GMS News

Autumn 2017

Weeks 28-36

Contents

Editorial – Norman Lowe

Once more we reach the end of the year and as I write this snow is thick on the ground. A white Christmas perhaps? And on the moth front I've had three empty GMS weeks in a row and it seems a long time since I saw a moth of any kind.

So hopefully this newsletter will bring a little cheer, with again a wide variety of reports and stories. Evan's analysis includes a comparison between the East of England and Wales showing that although weather conditions were quite similar there was a lot of difference in numbers and types of moth recorded. It was also interesting to see the temperature maps showing for example the much warmer areas along our south and west coastlines.

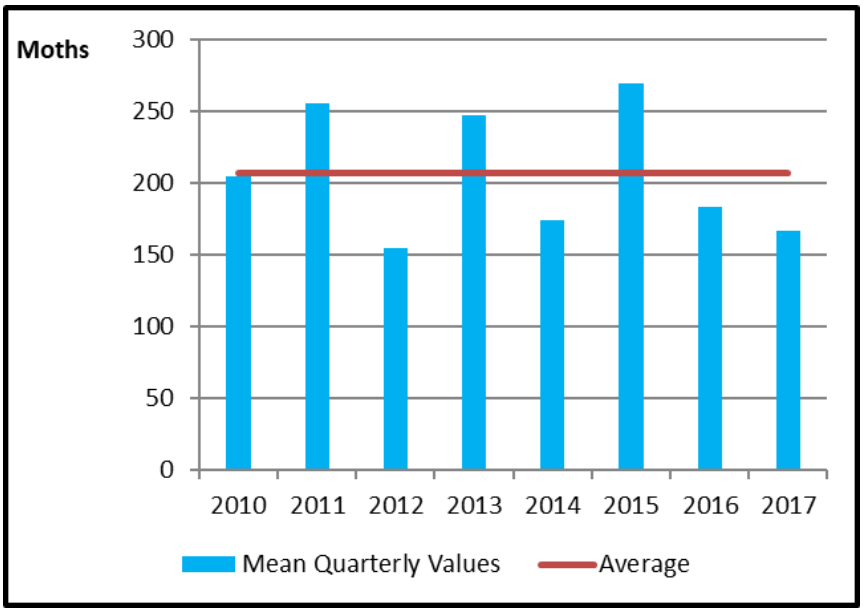
In this edition Evan is putting the Light Brown Apple Moth under his microscope. It can be seen that this moth flies throughout the year with peak numbers in early summer and late summer/ autumn. And I know that in Wales this is a species recorded in large numbers from a few gardens but scarce or absent in most others. Other articles include an account of how to get your family and the neighbours interested in moths, and an interesting question concerning where moths go to in the days after they've been recorded in our traps. And to get you into the seasonal spirit there's a new Christmas crossword from our regular Nonconformist.

Finally – remember that the next GMS Annual Conference will be held at Moira Village Hall, Leicestershire on Sunday 4th March 2018. The postcode is DE12 6DP. We will be putting the programme together shortly and we will need presentations, so if you'd like to tell us about things in your area, let me know.

Overview GMS 2017 4th Quarter by Evan Lynn

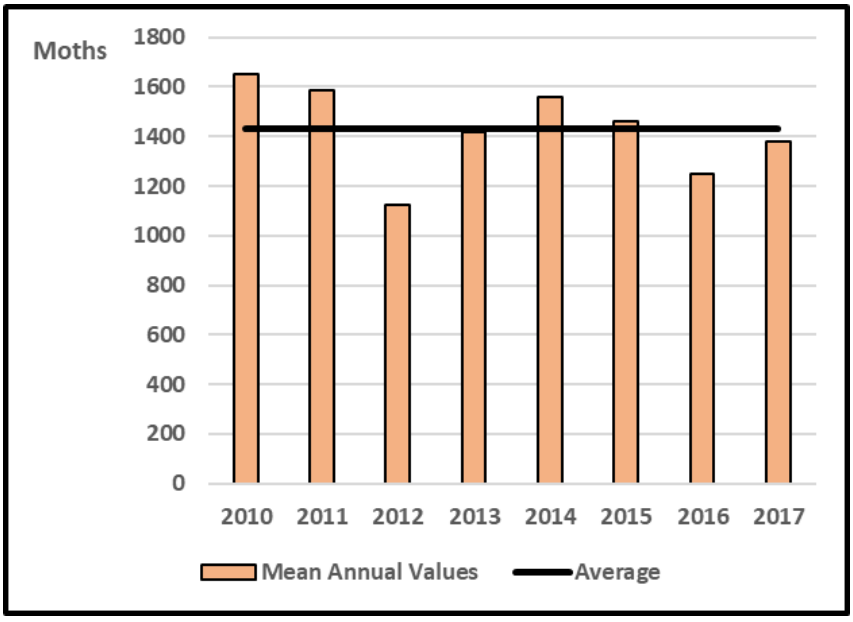
This has not been the most productive quarter for moths as shown in Figure 1 with the mean number of moths per garden being only slightly higher than 2012 and at least 100 below that of the three best years (2011/13/15). This is reflected by its position below the average line calculated from the last eight years.

Fig 1. GMS 2010 - 2017 Q4. Mean Quarterly Moth Numbers



However, when taking the whole year into account, 2017 did not fare as badly, with the mean annual number of moths being just below the average of the past eight years and being a little better than last year, 2016 (Fig 2).

