GMS News

Spring 2021

Weeks 1-9

Contents

Editorial – Norman Lowe

Now that Covid restrictions are easing we are starting to be able to record moths from places other than our gardens. But perhaps our gardens have become more valued, at least for some of us. A few days ago I was pleased to rack up species number 652 for my garden even if it was quite a common micro, the Speckled Fanner *Glyphipterix thrasonella*. So keep going with GMS even if, as reported by Evan in his analysis, the number of moths in our traps has so far been disappointing.

Following Evan's description of numbers and weather conditions he takes a look at the additional species that recorders can list at the bottom of the form. Isn't it interesting that in a scheme for recording common garden moths the Belted Beauty is mentioned? Doesn't that emphasise the variety and value of gardens? Finally, Evan turns his attention to one of the most attractive of the early spring species, the Oak Beauty.

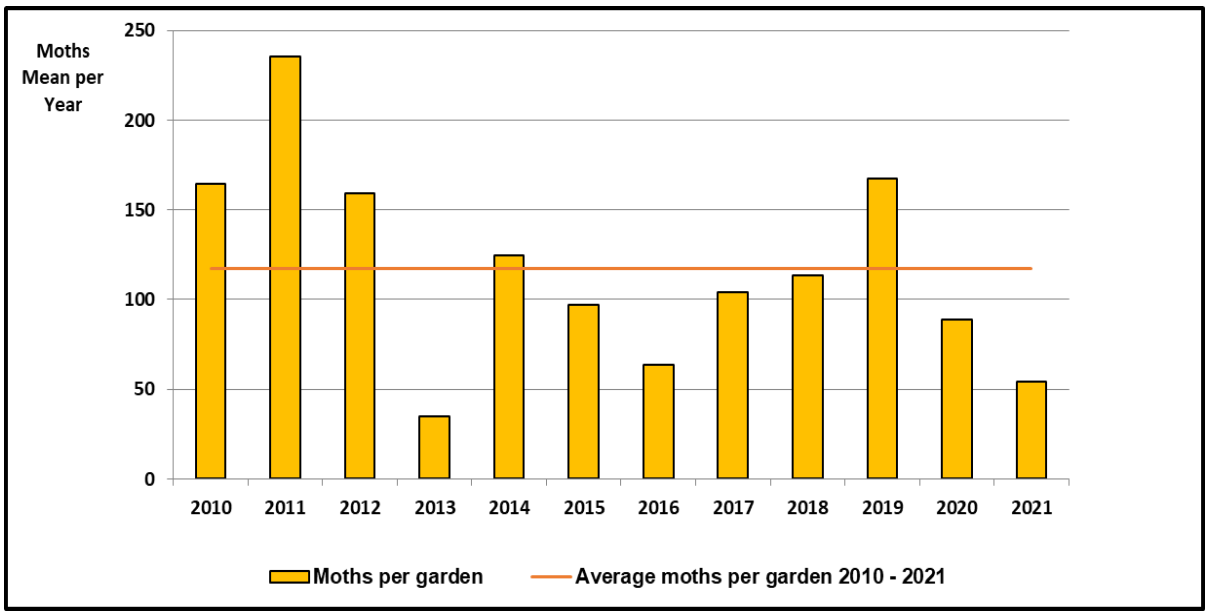
Roger Freestone continues his review of the situation regarding GMS questionnaires with especial emphasis on trap types. The data analysts tell us that they concentrate their attention on records from the "common" trap types such as Heath, Skinner and Robinson but they confirm that all records are still of value. We then hear from Jason Newton who investigated the chemistry of some isotopes in Brimstone Moths, some of which were contributed by GMS recorders. His peer-reviewed article is available for study, showing spatial maps of isotope concentrations in the UK. I then muse on happenings in Wales including the future of online recording and the merits or otherwise of standard vernacular names for all moths in your language of choice. Following a snippet from Wales, Nonconformist comes up with his latest crossword, which I am currently grappling with. Who on earth is Cymbran, Nonconformist?

Overview GMS 2021 1st Quarter – Evan Lynn

Yearly Comparisons

All regions have reported very low catches this quarter and I was even wondering if my UV lights were working correctly. This is clearly demonstrated in Fig 1 with only the 1st quarter of 2013 being worse. It seems that the weather this year is running about one month later than normal. While Mother Nature has a way of self-correcting it may be too late for many moths if the conditions were too cold for them to emerge and it could take a few years to recover from this dip.

Fig 1. GMS 2010 - 2021 Q1. Mean Quarterly Moth Numbers

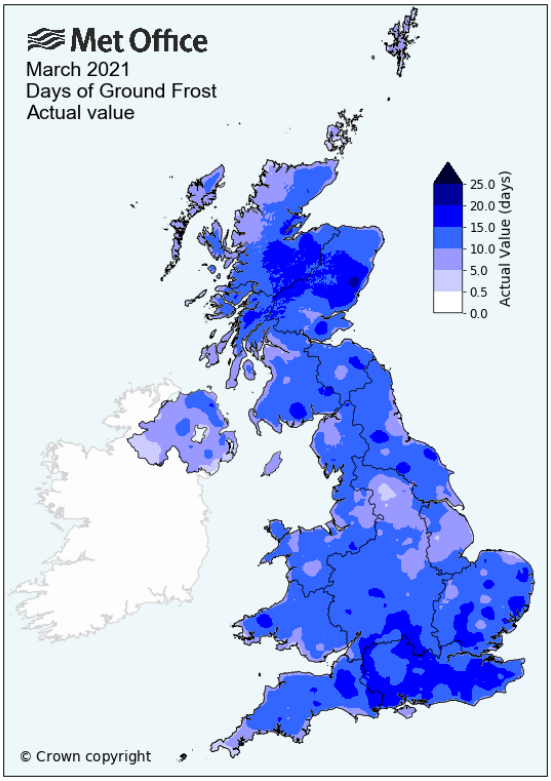


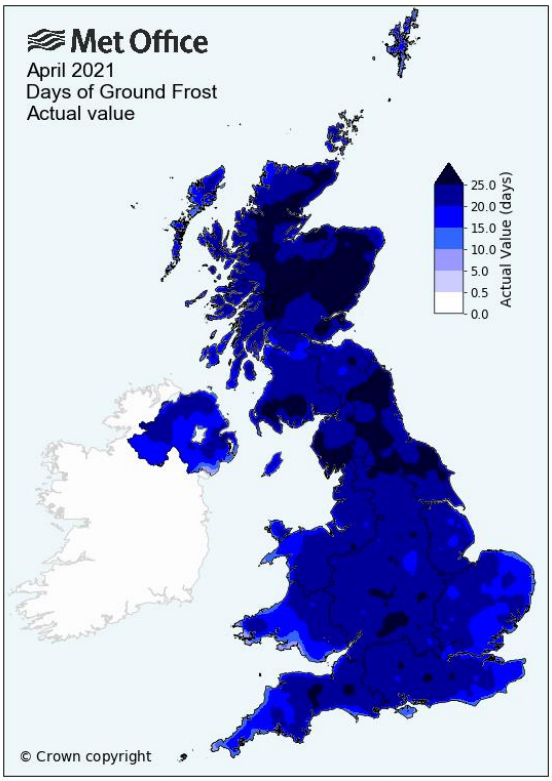
March initially came in like a lamb and farmers were pleased with temperatures in double figures as the lambing season started. However, it went rapidly downhill as a Norwegian Surge on the 4th produced cold winds and freezing temperatures. In the second week disturbances in the Atlantic suggested further change and on the 24th of March Quasimodo swept in bringing winds and rain followed by more depressions at the end of the month. Overall, rainfall was only 89% of average apart from areas in the North and West.

Then April rapidly brought in problems with cold weather being the norm, even colder than March. The weather was dominated by continental high pressure with freezing temperatures everywhere including France and Italy all but destroying this year's grape harvest. One unfortunate recorder in Aberdeenshire recorded sub-zero temperatures each week throughout the whole quarter.

This is illustrated in the following series of weather charts for this quarter (Figs 2-4). April 2021 had the lowest average minimum temperatures since 1922, as air frost and clear conditions combined for a frost-laden, chilly month, despite long hours of sunshine. It had 22 days of ground frost compared to the average number of 12 days.

