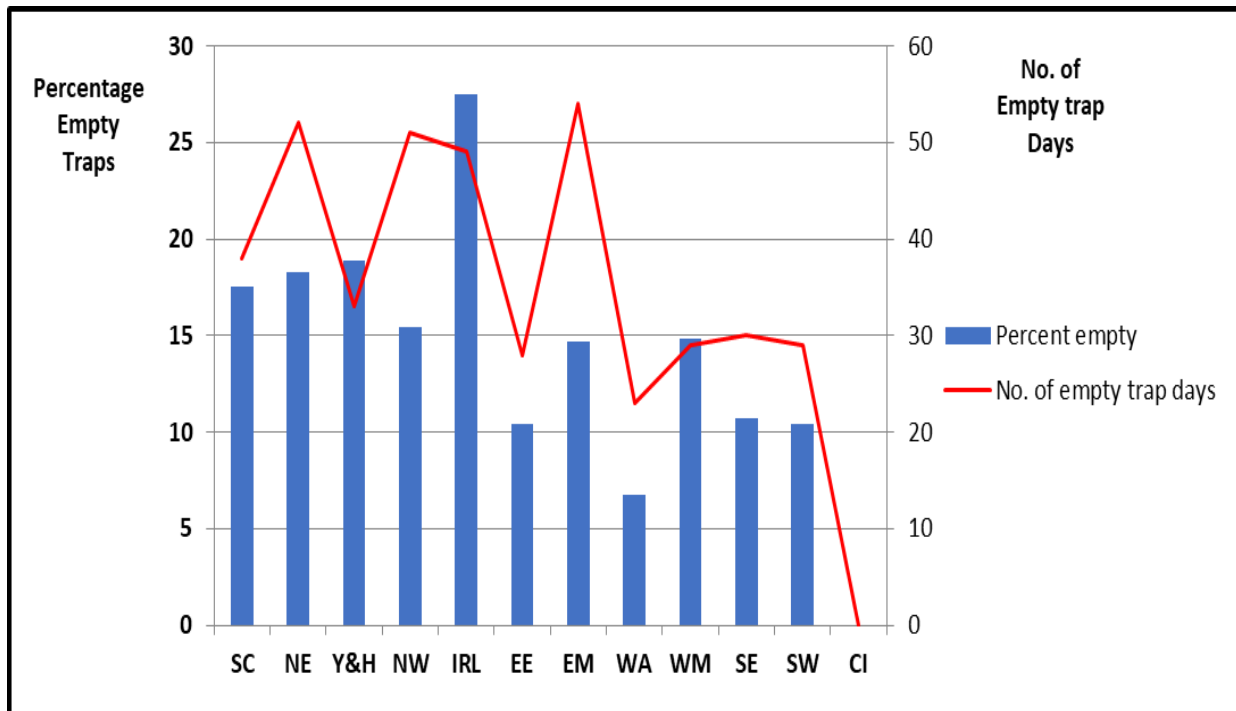
The worst part of trapping in the first quarter is the thought of “no moths” but even just one ubiquitous Hebrew Character will keep the dreaded “nothing” at bay. The number of empty traps together with the minimum temperature is shown in figure 9 and, strangely, week 2 has a large number despite a warmer night.

Fig 9. GMS 2022 Q1. Number of Empty Traps and Minimum Temperature



The regional percentage of empty traps together with the actual number of traps shows Ireland to have the highest percentage (fig 10) but in reality, the first two weeks caused the surge with 12 and 13 empty traps respectively. The remaining weeks were either in single figures or zero.

Fig 10. GMS 2022 Q1 Regional Number of Empty Traps



This quarter I will be noting the differences between two large regions and comparing them with last year. This time it is the North versus the South and with the risk of upsetting some recorders with latitude pride I will use only Scotland together with the South East & South West.

This year the North put in a credible performance with catches exceeding the South in six weeks (fig 11) but in total, average catch lost out by a total of 114 to 103 moths. In 2021 (fig 12), however, Scotland only exceeded the South in three weeks but also in total catch won by 63 to 56 moths.

Fig 11&12. GMS Q1 Weekly Average catches in the South (red) and the North (blue)