Fig 2. GMS 2010 - 2017 Mean Annual Moth Numbers



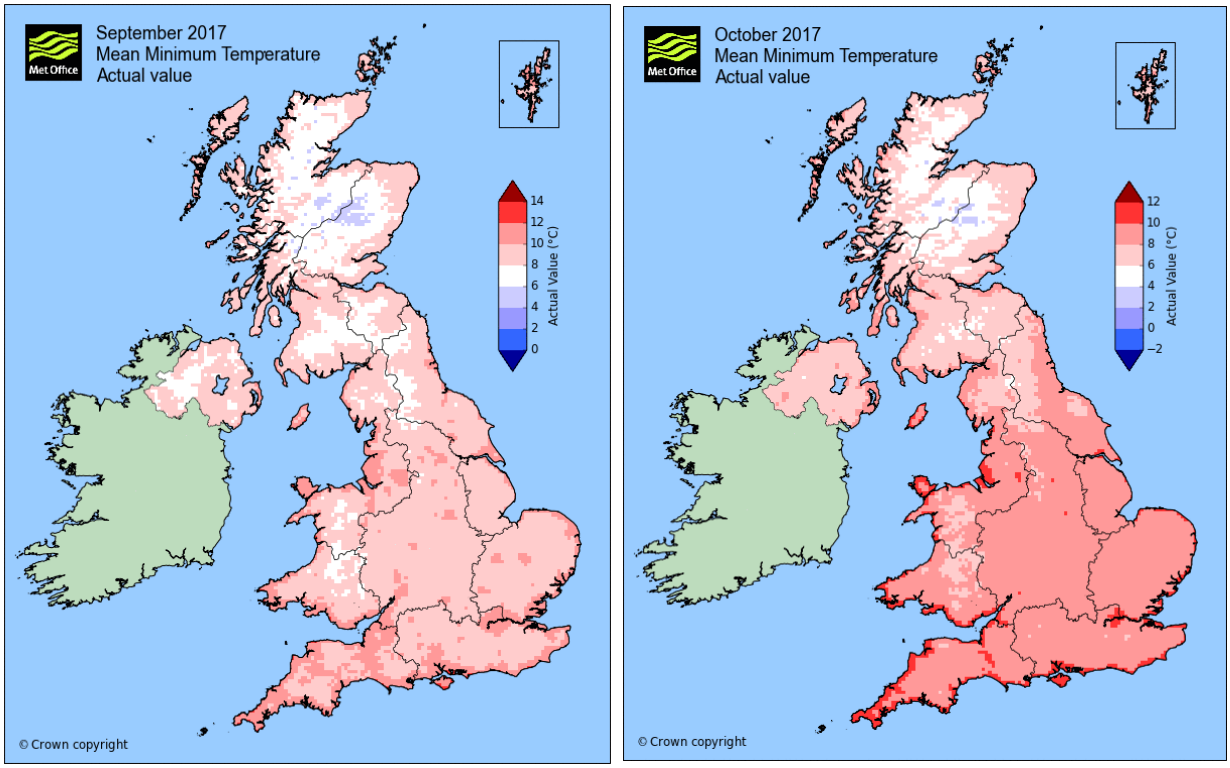
Temperature

September was a month with lots of variation! It saw a succession of low pressure areas tracking from west to east. This reached a climax with the arrival of Storm Aileen which cleared the weather for a while until more depressions finished off the month. The average daytime temperature in England and Wales was around 14°C whilst that in Scotland was lower at about 12°C. Night time temperatures were close to average but rose towards the end of September.

October was mild, wet and windy and the average temperature in England and Wales was 12.7°C with Scotland achieving 10.2°C. The mean minimum temperatures in Figure 3 reflect this, though the overall temperature in October is probably skewed during the last week when overnight temperatures dropped dramatically, in the Highlands for example as low as minus 5°C.

October was notable for the passing of two storms, Ophelia and Brian, which caused extensive damage to the accommodation on Skomer and Skokholm off the Pembrokeshire coast. In addition to the winds, Ophelia will be remembered for the red sun, caused by atmospheric soot particles from Spanish forest fires.

Fig 3. Mean Minimum Temperatures for September & October 2017 (with permission of the Met Office)



These weather conditions are reflected in the number of empty traps recorded this quarter (Fig 4) which increased as colder nights drew in. Weeks 35 & 36 look very dramatic with a surge in number of nil catches. Although the nominal trapping night is Friday, in week 36 a number of recorders delayed setting their traps until the weekend unfortunately coinciding with the abrupt drop in overnight temperatures as shown. These included 37 recorders on the Saturday, 16 recorders on the Sunday and 6 recorders on the Monday. The same depressing picture emerged when we examine the number of moths being caught (Fig 5).

Fig 4. GMS 2017 Q4. Minimum Night Temperatures and Empty traps

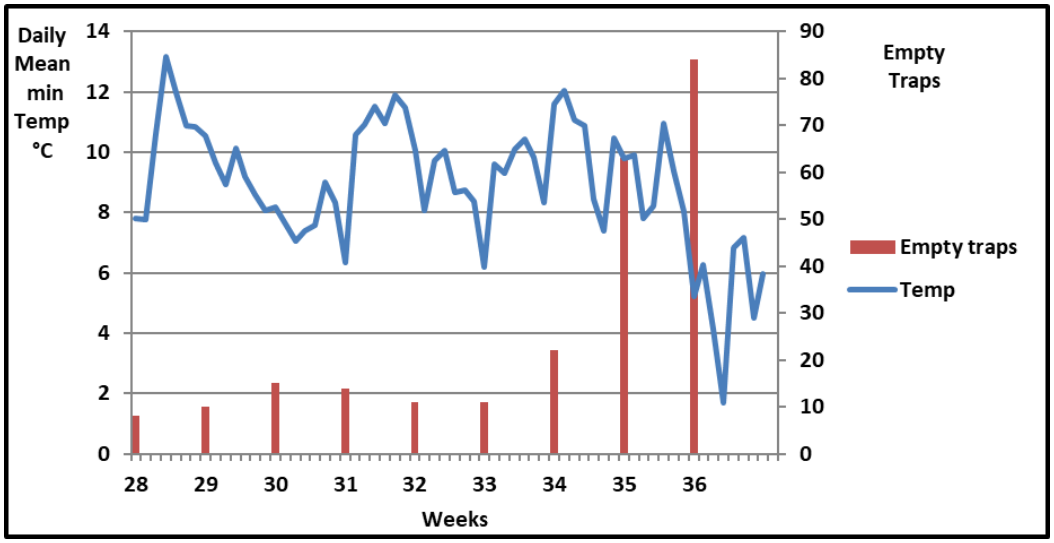
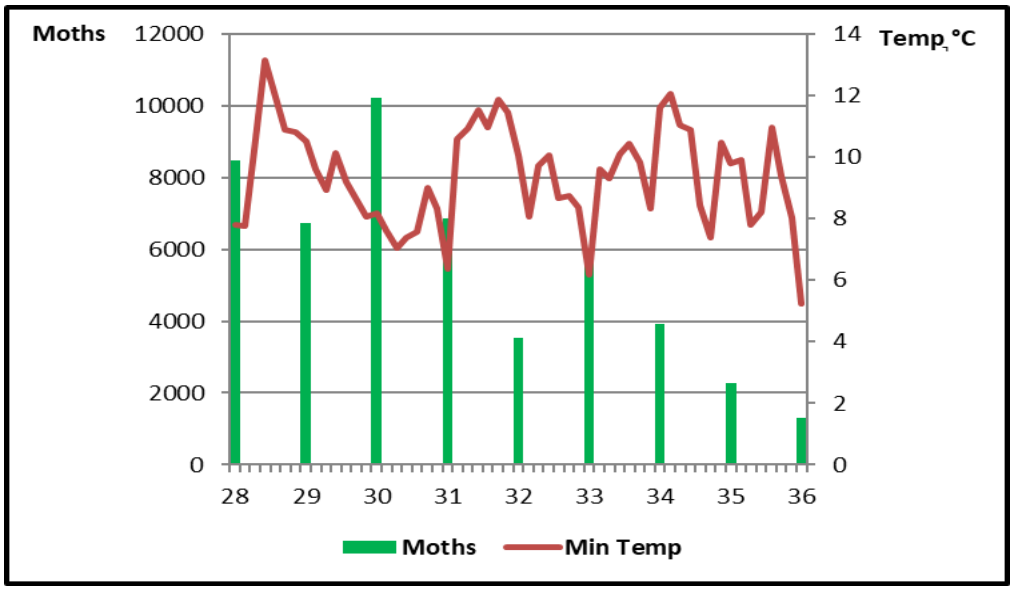


Fig 5. GMS 2017 Q4. Minimum Night Temperatures and Moth Numbers



Regional Comparisons

This quarter I have chosen two regions at roughly the same latitude but on different sides of the country – namely the East Midlands and Wales. Even though the temperatures remain reasonably convergent for the first half of the quarter(Fig. 6), the East Midlands outperforms Wales in terms of the quantity of moths recorded (Fig.7). In the second part of the quarter the temperature differs markedly but despite a major temperature drop in the last week Wales managed to exceed the East Midland catches.

