

GMS News

Early Summer 2023

Weeks 10-18



Contents

Editorial	Norman Lowe	1
Overview GMS 2023 2 nd Quarter	Evan Lynn	2
How GMS data is being used	Norman Lowe	13
Puzzle Corner	Non-conformist	14
Communications & links		16
GMS sponsors		16

Editorial

We start as usual with Evan’s analysis of the results for the quarter. As climate change starts to kick in, we are starting to see weather patterns that seem different to those we are used to. In particular “Flaming June” lived up to its billing.

Evan reports that the mean number of moths per garden was the third highest since 2012, beaten only by 2014 and 2017. This was due in part to a large number of Garden Grass-veneers. Spare a thought for the hero who counted 780 Garden Grass-veneers in their trap on one night.

This quarter the moth under Evan’s microscope is the Elephant Hawk-moth. I regard this as the Number 1 Flagship Moth in my county at least. Whenever I receive a random communication from someone about a moth more often than not it’s the dear old elephant. If it’s the moth it leads to a conclusion that perhaps all moths aren’t necessarily dull and brown, whereas the larva in its role as a snake lookalike provides endless fun.

Next, I take a look at how GMS data has been and is being used and more generally the wider benefits of the scheme. You’ll see that I’m suggesting that someone might like to write a piece on GMS papers. But actually, I need reader’s contributions on any topic.

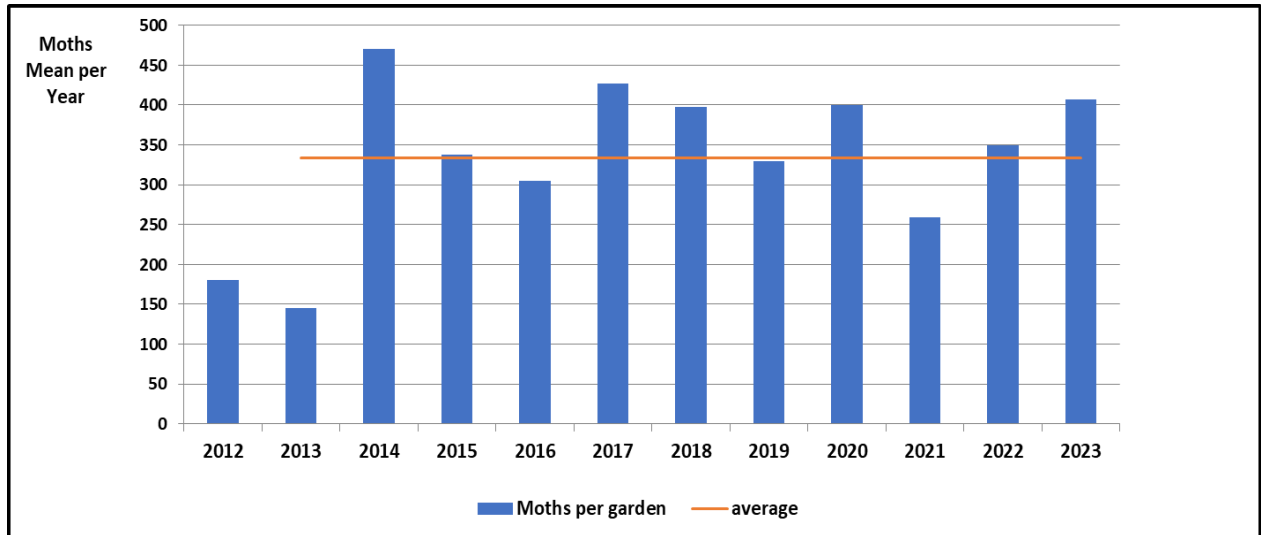
We finish as usual with Puzzle Corner.

Overview GMS 2023 2nd Quarter

Evan Lynn

After a slow start to the year the number of moths improved greatly this quarter compared with 2022 (fig 1).

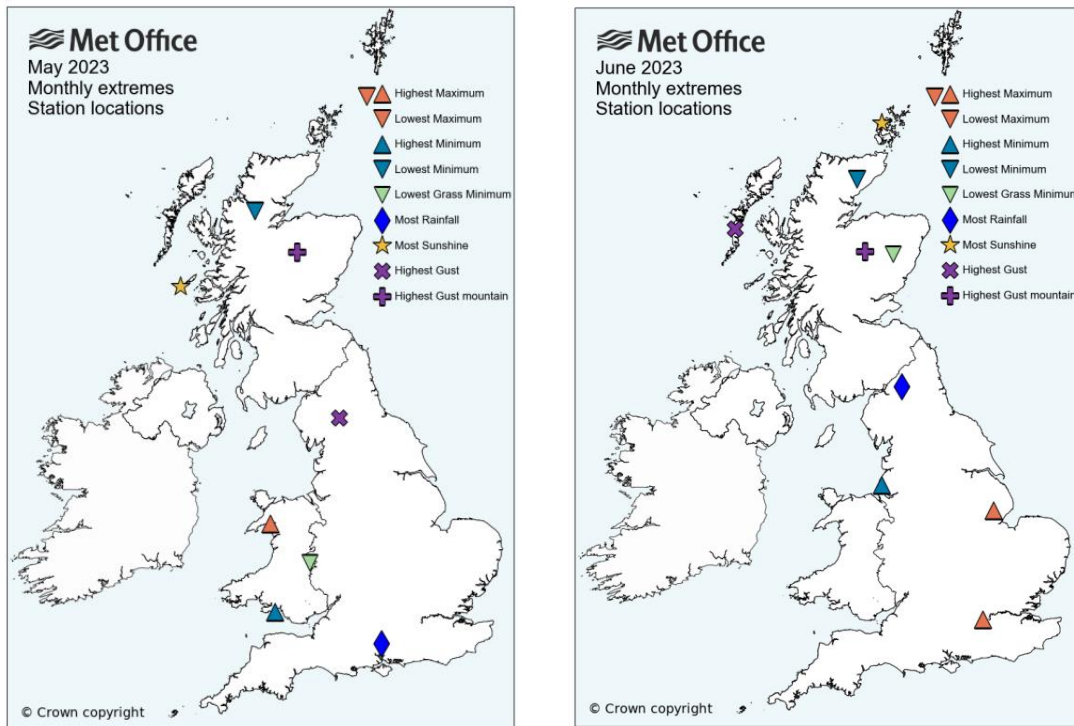
Fig 1. GMS 2023 Q2. Mean Quarterly Moth Numbers 2012 to 2023.



