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Angle Shades *Phlogophora meticulosa*Simon Roddis

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### **INTRODUCTION**

I would to thank you all for your continued support to the Garden Moth Scheme, without dedicated recorders like yourselves the scheme could not operate.

Following my recent email correspondence re my request for feed-back on these reports I have decided to make them a bit simpler by just presenting a summary of the records received with a short commentary, along with a list/numbers of moths recorded.

The records in this report are based on data from 31 recorders and I hoping that a few more recorders will submit their records prior to the end of the year for inputting into the national GMS database. If you have not forwarded your records to date could you please get them to me by the end of December?

In this report information presented relates in the first part to records for weeks 28 to 36 (Q4) and in the second part for the whole 36 weeks of the scheme.



Merveille du Jour *Griposia aprilina*Simon Roddis

#### 2015 Q4 & ANNUAL SUMMARY REPORT

### Q4 EAST MIDLANDS REGION DATA OVERVIEW

#### **2015 Q4 Records Summary**

Table 1 below compares the records for weeks 28 to 36 for 2015 (Q4) alongside previous years since 2009. Although the autumn seemed to have been relatively mild compared to previous years where myself and a number of other recorders expected more records this is not reflected in the submitted records. The average number of moths recorded is very much in line with 2014 albeit with less species recorded even with the increased species list that was introduced this year.

	2009	2010	2011	2012	2013	2014	2015
No. Recorders	19	21	24	29	33	33	31
No. Recording Nights	164	168	199	216	228	280	257
No. Species Recorded	104	84	102	95	101	124	106
No. Moths	2,733	3,320	4,532	3,317	6,190	8,570	7,597
Ave Moths per Recording Night	17	20	23	15	27	31	30

Table 1 Q4 Comparison for 2009 to 2015

#### **2015 Q4 Top 20 Species**

The Top 20 recorded species in 2015 Q4 are presented in Table 2 alongside a comparison to previous years since 2010, based on the Average Number of Moths per Recording Night.

As highlighted in the Q3 report this year seems to have been a very successful year for large Yellow Underwing in the East Midlands and this can also be seen the Q4 records.

I had personally noticed a greater abundance of Feathered Thorn in my garden during the last 9 weeks of GMS and this year is the first year it has appeared in the Top 20 species for Q4.

A full list of species and numbers recorded is attached in Appendix 1.