Fig 11. 2022

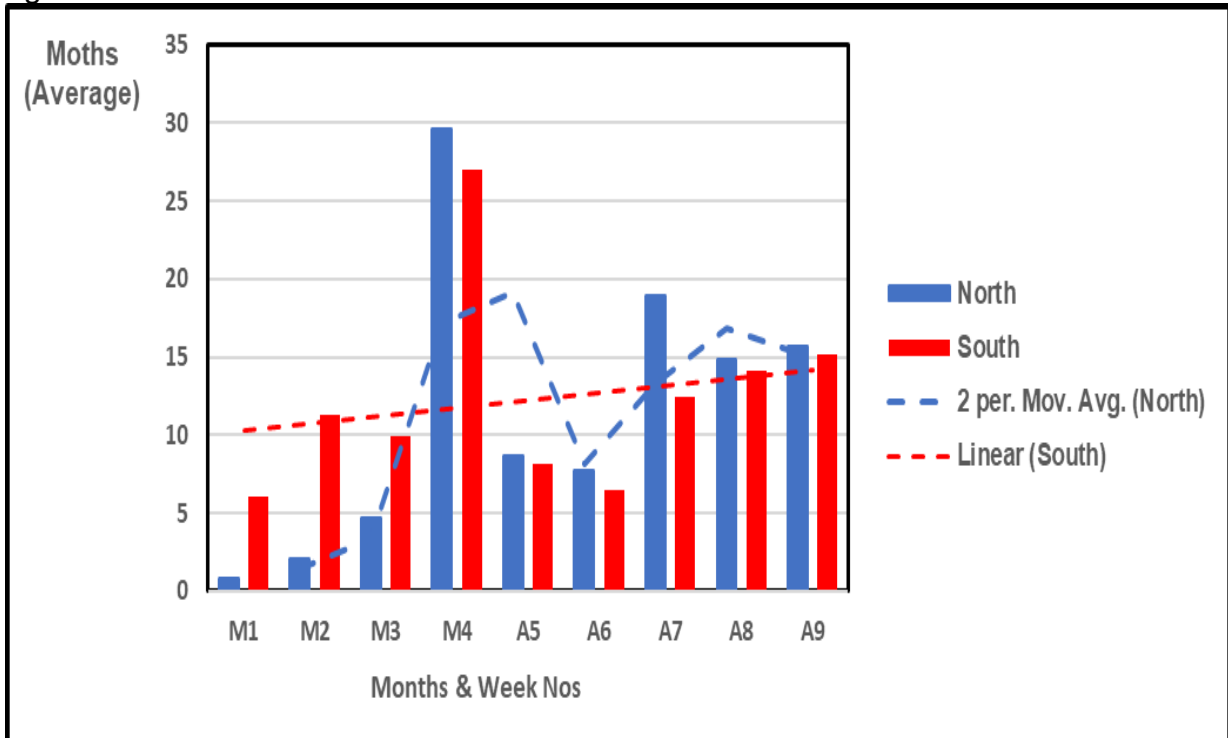
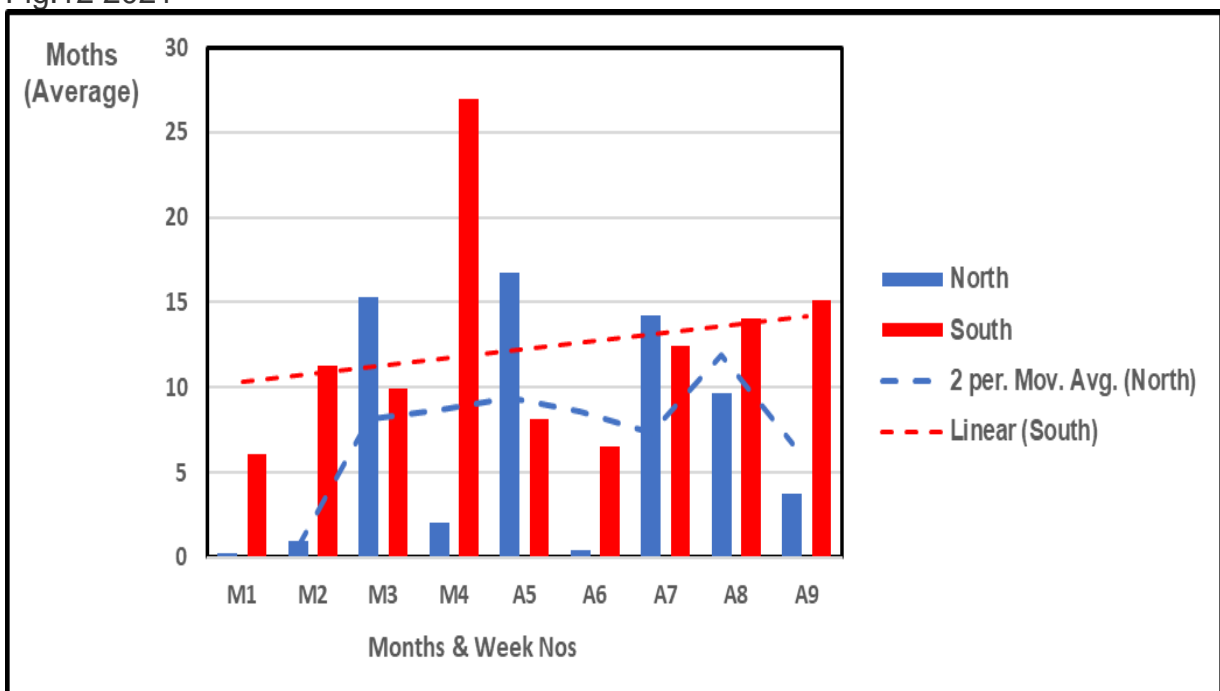


Fig.12 2021



A comparison of the average minimum temperatures for both regions in these two years is shown in Fig 13 & 14. Strangely, although temperatures were lower in Scotland in week 9, 2021, catches were higher.

Fig 13&14.GMS Q1 Weekly Minimum Temperatures in the South (red) and the North (blue)

Fig. 13 2022

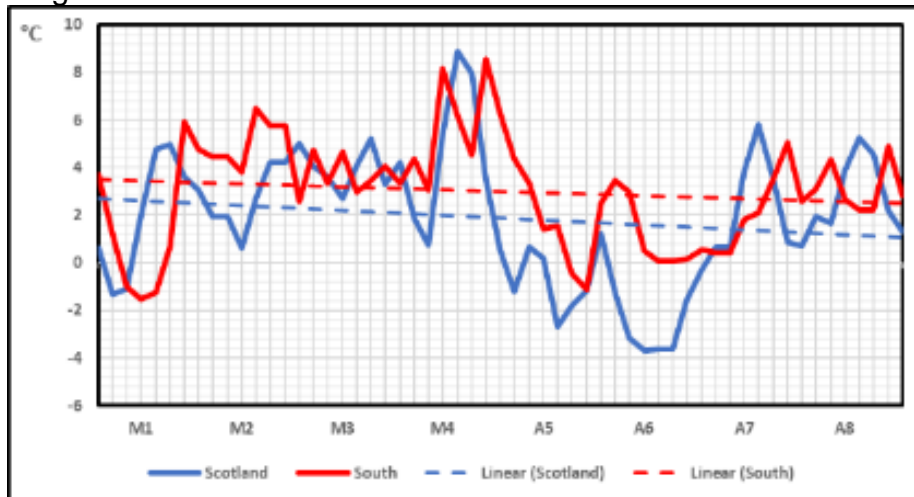
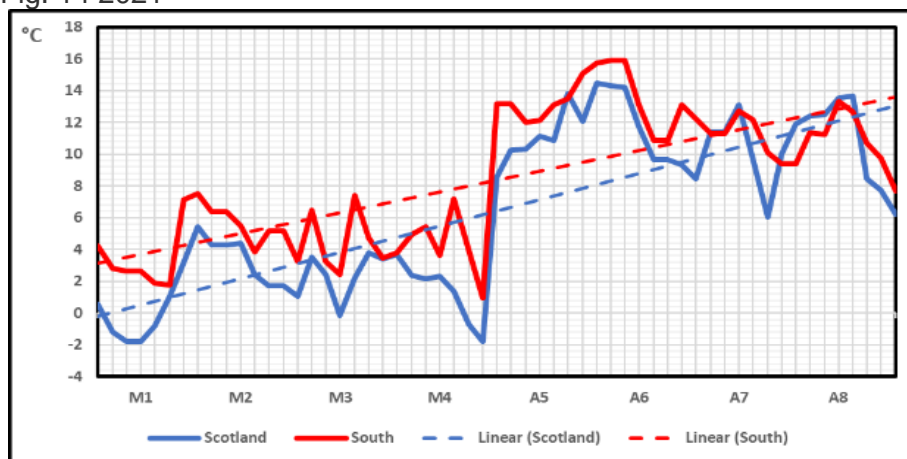


Fig. 14 2021



One thing that intrigued me was the dramatic differences in moth numbers in weeks 4 & 5 in Scotland between the two years (figs 11&12). I compared a range of moths to see the differences in numbers between the two relevant years (table 2).