Figure 6 September & October 2017 Mean Daily Temperature Comparison for East Midlands and Wales

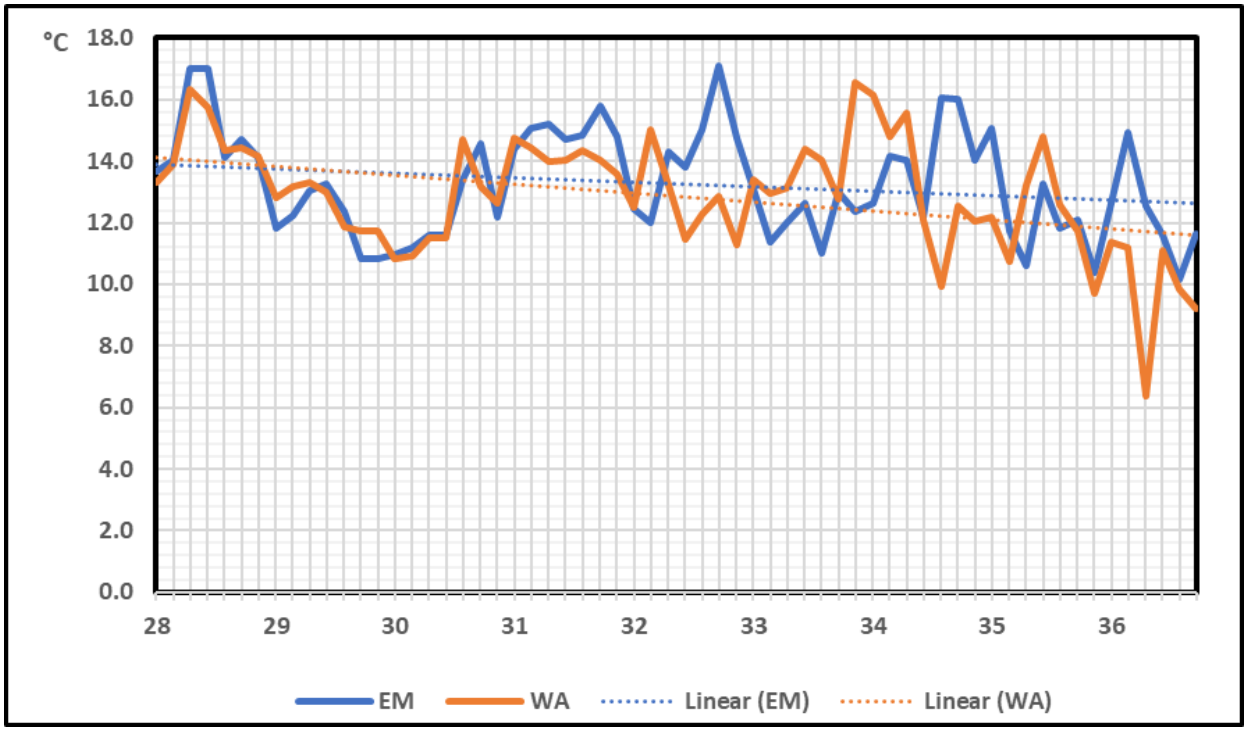
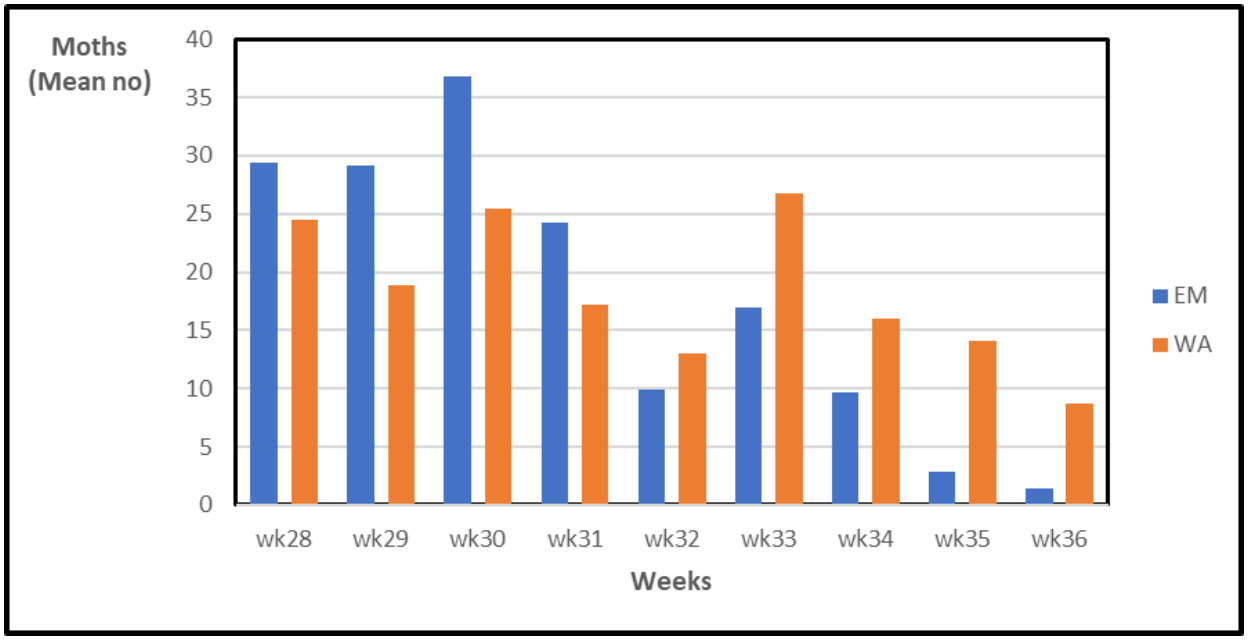


Figure 7 September & October 2017 Mean Moth Catches for East Midlands and Wales



Statistics

This quarter's Top 20 list shows a drop in mean value for most species from 2016. These losses start with the Large Yellow Underwing showing the greatest divergence (-16) and finish with the Beaded Chestnut showing the least (-0.3). The remaining seven positive values are small by comparison. The Chestnut from the perspective of the list position is a winner but in fact only had a mean gain of 1.3. The Green Brindled Crescent, Garden Carpet and Garden Rose Tortrix are all losers dropping off the list entirely to 22, 36 and 21 respectively. It does not necessarily mean that these moths have had a disastrous year, but they could be flying outside of this quarter's time slot as there have been several time travellers reported this quarter. In the case of the Large Yellow Underwing the prevailing westerlies may have hindered the annual migration from Europe.

