



Garden Moth Scheme Report 2015



Heather Young – April 2016

GMS Report 2015

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Cover photograph: Elephant Hawk-moth (H. Young)

Introduction

The Garden Moth Scheme (GMS) welcomes participants from all parts of the United Kingdom and Ireland, and in 2015 received 354 completed recording forms. The overall number of participants has been fairly consistent for the last 5 years (Fig. 1), while the distribution of recorders has changed somewhat, becoming more evenly spread across the regions with less bias towards the West Midlands, where the scheme originated (Fig. 2).

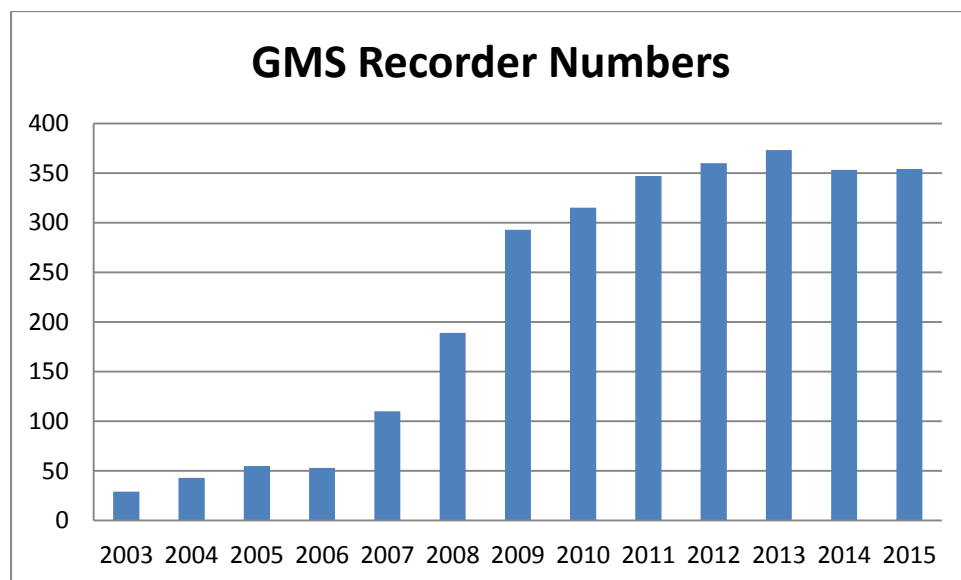


Fig. 1. Numbers of participants in the Garden Moth Scheme 2003 - 2015.

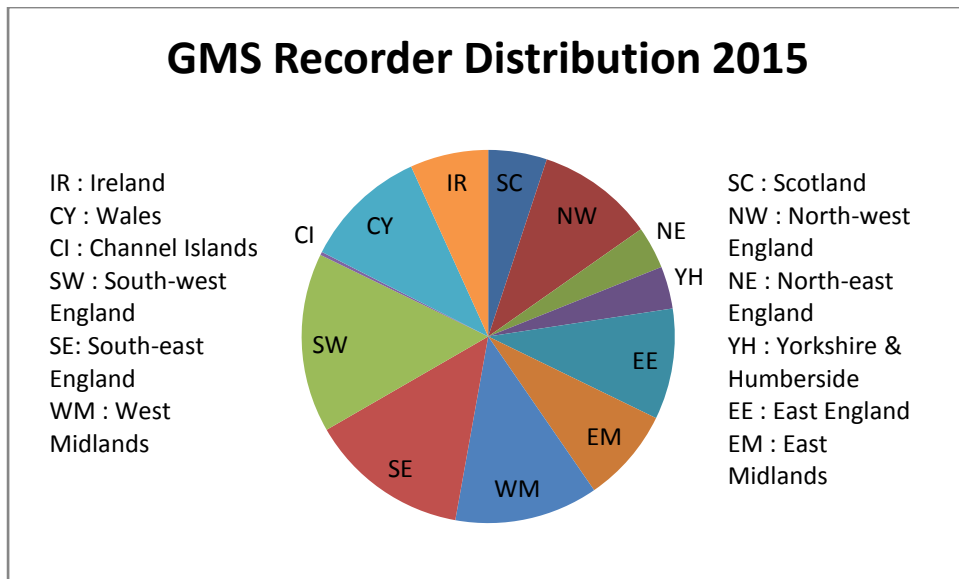


Fig. 2. Distribution of Garden Moth Scheme participants across the 12 designated regions in 2015.