One of the consequences of global warming is the duration of blocking high pressures which show great reluctance to move unless a strong Jetstream moves them away. May showed signs of this anticyclonic condition giving a warmer month than usual. Not all was sunshine with most of the rainfall coming between the 5th and 12th with thundery rain belts running from the southwest to eastern England. Many places were affected, including Hereford, where we enjoyed watching a spectacular electric storm, though I suspect residents in the flood hit part of the city did not share my enthusiasm. Later in the month, drier conditions prevailed with wildfires breaking out in Wales.

June continued on with the anticyclonic weather with this month becoming the warmest June on record. This flaming month was interrupted several times with the inevitable thunderstorms and heavy rain showers. The most memorable were the thunderstorms on the 12th when 7,500 strikes were recorded and here our weather station showed 35 mm rainfall. This warm weather mixed with heavy rain showers continued to the end of the month. The most notable happenings of May and June can be summarised in these monthly extreme charts:

Fig 2. GMS 2023 Q2. Monthly Extremes for May and June (with permission of the Met Office).



Some of this weather can be seen in the following charts where the South sweltered but the North kept on their coats with waterproofs close at hand.

Fig 3. Mean Maximum Temperature for May & June 2023 (with permission of the Met Office).

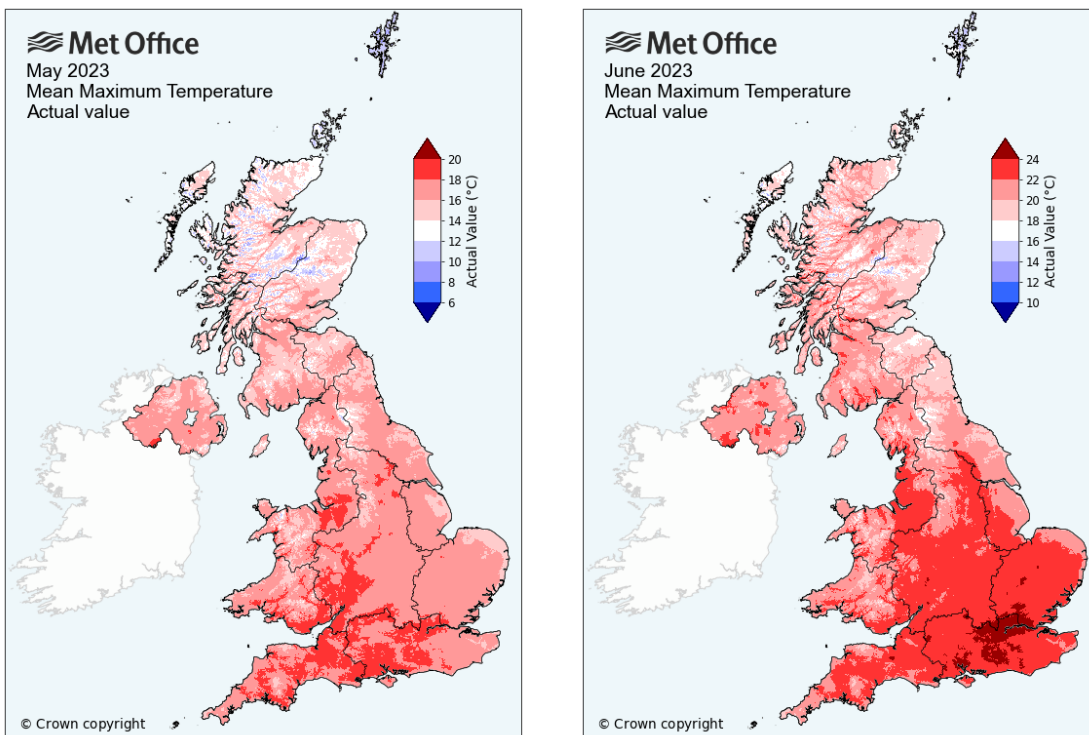


Fig 4. Days of Rainfall greater than 10 mm for May & June 2023 (with permission of the Met Office).

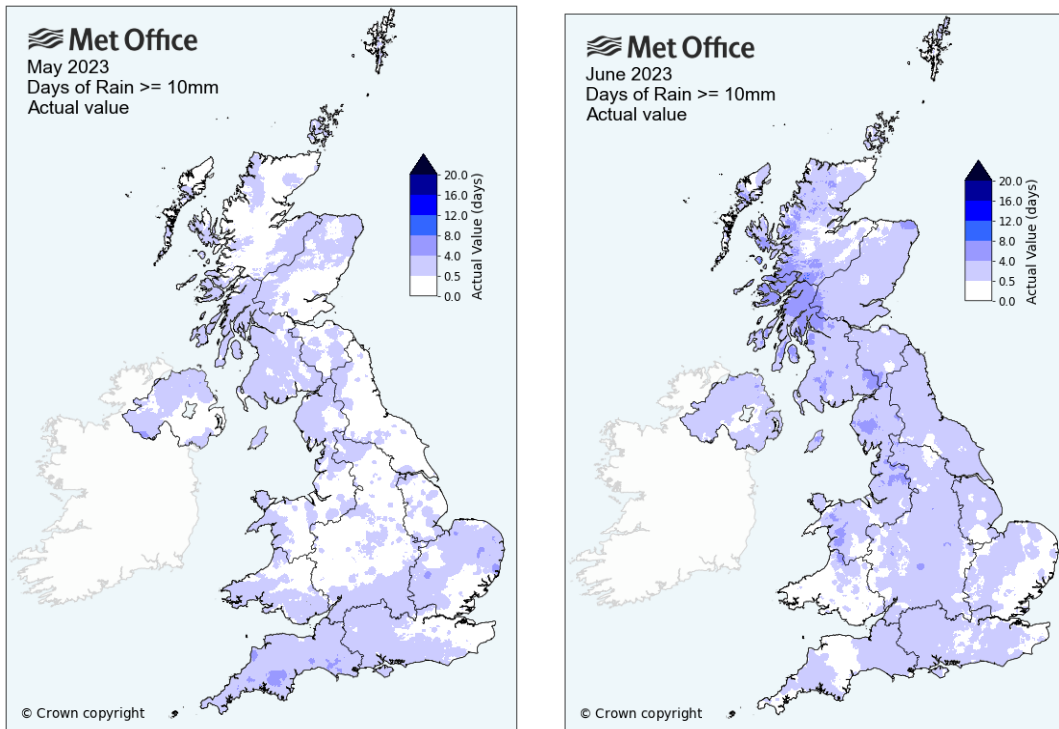


Fig 5. Hours of Sunshine for May & June 2023 (with permission of the Met Office).