Table 1 GMS Q4 2017 Top 20 Species

Position		Species	Mean per Trap		Mean change	No of records	Max per Trap
2016	2017		2016	2017		2017	
1	1	Large Yellow Underwing	40.6	24.6	-16	1043	128
3	2	Lunar Underwing	14	11.8	-2.2	508	408
2	3	Setaceous Hebrew Character	14.6	9.6	-5	634	99
4	4	Light Brown Apple Moth	11.4	8	-3.5	912	21
5	5	Square-spot Rustic	11.1	7.4	-3.7	606	38
9	6	Lesser Yellow Underwing	4.5	6.8	2.3	678	31
6	7	Common Marbled Carpet	8	5.3	-2.7	779	12
8	8	Beaded Chestnut	4.6	4.3	-0.3	291	51
11	9	Black Rustic	3.5	4.1	0.6	440	25
7	10	November Moth agg.	6.6	3.7	-2.9	357	32
14	11	Red-green Carpet	2.7	3.2	0.6	480	27
16	12	Spruce Carpet	2	2.6	0.6	245	101
21	13	Yellow-line Quaker	1.7	2.6	0.9	323	27
12	14	Snout	3	2.5	-0.5	366	15
15	15	Brimstone Moth	2.2	2.5	0.3	348	23
22	16	Blair's Shoulder-knot	1.6	2.3	0.7	358	11
10	17	Silver Y	3.5	2.1	-1.4	476	11
20	18	Red-line Quaker	1.7	1.9	0.2	360	12
13	19	Angle Shades	2.7	1.8	-0.9	397	13
57	20	Chestnut	0.5	1.8	1.3	176	67
		344 Gardens 2017	340 Gardens 2016				

Breaking these figures down into regions, Table 2 shows the mean number of the Top 10 moths for each region with some doing better than others.

Table 2 GMS Q4 2017 – Top 10 Regional Core Species

Scotland (20)	Mean	North East (19)	Mean	North West (42)	Mean
Spruce Carpet	13	Large Yellow Underwing	15	Large Yellow Underwing	15
Large Yellow Underwing	6	Light Brown Apple Moth	6	Light Brown Apple Moth	10
November Moth agg.	6	Rosy Rustic	4	Common Marbled Carpet	7
Common Marbled Carpet	5	Red-green Carpet	4	Set Hebrew Character	6
Red-green Carpet	4	Spruce Carpet	4	Less Yellow Underwing	5
Square-spot Rustic	4	Common Marbled Carpet	3	Blair's Shoulder-knot	5
Rosy Rustic	4	Silver Y	3	Red-green Carpet	4
Yellow-line Quaker	4	Less Yellow Underwing	3	Square-spot Rustic	3
Grey Pine Carpet	3	November Moth agg.	3	Lunar Underwing	3
Silver Y	3	Blair's Shoulder-knot	2	November Moth agg.	3
Yorks & Humber (16)	Mean	Ireland (24)	Mean	East England (33)	Mean
Large Yellow Underwing	16	Beaded Chestnut	9	Large Yellow Underwing	32
Light Brown Apple Moth	13	Square-spot Rustic	8	Set Hebrew Character	20
Beaded Chestnut	10	Spruce Carpet	8	Lunar Underwing	18
Set Hebrew Character	8	Grey Pine Carpet	7	Square-spot Rustic	12
Lunar Underwing	7	Light Brown Apple Moth	6	Beaded Chestnut	11
Blair's Shoulder-knot	6	Common Marbled Carpet	5	Black Rustic	10
Less Yellow Underwing	6	Set Hebrew Character	4	Less Yellow Underwing	10
Garden Rose Tortrix	4	November Moth agg.	4	Light Brown Apple Moth	8
Snout	4	Rosy Rustic	4	Brown-spot Pinion	3
Angle Shades	3	Red-green Carpet	4	November Moth agg.	3
East Midlands (33)	Mean	West Midlands (28)	Mean	Wales (42)	Mean
Large Yellow Underwing	33	Large Yellow Underwing	32	Set Hebrew Character	14
Lunar Underwing	17	Lunar Underwing	13	Large Yellow Underwing	11
Set Hebrew Character	16	Less Yellow Underwing	8	Common Marbled Carpet	11
Light Brown Apple Moth	11	Light Brown Apple Moth	8	Chestnut	9
Less Yellow Underwing	10	Square-spot Rustic	8	November Moth agg.	7
Square-spot Rustic	8	Common Marbled Carpet	6	Light Brown Apple Moth	7
Blair's Shoulder-knot	5	Beaded Chestnut	4	Brimstone Moth	6
Common Marbled Carpet	4	Set Hebrew Character	4	Spruce Carpet	6
Beaded Chestnut	4	Black Rustic	4	Square-spot Rustic	6
Black Rustic	3	Red-green Carpet	3	Yellow-line Quaker	6
South East (45)	Mean	South West (38)	Mean	Channel Islands (1)	Mean
Large Yellow Underwing	42	Large Yellow Underwing	42	Large Yellow Underwing	57
Lunar Underwing	39	Set Hebrew Character	11	Rusty-dot Pearl	45
Square-spot Rustic	13	Lunar Underwing	11	Light Brown Apple Moth	30
Set Hebrew Character	10	Less Yellow Underwing	9	Feathered Ranunculus	27
Less Yellow Underwing	10	Square-spot Rustic	9	Common Marbled Carpet	22
Light Brown Apple Moth	8	Light Brown Apple Moth	8	Square-spot Rustic	19
Black Rustic	7	Common Marbled Carpet	7	Black Rustic	19
November Moth agg.	4	Rusty-dot Pearl	5	Set Hebrew Character	14
Light Emerald	4	Brimstone Moth	5	Shuttle-shaped Dart	12
Red-green Carpet	3	Black Rustic	4	Brimstone Moth	10

The figure in brackets is the number of recorders for that region.

The records received from the twelve GMS Regions for the quarter are summarised below (Table 3). The minimum value of 0 in the North East demonstrates the continuing problem of

the siting of the trap. Hopefully a better position can be found elsewhere so this recorder can continue with their enthusiasm. Other regions also show some depressingly low minimum catches. For the Moth Trap Nights table on the right, the "possible" column shows the maximum number of nights that could be trapped per region. Unfortunately, some weeks have to be missed for personal reasons (holidays etc). The rules state that every recorder must trap on at least 27 of the 36 weeks and with no recording gaps greater than 3 weeks. Although Friday is the official or preferred trap day for the week, three nights either side are acceptable as everyone has a life to live apart from mothing.