The scheme now monitors 233 species of moth in every region across the UK and Ireland, although some are not present in all areas (yet?). These are termed ‘Core Species’ and Fig. 3 shows the number of core species recorded in each region in 2015. As could be expected, more of these are found in the southern half of the mainland.

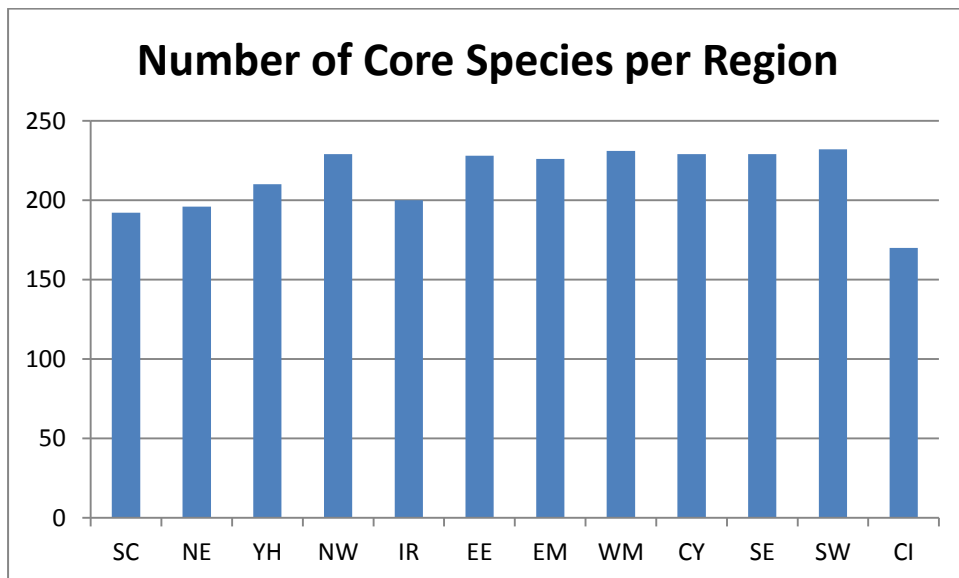


Fig. 3. Number of core species recorded in each region in 2015.

Unfortunately, the Channel Islands are represented by only one garden at present, but a very productive one it seems. When it comes to the actual number of moths recorded of the core species, that particular garden produces far more individuals than the mean number per garden in any other region across the scheme (Fig. 4.).

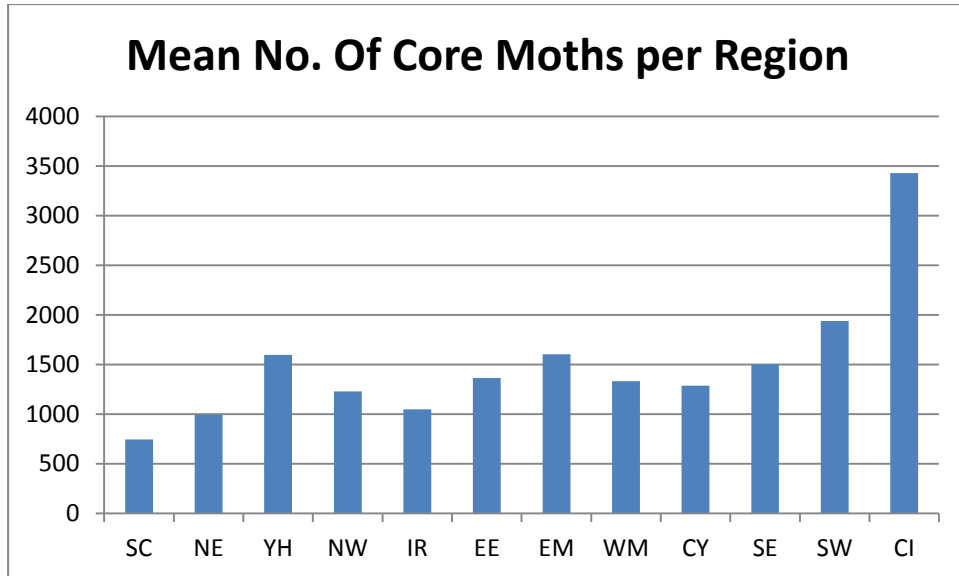


Fig. 4. Mean numbers of individual moths of core species per garden in each region in 2015.