Table 2. GMS 2022 Q1 Comparison of weeks 4 & 5 in Scotland for 2021 & 2022

	2021	2022		2021	2022	
Moths	Week 4	Week 4	Diff	Week 5	Week 5	Diff
Hebrew Character	20	215	▲ 195	263	92	▼ 171
Common Quaker	21	162	▲ 141	73	57	▼ 16
Clouded Drab	10	115	▲ 105	56	31	▼ 25
Early Grey	2	64	▲ 62	37	19	▼ 18
Yellow Horned	1	42	▲ 41	6	2	▼ 4
Red Chestnut	2	40	▲ 38	13	3	▼ 10
Chestnut	1	23	▲ 22	6	0	▼ 6

No doubt the relative temperatures played their part but possibly the wind speed played a role in Week 4 at least. On the Friday of week 4 2021, the mean wind speed was 17 mph (force 5) while on the same Friday in 2022 it was less than 1 mph (calm).

Statistics

The top 20 table of last year showed a significant drop in numbers and so it is a relief to know that this year the numbers have increased (table 3). Only the Chestnut shows a negative number. Even though there is a sense of relief in the increased numbers, a recent article by Patrick Barkham in the Guardian and a mention on Springwatch showed the number of moths continues to decrease but, as always, the answer is never a simple one.

We welcome back the Channel Islands to the scheme. Their numbers have not been included in this chart as they were not active last year, but even so, with their late start and low moth numbers it might have just disturbed the third decimal place.

Table 3. GMS 2022 Q1. Top 20 Core Species

Position		Top 20 Species	Mean Per Trap			Catching Frequency (%. Of gdns)		
2021	2022		2021	2022	Change	2021	2022	Difference
1	1	Hebrew Character	16.5	24.5	8.1	93	96	3
2	2	Common Quaker	10.1	19.7	9.6	88	96	8
3	3	Small Quaker	8.1	11.8	3.7	68	75	7
4	4	Clouded Drab	4.6	9.5	4.9	70	85	15
5	5	Early Grey	4.7	6.9	2.2	79	86	7
7	6	Brindled Beauty	0.9	2.3	1.4	40	40	1
13	7	Double-striped Pug	0.5	1.9	1.4	26	50	24
6	8	Twin-spotted Quaker	1.4	1.8	0.4	32	46	14
12	9	Oak Beauty	0.7	1.6	0.9	27	51	24
18	10	Light Brown Apple Moth	0.2	1.4	1.2	29	37	8
17	11	Shuttle-shaped Dart	0.2	1.4	1.2	25	41	15
9	12	March Moth	0.6	1.3	0.6	30	41	11
8	13	Early Thorn	0.9	1.2	0.2	22	45	23
11	14	Powdered Quaker	0.7	1	0.4	20	31	11
15	15	Muslin Moth	0.2	0.8	0.5	18	30	12
10	16	Chestnut	0.8	0.7	-0.04	10	30	20
22	17	Brimstone Moth	0.1	0.7	0.6	10	21	11
14	18	Dotted Border	0.4	0.5	0.2	13	23	10
16	19	Shoulder Stripe	0.2	0.3	0.1	14	16	2
29	20	Flame Shoulder	0	0.3	0.2	7	18	11

The top 10 species for each region are listed below in table 4 and to some extent they mirror the top 20 table. The Channel Islands section is one moth short. This is not an error but is actually the total list of their species caught due to a combination of poor catches and to a late start this year.

Table 4. GMS 2022 Q1. Top 10 Regional Core Species

Scotland (26)	Mean	North East (33)	Mean	North West (40)	Mean
Hebrew Character	37.3	Hebrew Character	29.2	Hebrew Character	23.3
Common Quaker	18.5	Common Quaker	12.7	Common Quaker	21.7
Clouded Drab	11.9	Clouded Drab	7.3	Small Quaker	16.0
Early Grey	5.0	Small Quaker	6.4	Clouded Drab	9.2
Red Chestnut	3.7	Early Grey	5.9	Early Grey	5.7
Small Quaker	2.4	Mottled Grey	2.1	Twin-spotted Quaker	3.1
Early Tooth-stripped	2.2	Powdered Quaker	1.5	Double-striped Pug	1.7
Chestnut	2.2	Red Chestnut	1.2	Brindled Pug	1.5
Double-striped Pug	2.0	Twin-spotted Quaker	0.9	Early Thorn	1.1
Yellow Horned	2.0	Oak Beauty	0.7	Oak Beauty	1.1
Yorks & Humber (20)	Mean	Ireland (21)	Mean	East of England (31)	Mean
Common Quaker	23.8	Hebrew Character	35.1	Hebrew Character	17.2
Hebrew Character	21.0	Clouded Drab	15.8	Common Quaker	17.0
Small Quaker	14.4	Common Quaker	15.4	Small Quaker	12.1
Clouded Drab	14.0	Early Grey	9.0	Early Grey	6.0
Early Grey	4.9	Powdered Quaker	3.6	Clouded Drab	5.9
Common Plume	1.5	March Moth	3.4	Shuttle-shaped Dart	4.7
Twin-spotted Quaker	1.4	Early Thorn	3.0	Double-striped Pug	3.0
Powdered Quaker	1.3	Red Chestnut	2.2	Brindled Beauty	2.5
Early Thorn	1.1	Early Tooth-stripped	2.0	Oak Beauty	2.0
Oak Beauty	1.0	Light Brown Apple Moth	1.9	March Moth	1.6
East Midlands (42)	Mean	West Midlands (22)	Mean	Wales (40)	Mean
Hebrew Character	16.3	Common Quaker	31.0	Hebrew Character	31.7
Common Quaker	15.3	Small Quaker	24.8	Common Quaker	20.7
Small Quaker	15.1	Hebrew Character	19.3	Small Quaker	14.2
Clouded Drab	9.2	Clouded Drab	9.5	Clouded Drab	13.5
Early Grey	4.0	Brindled Pug	5.9	Early Grey	12.9
Shuttle-shaped Dart	2.2	Early Grey	5.3	Brindled Beauty	6.6
Light Brown Apple Moth	2.1	Twin-spotted Quaker	3.8	Twin-spotted Quaker	2.6
Twin-spotted Quaker	1.8	Double-striped Pug	2.1	Oak Beauty	2.4
Double-striped Pug	1.7	Many-plumed Moth	1.7	Brindled Pug	1.9
Common Plume	1.6	Oak Beauty	1.6	March Moth	1.9
South East (32)	Mean	Southwest (32)	Mean	Channel Islands (1)	Mean
Common Quaker	19.8	Hebrew Character	27.8	Early Grey	7
Hebrew Character	15.8	Common Quaker	25.2	Common Quaker	7
Small Quaker	13.5	Early Grey	9.7	Hebrew Character	4
Early Grey	6.3	Clouded Drab	7.8	Pale Prominent	1
Clouded Drab	3.5	Small Quaker	7.2	Muslin Moth	1
Double-striped Pug	2.9	Brindled Beauty	5.6	Clouded Drab	1
Shuttle-shaped Dart	2.6	Double-striped Pug	4.6	Tawny Shears	1
Oak Beauty	2.6	Brimstone Moth	4.2	Shuttle-shaped Dart	1
Light Brown Apple Moth	2.5	Brindled Pug	3.9	Flame Shoulder	1
Brindled Pug	2.2	Light Brown Apple Moth	3.8		