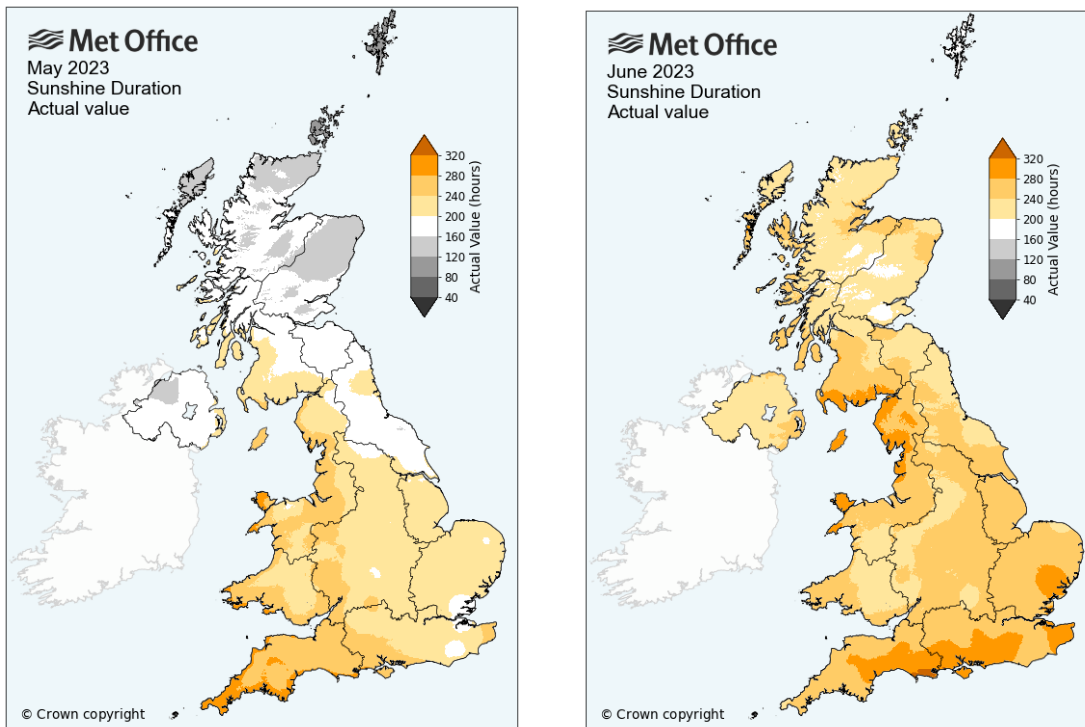
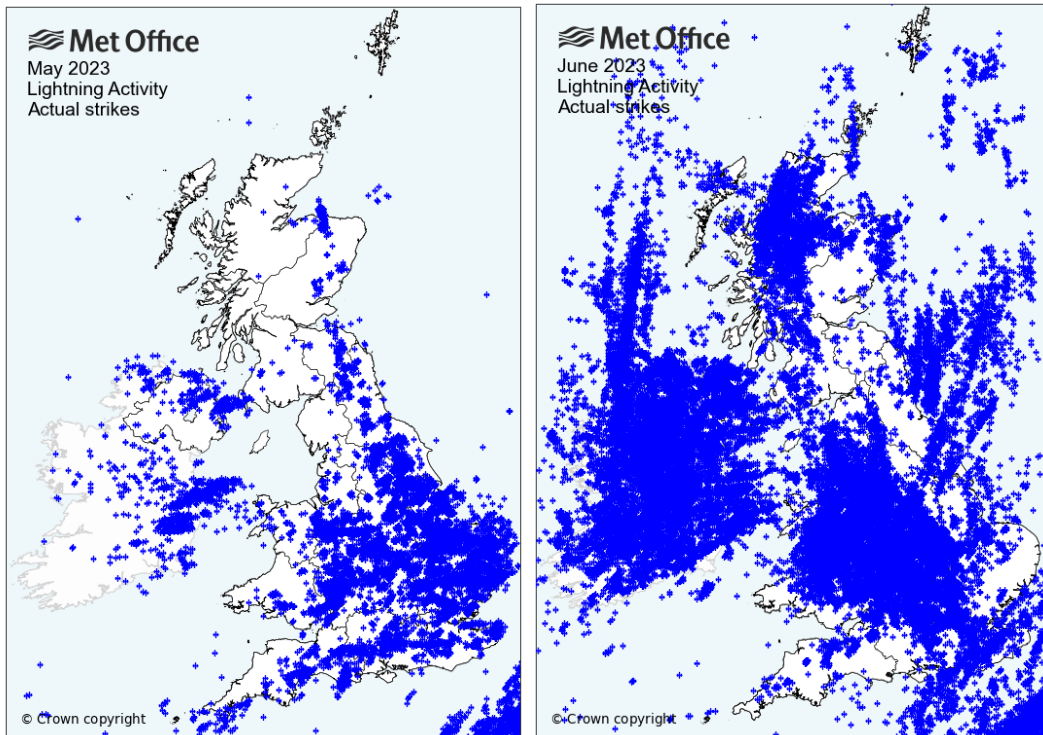
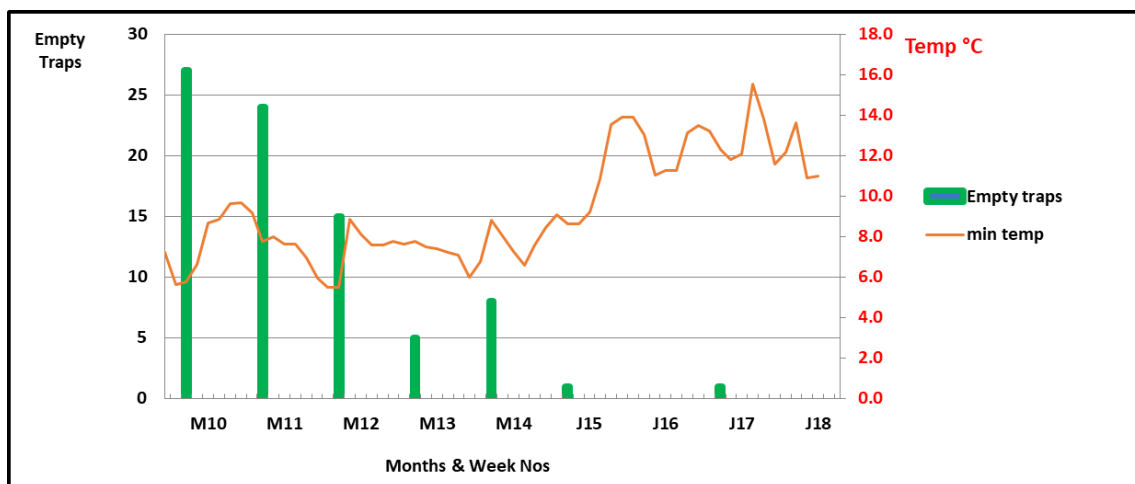


Fig 6. Actual Lightning Strikes for May & June 2023 (with permission of the Met Office).