2015 was not a particularly good year overall for moths covered by the GMS. Although not all of the core species were recorded everywhere for the previous 5 years (the core species list was expanded from 195 species in 2015), the average number of core moths per garden was well down on 2014 and below the numbers recorded in 3 out of the previous 5 years (Fig. 5).

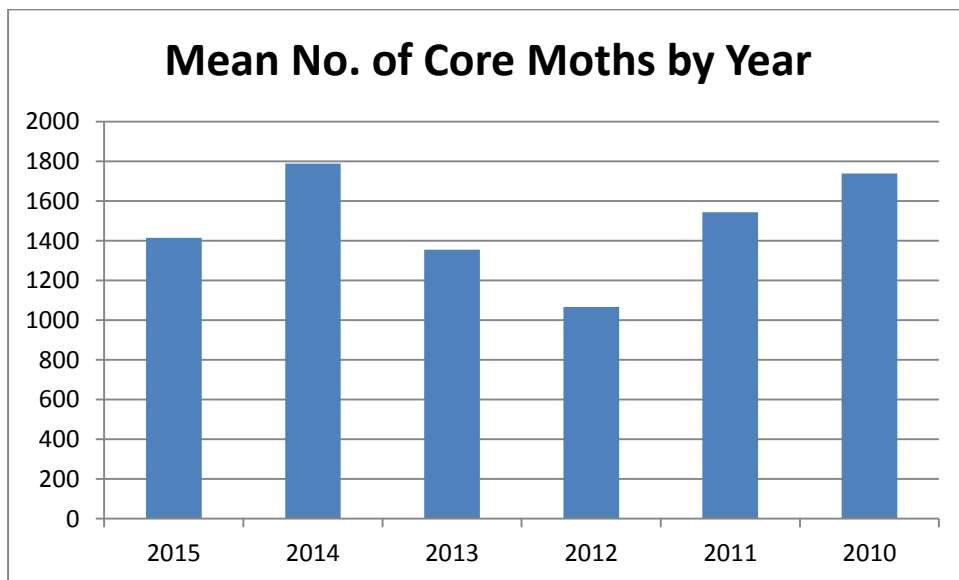


Fig. 5. Mean numbers of individual moths of core species per garden 2010 - 2015.

Top 30 species 2015

The top 30 GMS species are shown below, ranked in order of abundance in terms of average numbers per garden in 2015, along with their figures for 2014, percentage change year on year and an indication of how widespread they are (Table 1).

Rank 2015	Rank 2014	Species	Average 2015 (354 traps)	Average 2014 (353 traps)	% change	% Traps with:
1	1	Large Yellow Underwing	216.6	154.2	40.8	100%
2	2	Heart and Dart	94.6	91.1	4.2	97%
3	4	Common Rustic agg.	58.3	43.4	34.8	98%
4	3	Dark Arches	47.2	50.5	-6.1	99%
5	16	Uncertain/Rustic agg.	42.6	42.1	1.6	88%
6	6	Garden Grass-veneer	40.6	37.3	9.2	79%
7	5	Hebrew Character	31.9	38.9	-17.9	99%
8	11	L B-b Yellow Underwing*	30.4	28.8	5.8	97%
9	8	Light Brown Apple Moth	29.2	34.4	-15.0	77%
10	9	Common Quaker	27.2	34.4	-20.5	98%
11	14	Square-spot Rustic	26.8	27	-0.6	92%
12	13	Setaceous Hebrew Character	24.6	27.7	-12.4	77%
13	19	Lesser Yellow Underwing	23.7	17.9	32.5	97%
14	10	Flame Shoulder	23.0	33.2	-30.6	94%
15	7	Riband Wave	22.6	35.8	-36.6	96%
16	17	Small Square-spot	21.4	21	2.1	77%
17	24	<i>Agriphila tristella</i>	20.0	14.3	40.4	74%
18	12	Common Footman	18.9	28.7	-33.9	81%
19	15	Brimstone Moth	16.4	24.4	-32.7	97%
20	25	Buff Ermine	15.7	14.2	11.0	90%
21	24	<i>Agriphila straminella</i>	15.1	14.1	7.1	68%
22	31	Mother of Pearl	13.8	12.9	7.1	85%
23	18	Lunar Underwing	12.7	20.6	-38.5	65%
24	22	Marbled Minor agg.	12.2	15.1	-18.9	89%
25	27	Bright-line Brown-eye	12.1	14.1	-13.9	88%
26	28	Willow Beauty	11.9	13.7	-12.4	86%
27	23	Flame	11.4	14.3	-20.4	85%
28	20	Common Marbled Carpet	11.3	17.8	-40.0	74%
29	21	Shuttle-shaped Dart	11.1	16.9	-30.0	95%
30	29	Clouded Drab	10.1	13.6	-25.1	87%
		*Lesser Broad-bordered Yellow Underwing				

Table 1. The thirty most abundant species in 2015 in terms of average number of individuals recorded per garden.