All the catches and trap nights completed by the recorders are summarised in Table 5. The minimum and maximum moth numbers both within and between regions over the nine-week period vary considerably, yet with some similarities, possibly reflecting location, type of trap and/or the individual micro-climates while the trapping effort (moth trap nights) for the most part remains remarkably consistent. 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 2022 Q1. Top 10 Regional Statistics

Region	Gardens	Moths				Moth Trap Nights		
		Total	Mean	Min	Max	Possible	Actual	Percent
SC	26	2659	102	9	499	234	217	93
NE	33	2489	75	12	221	297	284	96
Y&H	20	1871	94	22	218	180	175	97
NW	40	3779	94	2	484	360	330	92
IRL	21	2331	111	3	365	189	178	94
EE	31	2780	90	10	370	279	269	96
EM	42	3523	84	12	216	378	368	97
WA	40	5016	125	12	423	360	341	95
WM	22	2680	122	6	432	198	195	98
SE	32	2909	91	9	310	288	279	97
SW	32	4379	137	9	340	288	278	97
CI	1	24	N/A	N/A	N/A	9	4	44

Weekday Trap Nights							
Night	Tues	Wed	Thurs	Fri	Sat	Sun	Mon
Days	34	39	193	1409	328	154	66
Percent	2	2	9	63	15	7	3

Additional Species

The lower part of the form is to input other moths caught in the GMS trap that are not in the core and regional species list. This quarter, there were over 195 rows of data coming from all of the regions giving a total of over 187 moths of 79 species of both micro and macro moths. This is assuming of course that the identifications are correct.

Some of these may actually be duplicated up to three times when one recorder identifies it as the species whilst others record it as a sp. or an agg. Table 6 below lists the top moths from the section for this quarter. "R" identifies it as a regional species and is actually included in their upper section. The Frosted Green was the main species caught which here in VC46 is a welcome sign of spring.

Although not listed here, the catch of the quarter was a Common Footman caught by a recorder in Ireland. Before you go spilling your coffee or typing out emails it was in fact a larva that had fallen into the trap!

Table 6. GMS 2022 Q1. Top Additional Species

Latin/Vernacular	Total	SC	NE	Y&H	NW	Irl	Wa	WM	EM	EE	SE	SW
Frosted Green	23	0	0	0	0	0	10	8	0	0	5	R
Oak-tree Pug	20	0	0	0	0	2	1	5	0	0	9	3
Early Tooth-striped	20	0	R	4	7	R	8	0	0	0	0	1
<i>Agonopterix heracliiana</i>	13	1	0	8	1	2	1	0	0	0	0	0
<i>Agonopterix arenella</i>	12	12	0	0	0	0	0	0	0	0	0	0
Lead-coloured Drab	9	0	0	1	7	0	0	0	0	0	1	0
Beautiful Plume	9	0	0	1	1	0	0	2	0	0	3	2
<i>Agonopterix heracliiana/ciliella</i> agg.	9	4	0	0	0	0	2	1	0	0	0	2
Oak Nycteoline	8	0	0	1	1	0	2	0	0	0	1	3
Mottled Pug	8	0	R	R	0	0	0	1	0	0	0	7
White-marked	7	0	0	0	0	0	7	0	0	0	0	0
The Engrailed	6	0	0	0	2	2	0	0	0	0	0	2

Brindled Beauty (*Lycia hirtaria*)

The Brindled Beauty's scientific name (*Lycia* coming from the Greek "lukeios" relating to a wolf and *hirtaria* from the Latin "hirtus" meaning shaggy or hairy) suggests that this moth was so named because its hairy abdomen has a possible similar appearance to the shaggy mane of a wolf. The vernacular name of "brindled" relates to its brownish or tawny colouration with paler streaks of another colour. They earned the name of beauty from the Victorian love of using these moths in art and embroidery for their patterns and textures as they oblige by sitting quietly with outstretched wings while waiting to be portrayed, as mentioned by Peter Marren in his book *Emperors, Admirals & Chimney Sweepers*.