The number of empty traps started off high but rapidly dropped as the quarter went on and the minimum temperature rose significantly (fig 7). The high initial quantity did seem strange when the last weeks of quarter one were low.

Fig 7. GMS 2023 Q2. Number of Empty Traps



When comparing their numbers with those of 2022 there was a great improvement (fig 8), possibly linked to higher minimum temperatures (fig 9).

Fig 8. GMS 2023 Q2. Average number of Empty Traps 2022 & 2023

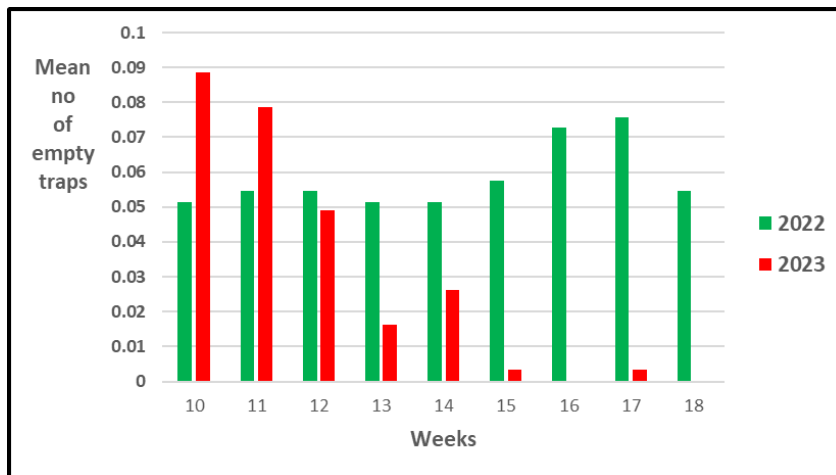
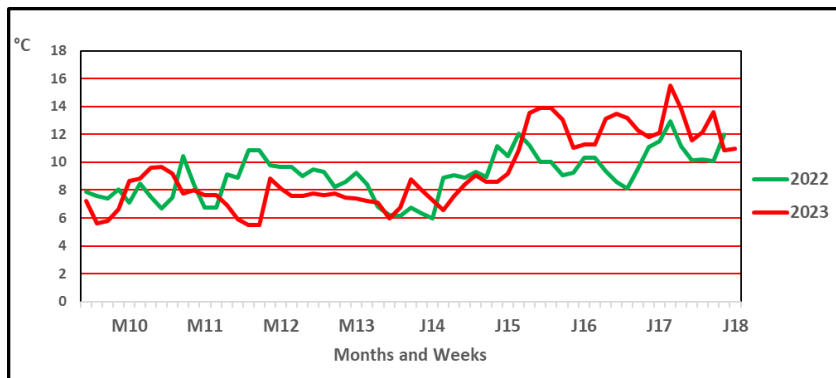
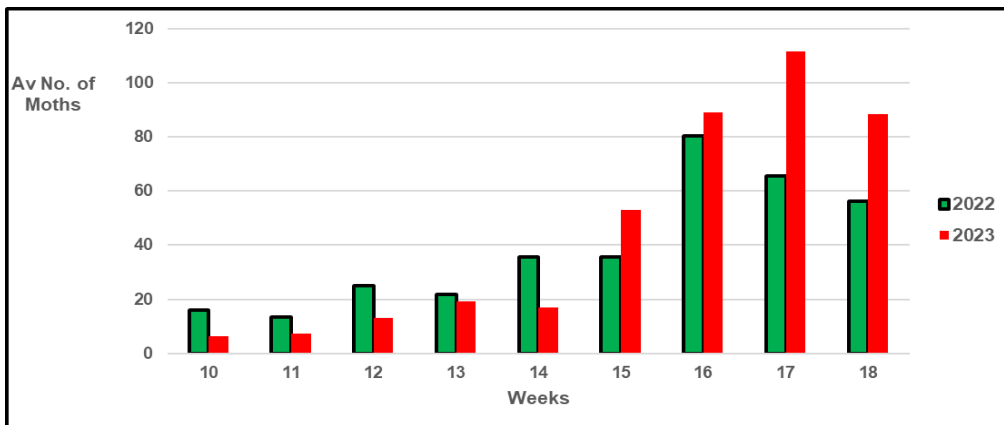


Fig 9. GMS 2023 Q2. Mean Minimum temperatures 2022 & 2023



Comparing the average number of moths caught weekly, last year's catches were higher until week 16 when they were overtaken (fig 10). This looks very good until you look at the wider picture. The high temperatures earlier in the year gave a bonanza for the honeybees and large amount of spring honey was removed, but the flowers bloomed earlier than normal and the high temperatures reduced the production of nectar. As a result, in our region of Wales at least very little summer honey has been produced. Such conditions will no doubt have an adverse effect on health and egg laying production of the nectar-drinking moths. Possibly the recorders in Scotland and other wetter and cooler areas will be wondering what I am talking about. Although it may seem strange comparing moths to bees it could be said that the bees are the "canaries in the mines".

Fig 10. GMS 2023 Q2. Average Number of Moths 2022 & 2023



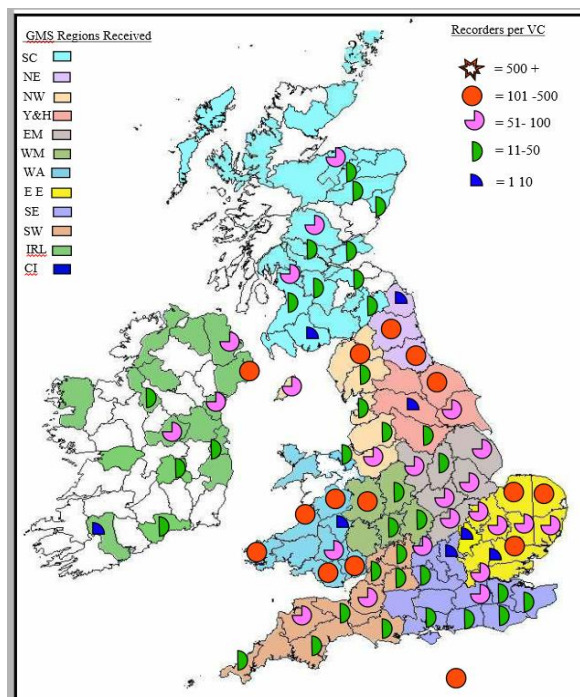
Despite the problems with the hot weather of the past two years there has been a good showing of moths, although perhaps the greatest contributor has been the Garden Grass-veneer. This micro, appearing in large numbers in the grasses, is no doubt one of the main reasons for the good result in figure 1 which showed an increase in the total number of moths. The three top catchers for this moth are list in Table 1.