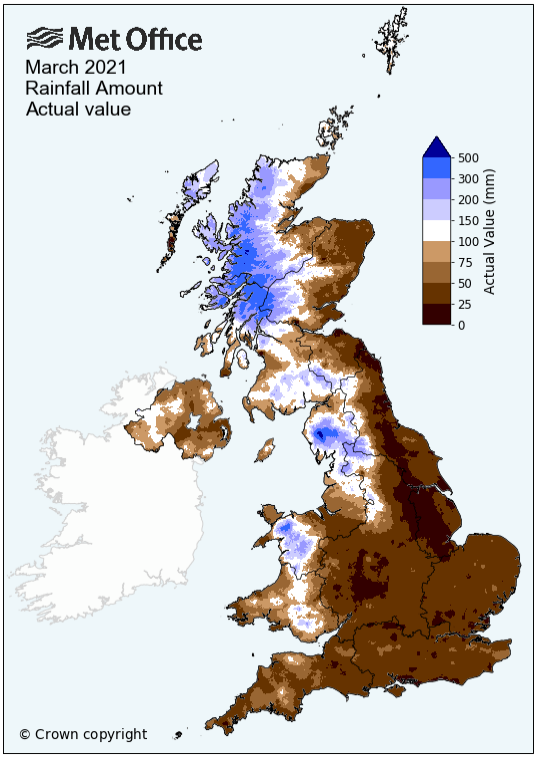
Fig 2. Days of Ground Frost for March & April 2021 (with permission of the Met Office)

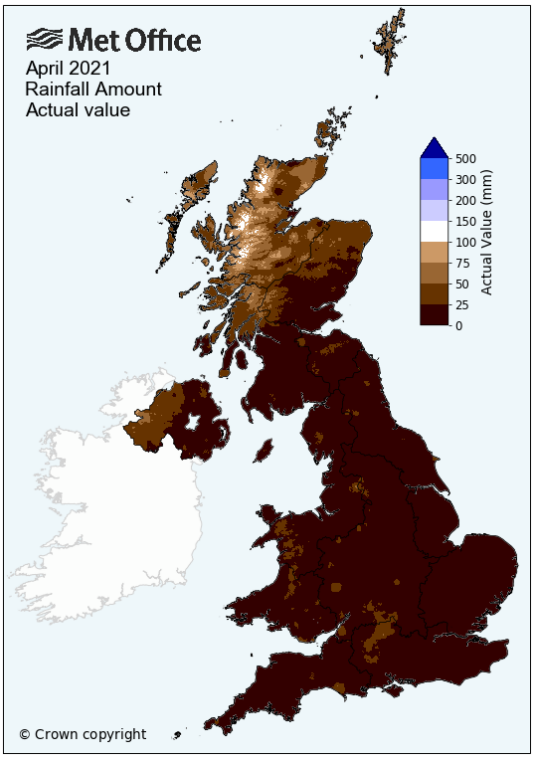




The dominant higher pressure stopped the formation of the expected April showers and the month has gone on record as being one of the driest Aprils for some years.

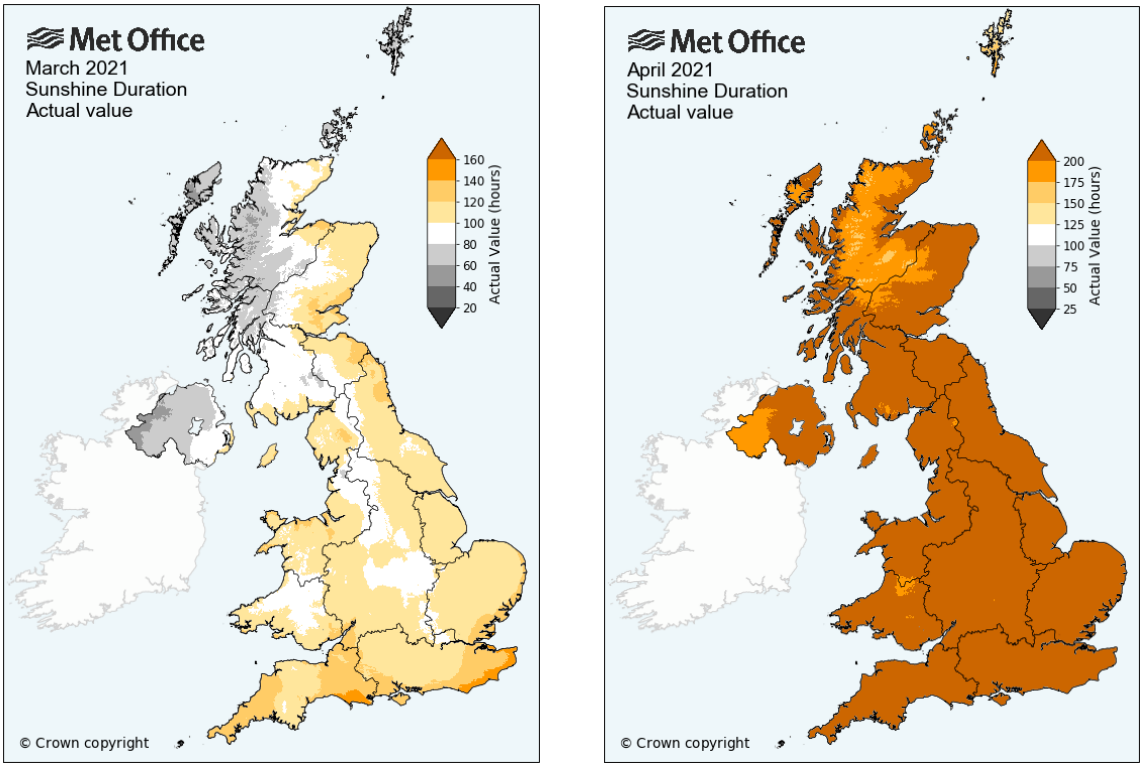
Fig 3. Rainfall in mm for March & April 2021 (with permission of the Met Office)





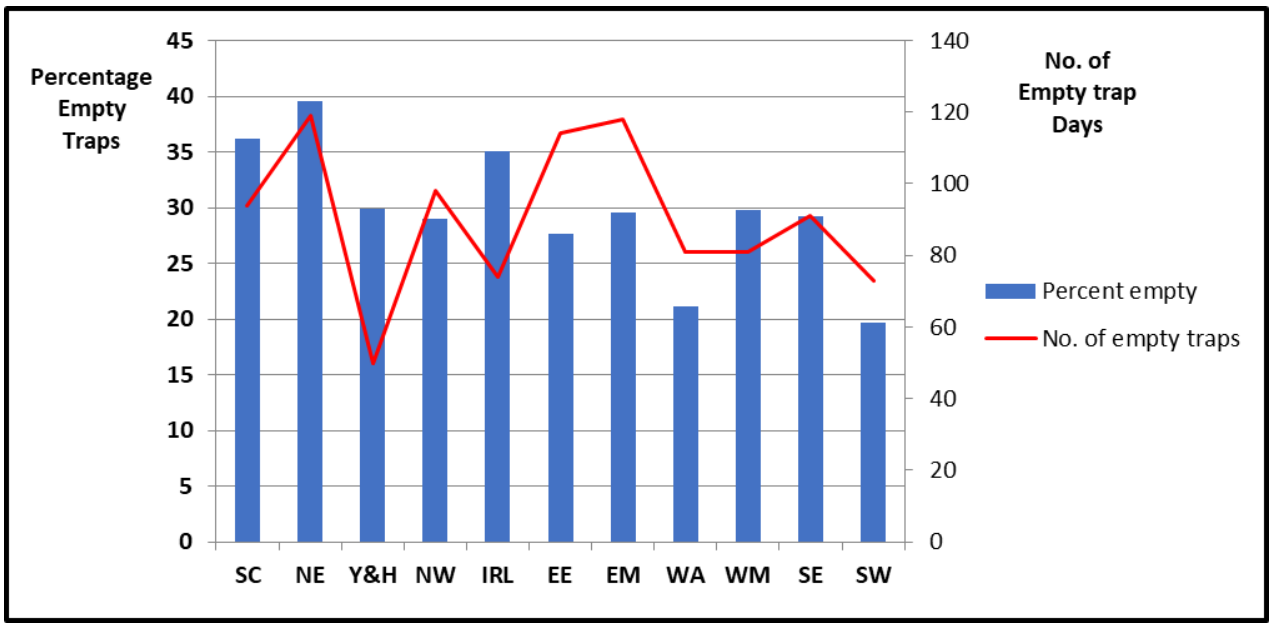
Despite the low temperatures in many areas, long days of sunshine in April were the norm with about 40% more sunshine than normal.