Photo Howard Burt

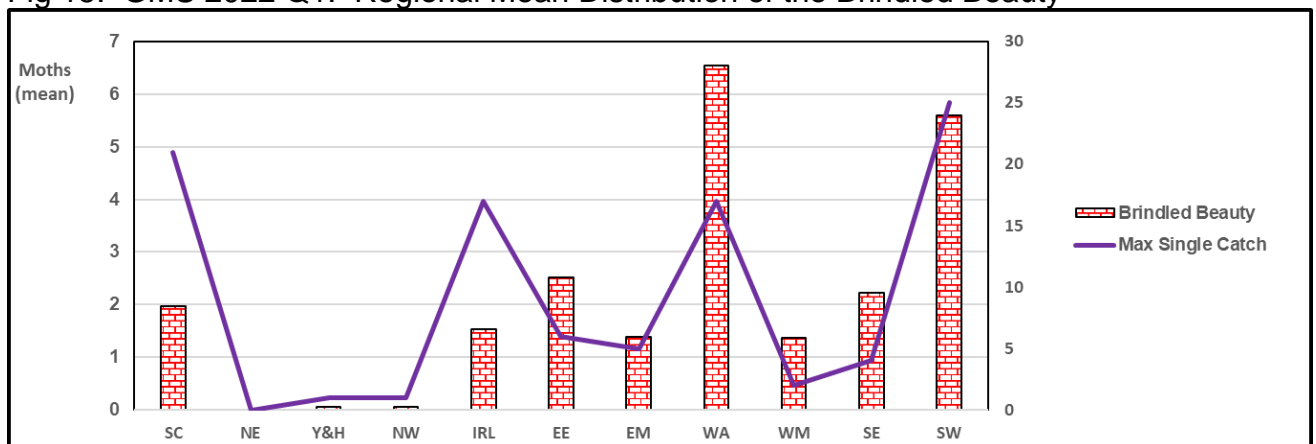
It is a fairly distinctive hairy Geometrid moth with a variable wing pattern but always having some heavy blackish cross-lines. Most examples have a golden yellow component whilst others are predominantly grey. A rarer melanistic form occurs mainly in the south. The males show large comb-like antennae. Its markings are perfect for camouflage against a tree trunk where it may be found by day.



Photo Howard Burt

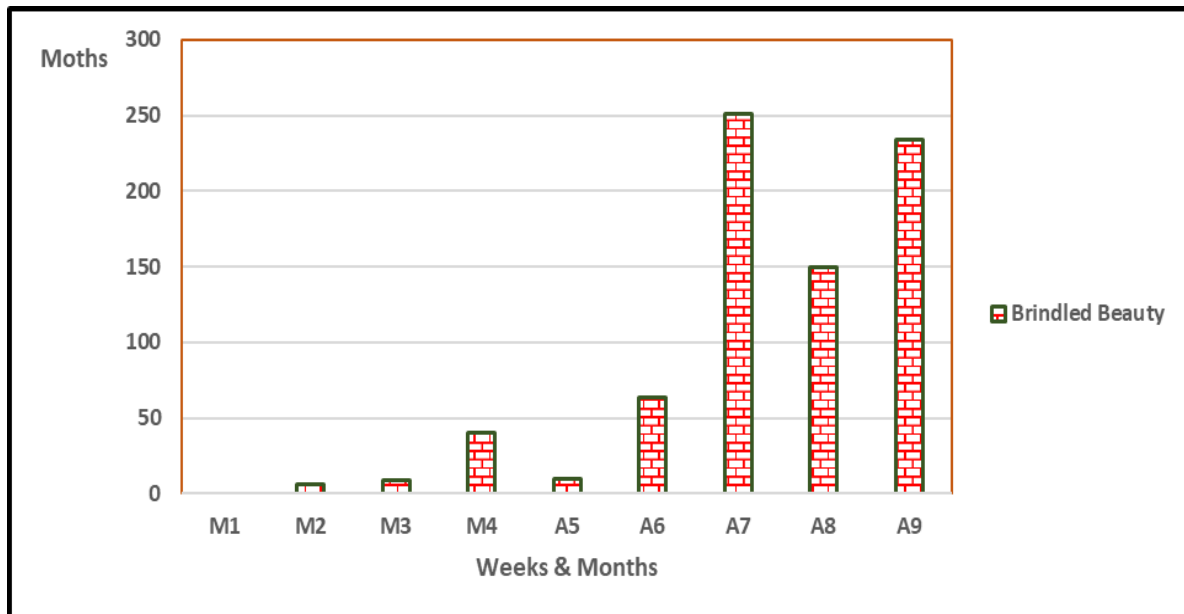
The moth is resident and well distributed in the south of the UK with what seems to be an empty gap in North Wales and Northern England and scantily spread in Scotland. This may be due to under reporting but perhaps indicates that the uplands are not its preferred habitat. In Ireland it is frequent in the Burren but scattered elsewhere (fig 15). Here it was found at only two sites, where one of these recorders caught 17 on March 27th, but in the Southwest, 24 recorders caught 174, with one recorder catching 25 on March 29th.

Fig 15. GMS 2022 Q1. Regional Mean Distribution of the Brindled Beauty



It is more restricted in the Channel Isles and first recorded on the Isle of Man in 2007. The long-term distribution trend shows a moderate increase but its abundance has declined sharply from 1970 by 78% (Atlas of Britain and Ireland's Larger Moths). There is only one generation and it is on the wing from March to May (fig 16), overwintering as a pupa. The larva is polyphagous feeding on many broadleaved trees and shrubs including birch, hawthorn, limes, elms, willow and alder. It prefers woodlands and suburban areas. The males come readily to light late at night, sometimes in large numbers, but females rarely do so.

Fig 16. GMS 2022 Q1. Flight Period of the Brindled Beauty



Does the Ratio of Macros to Micros tell us anything about the sample habitat?

John Austin

I am relatively new to moth recording in one sense but not in another. I've had an interest in moths since the early 1970s as an impecunious teenager, but later felt obliged to earn a living. So my interest became dormant. The issue of "The Atlas"[1] a few years ago piqued my interest, but could I really expect to see much in my humble suburban garden? I bought an economical moth trap, as I didn't see much point in spending much on equipment if I was only going to catch a few dozen species. That was the first surprise, my 50 m2 garden could attract hundreds of species of moths not dozens. I started recording seriously just after the first Covid lockdown in March 2020. Of course 2020 was spent getting up to speed and learning to identify the range of species that occurred. The images below show the habitat in my garden near Reading, Berkshire. My goal was simply to do a site survey.



The rear garden (left) is a bit scruffy, but perhaps the moths like it that way. The image shows just the left hand side of the garden along with part of the railway embankment which I expect contributes to biodiversity. The view from the front of the house (right) shows the railway and embankment more clearly. In 2020, there were tall trees present, but the railway company cut them all down, and the wild shrubs have grown in their place. I place my moth trap on the black bin shown in the bottom right of the image shown on the left. This is shown in operation below.