Large Yellow Underwing was again the commonest species, showing quite a large increase in numbers over last year, as did Lesser Yellow Underwing, with Lesser Broad-bordered Yellow Underwing also increasing. The grass moths (Garden Grass Veneer, *Agriphila tristella* and *Agriphila straminella*) all had a good year, as did the Common Rustic and Uncertain / Rustic aggregates. Spring moths Hebrew Character, Common Quaker and Clouded Drab did not do as well in 2015, and most of the 30 commonest species showed declines compared with 2014.

Regional variations

Large Yellow Underwing was the most abundant moth in all but 2 regions; Heart and Dart outnumbered it in Wales, and Shuttle-shaped Dart in the Channel Islands. The top ten species for each region are shown below (Table 2).

Scotland (18)	Mean	North-east England (13)	Mean	North-west England (36)	Mean
Large Yellow Underwing	95.3	Large Yellow Underwing	278.7	Large Yellow Underwing	274.8
Dark Arches	86.9	Dark Arches	63.0	Dark Arches	79.1
L. B.-bordered Yellow Underwing *	33.1	Common Rustic agg.	53.7	Common Rustic agg.	74.0
True Lover's Knot	31.9	Heart and Dart	51.8	Heart and Dart	66.7
Common Rustic agg.	30.9	Lesser Yellow Underwing	33.5	Common Quaker	32.6
Magpie Moth	30.1	Hebrew Character	33.2	Lesser Yellow Underwing	30.6
Lesser Yellow Underwing	27.5	L.B.-bordered Yellow Underwing*	30.0	L. B.-bordered Yellow Underwing*	30.3
Hebrew Character	24.9	Light Brown Apple Moth	20.2	Hebrew Character	29.5
Common Quaker	15.1	Common Quaker	18.3	Light Brown Apple Moth	26.8
Dotted Clay	12.0	Smoky Wainscot	15.7	Flame Shoulder	19.4
Yorkshire & Humberside (13)	Mean	Ireland (24)	Mean	East England (34)	Mean
Large Yellow Underwing	378.5	Large Yellow Underwing	72.7	Large Yellow Underwing	127.4
Common Rustic agg.	89.5	Heart and Dart	61.1	Heart and Dart	72.4
<i>Agriphila straminella</i>	55.2	Common Rustic agg.	57.6	Setaceous Hebrew Character	68.2
Heart and Dart	53.5	L.B.-bordered Yellow Underwing*	42.1	Garden Grass-veneer	52.9
Dark Arches	51.0	Small Square-spot	38.9	Uncertain/Rustic agg.	46.7
Uncertain/Rustic agg.	45.9	Hebrew Character	37.5	Dark Arches	36.9
Lesser Yellow Underwing	42.2	Dark Arches	35.1	Common Rustic agg.	32.1
Common Quaker	36.1	Square-spot Rustic	31.0	L. B.-bordered Yellow Underwing*	28.4
Square-spot Rustic	33.7	Lesser Yellow Underwing	28.3	Square-spot Rustic	28.0
L. B.-bordered Yellow Underwing*	32.5	Common Marbled Carpet	25.2	Common Quaker	28.1