Fig 4. Hours of Sunshine for March & April 2021 (with permission of the Met Office)



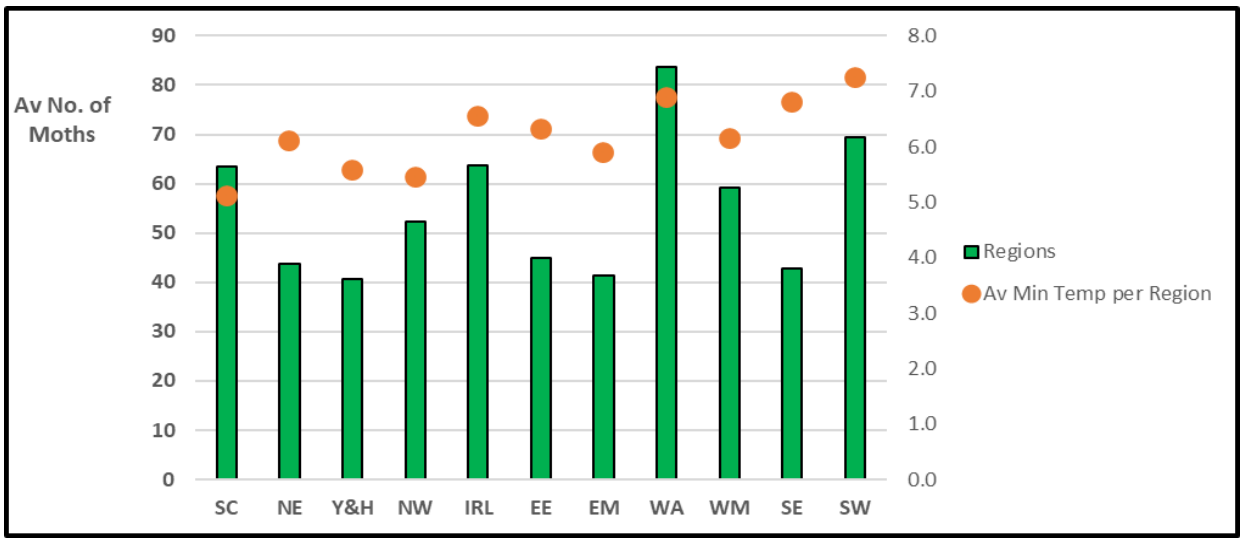
This adverse weather is portrayed in Fig 5 which shows the percentage number of empty traps as a bar chart and the actual number of empty trap days are shown in the line graph. Wales and the South West had the lowest percentage of empty traps.

Fig 5. GMS 2021 Q1. Average Minimum Temperature and Empty Traps



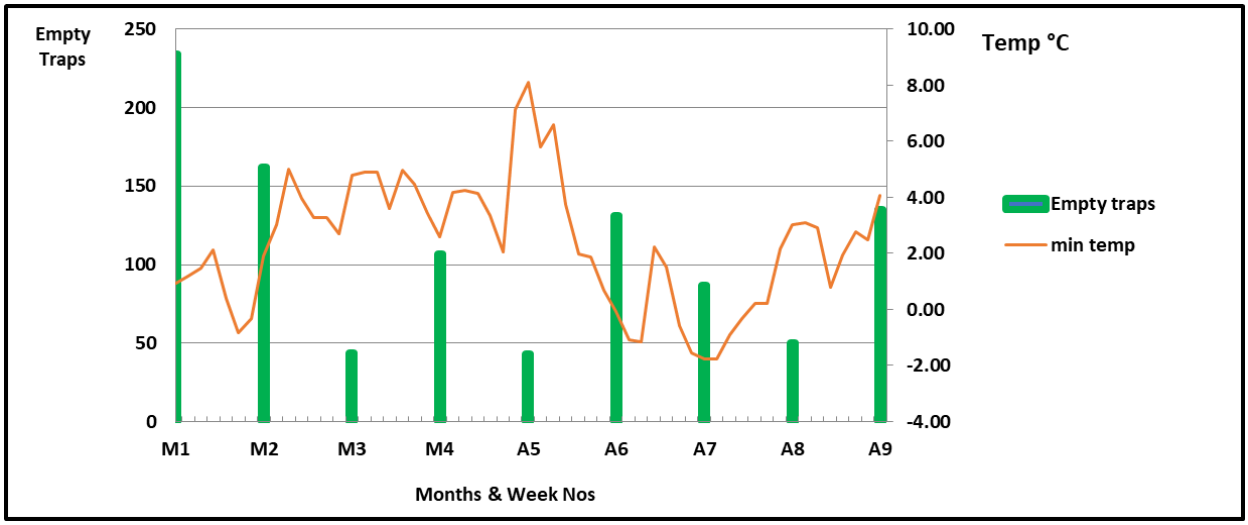
The average number of moths caught per region is shown with the regional minimum temperatures (Fig 6). Unsurprisingly, both Wales and the South West which had the highest minimum temperatures as well as the lowest percentage of empty traps, had the highest numbers of moths.

Fig 6. GMS 2021 Q1. Average Regional Minimum Temperatures and Moths caught



Higher number of empty traps per week were generally recorded when the daily minimum temperatures were lower. The low catches occurred when the Norwegian Surge plunged the temperatures down and then again in the colder weeks of April. (Fig 7)).

Fig 7. GMS 2021 Q1. Average Minimum Temperatures and Empty Traps per Week



Comparison with 2020

Given the late start to the season I compared this quarter's catches and temperatures to those of last year (Figs 8 and 9). For the first two weeks of March catches alternated while the third week definitely favoured 2021. For example, in our trap, the catches in the third week this year went up from very low single figures to 34 moths while in the previous year our total that week was 11. Then, following the incursion of the cold continental air, the differences between the two years becomes very apparent.

Fig 8. GMS 2021 Q1. Average Minimum Temperatures 2020 & 2021

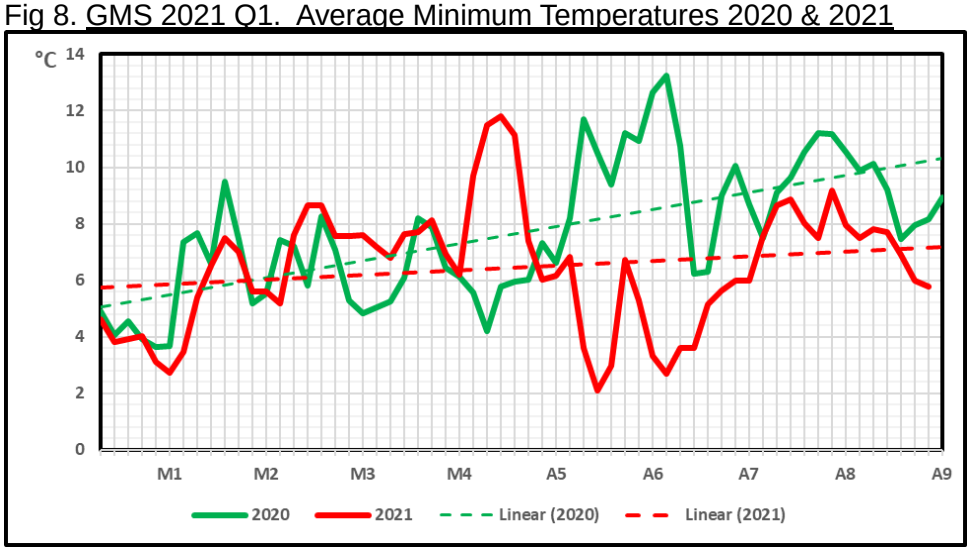
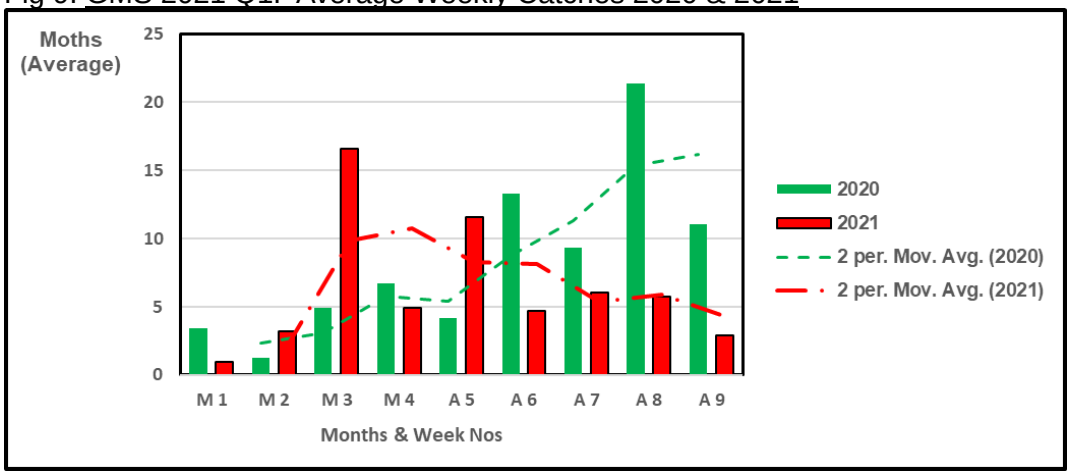
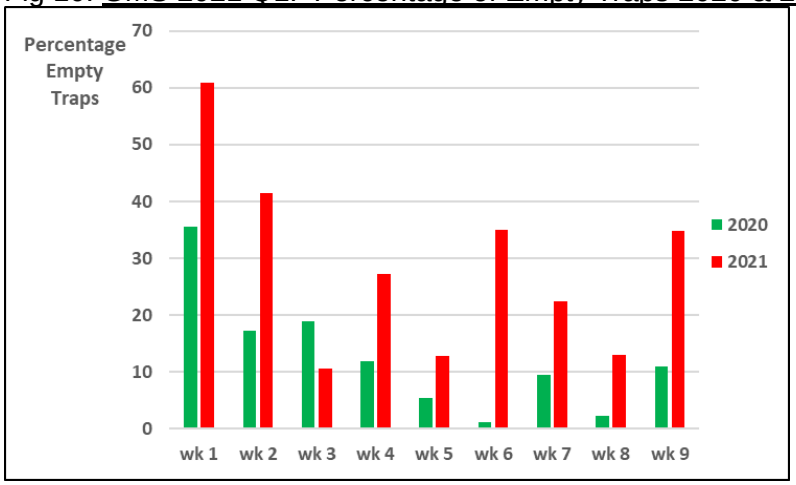