Everything now is vastly different from those early days in the 1970s. Identification of even the macros was often quite a challenge. The classic was South's British Moths[2]. The printing was poor by modern standards and there was a further problem in that text books at the time showed the moths in the set position which makes them look very different to the live specimens we are used to today. In the 1970s I preferred it that way,

though, as I too killed my specimens and set them. In those days, there was of course no digital photography and macro lens cameras were in any case very expensive, especially for the aforementioned impecunious individual!

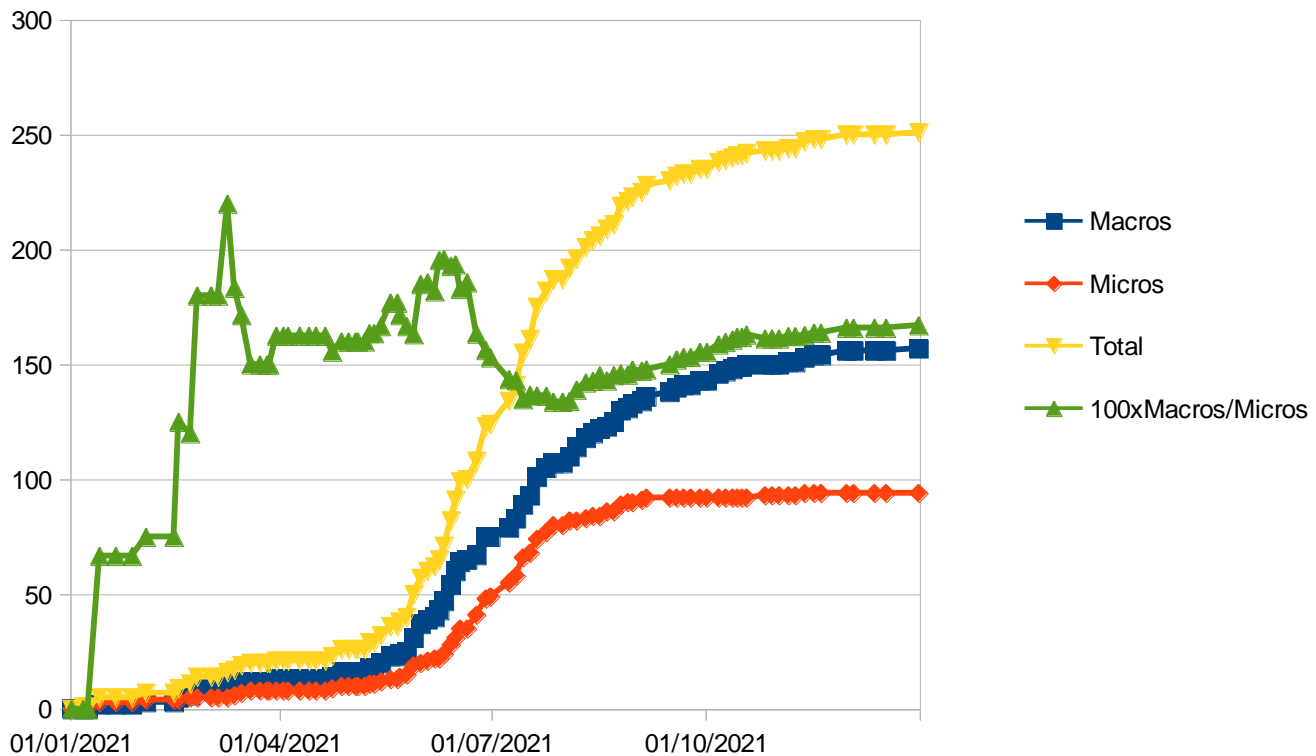
It was almost a waste of time trying to identify micros as documentation was poor and setting them was a challenge. Indeed most publications seemed to warn you off bothering with micros altogether. Times have changed, but it seems to me that there is still an overemphasis on the macro moths.

So we now arrive at my second revelation of 2020. The micros are easier to identify *now* than the macros were *40 years ago*. When you also take account the quality of modern cameras and the power of the internet, even if you can't identify a moth yourself, as long as you have a half decent photo, the likelihood is that somebody will be able to identify it for you within a few days.

So by the end of 2020, I felt confident enough to be able to identify or get identified the vast majority of the moths that I could trap. So my counts should be reasonably reliable. Some mistakes will have been made I'm sure, but the total numbers and ratios should not be far wrong. Macros, then have been identified using "The Atlas" [1], also "What's flying tonight" website [3], with UK Moths Facebook page [4] providing human assistance. Micros were identified with Sterling and Parsons [5], the Norfolk Moths internet site [6] and, again UK Moths Facebook page [4]. I found the Norfolk Moths site to be very valuable for micros, even though I live in Berkshire. It is of course arbitrary to divide the moths into macros and micros but apart from a few examples, the micros are much smaller than the macros of course and this likely affects species counts, as argued below. So although common usage is not scientifically robust the normal classification seems to be a reasonable working hypothesis.

One of the issues that I became aware of in 2020 was that I was trapping far fewer micros (39) than macros (135). Taking the number of micros from [5] and the number of macros from [1], the ratio of macros to micros is about 0.549, referred to as the "UK Moths ratio". The Norfolk moths website [6] records 684 macros and 1183 micros observed in the county for a ratio of 0.578, quite close to the "UK Moths ratio", yet my ratio during 2020 was about 3.5.

So during 2021 I made a special effort to identify as many micros as possible to try to get a better understanding of them. Were the additional micros present, but I had missed them, or were they not present at all? The graph shows the results for the whole year. The total by the end of the year, which consisted of 98 separate sampling events of my garden, yielded 157 macros and 94 micros (251 total).



In 2020, the site also yielded a further 47 (6 micros, 41 macros) giving 298 for the site to date. From about April onwards the ratio was broadly constant, probably within statistical error, at about 1.7, with a final value of 1.67. This is much lower than the tentative value I obtained for my first year of systematic observations. Despite my best efforts for 2021, though, the number of micros are likely to be under-recorded. About a dozen moths could not be identified, due to a worn moth, the poor quality of the image or indeed lack of experience on my part. If we assume that half of these represented new species for the year, and no similar compensating error occurred in the macro count, the ratio would be over-estimated by about 7%, far smaller than the factor of three needed to account for the difference from the UK Moth ratio of about 0.55.