Table 1. GMS 2023 Q2. Top Three Catches of the Garden Grass-veneer.

Garden Grass-veneer	780	27/06/2023	Week 18	Y&H
Garden Grass-veneer	470	23/06/2023	Week 17	WA
Garden Grass-veneer	333	30/06/2023	Week 18	EM

My congratulations to these and all the other recorders who had them in ranges from 67 to 134. I can only imagine the problems they had as it took us almost a week to clear the paltry 100 from our conservatory. Of course, these moths are not necessarily found equally; figure 11 shows their distribution in Regions and Vice Counties.

Fig 11. GMS 2023 Q2. Regional & Vice County Distribution of The Garden Grass-veneer



Statistics

The performances of the top 20 core moths are listed here in table 2. The ubiquitous Heart and Dart leads the table with Garden Grass-veneer coming in second place. Dark Arches and Uncertain/Rustic agg follow with modest to good gains. On the downside species such as the Large Yellow Underwing and the Elephant Hawk-moth didn't quite make the break-even line which does surprise me as we caught this latter moth in good numbers this quarter.

The second section shows the percentage frequency of gardens visited and that for the Heart and Dart and Garden Grass-veneer have surprisingly dropped by 12 & 4% respectively. This apparent contradiction is explained by fewer gardens recording these moths, but they were caught in larger numbers.

Table 2. GMS 2023 Q2. Top 20 Core Species

Position		Top 20	Mean Per Trap			Catching		
2022	2023	Species	2022	2023	Change	Frequency (%. of gardens)		
			330 Gardens	306 Gardens		2022	2023	Difference
1	1	Heart and Dart	37.9	52.0	14.1	97	85	-12
3	2	Garden Grass-veneer	11.8	51.7	39.9	76	72	-4
11	3	Dark Arches	6.5	22.1	15.7	74	83	9
2	4	Uncertain/Rustic agg.	12.0	15.2	3.2	80	70	-10
5	5	Marbled Minor agg.	9.2	11.8	2.6	87	76	-11
9	6	Treble Lines	7.7	9.4	1.7	72	50	-22
20	7	Willow Beauty	4.8	8.2	3.4	69	67	-2
7	8	Light Brown Apple Moth	8.1	7.3	-0.8	83	66	-17
4	9	Buff Ermine	10.9	6.9	-4.0	54	58	5
18	10	Riband Wave	5.7	6.6	1.0	66	69	3
15	11	Brimstone Moth	6.1	6.1	0.0	85	69	-16
6	12	Flame	8.2	6.0	-2.2	72	52	-20
14	13	Large Yellow Underwing	6.3	6.0	-0.4	58	78	20
17	14	Elephant Hawk-moth	5.7	5.4	-0.3	88	59	-28
16	15	Bright-line Brown-eye	5.8	5.2	-0.6	83	59	-24
36	16	Heart and Club	2.5	4.8	2.32	69	42	-28
8	17	Flame Shoulder	7.9	4.5	-3.4	72	56	-16
22	18	Common Footman	4.3	4.4	0.1	79	55	-25
30	19	Middle-barred Minor	2.9	4.1	1.2	83	51	-33
65	20	Green Oak Tortrix	1.1	4.1	3.0	73	41	-33

Coming down to regional level table 3 lists their top 10 moths. The Heart and Dart vies for top spot with the Garden Grass-veneer apart from the Channel Islands where it languishes at 8th place.

Table 3. GMS 2023 Q2. Regional Top 10 Moths

Yorks & Humber (20)	Mea	%	Ireland (19)	Mea	%	East of England (30)	Mea	%
Garden Grass-veneer	87.3	20	Heart and Dart	45.6	9.	Heart and Dart	51.1	14
Heart and Dart	24.3	5.	Garden Grass-veneer	42.7	8.	Garden Grass-veneer	32.2	9
Dark Arches	16	3.	Buff Ermine	25.6	5.	Treble Lines	21.9	6.
Large Yellow Undwing	13.2	3	White Ermine	25.6	5.	Dark Arches	19.1	5.
Uncertain/Rustic agg.	11.5	2.	Small Square-spot	16.2	3.	Marbled Minor agg.	18.6	5.
Marbled Minor agg.	9.2	2.	Brimstone Moth	13.3	2.	Heart and Club	15.9	4.
Lt Brown Apple Moth	8.9	2	Bright-line Brown-eye	12.2	2.	Uncertain/Rustic agg.	15.6	4.
Bee Moth	6.1	1.	Lt Brown Apple Moth	12	2.	Green Oak Tortrix	12.7	3.
Brown Silver-line	5.8	1.	Flame	10.9	2.	Willow Beauty	10.9	3
Buff Ermine	5	1.	Uncertain/Rustic agg.	10.2	2.	Turnip Moth	8.5	2.
East Midlands (40)	Mea	%	West Midlands (15)	Mea	%	Wales (30)	Mea	%
Garden Grass-veneer	61.1	15	Garden Grass-veneer	58.6	15	Heart and Dart	115	20
Heart and Dart	46.3	11	Heart and Dart	56.3	15	Garden Grass-veneer	96.2	17
Dark Arches	41.9	10	Dark Arches	29.5	7.	Dark Arches	26.2	4.
Uncertain/Rustic agg.	21.8	5.	Uncertain/Rustic agg.	23.9	6.	Uncertain/Rustic agg.	22.4	3.
Marbled Minor agg.	13.9	3.	Crambus pascuella	16	4.	Treble Lines	19.8	3.
Lt Brown Apple Moth	8.8	2.	Marbled Minor agg.	13.2	3.	Flame	14.1	2.
Brimstone Moth	8.3	2	Lt Brown Apple Moth	10	2.	Marbled Minor agg.	13.6	2.
Riband Wave	8.2	2	Elephant Hawk-moth	8.5	2.	Brimstone Moth	11.3	1.
Willow Beauty	8	1.	Riband Wave	7.9	2.	Elephant Hawk-moth	11	1.
Elephant Hawk-moth	7.7	1.	Treble Lines	6.7	1.	Willow Beauty	10.8	1.
South East (33)	Mea	%	Southwest (29)	Mea	%	Channel Islands (1)	Mea	%
Heart and Dart	53.1	15	Heart and Dart	51.1	11	Heart and Dart	172	18
Garden Grass-veneer	43.2	12	Garden Grass-veneer	50.1	11	Shuttle-shaped Dart	138	15
Dark Arches	27.5	7.	Dark Arches	24.1	5.	Marbled Minor agg.	76	8
Uncertain/Rustic agg.	17.2	4.	Uncertain/Rustic agg.	23	4.	Vine's Rustic	45	5
Willow Beauty	16.6	4.	Marbled Minor agg.	21.8	4.	Dark Arches	39	4
Treble Lines	15	4.	Treble Lines	21.5	4.	Large Yellow Undrwing	37	4
Heart and Club	13.3	3.	Willow Beauty	17.7	3.	Lt Brown Apple Moth	33	4
Marbled Minor agg.	11.2	3.	Riband Wave	11	2.	Garden Grass-veneer	30	3
Light Brown Apple Moth	10	2.8	Flame	8.8	1.9	Willow Beauty	22	2
Riband Wave	9.6	2.7	Light Brown Apple Moth	8.3	1.8	Heart and Club	22	2