Fig 9. GMS 2021 Q1. Average Weekly Catches 2020 & 2021



One aspect of this year, that was made loud and clear both in emails and at a Welsh Zoom session arranged by Norman, was the number of empty traps each morning (Fig 10). I can well understand the frustration experienced by all of these unfortunate recorders and especially those new to the scheme.

Fig 10. GMS 2021 Q1. Percentage of Empty Traps 2020 & 2021



While interpreting these figures please bear in mind that other factors besides low temperatures such as wind speed may also have an effect on the number of moths flying.

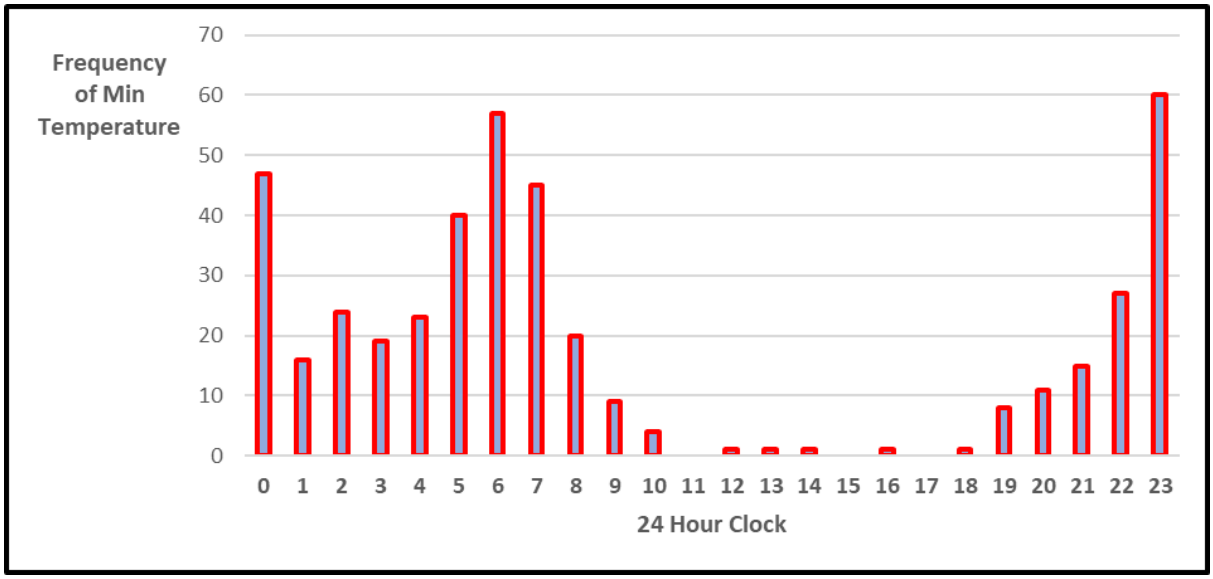
Minimum Temperatures

The previous night's precise minimum temperatures as recorded on the form should be taken with a pinch of salt. Use the numbers purely as a guide, i.e., cold, cool or warm nights, because the actual time when the mercury reached the lowest point may not actually coincide with moth flying times. In fact it can happen at any time of the day or night due to several factors:

- Passage of warm or cold fronts can bring warm or cold air respectively in their wake.
- Clear night skies will cool the ground quicker than under cloudy skies leading to an earlier minimum temperature. Often, due to this temperature lag, the ground reaches minimum temperatures just before dawn.
- If night temperatures are close to 0°C then a wind speed of greater than 10 mph mixes the air column close to the ground reducing the risk of ground frost.

Hourly minimum temperature records for my garden weather station for the past year (Fig 11) show the frequency of hours (rounded up) in which the minimum temperature was recorded. For example, there were 47 days when the minimum temperature was at midnight and one day when it was at 2 pm. But the two hourly times when the lowest temperatures were most frequently recorded were 11pm and 6am.

Fig 11. GMS 2021 Q1. Frequency of minimum temperature 2020-2021



Statistics

As you have surmised by now the numbers are significantly down this quarter and this is reinforced by the figures in Table 1 which show losses for most species. This was the norm instead of the exception and it is interesting to note that the species that showed a gain were found in more gardens this year as seen in the catching frequency section. This is not necessarily always the case as in some years more moths of the same species can be found in each trap but in fewer gardens.

Table 1. GMS 2021 Q1. Top 20 Core Species

Position		Top 20	*Mean Per Trap*			Catching Frequency		
2020	**2021**	Species	**2020** 369 Gardens	**2021** 392 Gardens	Change	**2020**	**2021**	Difference
1	**1**	Hebrew Character	27.2	15.1	-12.0	358	**365**	7
2	**2**	Common Quaker	15.0	9.3	-5.7	349	**346**	-3
3	**3**	Small Quaker	7.7	7.0	-0.7	271	**265**	-6
5	**4**	Early Grey	4.5	4.4	-0.1	296	**311**	15
4	**5**	Clouded Drab	6.6	4.4	-2.2	286	**275**	-11
12	**6**	Twin-spotted Quaker	1.1	1.2	0.1	145	**156**	11
7	**7**	Brindled Beauty	2.2	1.0	-1.2	135	**102**	-33
16	**8**	Early Thorn	0.9	0.8	-0.1	138	**124**	-14
19	**9**	March Moth	0.7	0.7	0.1	100	**106**	6
22	**10**	Chestnut	0.6	0.7	0.1	88	**115**	27
14	**11**	Powdered Quaker	1.0	0.7	-0.3	124	**99**	-25
18	**12**	Oak Beauty	0.7	0.7	0.0	119	**118**	-1
9	**13**	Double-striped Pug	1.5	0.4	-1.1	163	**86**	-77
32	**14**	Dotted Border	0.2	0.4	0.1	49	**79**	30
8	**15**	Muslin Moth	1.7	0.2	-1.4	158	**69**	-89
20	**16**	Shuttle-shaped Dart	0.6	0.2	-0.4	116	**39**	-77
0	**17**	Shoulder Stripe	0.0	0.2	0.2	59	**41**	-18
13	**18**	Light Brown Apple Moth	1.0	0.2	-0.8	126	**49**	-77
47	**19**	Satellite	0.1	0.2	0.0	36	**54**	18
33	**20**	Pine Beauty	0.2	0.1	-0.1	48	**27**	-21

The top 10 species for each region are listed below in Table 2. I have not included the Channel Islands this time as a new person has just been found to replace the previous long-standing existing recorder and has not yet sent in his records.