The likelihood is that both the total species counts and the ratio are determined by the range of habitats and foodplants available within the sample area, which would extend beyond the immediate garden. Micros being smaller come from rather shorter distance away, presumably further limiting the sample area compared with that of the macros. It's unclear how far this idea can be extended.

Of course the UK as a whole has all the habitats within its borders so that gives the maximum species counts and minimum ratio possible. As the sample area reduces so the species counts decrease and the ratio increases. Compare the national values with the Norfolk county values indicated above. The difference is small, certainly, but in this general direction. Do other counties find similar results? Or is the difference simply not statistically significant? As the area shrinks to that of a small garden, as in my data, so the ratio increases very significantly. Do other garden moth surveyors find similar results?

Refs

- 1) Atlas of Britain and Ireland's Larger Moths, Randle, Z. et al.. Pisces Publications, pp. 492+xi, 2019.
- 2) The Moths of the British Isles, South, R., Edited and revised by Edelsten, H.M., and D.S. Fletcher, Frederick Warne & Co. Ltd., 1907, Reprinted 1973, In Two volumes.
- 3) https://shiny-apps.ceh.ac.uk/whats_flying_tonight/
- 4) <https://www.facebook.com/groups/1578941109041924> (UK Moths Facebook page)
- 5) Field Guide to the Micro Moths of Great Britain and Ireland, Sterling, P. and M. Parsons, illustrated by R. Lewington, bloomsbury Publishing PLC, pp. 416, 2012.
- 6) <https://norfolkmoths.co.uk/>

Moth illustrations over the last 500 years

Norman Lowe

During the course of my interest in moths I have accumulated a number of old moth books, all of which had illustrations of some kind. More recently I have found it interesting to look at the progression in the techniques involved as well as the degree of skill shown by the illustrators.

The oldest illustration in my collection is from a manuscript dated to around 1480 to 1500 and it is interesting that the name of the person who wrote the text is known to be a certain Johann de Bomalia. The illustrations are attributed to the school of Simon Marmion but you might think that however good he and his collaborators were at painting flowers and leaves this depiction of a caterpillar wasn't up to much.



Illuminated manuscript c1500 – School of Marmion

Over the next 300 years moth illustrations became more sophisticated but until the 19th century were too expensive for my pocket. My next oldest is a pen and ink outline with

hand colouring that appears to show an Oleander Hawk moth and its larva, though as you can see the colours aren't always true to life. I can date it fairly precisely as it was accompanied by a butterfly painting and romantic verse on similar paper but with a watermark of 1818.



Ink and watercolour Oleander Hawk and larva c1818

Probably my favourite hand-coloured illustrations are from HT Stainton's "The Natural History of the Tineina", published in 1857. Here the outlines are printed but the colouring was done by hand producing a truly impressive results. Notice that the subjects were illustrated as they appeared in real life even including the presence of a parasitoid on one of the larvae. Also notice that the text was written in four languages, English, French, German ... and Latin!



Stainton 1857

Such a work would have been very expensive to buy, so cheaper books were available with uncoloured illustrations. Then in 1880 FO Morris brought out his 4 volume “British Moths”, covering all the known species, including the micros, and coloured by hand. Nearly 100 years later I was bemoaning the lack of books with micro-moth illustrations (all I had was the almost illustration-free Meyrick of 1927) when I came across a copy of Morris, priced at the princely sum of 2 guineas. And even though the illustrations of the micros are small I found it incredibly useful.



Morris 1880

The next stage was accurate colour printing. In 1880 OS Wilson’s “The Larvae of the British Lepidoptera and their foodplants” was published. This is mainly devoted to macro moths although the first few plates are of butterfly larvae. Interestingly, the author makes no reference at all to micro moths almost as if these weren’t the sort of lepidoptera that should be mentioned in polite society. A somewhat similar approach occurs in “A Handbook to the Order Lepidoptera” by W Kirby. Published in 1897 in 5 volumes and covering the whole world, the first two and a half volumes are devoted to butterflies leaving just two and a half volumes for the moths, limited almost entirely to the macros. The micros are mentioned briefly right at the end and occupy just the last 3 colour plates out of a total of 108.



Wilson 1880

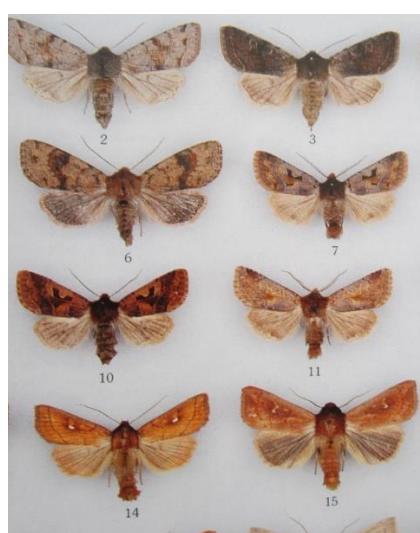


Kirby 1897

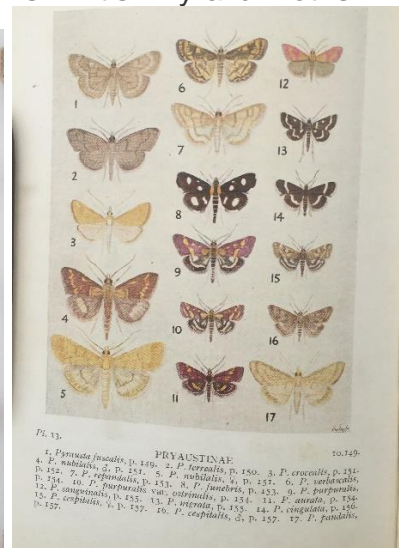
In 1907 and 1908 came the publication of South's two-volume "The Moths of the British Isles" which as the century wore on was reprinted and revised using photographs of set specimens, a technique later used by B Skinner in his coverage of the same subject from 1984 onwards. B Beirne however used paintings in his "British Pyralid Moths".



