

The Garden Moth Scheme 2012.

The Garden Moth Scheme (GMS) runs from early March to early November, with people recording the numbers of around 260 species of the more common moths in their gardens once a week throughout this period. Further information on the findings of the GMS for the whole of the UK and Ireland, both current and historical, is available in the form of annual reports and quarterly newsletters, which can be found in the Downloads section of the web-site: <<http://www.gardenmoths.org.uk>>

Butterfly Conservation's report "The State of Britain's Larger Moths" in 2006, and its 2013 update, indicate that a lot of previously common moths are declining across Britain as a whole, but particularly in the southern half of the country. The Garden Moth Scheme (GMS) was set up to try to find out what's happening to our common garden moths, and welcomes recorders from all parts of the United Kingdom and Ireland, greatly adding to the value of the scheme as a long-term dataset.

The main aim of the GMS is to coordinate records to get standardised data which can be used for future study. The more people that take part, the more useful the data. Scientists at Birmingham University have already used the GMS data to analyse the effect of trap and bulb type on moth catches, recently publishing a paper on this in a peer-reviewed journal (Bates et al, 2013), with more in the pipeline on factors affecting our moth populations. It will probably come as no surprise that, of the most commonly-used equipment, a Robinson Trap with an MV bulb will maximise your moth catch, an MV Skinner comes a close second, and using a Heath Trap or an actinic light in your Robinson or Skinner will reduce the number of both individuals and species caught. This research is based on records returned by 314 GMS participants in 2010, gathering over half a million moth records over a very wide geographical area.

Scottish recorders returned 24 sets of results for the GMS in 2012, up from 21 in 2011. Of these, 7 are from the Glasgow & South-west (G&SW) BC branch region, 11 from the East, and 6 from Highland.

Members counted 22,435 individual moths of 228 species at an average of 934.8 per garden over 790 trapping events (ideally everyone traps once a week for 36 weeks – inevitably some weeks are missed, but these are kept to a minimum), and not including any 'extra' species encountered that are not on the monitored list of common moths. Compliance was excellent overall, with three people managing to return records for all 36 weeks, with an average of 32.9 across Scotland. Moth numbers were well down on 2011, the average / garden showing a decrease of 26.5%, although the same number of species were recorded.

Large Yellow Underwing recovered from a poor 2011 to displace Dark Arches as the commonest moth overall, although still not quite as abundant as in 2010. True Lover's Knot remains locally abundant in South Uist, keeping it in the top three overall, despite a 36% decline in numbers, but interestingly appeared in twice as many gardens as last year (12 out of the 24). The Scottish top 20 are shown below, along with their regional averages – figures highlighted in bold designate the regional Number One species – and last year's rank shown in brackets, with the percentage change in average numbers per garden across Scotland year on year. The four species disappearing from the top 20 are also listed along with their 2012 rank – note the crash in numbers of the Chestnut in particular.

Rank 2012 (2011)	Percentage change	Species	Average per garden 2012			
			Scotland	G&SW	East	Highland
1 (4)	+65.0	Large Yellow Underwing	136.3	187.4	150.7	50.3
2 (1)	-55.8	Dark Arches	63.6	45.3	48.8	112.2
3 (2)	-36.2	True Lover's Knot	60.0	0.9	0.7	237.5
4 (3)	-41.3	Hebrew Character	52.5	13.7	76.2	54.3
5 (8)	+63.3	Lesser Broad-bordered Yellow Underwing	50.8	37.7	72.7	25.8
6 (13)	+53.3	Lesser Yellow Underwing	32.5	30.6	46.7	8.5
7 (7)	-19.5	Square-spot Rustic	27.3	1.6	6.2	96.0
8 (6)	-40.7	Common Rustic aggregate	25.4	21.3	33.1	16.0
9 (12)	-0.8	Dotted Clay	24.2	15.1	35.3	14.5
10 (5)	-69.8	Common Quaker	20.7	9.4	37.4	3.3
11 (10)	-41.5	Small Wainscot	16.5	0.4	1.9	62.2
12 (18)	+12.7	Beautiful Golden Y	15.1	14.0	15.0	16.5
13 (14)	-30.4	Antler Moth	13.3	2.7	5.6	39.7
14 (15)	-21.8	Rosy Rustic	12.9	1.0	17.1	19.0
15 (22)	+4.5	Smoky Wainscot	11.5	3.1	10.3	23.5
16 (11)	-62.1	Clouded Drab	9.4	1.3	15.5	7.7
17 (37=)	+34.3	Mottled Beauty	9.0	5.7	8.7	13.2
18 (29)	+2.4	Common Marbled Carpet	8.7	10.3	10.8	2.8
19 (23)	-21.1	Silver-ground Carpet	8.6	3.7	7.8	15.7
20 (20)	-30.8	Burnished Brass	8.3	2.4	11.6	9.0
24 (19)	-49.6	<i>Agriphila tristella</i>	6.6	9.9	1.0	13.0
42 (17)	-73.2	Bird-cherry Ermine	4.2	4.4	6.2	0.3
59= (16)	-82.7	Red Chestnut	2.8	0.0	0.6	10.2
83= (9)	-93.7	Chestnut	1.9	1.0	3.0	1.0