Table 3 GMS Q4 2017 – Regional Statistics

Region	Gardens	Moths			
		Total	Mean	Min	Max
SC	20	1986	99	26	353
NE	19	1450	76	0	333
Y&H	16	2096	131	24	323
NW	42	4447	106	7	368
IRL	24	2441	102	4	426
EE	36	12113	336	36	2286
EM	33	5298	161	14	407
WA	42	6909	165	5	646
WM	28	3874	138	23	344
SE	45	9272	206	10	1260
SW	38	6663	175	46	436
CH	1	610	610	n/a	n/a

Moth Trap Nights		
Possible	Actual	Percent
180	170	94
171	157	92
144	139	97
378	357	94
216	202	94
324	299	92
297	285	96
378	357	94
252	232	92
405	370	91
342	315	92
9	9	100

Night?	Tues	Wed	Thurs	Fri	Sat	Sun	Mon
Days	48	109	301	1766	354	217	97
Percent	2	4	10	61	12	8	3

I received a request from a recorder in East of England asking for some information on the relative abundance of core species across the GMS regions. He was aware that abundant species in his area were not necessarily as common elsewhere. I therefore collated the list of the 159 core moth species that were trapped this 4th quarter. Each moth was given a rank of between 12 and 1 according to how many regions reported catching them. A value of 12 means that they were caught in all of the regions while a value of one means that it was only reported in a single region.

It was impractical to list all of the moths in this report so I randomly selected one moth from each category as shown in table 4

Table 4 GMS Q4 2017 – Coding for table 5

12	Angle Shades (AS)
11	Frosted Orange (FO)
10	Flame Shoulder (FS)
9	Burnished Brass (BB)

8	Flame Carpet (FC)
7	Orange Swift (OS)
6	Spectacle (S.)
5	July Highflyer (JH)

4	Small Phoenix (SP)
3	Flame (F.)
2	Garden Pebble (GP)
1	Gothic (G.)

These named moths can then be found in table 5 where the figures for each species are the actual number of moths caught and the number in brackets beside the region is the number of recorders. As an example, for the Flame Shoulder (rank 10) 17 moths were caught in the East of England, 9 in Ireland and 21 in the Southwest.

Table 5 GMS Q4 2017 – Relative Abundance of Core Species

Species	**AS**	**FO**	**FS**	**BB**	**FC**	**OS**	**S.**	**JH**	**SP**	**F.**	**GP**	**G.**
Rank	12	11	10	9	8	7	6	5	4	3	2	1
EE (33)	40	28	17	54	1	4	9	0	0	0	0	0
SC (20)	54	7	0	0	0	0	0	9	0	0	0	0
NE (19)	29	10	0	0	0	0	0	2	0	0	0	0
Y&H (16)	55	16	17	23	1	1	0	0	0	0	0	0
NW (41)	79	5	17	4	7	1	0	0	0	0	0	0
IRL (24)	63	24	9	1	23	0	0	2	0	0	0	0
EM (33)	70	11	11	21	0	0	1	0	0	2	0	0
WA (42)	101	31	69	5	12	0	2	6	6	4	3	0
WM (28)	26	9	13	8	2	2	1	0	1	0	0	2
SE (42)	46	32	10	16	4	5	7	0	0	0	0	0
SW (36)	60	12	21	41	1	1	3	0	1	2	1	0
CI (1)	5	0	1	0	0	1	0	1	1	0	0	0

Finally, table 6 shows the number of different species per rank

Table 6 GMS Q4 2017 – Number of Core Species per rank

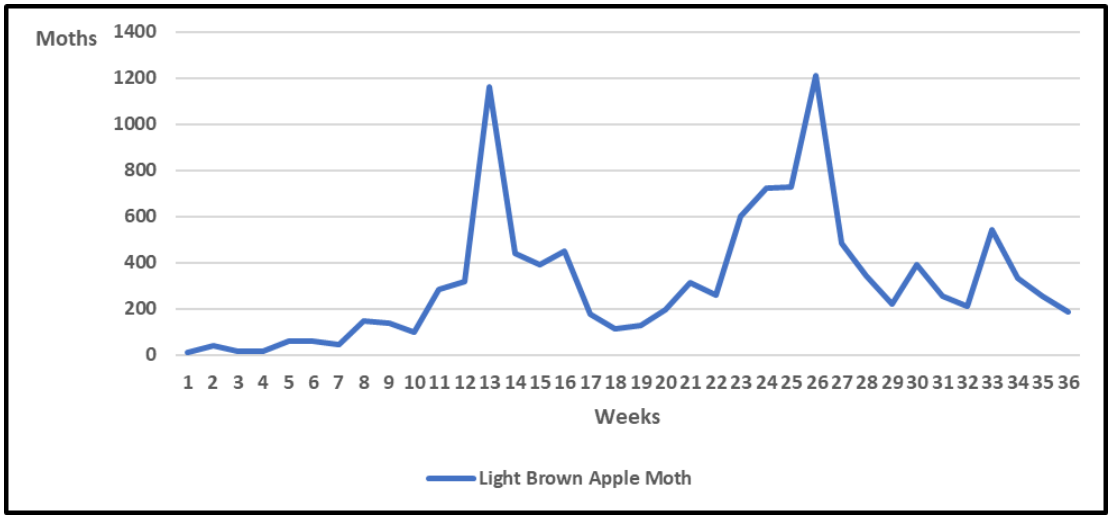
Rank	Species	Rank	Species	Rank	Species
12	27	8	9	4	6
11	18	7	4	3	11
10	11	6	7	2	14
9	11	5	14	1	28

Interpreting the results is difficult as we are dealing with only two months and some moths may fly before or after this time slot. Factors influencing numbers include natural variations in their life cycle, unsuitable nights for moths to fly and adverse weather patterns such as El Niño and El Niña. This is where the value of schemes such as the GMS become apparent in building up a database of moths to monitor ebbs and flows of moth numbers.