Grey Chi *Antitype chi* Graham Birkett

	2015		2014		2013		2012		2011		2010	
1	Large Yellow Underwing	9.33	Large Yellow Underwing	7.81	Large Yellow Underwing	5.29	Large Yellow Underwing	2.75	Large Yellow Underwing	4.73	Large Yellow Underwing	3.88
2	Lunar Underwing	3.66	Lunar Underwing	3.80	Lunar Underwing	4.03	Setaceous Hebrew Character	1.44	Lunar Underwing	1.92	Setaceous Hebrew Character	2.84
3	Light Brown Apple Moth	1.99	Lesser Yellow Underwing	2.17	Light Brown Apple Moth	2.37	Light Brown Apple Moth	1.20	Square-spot Rustic	1.83	Square-spot Rustic	1.36
4	Square-spot Rustic	1.95	Square-spot Rustic	2.07	Setaceous Hebrew Character	2.33	Square-spot Rustic	1.10	Lesser Yellow Underwing	1.53	Lunar Underwing	1.33
5	Setaceous Hebrew Character	1.70	Light Brown Apple Moth	2.03	Lesser Yellow Underwing	1.71	Lunar Underwing	1.06	Setaceous Hebrew Character	1.50	Lesser Yellow Underwing	0.96
6	Lesser Yellow Underwing	1.45	Setaceous Hebrew Character	1.07	Common Marbled Carpet	1.70	Lesser Yellow Underwing	0.97	Beaded Chestnut	1.28	Blair's Shoulder- knot	0.88
7	Beaded Chestnut	0.88	Common Marbled Carpet	0.94	Beaded Chestnut	0.70	Silver Y	0.61	Black Rustic	0.66	Light Brown Apple Moth	0.80
8	Blair's Shoulder-knot	0.51	Beaded Chestnut	0.70	Blair's Shoulder- knot	0.67	Angle Shades	0.42	Light Brown Apple Moth	0.50	Yellow-line Quaker	0.49
9	November Moth agg.	0.46	Snout	0.55	Garden Rose Tortrix	0.64	Copper Underwing agg.	0.39	Common Wainscot	0.47	Common Wainscot	0.48
10	Common Wainscot	0.45	Brimstone Moth	0.54	Square-spot Rustic	0.60	Garden Rose Tortrix	0.37	Blair's Shoulder- knot	0.44	Beaded Chestnut	0.47
11	Common Marbled Carpet	0.37	Blair's Shoulder- knot	0.53	Silver Y	0.50	Green Carpet	0.35	Green-brindled Crescent	0.43	Sallow	0.35
12	Silver Y	0.33	Common Wainscot	0.44	November Moth agg.	0.42	Common Marbled Carpet	0.35	Sallow	0.41	Smoky Wainscot	0.34
13	Black Rustic	0.32	Garden Carpet	0.41	Angle Shades	0.41	Garden Carpet	0.34	November Moth agg.	0.40	Red-line Quaker	0.34
14	Small Square-spot	0.31	Garden Rose Tortrix	0.39	Brimstone Moth	0.39	Brimstone Moth	0.33	Yellow-line Quaker	0.32	Barred Sallow	0.33
15	Angle Shades	0.30	Shuttle-shaped Dart	0.38	Black Rustic	0.34	Blair's Shoulder- knot	0.32	Vine's Rustic	0.32	November Moth agg.	0.30
16	Feathered Thorn	0.29	November Moth agg.	0.35	Garden Carpet	0.32	Black Rustic	0.25	Pink-barred Sallow	0.30	Common Marbled Carpet	0.28
17	Garden Rose Tortrix	0.29	Willow Beauty	0.30	Copper Underwing agg.	0.25	Centre-barred Sallow	0.19	Silver Y	0.29	Turnip Moth	0.24
18	Juniper Carpet	0.27	Pale Mottled Willow	0.28	Yellow-line Quaker	0.25	Willow Beauty	0.16	Shuttle-shaped Dart	0.27	Black Rustic	0.24
19	Garden Carpet	0.26	Flame Shoulder	0.28	Juniper Carpet	0.23	Beaded Chestnut	0.15	Copper Underwing agg.	0.26	Pink-barred Sallow	0.23
20	Vine's Rustic	0.24	Rosy Rustic	0.26	Red-line Quaker	0.22	November Moth agg.	0.14	Pale Mottled Willow	0.26	Angle Shades	0.21

Table 2: Top Twenty Moth Records for Weeks 28 to 36 2010 thru 2015 (Average Number of Moths per Recording Night)

### 2015 EAST MIDLANDS REGION DATA OVERVIEW

#### **2015 Records Summary**

Table 3 below summarises the annual records for 2015 alongside previous years since 2009. It should be noted that species list was increased for 2015 and so it is not surprising that the total number of species has increased. Of the 54,779 moths recorded in 2015 a massive 10,483 (19%) were Large Yellow Underwings, whilst in 2014 a more modest 5,285 moths were recorded (11.6% of the total).

	2009	2010	2011	2012	2013	2014	2015
No. Recorders	19	21	24	29	33	33	31
No. Recording Nights	644	706	814	924	1046	1124	1,155
No. Species Recorded	230	249	246	243	250	257	267
No. Moths	21,810	32,575	32,570	27,073	43,312	45,615	54,779
Ave Moths per Recording Night	34	46	40	29	41	41	47

**Table 3 Annual Record Comparisons for 2009 to 2015** 

#### **2015 Q4 Top 20 Species**

The Top 20 recorded species in 2015 are presented in Table 4 alongside a comparison to previous years since 2010, based on the Average Number of Moths per Recording Night. This is the first year that moths of the Uncertain/Rustic aggregate have been recorded and is not a surprise that they are in the Top 20.

Species in Table 4 which are underlined have consistently been in the Top 20 since GMS recording started in the East Midlands.