Table 2 GMS 2021 Q1. Top 10 Regional Core Species

Scotland (30)	Mean	North East (34)	Mean	North West (40)	Mean
Hebrew Character	27.3	Hebrew Character	19.4	Hebrew Character	14.2
Common Quaker	11.0	Common Quaker	5.5	Common Quaker	11.0
Clouded Drab	6.8	Mottled Grey	3.5	Small Quaker	8.8
Early Grey	3.2	Clouded Drab	3.1	Early Grey	3.9
Powdered Quaker	2.4	Small Quaker	3.0	Clouded Drab	2.9
Red Chestnut	2.3	Early Grey	2.8	Twin-spotted Quaker	2.0
Mottled Grey	2.0	Chestnut	0.9	Brindled Pug	1.5
Small Quaker	1.0	Yellow Horned	0.7	Chestnut	0.8
Yellow Horned	0.9	Powdered Quaker	0.7	Oak Beauty	0.7
Chestnut	0.8	Red Chestnut	0.7	Red Chestnut	0.7
Yorks & Humber (19)	**Mean**	**Ireland (24)**	**Mean**	**East of England (47)**	**Mean**
Hebrew Character	12.9	Hebrew Character	23.5	Common Quaker	10.5
Common Quaker	7.2	Clouded Drab	8.7	Small Quaker	9.9
Small Quaker	6.4	Common Quaker	7.9	Hebrew Character	8.5
Clouded Drab	5.3	Early Grey	6.0	Early Grey	3.2
Early Grey	2.7	Early Thorn	2.8	Clouded Drab	3.1
Powdered Quaker	0.8	Early Tooth-striped	1.7	March Moth	1.2
Common Plume	0.8	March Moth	1.6	Twin-spotted Quaker	1.1
Mottled Grey	0.7	Powdered Quaker	1.3	Brindled Beauty	1.0
Brindled Pug	0.5	Water Carpet	1.3	Oak Beauty	0.7
Twin-spotted Quaker	0.5	Red Chestnut	1.3	Powdered Quaker	0.7
East Midlands (45)	**Mean**	**West Midlands (31)**	**Mean**	**Wales (44)**	**Mean**
Hebrew Character	11.1	Common Quaker	17.3	Hebrew Character	21.5
Small Quaker	8.7	Small Quaker	13.5	Small Quaker	10.3
Common Quaker	8.6	Hebrew Character	12.8	Common Quaker	9.8
Clouded Drab	4.0	Early Grey	4.0	Clouded Drab	9.1
Early Grey	2.2	Clouded Drab	3.5	Early Grey	8.9
Twin-spotted Quaker	1.1	Twin-spotted Quaker	1.2	Brindled Beauty	3.6
Common Plume	0.6	Brindled Pug	0.8	Twin-spotted Quaker	2.3
Early Thorn	0.6	Early Thorn	0.6	Red Chestnut	2.1
Brindled Beauty	0.6	Brindled Beauty	0.5	Early Thorn	2.1
Oak Beauty	0.5	Oak Beauty	0.5	Oak Beauty	1.7
South East (36)	**Mean**	**Southwest (42)**	**Mean**		
Small Quaker	11.8	Hebrew Character	18.7		
Hebrew Character	8.6	Common Quaker	11.8		
Common Quaker	7.1	Early Grey	7.6		
Early Grey	4.3	Small Quaker	5.7		
Clouded Drab	1.7	Clouded Drab	4.0		
Brindled Pug	1.0	Brindled Pug	2.2		
Diurnea fagella	0.8	Brindled Beauty	1.8		
Brindled Beauty	0.8	Twin-spotted Quaker	1.7		
Oak Beauty	0.7	March Moth	1.4		
Light Brocade	0.6	Early Thorn	1.3		

I have compared this year with last year by taking the maximum number of moths caught in any trap and subtracting the values of 2021 from those of 2020 (Table 3). The highlighted cells show a drop in the maximum catch so for example in Wales, the maximum catch for the

Hebrew Character dropped from 60 to 22. Conversely, congratulations go to a recorder in the South East who laboriously counted 133 Small Quakers in Week 2. Furthermore, the number of species caught this year dropped from 144 to 86.

Table 3. GMS 2021 Q1. Maximum Catches (2021 minus 2020)

Vernacular	SC	NE	Y&H	NW	IR	EE	EM	WA	WM	SE	SW
Hebrew Character	14	-75	-2	-15	-43	-4	3	-38	4	-3	-1
Common Quaker	-19	-4	-29	-44	-26	37	-1	-39	3	-2	5
Small Quaker	-18	-17	-35	22	-12	-4	-10	-17	103	123	18
Early Grey	8	3	-4	2	-3	-1	-4	19	4	0	5
Clouded Drab	-10	-10	4	-5	-13	6	3	-12	-18	-1	4
Twin-spotted Quaker	5	-6	0	6	6	-1	6	-1	4	-2	13
Brindled Beauty	-36	-1	0	-1	1	0	-1	-10	-9	-1	-2
Early Thorn	1	-1	-1	-5	3	0	-2	9	-2	0	9
March Moth	1	1	0	1	0	4	-2	1	-2	1	5
Chestnut	-4	1	0	-5	5	2	1	2	-2	-2	5
Powdered Quaker	4	-11	0	-2	-8	-2	-4	-2	-1	2	-1
Oak Beauty	0	4	0	0	-2	0	6	1	-4	4	0
Double-striped Pug	-1	0	-2	-6	-4	-2	-8	-5	-9	0	-9
Dotted Border	4	2	1	1	4	2	0	-7	2	0	-1
Muslin Moth	0	-2	0	1	-1	-58	-4	-9	-12	-6	-15
Shuttle-shaped Dart	0	0	-2	-2	0	-4	-1	-1	-7	-2	0
Shoulder Stripe	0	0	-1	-3	-1	0	0	0	0	0	-1
Light Brown Apple Moth	0	2	2	5	2	2	6	3	3	8	15
Satellite	1	1	0	2	3	1	2	1	1	1	1
Pine Beauty	5	1	1	2	1	5	2	2	2	1	1

All the hours and catches completed by the recorders are summarised in Table 4. 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.

Table 4. GMS 2021 Q1 - Regional Statistics

Region	Gardens	Moths	Moths	Moths	
		Total	Mean	Min	Max
SC	30	1903	63	6	269
NE	34	1489	44	0	164
Y&H	19	774	41	3	124
NW	40	2089	52	0	285
IRL	24	1530	64	0	204
EE	47	2109	45	2	312
EM	45	1860	41	1	157
WA	44	3677	84	9	315
WM	31	1834	59	1	327
SE	36	1540	43	0	398
SW	42	2913	69	4	248

Moth Trap Nights		
Possible	Actual	Percent
270	260	96.3
306	301	98.4
171	167	97.7
360	338	93.9
216	211	97.7
423	412	97.4
405	399	98.5
396	383	96.7
279	272	97.5
324	312	96.3
378	371	98.1

Weekday Trap Nights							
Night	Tues	Wed	Thurs	Fri	Sat	Sun	Mon
Days	43	57	254	3791	812	131	83
Percent	1	1	5	73	16	3	2

The minimum and maximum number of moths caught per region ranges between 0 and 398 while the trapping effort (moth trap nights) is remarkably consistent. For many recorders, this quarter has been very dispiriting, especially for those who either caught no moths or less than 10 this quarter, but fear not, it will improve. 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.

Additional species

One part of the form which is often ignored is the lower section where you are invited to add moths caught which are not on the core/regional list. Although not essential to the immediate running of the scheme they are useful for working out any future need to add species to the list and can produce a more comprehensive list of the moths caught should the need arise in the future. Also, by listing them together with the usual moths, they can be converted into a format suitable for submission to your county recorder. Table 5 below lists the top 20 moths from this section for this quarter. Interestingly the second most numerous moth caught was the Belted Beauty – a Nat scarce A species which was caught by one recorder in Ireland. Also, the Engrailed, as added by East Midlands recorders, is a regional species in other regions but not theirs.

Table 5.GMS 2021 Q1. Top 20 Additional Species

Code	Latin	Vernacular	
32.018/.019	*Agonopterix heracliana/ciliella*	*Agonopterix heracliana/ciliella*	20
70.25	*Lycia zonaria*	Belted Beauty	15
73.197	*Conistra rubiginea*	Dotted Chestnut	10
70.202	*Trichopteryx carpinata*	Early Tooth-striped	8
74.009	*Nycteola revayana*	Oak Nycteoline	6
32.039	*Depressaria daucella*	Depressaria daucella	6
70.157	*Eupithecia dodoneata*	Oak-tree Pug	5
49.087	*Acleris literana*	*Acleris literana*	5
49.082	*Acleris hyemana*	*Acleris hyemana*	5
45.01	*Amblyptilia acanthadactyla*	Beautiful Plume	5
32.031	*Agonopterix alstromeriana*	*Agonopterix alstromeriana*	5
70.208	*Ligdia adustata*	Scorched Carpet	4
70.103	*Lampropteryx suffumata*	Water Carpet	4
49.354	*Grapholita jungiella*	Vetch Piercer	4
71.023	*Odontosia carmelita*	Scarce Prominent	3
70.270	*Ectropis crepuscularia*	Engrailed	3
15.01	*Caloptilia stigmatella*	*Caloptilia stigmatella*	3
73.255	*Anarta trifolii*	The Nutmeg	2
73.243	*Orthosia miniosa*	Blossom Underwing	2
71.016	*Peridea anceps*	Great Prominent	2

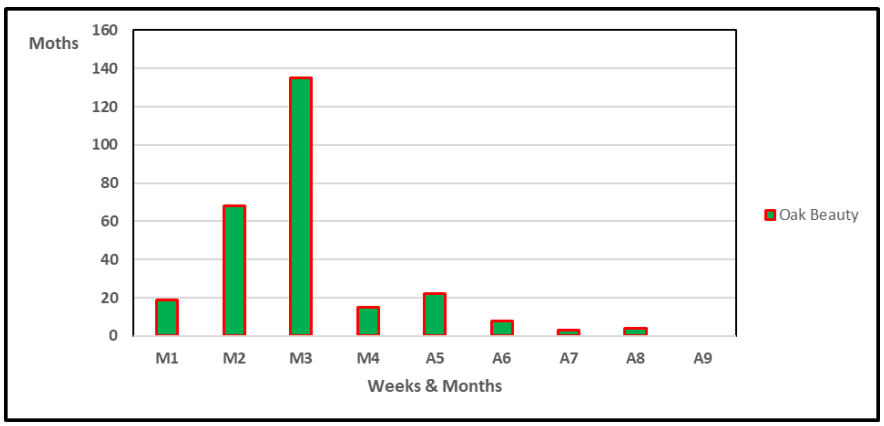
Oak Beauty (Biston strataria)

This beautiful Geometrid moth is unmistakeable in early spring. It was first described by Johann Siegfried Hufnagel, a German pastor and entomologist, in 1767. The scientific name comes from Biston (son of Ares and advocate of tattoos of eye-like pattern) and strataria, from stratum – something spread out or quilt-like. It is one of no fewer than 14 common moths named after the oak tree. It has two broad bands across the forewing which vary in width and are edged with black. The ground colour varies from white to greenish grey.