South



Skinner



Beirne

In the present century there continues to be a choice between painted and photographed specimens and there are several excellent accounts to choose from, such as those by GMS recorder Chris Manly (photos) and Paul Waring et al, (paintings). However fewer and fewer lepidopterists now set any moths and so most publications illustrate the moths in their natural resting position. The unintended consequence is of course that beginners don't take hindwing patterns into account so one of the moth photos most frequently emailed to me for identification is the Large Yellow Underwing.



Waring et al



Manly

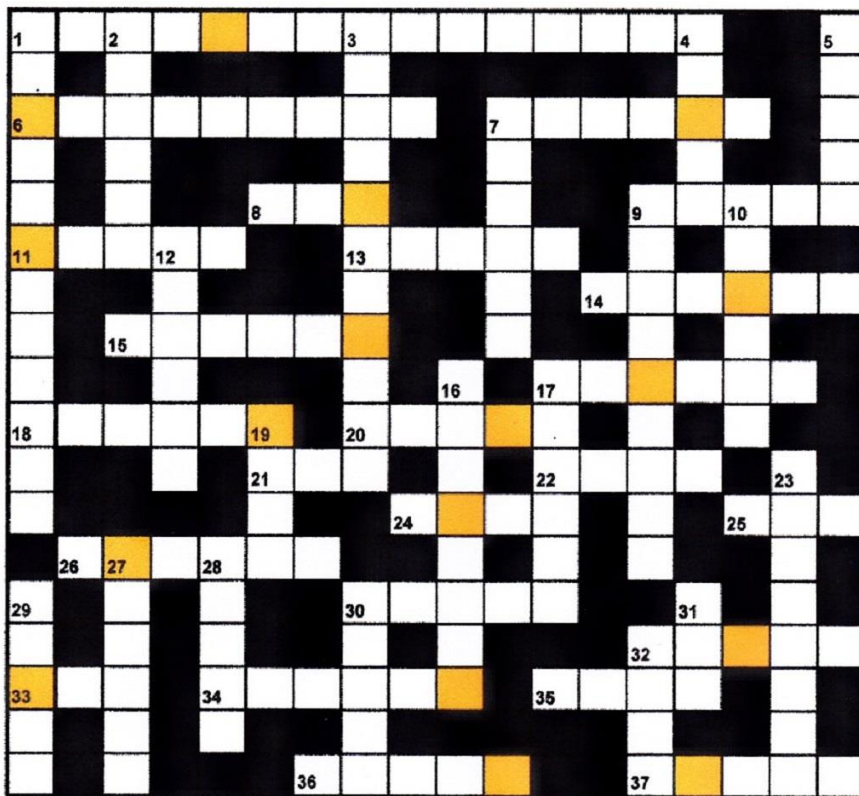
I feel I must conclude by paying tribute to the monumental MOGBI (“The Moths and Butterflies of Great Britain and Ireland”) which with illustrations of, it has to be said, varying quality has attempted to cover in depth all the British Lepidoptera. Will we ever see Volumes 6 and 8 I wonder?

Puzzle Corner

Lepidoptera Crossword 19

Nonconformist

As usual the answers form a vernacular name of, or a part of, a moth on the British list. The letters in the coloured squares form an anagram of another British moth.



Clues across.

1. Enough to make a Sumo Nippon tremble, be it so like an outstanding stone feature.
6. Very irregular and possibly a solo Man.U. fan.
7. A beauty, but is it named after the family cat or blue pottery?
- 8 & 30d. A lapwing consumes an ancient force and turns into a legume fancier.
9. Looking back at the matured nucleus we find the location of the wings.
- 11 & 23d. In really wet conditions winds can boost the chances of finding these species.
- 13 & 35a. Problems with some species in a snowy location can be sorted with pesto to good effect.
14. Not seen too often but Oscar certifies a good twenty or so species in the books.
15. See 3d.
17. See 2d.
18. A species which baffles us all owing to its conversion to a yellowish hue.
20. A northern species known to fly backwards in a helix ending up in a moorland habitat.
21. See 27d.
22. Type of old soldier mentioned in an article advertising toys.
24. Small metal vehicle pushed in reverse may lose an article that forms a fastening.
25. Maybe purple, in triplicate, or perhaps I'm talking rhubarb as usual.
26. See 2d.
30. See 12d.
32. A scurrying species that starts life in many often used spaces everywhere in Britain.
- 33 & 32d. A large biblical beast shakes off the aspirate and evolves into a smaller species.
34. Replacing its wings with leaves would be considered a very lucky thing to be looking over.
35. See 13a.
36. See 10d.
37. Chasing moths in this habitat certainly causes me to breathe at higher rates.

Clues Down.

1. "That was some plea Boss" said the weaver's aide on the Bard's solstice.
- 2, 17a, 26a. To find this supposedly damaged item the banker read P.C Robert his instructions.
- 3 & 15a. The well known artist drew moduli, sunning himself in the marshy countryside.
4. See 5d.
- 5 & 4d. On the monthly ramble he shouted "halt Ron: Run when you're away from these brambles".
- 7 & 32d. Our County Recorder says "now trim the nights you set the trap, its getting cold".
9. Not really sure but when it is cut in near perfect shapes it makes more sense.
- 10, 36a, 19d. The helpful southern steward came over and assisted us in identifying this specimen.
- 12 & 30a. Blue-blooded gentry may wear twice as many ear-rings as us poor folk.
16. One doesn't need sulphide of mercury to find this moth, anyone with a brain can do it.
17. Check on Annabel, Ted and their friends to find this beauty.
19. See 10d
23. See 11a.
- 27, 21a, 29d. The poor fellow in bandages learnt his lesson looking for the silver and black brushes.
28. Keep each specimen and examine closely for a fruitful catch.
29. See 27d.
30. See 8a.
- 31 & 32d. Was this species a product of the internet generation?
32. See 7d, 31d and 33a.

Tailpiece

Those of you who regularly read as far as this will know that I often appeal for more articles on moth-related topics. This is particularly relevant now since the stream of contributions is showing signs of drying up. So please send me your thoughts, whether or not you have contributed before. Email preferred to norman@enviro-consulting.com but feel free to use other forms of communication with the possible exception of carrier pigeon!

And a question for you. Are you ever asked by beginners to identify a moth for them from a photo? If so, which macro moth species crop up most? I've already said that my list includes Large Yellow Underwing and it's accompanied by Small Square-spot, Dusky Brocade and Common Lutestring. Do let me know yours.

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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