Light Brown Apple Moth

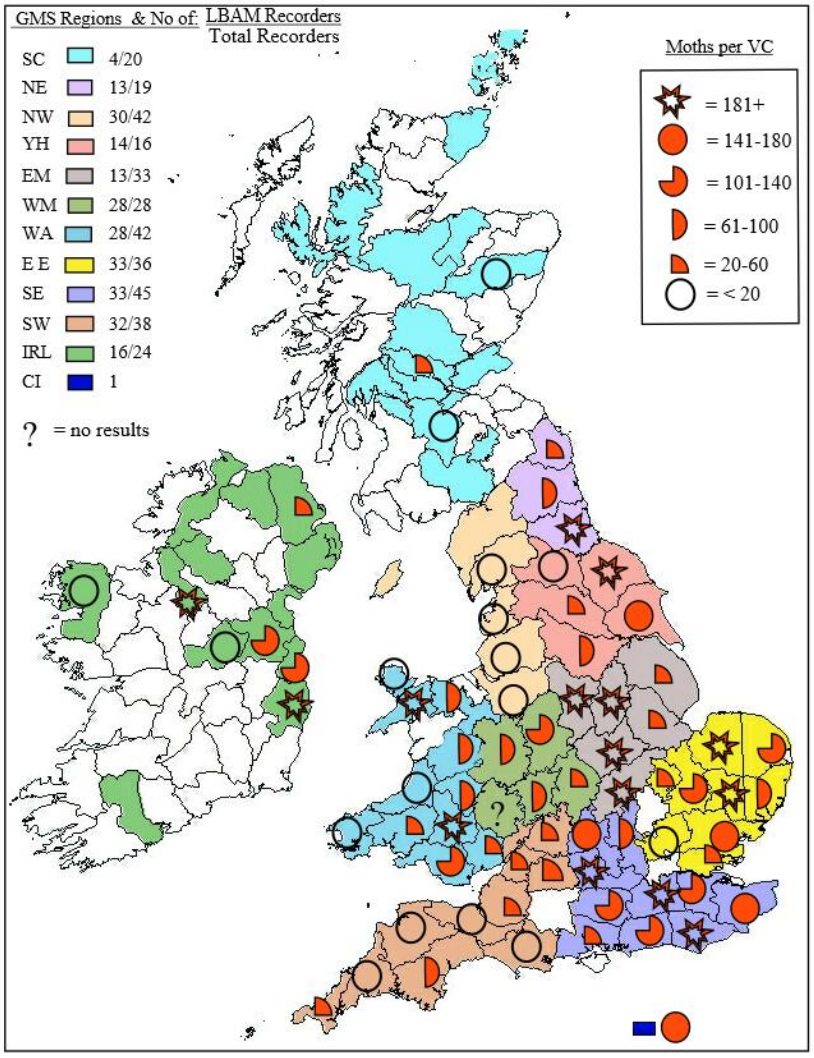
This ubiquitous moth, *Epiphyas postvittana*, is a micro moth regularly seen in the traps. It is a leaf rolling member of the Tortricidae family which has been steadily on the increase northwards since its introduction from Australia as an adventive species in 1936 in Cornwall. Adventive species are those accidently transported by man with vegetable produce from abroad in this case introduced with imported apples. Although a serious orchard pest in Australia, over here it is one of the most catholic polyphages and has prospered. It has two generations between May and October as shown in Figure 8 and is susceptible to cold conditions.

Fig 8 GMS Q4 2017 – Flight Period of the Light Brown Apple Moth



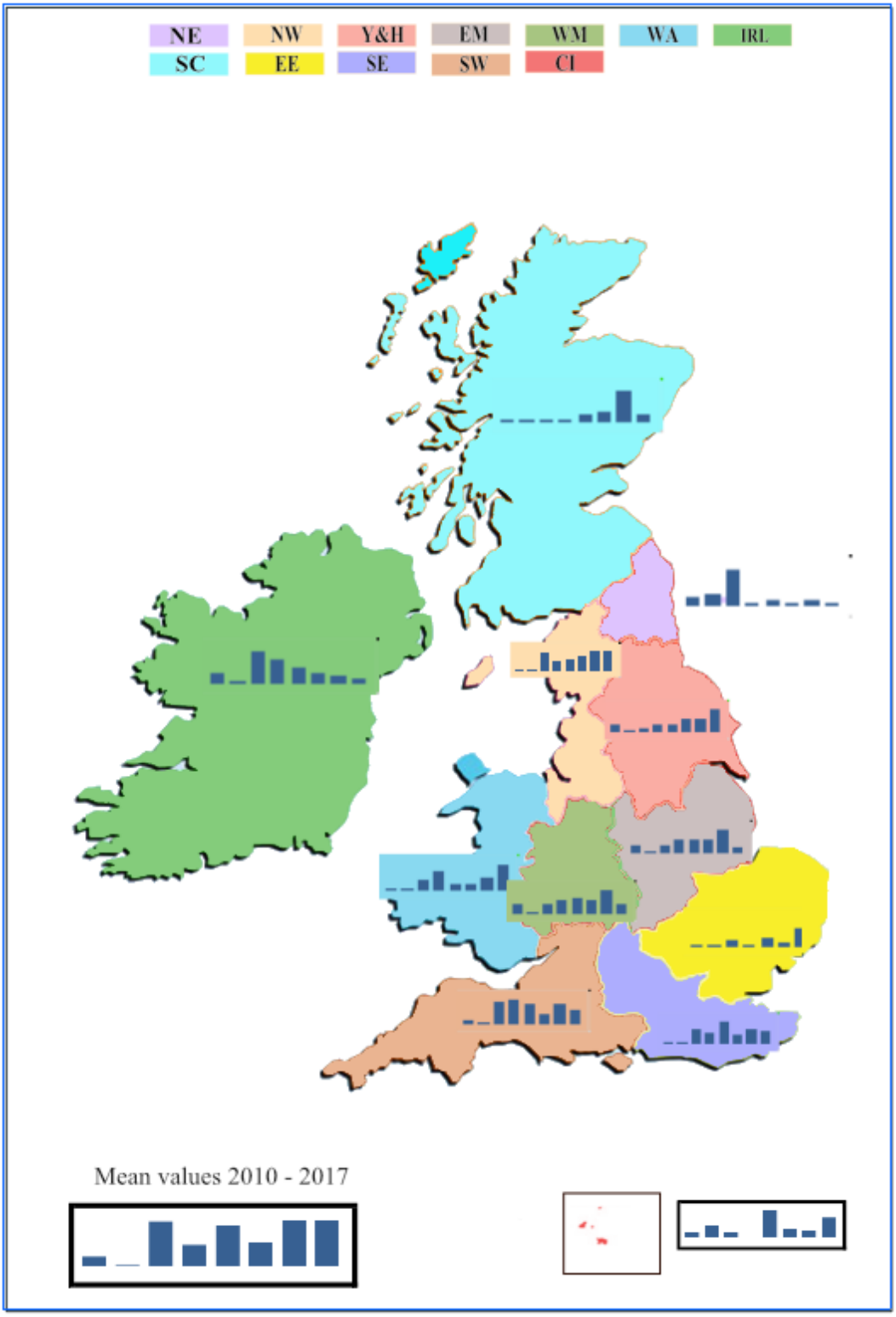
Its distribution throughout the GMS region is shown (Fig 9). Using symbols representing whole numbers rather than mean figures enables comparison between Vice Counties within regions. For countrywide comparison the number of Light Brown Apple Moth recorders is also listed.

Fig 9 GMS Q4 2017 VC distribution of the Light Brown Apple Moth



The Light Brown Apple Moth has had mixed fortunes in its steady advancement through the regions. As both the Top 10 table and the previous figure show there has been little progress into Scotland. Figure 10 shows the ups and downs since 2010. Ireland shows a fall in numbers while Scotland shows a large increase. This is deceptive as Figure 9 above demonstrates that this moth is found with a very limited distribution in Scotland.

Fig 10 GMS Q4 2017 – Mean Regional Values of the Light Brown Apple Moth 2010-2017



Sometimes It's Sunny By Janet Laughlin

I invited my neighbour round for coffee a month or so ago. "Would you like to see the Poplar Hawkmoth we caught this morning, Audrey?" I asked. "He's one of my favourites."

She looked doubtful.

Perhaps I should point out that Audrey has been brought up to fight anything going by the name of 'moth' by spreading lavender bags or little white balls of a foul-smelling concoction around her wardrobe when she was a child. "Moths eat your clothes," her mother used to tell her, though to be fair, it was debatable whether the vile smell on her best coat was a socially acceptable alternative.