Table 4 shows the maximum number of this year's top 10 caught in one night in one trap and is compared with those of last year. 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 4. GMS 2023 Q1. Top 10 Core Species Maximum Catches 2022 & 2023

Top 10	2022	Region	Date	2023	Region	Date
Heart and Dart	119	WA	23/06/2022	198	WA	18/06/2023
Garden Grass-veneer	133	NW	23/06/2022	780	YH	27/06/2023
Dark Arches	37	EM	23/06/2022	176	NW	30/06/2023
Uncertain/Rustic agg.	47	EM	24/06/2022	63	EE	28/06/2023
Marbled Minor agg.	33	EM	17/06/2022	52	SW	09/06/2023
Treble Lines	36	EE	20/05/2022	43	EE	24/05/2023
Willow Beauty	22	WA	17/06/2022	39	SW	23/06/2023
Light Brown Apple Moth	24	SE	22/05/2022	36	SC	18/06/2023
Buff Ermine	39	NW	15/06/2022	48	IRL	18/06/2023
Riband Wave	27	EM	17/06/2022	22	WM	26/06/2023

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 15 to 164 and the maximum between 51 and 1417, while the trapping effort (Moth Trap Nights) is very high as per usual.

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				Moth Trap Nights		
		Total	Mean	Min	Max	Possible	Actual	Percent
SC	24	5590	233	36	518	216	209	96.8
NE	31	4208	136	15	616	279	266	95.3
Y&H	20	7333	367	31	1346	180	164	91.1
NW	34	15777	464	123	1249	306	294	96.1
IRL	19	9839	518	37	1417	171	161	94.2
EE	30	12061	402	69	1099	270	257	95.2
EM	40	17065	427	38	977	360	344	95.6
WA	30	17853	595	127	1371	270	250	92.6
WM	15	5814	388	62	809	135	125	92.6
SE	33	12694	385	73	1086	297	278	93.6
SW	29	15220	525	164	2071	261	246	94.3
CI	0	999	n/a	n/a	n/a	9	9	100.0

Night	Tues	Wed	Thurs	Fri	Sat	Sun	Mon
Days	35	60	246	1552	380	158	74
Percent	1	2	10	62	15	6	3

In continuation of David Baker’s interesting article in last month’s newsletter, the “Scarce” moths have lived up to their name this quarter with only the Scarce Footman making an appearance 91 times with a total of 158 individuals. The “Common” moths lived up to their name with 13 species totalling 5654 moths

Additional Species

The number of entries this quarter has been high as expected for this time of the year. There were 235 rows of data coming from all of the regions giving a total of 2737 moths of 562 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). The names given for the micro species depend on whether UK Moths gives them a vernacular name.

The Hawthorn Moth tops the list and the Common Clothes Moth comes seventh which spells bad news for those households with holey jumpers. This moth has been the subject of articles in the papers and on-line with journalists giving hints on how to keep this moth at bay. This is all very well but one article then gave a photograph of a harmless Noctuid as one of the culprits. Later versions of the same article then replaced it with one of the offending moths after someone informed them of their error.

Two interesting recordings came from East of England with both a Red-belted and Yellow-legged Clearwing which are most usually seen with the aid of a pheromone.

Table 6. GMS 2023 Q1. Top 20 Additional Species

Latin/Vernacular	Total	SC	NE	Y&H	NW	Irl	Wa	WM	EM	EE	SE	SW
Hawthorn Moth	33	0	0	6	0	0	5	0	9	8	4	1
<i>Crassa unitella</i>	30	0	0	1	0	0	2	2	1	8	8	8
Apple Leaf Miner	22	0	R	R	R	0	0	1	1	2	4	14
Bird-cherry Ermine	18	R	R	R	R	0	2	1	15	0	R	R
<i>Batia lunaris</i>	17	0	0	0	0	0	6	1	4	3	3	0
Cypress Tip Moth	16	0	0	2	0	0	3	1	2	1	6	1
Common Clothes Moth	12	0	10	0	0	0	0	0	1	0	1	0
<i>Tinea trinotella</i>	12	0	0	0	0	0	0	0	3	3	4	2
Map-winged Swift	11	R	R	R	8	R	R	0	2	0	0	1
Ash Bud Moth	8	0	0	R	0	0	0	0	3	4	0	1
Large Long-horn	7	0	0	0	0	0	0	0	4	0	3	0
<i>Monopis crocicapitella</i>	7	0	0	0	0	0	0	0	0	3	3	1
<i>Agonopterix arenella</i>	6	0	0	0	1	0	1	0	2	0	0	2
<i>Agonopterix arenella</i>	6	0	0	0	1	0	1	0	2	0	0	2
<i>Nematopogon metaxella</i>	6	0	0	0	0	0	4	0	0	0	0	2
<i>Monopsis obviella</i>	6	0	0	0	0	0	0	0	1	4	1	0
<i>Paraswammerdamia albicapitella</i>	6	0	0	1	0	0	0	0	2	3	0	0
<i>Esperia sulphurella</i>	6	0	0	1	0	0	0	0	0	2	3	0
<i>Paraswammerdamia nebulella</i>	5	0	0	1	0	0	0	0	3	0	0	1
<i>Borkhausenia fuscescens</i>	5	0	2	0	0	0	2	0	0	0	1	0
<i>Agonopterix heracliiana</i>	5	0	0	1	0	0	0	1	2	1	0	0

Elephant Hawk-moth (*Deilephila elpenor*)

This attractive moth of the Sphingidae family is frequently seen nectaring on honeysuckle at dusk. It is resident and widespread throughout England, Wales, Isle of Man and Ireland. In Scotland its range has expanded northwards since the 1980's and now extends up to the north coast including the Hebrides, its long-term distribution trend having shown a large increase since 1970 (Atlas of Britain & Ireland's Larger Moths).