East Midlands (29)		West Midlands (44)		Wales (38)	
	Mean		Mean		Mean
Large Yellow Underwing	308.7	Large Yellow Underwing	238.4	Heart and Dart	159.2
Heart and Dart	97.3	Heart and Dart	102.6	Large Yellow Underwing	135.8
Common Rustic agg.	83.7	Uncertain/Rustic agg.	49.6	Hebrew Character	47.7
Dark Arches	63.0	Common Rustic agg.	46.5	Dark Arches	38.3
Uncertain/Rustic agg.	46.1	Light Brown Apple Moth	34.3	Garden Grass-veneer	37.6
Garden Grass-veneer	45.2	Hebrew Character	31.3	Common Quaker	30.9
Light Brown Apple Moth	44.1	Riband Wave	30.3	Flame Shoulder	30.1
Square-spot Rustic	40.7	L.B.-bordered Yellow Underwing*	28.1	Uncertain/Rustic agg.	25.3
Riband Wave	40.6	Dark Arches	27.4	Common Rustic agg.	22.3
Setaceous Hebrew Character	38.4	Garden Grass-veneer	24.4	Clouded Drab	21.0
South-east England (49)		South-west England (55)		Channel Islands (1)	
	Mean		Mean		Mean
Large Yellow Underwing	173.3	Large Yellow Underwing	312.2	Shuttle-shaped Dart	184.0
Heart and Dart	81.8	Heart and Dart	148.6	Large Yellow Underwing	168.0
Uncertain/Rustic agg.	67.0	Common Rustic agg.	90.4	Common Quaker	116.0
Garden Grass-veneer	64.0	Uncertain/Rustic agg.	74.5	Common Rustic agg.	93.0
Common Rustic agg.	54.7	Garden Grass-veneer	70.0	Light Brown Apple Moth	93.0
Light Brown Apple Moth	45.6	Small Square-spot	54.9	Buff Ermine	77.0
Square-spot Rustic	41.1	Flame Shoulder	45.3	Marbled Minor agg.	70.0
Dark Arches	37.4	Dark Arches	43.3	Rusty-dot Pearl	70.0
Riband Wave	35.2	Setaceous Hebrew Character	38.9	L.B.-bordered Yellow Underwing*	68.0
Vine's Rustic	30.6	Square-spot Rustic	38.9	Rush Veneer	67.0
* Lesser Broad-bordered Yellow Underwing					

Table 2. The ten most abundant species by region in 2015 in terms of average numbers of individuals recorded per garden.

Dark Arches and Lesser Yellow Underwing appear to be more common further north; Garden Grass Veneer and Heart and Dart further south. Many regions have species in their top ten that do not feature elsewhere, like the locally abundant Magpie Moth and True Lover's Knot in Scotland, Vine's Rustic in South-east England, Common Marbled Carpet in Ireland and half of the most abundant moths in the Channel Islands.

Winter GMS

The winter scheme ran for 16 weeks between 10 November 2015 and 29 February 2016, with 97 sets of results returned, a slight increase on last year. The top 20 species are shown below, ranked in order of abundance in terms of average numbers per garden in 2015/16, along with their figures for 2014/15 and percentage change year on year (Table 3).

Rank 2015/16 (2014/15)	Species	Average 2014/15 (92 Gardens)	Average 2015/16 (97 Gardens)	% change
	All species	21.79	16.94	-22.28
1 (1)	December Moth	4.25	2.66	-37.42
2 (3)	Winter Moth	2.64	2.21	-16.47
3 (5)	Chestnut	1.11	2.00	+80.39
4 (2)	Light Brown Apple Moth	3.23	1.16	-63.91
5 (7)	Mottled Umber	0.91	1.01	+10.65
6= (6)	Pale Brindled Beauty	0.93	0.87	-7.36
6= (24)	Hebrew Character	0.15	0.87	+469.07
8 (21=)	Common Quaker	0.17	0.75	+332.73
9 (28)	Dark Chestnut	0.11	0.48	+345.77
10 (9)	Dotted Border	0.58	0.45	-21.26
11 (10)	Red-green Carpet	0.53	0.39	-26.45
12= (8)	Feathered Thorn	0.80	0.36	-55.14
12= (14)	Yellow-line Quaker	0.27	0.36	+32.78
14 (18)	Early Moth	0.22	0.31	+42.27
15 (19=)	Angle Shades	0.18	0.27	+45.06
16 (29=)	March Moth	0.10	0.23	+131.84
17= (12)	<i>Emmelina monodactyla</i>	0.34	0.18	-47.99
17= (17)	Spruce Carpet	0.23	0.18	-23.22
19= (57=)	Clouded Drab	0.01	0.16	+1417.53
19= (15=)	Silver Y	0.26	0.15	-40.72

Table 3. The twenty most abundant species over the winter period of 2015/16 in terms of average number of individuals recorded per garden.

Fewer moths were recorded over the winter period this time, a decline of 22% in the average number of individuals per garden last winter, although the recording period was 16 weeks rather than the 17 weeks in 2014-15 (to re-align the start of the main scheme with the beginning of March 2015). Trapping events (the number of times a trap was run, i.e. number of gardens x number of weeks minus 'trap not run' situations) numbered 1465 in 2015-16, as opposed to 1486 in 2014-15, a decrease of only 1.4%, so there do seem to have been fewer moths around. The number of empty traps, or at least traps containing none of the winter scheme target species, was remarkably similar for the last two winters at around 65% of trapping events. There were however huge differences between gardens across the regions, with several participants recording 16 'Nothings', mostly in northern or eastern areas, while others had very few empty traps.