That was a million years ago, and this was the day Audrey was destined to become a moth admirer. Within minutes she welcomed our Poplar guest (gender unknown) on to her finger and he obligingly clambered up her arm – apparently on sticky feet – with neither lavender bag nor mothball in sight!

A Poplar Hawkmoth on an egg-box in the moth trap

To be truthful, I took moths a little for granted until I happened to notice the reference books that began to appear on our shelves at home, or, more to the point, until I realised just how many different species there were. My road to addiction began when I was asked to join the morning logging procedure in our garden a couple of years ago – only as a helping hand, you understand. "Forget the downpour, put your hood up; it's not always like this. Sometimes it's sunny …"

It didn't take long to become hooked, and you soon begin to see how each moth is a jewel in its own right – a distinctive wing pattern, eye-catching colour, pearly glow, and so on – remarkable for such a short time in the overall scheme of things. And talking of jewels, what about that

other little favourite with the furry head? Not just a slip of the tongue there – Ruby. Always raises an "Aww".

I admit I don't remember their names all that well – not my forte, I guess – but I am getting pretty quick at logging them in on my sheet. "Only use the pink side when I tell you ..." says Boss Man. Personally, I think it's time to call myself an associate archivist; I'm not just somebody in charge of the pencil, you know!

Five or six o'clock every morning might well come under the heading of "negatives" when it's gloomy outside, but the "positives" are doing rather nicely, too. "Therapeutic to be able to get close to nature," they say, and I can readily agree, with the added comment that I feel privileged to be able to see a part of wildlife that may not come around again for a long time. If ever!

Seems a long time since I changed my computer passwords to scientific names, not to mention the day I brightened my desktop with moth photos. Not too many, only the "Aww's". And what about all those questions that get the Google juices flowing? What goes on beneath that furry hat or behind the soulful eyes? Do they only have a survival instinct, or is there a brain? I reckon my Poplar Hawkmoth must have an inquisitive streak, or maybe just an affinity with human skin.

"They're not all as big as this, Audrey. Just look at this small one in the box, shimmering like silk ... Oops! He's trembling. He wants to be off." Amazing how quickly you learn. "Coffee tomorrow?"

Where do moths go after release? By Peter Terry

When I first joined the GMS Facebook Group, I was surprised at the number of people trapping the same location every night. I posted the question that surely they could be trapping the same moths on consecutive nights. Replies indicated that most released the night's catch some distance from the trap site.

Following posted suggestions regarding the marking of moths, I obtained some Citadel Foundation paint and on the 31st March 2017 marked 12 Hebrew Characters, 5 Small Quakers and 8 Common Quakers using a fine paintbrush before releasing them at the bottom of the garden around 20 metres from the trap location. I ran the trap again 4 days later on 4th April but only one marked Common Quaker was taken out of the 18 *Orthosia* species caught. No other marked moths were ever seen after that. With a large Sallow in full bloom adjacent to the release site, I had expected more of the marked moths to stay in the area.

Common Quakers

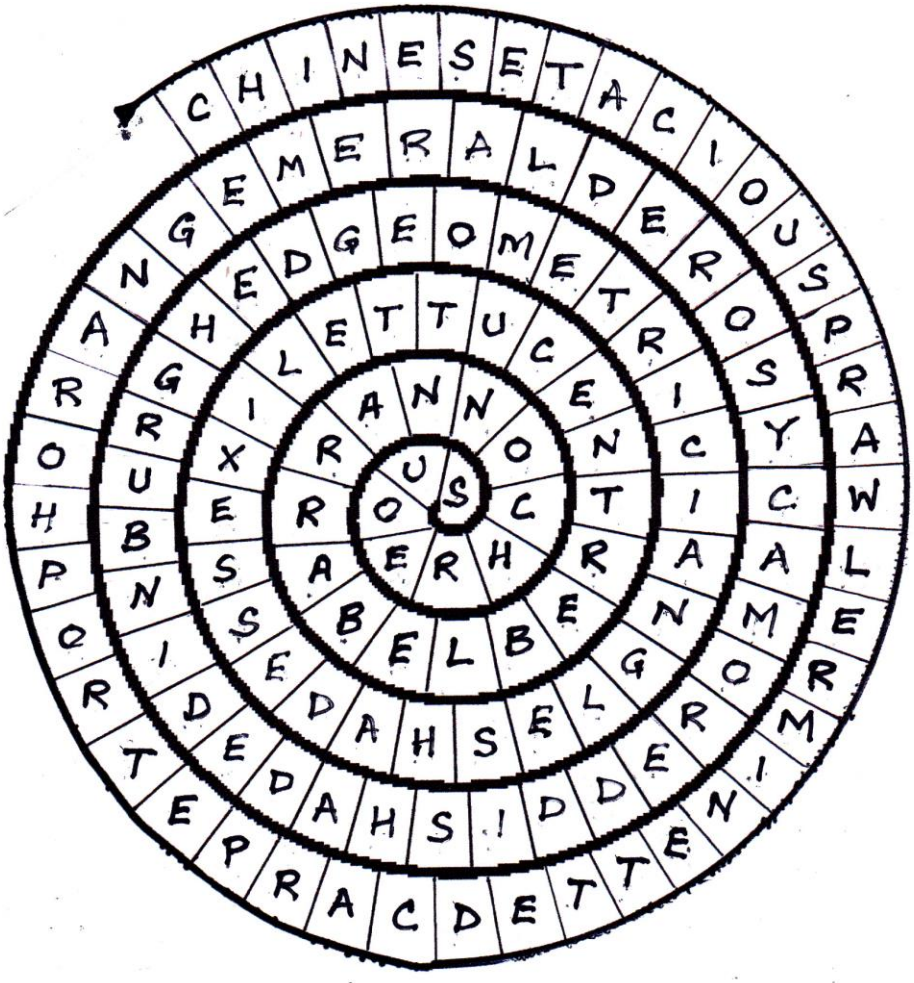
Hebrew Characters

The moths moved their wings under the slight pressure of the paintbrush, blurring the spot I so was delighted when Paul Waring's article in Atropos a few weeks later made mention of using cocktail sticks to apply the marking. This gave a much clearer mark and seemed not to distress the moths when I repeated the exercise on 13th June, marking 23 Heart & Darts before releasing them 20 meters away as before. Again, only one marked moth was taken amongst the 18 Heart & Darts taken when the trap was run 3 days later on 16th June.