There is a darker melanistic form where the banding is still present but less conspicuous which is prevalent in the Netherlands. The sexes are similar but the male with feathered antennae coming readily to light while the female only occasionally. Adults are sometimes found freshly emerged at the base of tree trunks where the disruptive pattern on its wings and cryptic colouration povide camouflage.

The flight period is from late February to April having overwintered as a pupa underground (Fig 12). The larvae are found from May to July feeding mainly on oak but also many other broad-leaved trees and shrubs. They have evolved to resemble sticks, being mainly brown with three lumps near the end of the abdomen, which help to protect them from predators.

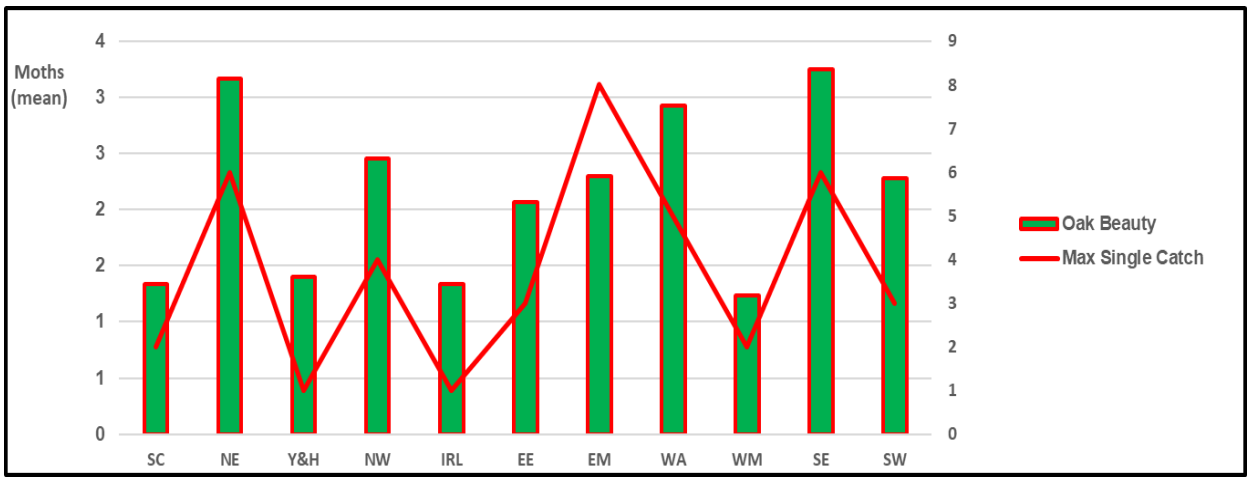
Fig 12. GMS 2021 Q1. Flight Period of the Oak Beauty



They are most numerous in mature oak woodland but also found in other types of woodland, scrub and gardens. The species has a widespread distribution across England and Wales and in the Channel Islands. In Scotland it occurs as far north as the Western Highlands and appears to be spreading. It is widespread but local in Ireland (Fig 13). However, the

abundance trend shows a significant decline since 1970 of -47%. (Atlas of Britain and Ireland's Larger Moths)

Fig 13. GMS 2021 Q1. Regional Distribution of Oak Beauty



Garden Questionnaires/Multi-Light Sources - Roger Freestone

The data that is generated by GMS recorders is an incredible resource for researchers to investigate variations in moth populations and their diversity in a wide range of gardens across the UK. To supplement these data the information provided in Garden Questionnaires are key for researchers to relate the submitted records to each site's location and associated habitats for use in their research. Hence it is important that all GMS recorders submit a completed GMS Questionnaire to their local coordinators in order that this information is available when required. Recorders should also inform their local coordinator if there have been any changes relating to their recording site or trap/light type. Recorders who move to a new house will need to submit a new Garden Questionnaire.

Another important element for researchers when utilising GMS data is the standardisation of experimental methods associated with submitted data. A key experimental method within GMS is the trap/light combination that is used at each recording site.

Trap types generally fall into three types, Robinson, Skinner and Heath. These trio of trap types are supplemented by Bucket, Funnel and Gladiator which are essentially like Heath traps.
Up until relatively recently light sources tended to fall into 2 types: Mercury Vapour Discharge (MV) and Actinic (including Black Lights) of various wattages. Recently Light Emitting Diodes (LED) in the UV range have become an alternative light source.

Recorders are also experimenting with combinations of various light types, albeit at present this is relatively limited within GMS recording.

Dependant on their research some researchers may ignore data where combined light sources are used as the potential variety of these combinations could make it difficult for the researchers to standardise their experimental method/methods. Hence, it is likely that researchers using GMS data will simply their analyses by concentrating on traps with a single light source of MV, Actinic and LED.

There is no intention to prevent GMS recorders with mixed light sources taking part in GMS, but it is felt that recorders should be made aware that this could limit the use of their data. All records resulting from mixed light sources will still be inputted into the GMS database and available to potential researchers.

Any GMS recorders using mixed light sources on their traps are requested to detail their lighting combination on their Garden Questionnaire which ensures that it is available for research purposes. However, to standardise light details within the GMS Participants List and on the GMS recording form and ultimately in the GMS database these mixed lights set ups will be described as "Mixed Lights", e.g *"Robinson Trap (Mixed Lights)"*.

Brimstone Moth Study - Jason Newton

As you may recall I am a researcher in stable isotope ecology, working at the Scottish Universities Environmental Research Centre. You kindly accepted my call to the moth recording community to help with a citizen science project in 2017 to create spatial maps (called isoscapes) of the stable isotope compositions of Brimstone Moths in the UK/Ireland. The principal aim was to provide future studies with a tool for distinguishing resident from migrant insects.

I know completion of this study has been a long time coming, but it is now complete and the resulting maps have now been accepted for publication in a peer reviewed journal where you and other citizen scientists have been acknowledged for your help without which this logistically large project would not have been possible.

You can find the article here:
https://doi.org/10.1002/rcm.9126
(You will need to download the pdf. file to access the full paper – Ed.)

Summary of the study

In summary, I measured hydrogen, nitrogen, carbon and sulfur isotopes in nearly 300 Brimstone Moths from 93 locations around the UK and Ireland. The patterns on the isoscape maps can be explained by what we know about our geology, climate and diet of the moths.

The pattern of hydrogen isotopes reflects what we know about H isotopes in rainwater, with the heavy isotope 2H decreasing towards the northwest. However there is a lot of noise in the data, presumably because the material comprising moth wings was constructed when they were larvae: Brimstone Moth caterpillars are around most months of the year in the south, hence there is a seasonal effect on H isotopes that this study can't disentangle. This sounds like a negative result, but I wouldn't have guessed it possible to pick up seasonal effects at all – this info will be useful to other researchers.