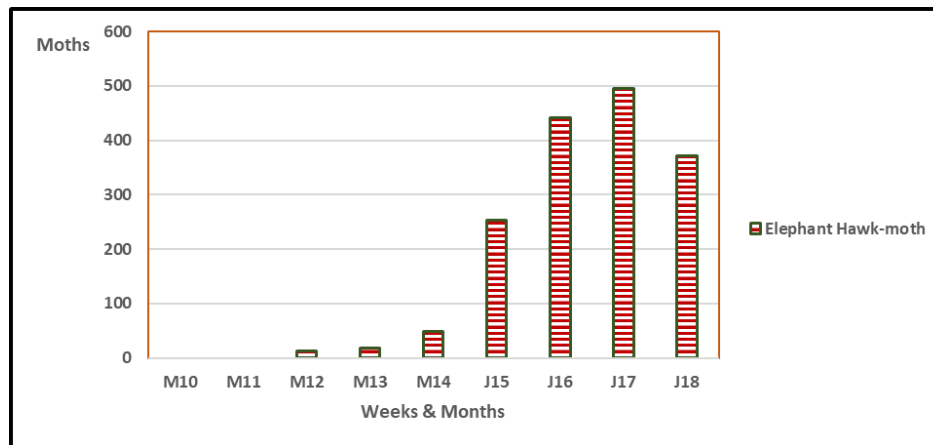
The vernacular name Elephant comes from the appearance of the larva which has an extensible neck recalling this animal's trunk; Hawk-moth it has been suggested comes from the resemblance of this family of moths to the hawks, which historically included falcons like the Kestrel, both of which have narrow wings, are fast flying and frequently hover. Its scientific name is genus *Deilephila* meaning evening-loving and species *elpenor* meaning pig. The original Elpenor was a member of the crew with Odysseus in Homer's Odyssey. His fate was to fall off a roof blind drunk and, according to the account was magically turned into a pig by the unforgiving Circe. The family name *Sphingidae* for the hawk-moths was named by Linnaeus because of the appearance of their larvae which rear up in a sphinx-like manner when threatened. (Emperors, Admirals and Chimney Sweepers by Peter Marren)

Its distinctive olive and pink colouring make it one of the most recognisable of moths but it could be confused with its smaller relative, the Small Elephant Hawk-moth which shares these characteristic colours.



Its flight season is from May to early August. Until recently, only one generation has been recorded but smaller numbers of fresh adults are now reported annually in the summer, north at least to Lancashire.

Fig 12. GMS 2023 Q2. Flight Season of the Elephant Hawk-moth



They can be found in a wide variety of habits including rough grassland often on disturbed or burnt ground where Rosebay Willowherb has colonised, gardens, woodland rides and clearings, heathland, sand-dunes and ditches.

The larvae are present late June to September and are very distinctive with their extensible necks and eye-spots clearly displaying snake mimicry as a predator deterrent. When small they rest on the underside of leaves but when large may be seen resting on the ground, climbing to feed at night. They are most frequently found on Rosebay Willowherb, Great Willowherb, other Willowherbs and Bedstraws and in gardens on Fuchsias. They pupate over winter in or on the ground.



How GMS data is being used

Norman Lowe

The Garden Moth Scheme provides a strong incentive to trap and record moths and to have fun while doing so. But it generates an enormous amount of data and it's important to make sure that this is used as effectively as possible. It's quite instructive to look back at Dave Grundy's invitation in 2005 to see how it was envisaged at the time. This is part of what Dave had to say back then.

People already collect records for the birds and butterflies they see in their gardens, so why not garden moths too? This year at least 500 people will trap moths in their gardens across the country on a regular basis. So, why don't we make use of this

research by surveying our common garden moths to help toward their conservation?

So have people taken up the challenge? It seems so as after a huge amount of work by Audrey Turner we now have a huge total of 2,205,038 records on our database. But all this effort could be largely wasted unless the data is used for the benefit of moths.

One danger when trying to interpret data is getting the statistics wrong. And in fact it was pointed out to me that in my piece for the previous newsletter I gaily inserted trend lines in my charts without adequate explanation of what (if anything!) they meant. However, I do know that during the Scheme's design phase great care was taken to obtain expert advice from knowledgeable statisticians to facilitate the production of statistically significant conclusions.

This has enabled the production of at least 12 peer-reviewed scientific papers with over 230 citations. It would be very useful if someone could chase these up and produce an article for the newsletter. Any volunteers?

Now, due to Audrey's sterling efforts we are in a position to make the data available to individuals and organisations knowing that the data is as up-to-date and accurate as we can make it. I'll keep you posted.