As in 2011, regionally on average Highland recorders trapped the highest number of moths, with the fewest being encountered in Glasgow & South-west, as shown below.

	Average / garden 2012	Average / garden 2011	Percentage change
Scotland	934.8	1271.2	-26.5
G&SW	612.1	637.3	-4.0
East	970.7	1507.6	-35.6
Highland	1245.3	1907.4	-34.7

All regions showed a decline in numbers, with G&SW faring better than the others, but as mentioned previously, other factors such as trap type and recorder effort do have an effect. Every one of the 7 members in G&SW used a different type of trap, while 8/11 in East and 5/6 in Highland used 125W MV in either a Robinson or Skinner trap. Highland also managed a higher number of weeks trapped (34.5 on average, compared with 32.9 in G&SW, and 32.1 in East).

The top 20 for the Highland branch region is shown below, along with their regional rank in 2011 in brackets, 2012 rank in Scotland, average numbers per garden, and the percentage change in that year on year. The five species dropping out of the top 20 of last year are also shown – two summer species (Garden Tiger and Clouded-bordered

Brindle) showed the greatest declines, unlike the other two regions where spring and autumn species seemed to suffer more.

Rank Highland 2012 (2011)	Rank Scotland 2012	Species	Average per garden 2012	Percentage change
1 (1)	3	True Lover's Knot	237.5	-39.5
2 (2)	2	Dark Arches	112.2	-66.4
3 (3)	7	Square-spot Rustic	96.0	-24.1
4 (4)	11	Small Wainscot	62.2	-44.6
5 (8)	4	Hebrew Character	54.3	-1.2
6 (5)	1	Large Yellow Underwing	50.3	-44.6
7 (9)	13	Antler Moth	39.7	-16.0
8 (53)	5	Lesser Broad-bordered Yellow Underwing	25.8	+761.1
9 (20)	21	Autumnal Rustic	25.3	+21.8
10 (13)	15	Smoky Wainscot	23.5	-15.5
11 (12)	23	Dusky Brocade	21.2	-26.0
12 (15)	14	Rosy Rustic	19.0	-28.0
13 (17)	26	Bright-line Brown-eye	17.7	-29.3
14 (30)	40	Chevron	16.8	+79.1
15 (11)	12	Beautiful Golden Y	16.5	-48.1
16 (7)	8	Common Rustic aggregate	16.0	-72.0
17= (22)	19	Silver-ground Carpet	15.7	-21.7
17= (24)	35	Straw Dot	15.7	+24.3
19 (14)	45=	Brown Silver-line	15.5	-42.2
20 (39=)	9	Dotted Clay	14.5	+158.9
27 (6)	59=	Red Chestnut	10.2	-83.1
28 (16)	64=	Buff Ermine	10.0	-61.5
29 (19)	20	Burnished Brass	9.0	-57.1
32 (10)	61	Garden Tiger	8.3	-78.0
46= (18)	41	Clouded-bordered Brindle	4.7	-79.2

The general feeling was that 2012 was a poor year for our garden moths, with every member recording at least one week when none of the target species were seen. Nationally numbers were low particularly in spring and autumn, and this is shown in the declines seen in several of the commonest species – Common Quaker, Clouded Drab, Hebrew Character, Chestnut, Yellow-line Quaker and the *Epirritas* all experienced big drops in abundance. The situation in Highland was different though, with no clear seasonal difference, but most of the common species were down in numbers from last year. Notable exceptions were Lesser Broad-bordered Yellow Underwing, Dotted Clay and Chevron that all showed big gains.

The GMS in Scotland continues to grow, and I am hopeful that at least 30 people will manage to complete the 2013 season. The more the merrier though, so if you may be interested in taking part in the future, please get in touch; the value of the scheme grows alongside the membership.

Heather Young
 GMS coordinator, Scotland.
 e-mail: heather.young@tiscali.co.uk

Bates AJ, et al. (2013) Assessing the value of the Garden Moth Scheme citizen science dataset: how does light trap type affect catch? *Entomologia Experimentalis Et Applicata* 146: 386-397.