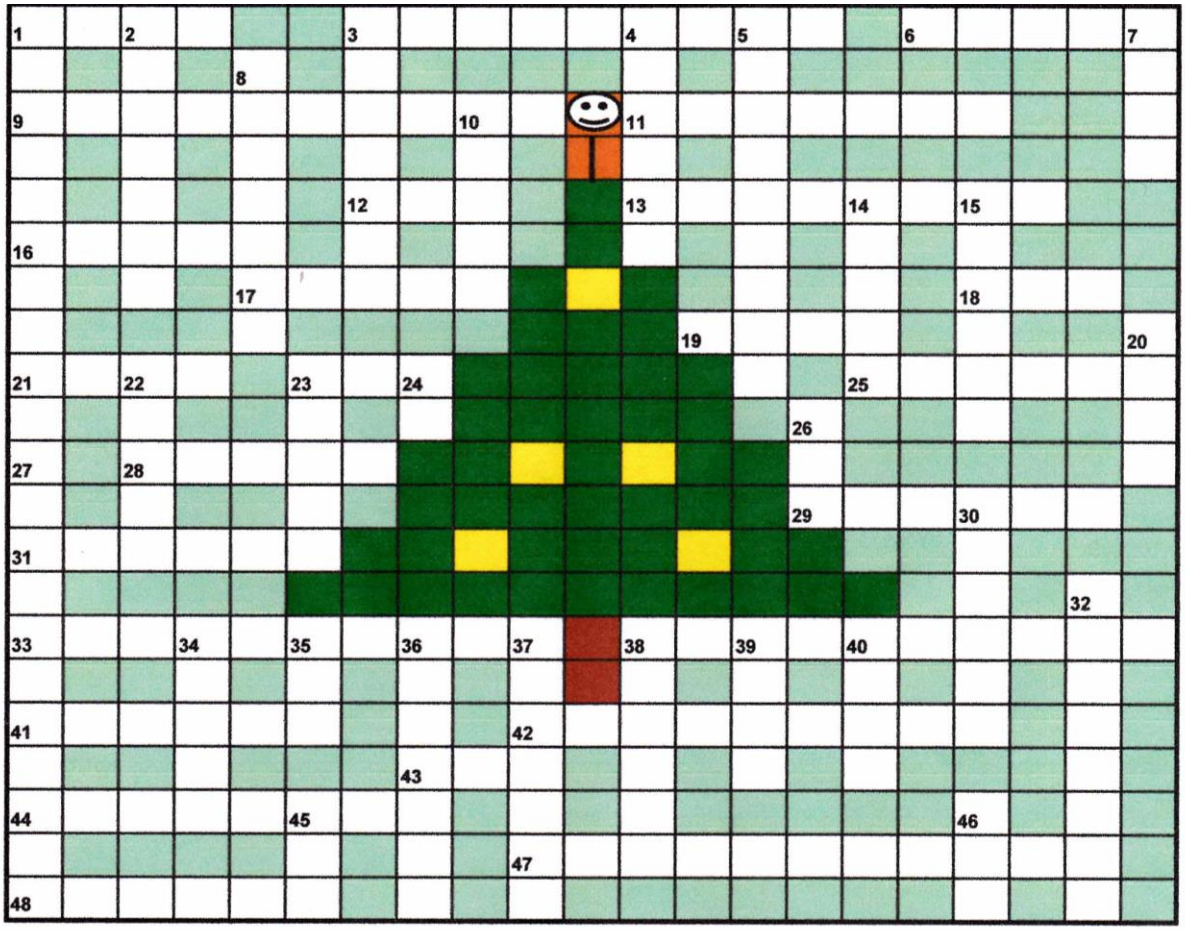
I intend to repeat the exercise again next spring but with consecutive nightly trappings in an attempt to determine how long the moths stay in the vicinity of the trap site. *(Please let us know how you get on – Ed.)*

Moths in a spin - answers

Here are the answers to Nonconformist's puzzle in the last edition:



Lepidopteran Crossword No. 9, Xmas 2017 - Nonconformist



Across

1a & 23a	4,3	A dull Greek character which frequents our moorlands.
3a & 29a	9,6	The chief got a red alteration to his old style avian covering.
6a & 33a	5,10	This beauty reminds me of a stunted buttercup.
9a	10	Genetic name from trees gives us a lead to a small household stone.
11a & 24d	7,2	The scientific name for a really fancy bird!
12a	3	The start of life for all groups.
13a	8	A pond-loving genetic result of outstanding oriental and old teutonic currency.
16a	5	Even Jezebel lets this beauty occur in five forms.
17a	5	Put in early claim for this small group.
19a & 18a	4,3	Gambling pugilists are guaranteed to bring home these small rewards.
21a	4	This small genus goes along backwards to survive.
25a	6	I have a beer already mixed for this northern flyer.
28a	5	Could find this in your garden, wood or even Jersey.
31a	6	Possibly found on a dull grey-brown sandbank?
38a	10	Group with hat goes to Alcoholics Anonymous to find a migrant. Why?
41a	6	Very enigmatic; could it be a migrant from Egypt?
42a	9	Try derailing this clue before adding an old pipe to settle things down.
43a	3	A collectors item.
44a	8	You have to tie piano down to get to this wild grouping.
47a	11	Take your tall car to the pier for the second stage.
48a	6	Common enough here, but what about Sweden?

Down

1d	5,8,8	Screen blender centring on this autumnal visitor.
2 d	7	Tin man reached this city as a mere lad.
3d	7	A garland made of honest endeavour without aspiration.
4d	6	Beauties indeed, but only one pioneering in England.
5d	9	Genus likely to remain on a tree trunk in an orchard.
8d	7	Do you have to gape at a book to find this group?
10d	5	Within Geometridae a smaller group can be found.
14d	5	This moth edges on to gain support of an uncouth companion.
15d	6	Forget being in a flap Peter, you will need a double flap for this flyer.
20d	4	Lepidopteran now allocated a solid place all over the country.
22d	5	Perhaps from ancient Rome.
23d	5	This is so obvious among a small group of winged sunshine flyers.
26d	3	One of a sextuple in insects.
30d	6	Keeping the register of genealogy and other aldermen.
32d	8	Try a thai meal for this mid summer-night's character.
34d	5	Country dweller follows this group for protection.
35d	3	Needs a tonsorial implement to stand out.
36d	7	It is said that this genus cannot change it's appearance.
37d	7	A sailor-man's grub but he has to inch past without his tea.
38d	6	A popular gentleman carried a very precious commodity.....
39d	4	Moth recorders know this part backwards.
40d	4	..... and so does his Mongol descendants.
45d	3	Advice on how to add something to your citrus for a spring flyer.
46d & 7d.	3,4	Inhabits foot-wear and is very indecisive. (Posh!)

Tailpiece - Norman Lowe

As mentioned briefly in my introduction, the next GMS Annual Conference will be held at **Moira Village Hall, Leicestershire on Sunday 4th March 2018**. Please put the date in your diary. As usual we will have a run-down on how things went for the Garden Moth Scheme in 2017, and a look forward to the future. But we need to put a filling in that sandwich so if you have any ideas for a presentation, or think someone else might be willing to do so, please let me know at normaan@enviro-consulting.com. As we have in the last couple of years we will ask attendees for a small contribution to cover our costs.

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 1100 'Likes'!

Facebook Group - https://www.facebook.com/groups/438806469608527/ - currently almost 2100 Members (not all active GMS participants). Membership is open to all and the GMS recording forms, instructions and useful micro-moth identification guides are available in the Files section.

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www.mapmate.co.uk