December Moth was again the commonest moth in our gardens over the winter period, but fewer were recorded this time with numbers declining by almost 40% on last winter. The migrants Rusty-dot Pearl and Diamond-back Moth fell out of the top 20, with only 13 of the former being recorded this time compared with 143 during the previous winter scheme, and only 2 of the latter (24 last time).

As overall numbers are small, percentage changes year on year perhaps exaggerate the situation, but there is no doubt that some parts of the country experienced an early emergence of spring moths, with Clouded Drab, Hebrew Character, Common Quaker, March Moth and Dark Chestnut all pushing their way into the top 20.

Annual Conference

The GMS Annual Conference was held at the beginning of March in the Wolseley Centre near Rugeley in Staffordshire, and was fully booked well in advance, with some members unfortunately having to be denied the opportunity to attend. For the first time it was necessary to charge a small entrance fee to cover the cost of the event, and the venue was chosen with a conservative estimate of how many people would want to attend. Encouraged by the response, we will now make sure that a larger venue is booked for next year's conference so that everyone who wants to attend can be accommodated.

John Bryan introduced the speakers and Norman Lowe presented a round-up of the GMS in 2015. Zoe Randle from Butterfly Conservation gave a talk on the progress of the National Moth Recording Scheme (NMRS); this is the last year of recording for the forthcoming Atlas of Macro Moths, so Zoe encouraged us all to not only submit all of our records to our Vice County moth recorders, but also get out there and fill in some blank spots on the distribution maps. She also outlined the plans for incorporating micro moth records into the NMRS. John Wilson presented more of his research, this time regarding the relationship between land use and moth abundance based on evidence from the GMS database. He expressed his intention to follow up his recently published paper on climate association with moth abundance in the *Journal of Insect Conservation* (Wilson, J.F. et al, 2015. Climate association with fluctuation in annual abundance of fifty widely distributed moths in England and Wales: a citizen-science study. *J Insect Conserv* DOI 10.1007/s10841-015-9811-4) with a further submission in due course.

The afternoon session included a talk by Jan Miller-Klein of Saith Ffynnon Wildlife Plants giving tips on how to encourage moths, butterflies and other beneficial insects into our gardens, followed by one of our West Midlands regional coordinators Stephen Howarth giving an insight into the GMS in Worcestershire and Warwickshire.

The meeting was again attended by Mark Tunmore of Atropos Books, despite the long drive from Cornwall, and the Wolseley Centre gift shop also attracted some attention from the delegates.

The 2017 GMS conference will probably be held in the Tewkesbury area in early March. Thanks go to John Bryan and Norman Lowe for organising the 2016 conference, and our speakers for freely giving their time and effort to the event. We

hope to see many more of our members in attendance next time, but will again have to charge a small entrance fee to cover costs.

Micro-moth identification guides

Just a reminder for new members that there is a series of identification guides to the GMS micro-moths, available from the Downloads section of our website and the Files section of both the Yahoo Group and Facebook Group (see below for links).

Links

GMS Website - <http://www.gardenmoths.org.uk/>

Facebook Page - <https://www.facebook.com/GardenMothScheme> - we now have more than 825 'Likes'!

Facebook Group - <https://www.facebook.com/groups/438806469608527/> - currently with more than 1300 Members (not all active GMS participants) – open membership.

Yahoo Group - <https://groups.yahoo.com/neo/groups/Gardenmoths/info> - closed membership; request an invitation to join.

Acknowledgements

Thanks as always to the GMS members themselves who put their traps out week in, week out, all season long, often with disappointing results (especially the winter trappers). Thanks also to all the Regional Coordinators and other volunteers who keep things running smoothly across the country, especially Mike Cook for his technical expertise and support. My gratitude goes to Evan Lynn for extracting the facts and figures used in this report from the GMS database, and for his continued contributions to the GMS quarterly newsletters, and to their editor Norman Lowe. The support of our sponsors is also very gratefully received – please check out their websites for all their latest offerings (see below).

GMS Sponsors

We were very thankful for the financial assistance from the following organisations during 2015; please consider using our sponsors for any purchases you need to make!

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Although no longer able to sponsor the Annual Conference, MapMate continues to support the GMS by providing software and support for the GMS database, and for that we are very grateful.