Puzzle Corner

Answers to Moth Word-search

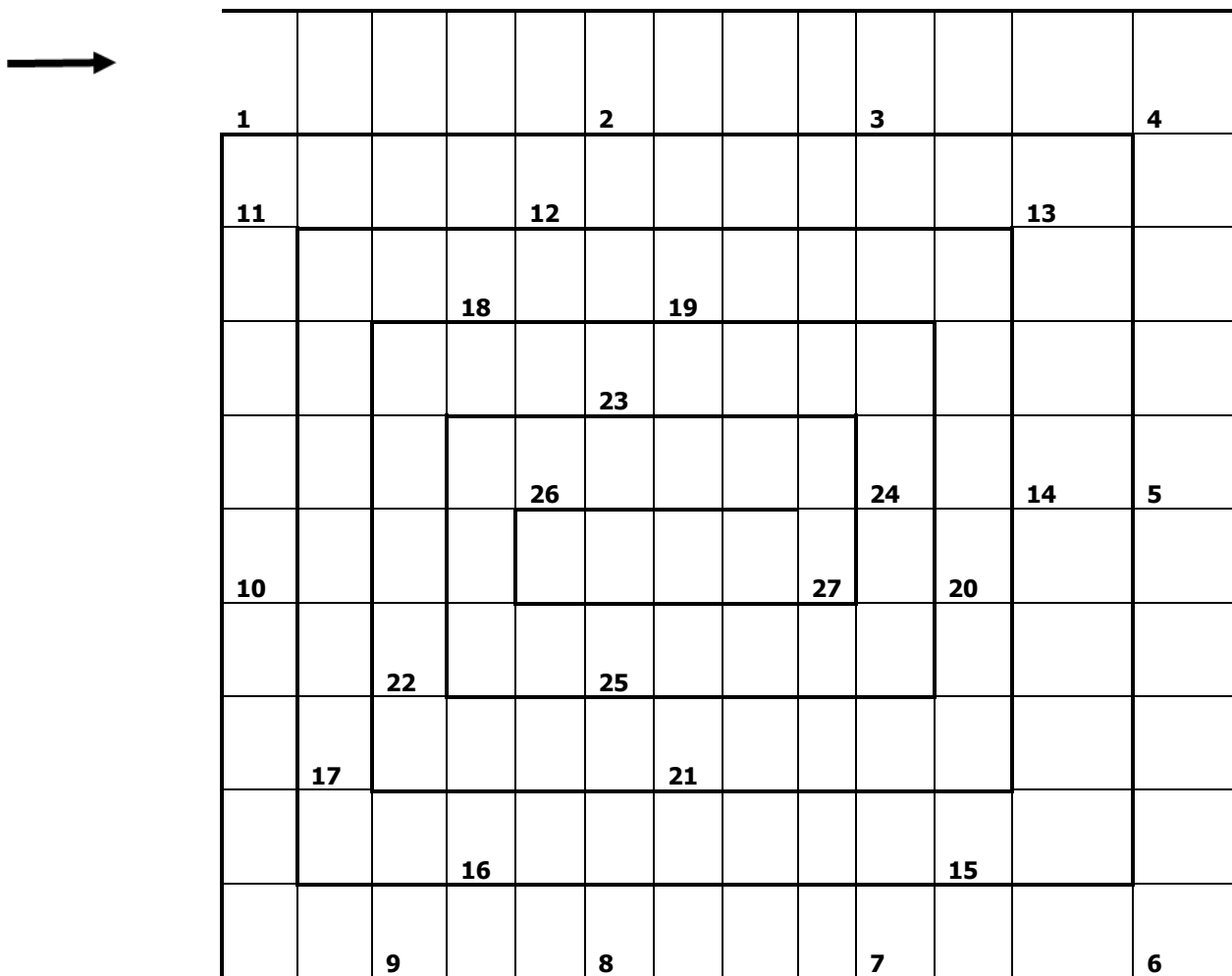
<u>ACROSS</u>	<u>UP/DOWN</u>	<u>DIAGONAL</u>
Barred	Arran	Alder
Belle	Beaded	Angle
Broom	Dingy	Ash
Buff	Fern	Beech
Burren	Festoon	Blue
Chinese	Forester	Burnished
Devon	Gold	Clay
Drab	Grey	Crescent
Eyed	Ling	Dot
Four	Peach	Dotted
Fox	Rush	Early
Gothic	Saxon	Essex
Great	Shaded	Gem
Heath	Shore	Lead
Hebrew	Softys	Magpie
Little	Streamer	Miller
Minor	Tail	Red
Netted	Treble	Reed
Orache	Triangle	Satin
Pale	Vestal	Scar
Pauper		Single
Pea		Small
Puss		T rue
Setaceous		

The 13 unused squares held the letters to make up another moth which was, of course, NONCONFORMIST.

Macro-Moth Squiral

Nonconformist

Insert either whole names or descriptive parts of macro-moths in an overlapping clockwise manner.



Clues

- 1 Surely they should proclaim every such situation?
- 2 Not such a bad run, especially when found on the Scottish coast....
- 3 ... although this species inhabits a far ranging island on the opposite coast.
- 4 A small ring often shown in pastel, unnaturally set.
- 5 Do we cut television time only to find a backward moving fish? Cos I do!
- 6 On returning I found the expert necessary to solve the problem.
- 7 One hundred and eighty! Three of these scores would help.
- 8 A superlative of little as taken by several species.
- 9 A visitor who really gets to grips but he's no learner!
- 10 Possibly worn at the end of term in Eastern countries.
- 11 Chased and caught....
- 12 ... as was a small species found in this Capital! Och Aye.
- 13 Marley's partner recorded four of these species.....
- 14 ...but didn't celebrate by hanging these on the premises.
- 15 I tramped through many yards of soggy level mire to find this marvel.
- 16 When working as Charles' servant one would expect to feel inferior.
- 17 Maybe Pam's heir inherited her moth trap to record this heavenly beauty.
- 18 Whether it is etymology or entomology, grammar changes are needed to sort this in time.
- 19 Del Boy would say he had a cush tent in which to eat his Xmas fare.

- 20 Whilst sat on this mound our hunger can only be satisfied with an SOS for tuck.
- 21 Possibly drenched to the skin whilst looking for this seemingly mis-named beauty.
- 22 A blemish in Ingrailed Clay wing may well have this effect.
- 23 The answer to clue 25 may well be a part of this dark style.
- 24 It was possibly the bran Cain ate that made him so distasteful.
- 25 We must search all over the wall openings to find our specimens.
- 26 The energy source for Bluto's enemy.
- 27 Teachers special missile in my schooldays.

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.

However, the information on the website is now out of date. Would anyone be willing to help in updating it?

Facebook Page - <https://www.facebook.com/GardenMothScheme>

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.

GMS Sponsors

Atropos Books

Online book store and publication of Atropos, the journal for butterfly, moth and dragonfly enthusiasts. Special offers available on the website.

www.atroposbooks.co.uk

The Boat House, Church Cove, Lizard, Cornwall, TR12 7PH

01326 290287

enquiries@atropos.info

ALS - Anglian Lepidopterist Supplies



For all your equipment requirements from moth traps to pots and generators – quality products at affordable prices.

www.angleps.com

Station Road, Hindolveston, Norfolk, NR20 5DE

01263 862068 9am – 5pm Monday to Friday

sales@angleps.com

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.

 **Watkins & Doncaster**
The Naturalists



Over 140 years specialising in the manufacture and supply of a huge range of entomological equipment. Everything from containers, breeding cages, nets, lenses, books and charts to moth traps and microscopes.

Buy online at www.watdon.co.uk or call 0333 800 3133 to order or request a catalogue.

Golderfield, Pudleston, Leominster,
Herefordshire HR6 0RG;
sales@watdon.co.uk

20W Eco Robinson trap, can run from mains or 12V battery with an inverter. For more details please go to www.watdon.co.uk, search product code E750.

MapMate[®]

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