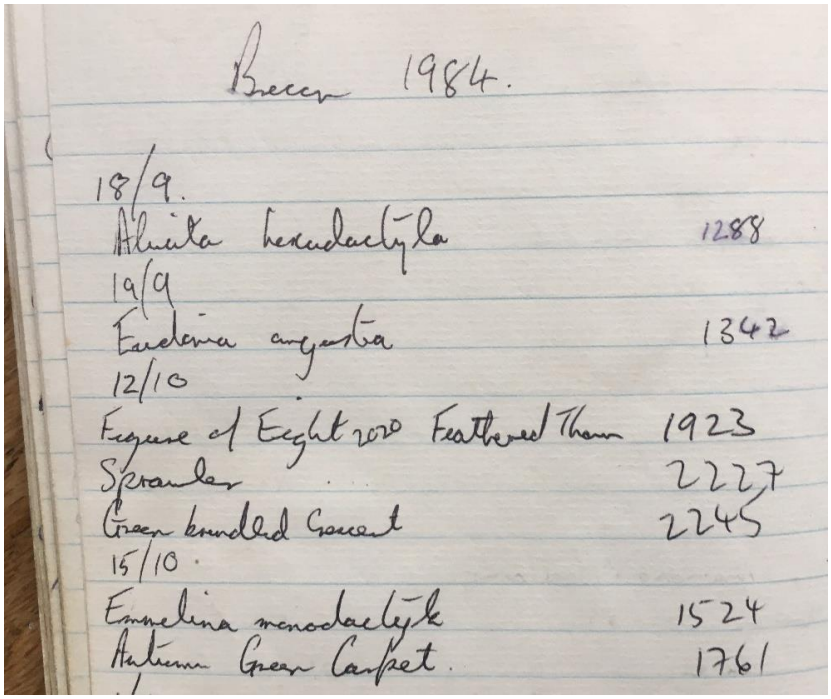
Carbon and nitrogen isotope patterns are also controlled by climate – by differences in temperature and rainfall between areas which affect their isotope compositions in the deciduous leaf diet.

Sulfur isotopes are controlled by geology and by the proximity to the sea – winds can deposit oceanic sulfate up to 50 miles inland which is enriched in the 34S isotope. Conversely there are areas where 34S is very depleted – these all turn out to be areas of ironstone and black shale deposits. Both these rocks are associated with sulfur that has been produced by bacteria, and thus the isotope composition is very different.

Thus, as promised, we now have a tool for distinguishing migrant from resident insects. Any (non-aquatic) insect which does not fall within the isotope compositions of the Brimstone Moth data has a high probability of being a migrant.

Moth recording in Wales, Past, Present and Future - Norman Lowe

Shortly after I moved to Pembrokeshire in 1977 I was asked to be Vice County Recorder (VCR) for the microlepidoptera. Moving on to Breconshire in 1984 I was soon installed as VCR for all moth species. My practice has always been to record sightings in longhand and for many years the compilation of my log book records was by means of handwritten lists and record cards. The method of submitting records to a national database was also via cards sent to the Lepidoptera Distribution Maps Scheme, which eventually published some maps for selected groups of species. Then as more advanced technology became available I progressed to word processors and spreadsheets alongside MapMate, which I found especially useful for inputting records.


Brecon 1984.

18/9.
Alniota hexadactyla 1288
19/9
Eudemia angustea 1342
12/10
Figure of Eight 2010 Feathered Thorn 1923
Sprawler 2227
Green hundred Carpet 2245
15/10.
Emmelina monodactyla 1524
Autumn Green Carpet. 1761

My notebook from 1984. Most of the scientific names have since changed.

The next step forward was the gradually-increasing interest of Butterfly Conservation in moths as well as butterflies. This resulted in the launch in 2007 of the National Moth Recording Scheme (NMRS) which despite its name was only concerned with macro-moths. This is perhaps not surprising as the production of distribution maps for all the macros was a huge task, completed only recently. In the early days of NMRS most recorders used MapMate and/or Excel spreadsheets but things soon started to change. In particular, a number of online wildlife recording schemes have been developed, one of which is iRecord.

In the latest e-moth newsletter, Butterfly Conservation have this to say: “More and more recorders are turning to iRecord as a way to submit and store their biological records. This has many benefits to recorders, County Recorders and Butterfly Conservation alike, but also raises issues and challenges. One problem for moth recording is that the general iRecord data entry form doesn’t differentiate between the relevant non-adult life stages, there are only two options:

adult and sub-adult, which creates problems for County Moth Recorders and data users. To overcome this problem we recommend and promote the use of iRecord's dedicated moth recording form. This form has the option to record relevant and informative life stages of moths: egg, egg batch, pupa, mine, larval case, larval web, larva and adult and can be used to record either a single species or a list of species."

As well as iRecord there are other online methods for recording moth sightings, not all of which produce records easily available to VCRs for verification. Also, the existence of more than one system can hinder the creation and maintenance of coherent databases both at the Vice County and national level. One of the problems besetting moth records arises from changes to scientific names. For example, the Uncertain moth, when I first knew it, was called *Caradrina alsines*, but over the years it became *Hoplodrina alsines* and, more recently, *Hoplodrina octogenaria*. Should these changes be implemented by different systems and literature sources at different times, discrepancies can arise. But the English name has remained constant throughout and it makes one wonder whether the use of the vernacular gives greater consistency over time.

The micros also suffer from frequent scientific name changes but, until recently, not all had generally-accepted English names. Various attempts had been made to allocate these to all the micros but none of these lists were adopted universally. Now a new comprehensive list has been proposed, though it has to be said that some recorders are critical of the names. For example the micro *Coptotriche marginea* is given the name Bordered Carl. Like it or not, this could remain permanently whereas its generic name, which has changed twice in the last 20 years or so, may well do so again some time in the future.

Nevertheless, care will have to be taken that any vernacular names are exactly the same across all the recording platforms. Currently it's surprising how many inconsistencies have crept in. So is it a Heart and Dart or a Heart & Dart? And is it a Poplar Hawk, a Poplar Hawk Moth or a Poplar Hawk-moth? Somebody please decide!

A Heart and Dart in my moth trap. Or is it a Heart & Dart?

Finally, the term vernacular doesn't mean just an English name and for some time we have had a list of Welsh names for the macro-moths. But now I understand that efforts are being made to issue a full list for all the moth species and, when complete, Butterfly Conservation have agreed to incorporate these into their data dictionary. Perhaps my vision of a comprehensive and universally-accepted inventory of vernacular moth names in both Welsh and English is not far away?

A Snippet

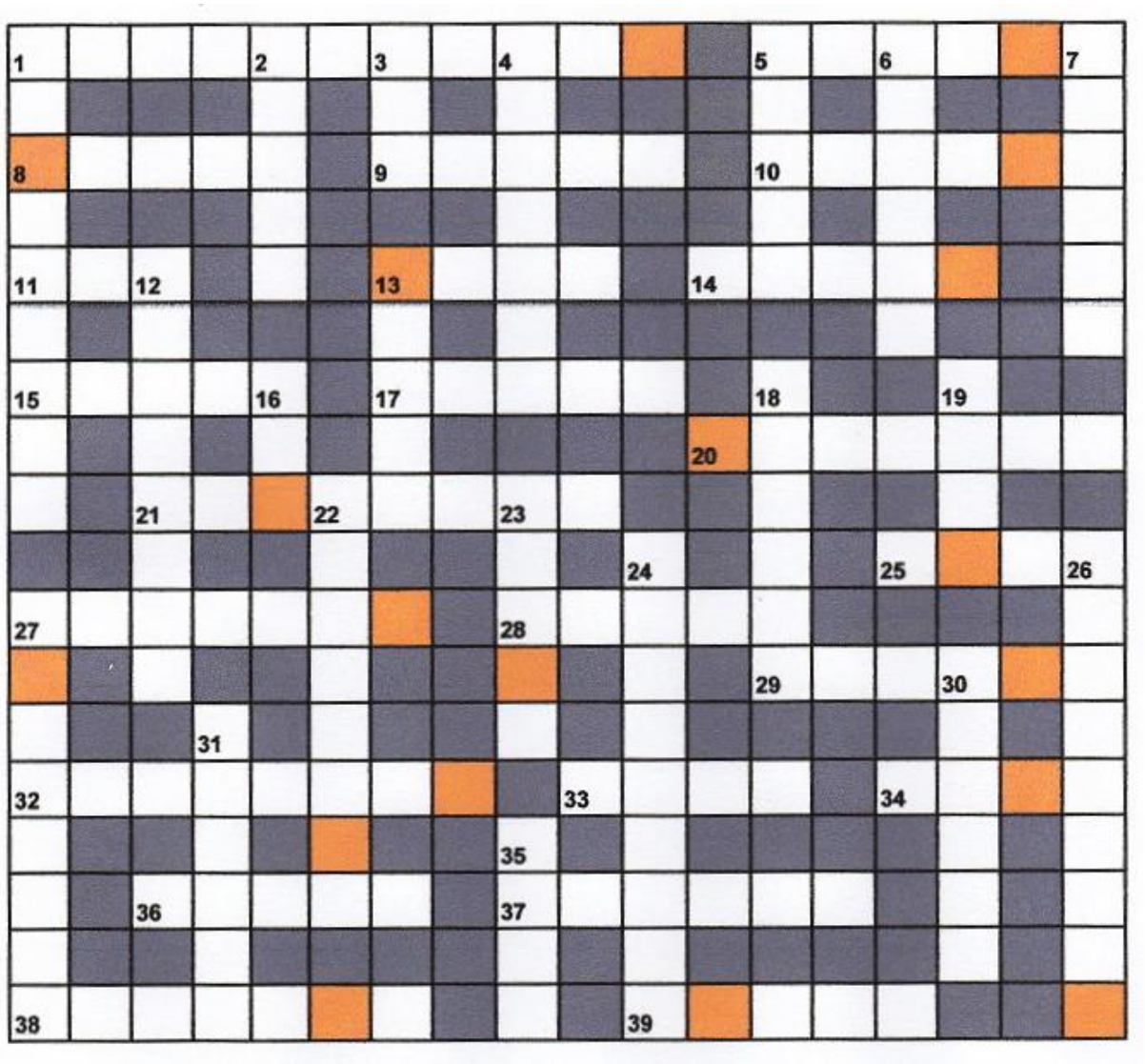
I don't know if this is worthy of your newsletter but I got a *Philodenides lunana* in my Carmarthenshire garden and according to the County Recorder it's never been recorded in Carmarthenshire before.
Bronia Lee

Puzzle Corner

Lepidoptera Crossword No.15

Nonconformist

The answers are vernacular names, or a part, of moths of the British Isles.
The letters in the coloured squares form an anagram of another British Moth.

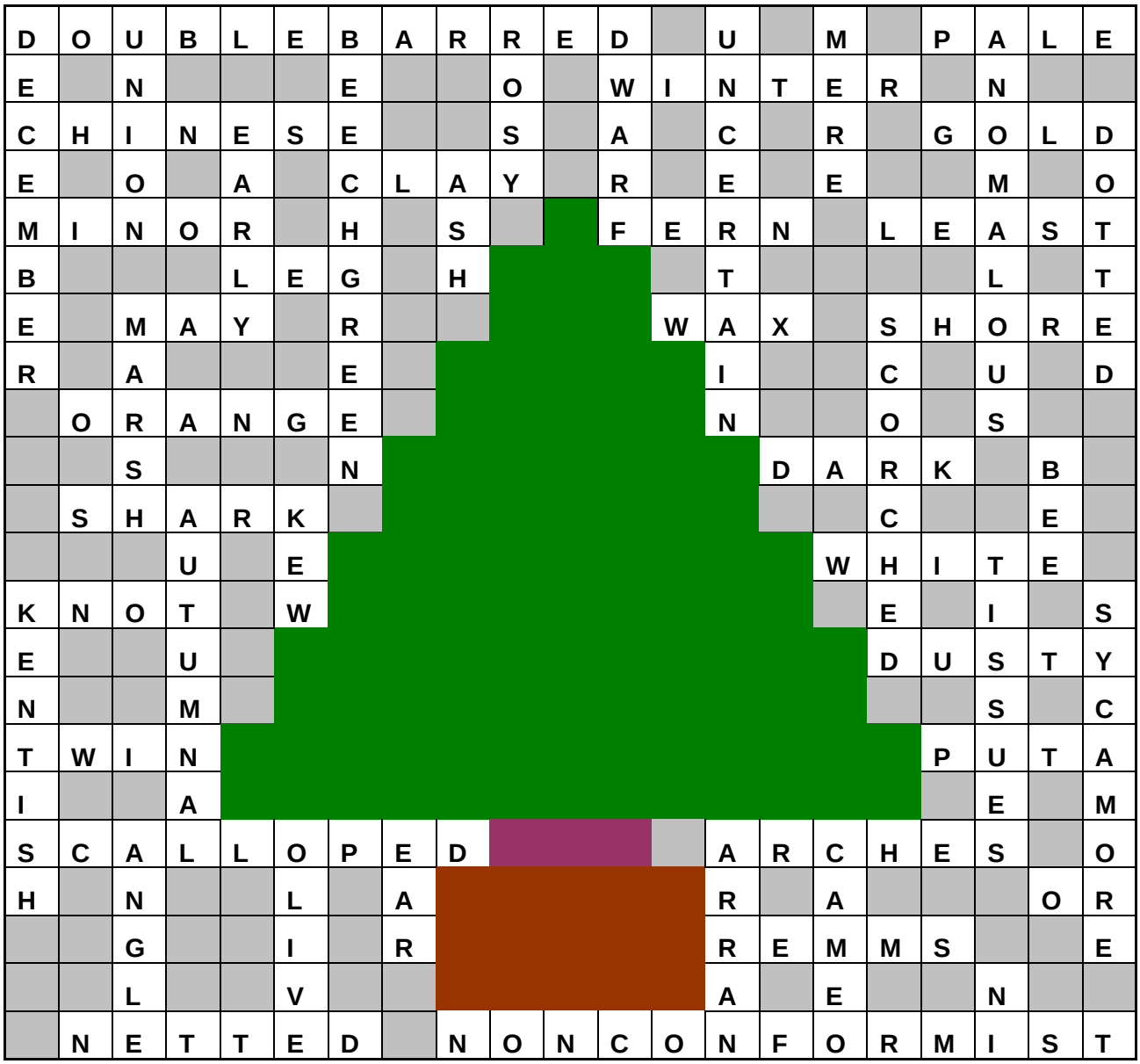


Clues across.

1 Prickly seed case makes colour mainly in Paddy's west.
5 Woodsman Francis tussled for days to find this species.
8 Woodland moth of oriental derivation.
9 A cockney hairpiece used for dressing in Canada?
10 A worker found unwell at the end of summer.
11 Location of a southern garden support system.
13 I would refer nearly everyone to find this type of habitat.
14 A fan of many a leguminous plant?
15 Sounds as though this moth has left it's island home.
17 Still on the island but the car ran out of fuel!
20 Home cooking of potato slices makes Chefs call open warfare.
21 Mickey's boss in a fantasy situation.
25 Plumbers would plead for a good deal of this coloured item.l
27 I had to identify Edward before he found the brimstone.
28 I have seen it as the return of a real beauty.
29 A load of untruths at last issued from this cave dweller.
33 Common bred but could maul tuna at certain times of the year.
33 & 35d "This crew can't row". " Rats" said the retreating coxswain.
34 Not a lot of character says the Bard of Nova.
36 You can trust your instincts to find this visitor.
37 The emperor angered his subjects by consuming fruit.
38 I give Cymbran no chance of being a site for these locals.
39 Using telepathy means this small moth finds the food plant.

Clues down
1 The main reason for miners and minors to have dirty collars.
2 Woolly Bear, Lychnis larvae etc. experience this life-stage.
3 See 18d.
4 They gave an oriental repro to me but I wanted the real leader.
5 I figure you would get relief if it became obvious to you.
6 An element of aggression at a borderless Liversedge? Why?
7 A multi-tasker breaks down and runs naked in public.
12 Antique panelling shows a maiden and cow sat in Greek fields.
13 Bringer of warmth in the Book of Lamentations.
16 At first every alternative route seems to lead to these species.
18 & 3d Where do we find a gent? Mecca could be the answer!
19 Common feature of lepidopteran BBC and unequalled moth.
22 Dark or not, they are roasted around Christmas in many homes.
23 The area for this species can be found with finesse and a cross.
24 Heavy weapon makes a sad tour of the TT circuit.
26 Use power around the bend to find this sombre specimen.
27 Confused sergeant loses direction in unknown location.
30 It is Jack's time to use this aid to leave his box.
31 A time to lay down a verdant floor covering.
35 See 33a.

Christmas Crossword Solution



Tailpiece

I always like to hear from readers of the newsletter and am always looking for articles. Maybe you have just a little snippet of news, like Bronia's in this issue. If so, do send it in and I can slip it in under the Snippets heading. It all makes for variety! Do get in touch with me at the usual norman@enviro-consulting.com

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 2100 'Likes'!

Facebook Group - https://www.facebook.com/groups/438806469608527/ - currently has over 2500 Members (not all active GMS participants). Membership is open and all recording forms, instructions and micro-moth identification guides are available in the Files section. We now also have a separate group solely for help with moth identification, so if you need an ID or can offer help to others please join the GMS Moth ID Help group at https://www.facebook.com/groups/GMS.Moth.ID.Help/.

You can also find us on Twitter @GardenMoths and Instagram at https://www.instagram.com/gardenmothscheme/.

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The Compact 20w Actinic Skinner Moth Trap now available in mains and 12 volt versions. Catch rates outperform any other actinic system and comparable to the Twin 30w Actinic Robinson Trap. See our web site for further details.

MapMate® is a biological recording system designed for enthusiasts to record, map, analyse and share their natural history sightings. It was originally developed for moth recording and has now expanded to include most of the UK fauna and flora. It is being used by some 20,000 individuals and institutions in the UK including very large groups like the RSPB and the Botanical Society of the British Isles.
www.mapmate.co.uk

MapMate continues to support the GMS by providing software and support for the GMS database, and for that we are very grateful.