It is interesting to see that four species of micro "grass moths" (Garden Grass Veneer, *Agriphila geniculea, Agriphila straminella* and *Agriphila tristella*) appear in the Top 20. The Garden Grass Veneer has consistently appeared in each year but this is the first year that all four have been recorded in such numbers. It is not clear if this is due to improved identification skills of recorders or a real increase or more likely a combination of both of these.

A full list of species and numbers recorded is attached in Appendix 2. Those species where there are less than or equal to 5 records are highlighted in red.

	2015		2014		2013		2012		2011		2010	
1	Large Yellow Underwing	9.08	Large Yellow Underwing	4.70	Large Yellow Underwing	4.66	Large Yellow Underwing	3.24	Heart & Dart	6.21	Large Yellow Underwing	5.23
2	Heart and Dart	3.09	Heart & Dart	2.86	<u>Dark Arches</u>	2.08	<u>Dark Arches</u>	2.24	<u>Large Yellow</u> <u>Underwing</u>	3.14	Heart & Dart	3.08
3	Common Rustic agg.	2.40	Dark Arches	1.64	Heart & Dart	1.84	Heart & Dart	1.91	Dark Arches	2.48	Dark Arches	2.99
4	Dark Arches	1.85	Light Brown Apple Moth	1.31	Riband Wave	1.31	Garden Grass- veneer	1.23	Square-spot Rustic	1.44	Setaceous Hebrew Character	2.68
5	Light Brown Apple Moth	1.37	<u>Riband Wave</u>	1.22	Common Rustic agg.	1.19	Common Rustic agg.	1.22	<u>Setaceous</u> <u>Hebrew Character</u>	1.39	Common Rustic agg.	1.53
6	Uncertain/Rustic agg.	1.36	Common Rustic agg.	1.16	Light Brown Apple Moth	1.15	Riband Wave	1.13	Common Rustic agg.	1.09	Hebrew Character	1.05
7	Garden Grass-veneer	1.22	Garden Grass- veneer	0.98	Square-spot Rustic	1.12	Willow Beauty	0.77	Common Quaker	0.95	Riband Wave	1.04
8	Riband Wave	1.17	Square-spot Rustic	0.95	Setaceous Hebrew Character	1.05	Light Brown Apple Moth	0.74	Lesser Yellow Underwing	0.91	Square-spot Rustic	1.00
9	Square-spot Rustic	1.13	Lunar Underwing	0.95	Lesser Yellow Underwing	1.02	Lesser Yellow Underwing	0.73	Hebrew Character	0.87	Lesser Broad- bordered Yellow Underwing	0.91
10	Setaceous Hebrew Character	1.06	<u>Lesser Yellow</u> Underwing	0.87	Silver Y	0.92	Common Footman	0.71	Riband Wave	0.85	Common Quaker	0.86
11	Lesser Yellow Underwing	0.93	Brimstone Moth	0.71	Lesser Broad- bordered Yellow Underwing	0.90	Setaceous Hebrew Character	0.60	Garden Grass- veneer	0.78	Garden Grass- veneer	0.84
12	Lunar Underwing	0.81	Common Footman	0.66	Lunar Underwing	0.88	Small Quaker	0.58	Common Footman	0.75	Flame Shoulder	0.80
13	Agriphila tristella	0.77	Flame Shoulder	0.62	Garden Grass- veneer	0.83	Common Quaker	0.55	Clouded Drab	0.73	Common Footman	0.79
14	Lesser Broad- bordered Yellow Underwing	0.76	Marbled Minor agg.	0.62	Willow Beauty	0.77	Square-spot Rustic	0.53	Lesser Broad- bordered Yellow Underwing	0.70	Light Brown Apple Moth	0.78
15	Hebrew Character	0.61	Setaceous Hebrew Character	0.61	Mother of Pearl	0.76	Lesser Broad- bordered Yellow Underwing	0.53	Shuttle-shaped Dart	0.61	<u>Lesser Yellow</u> <u>Underwing</u>	0.76
16	Common Quaker	0.55	Marbled Beauty	0.61	Common Footman	0.74	Hebrew Character	0.46	Willow Beauty	0.58	Willow Beauty	0.74
17	Marbled Minor agg.	0.53	Lesser Broad- bordered Yellow Underwing	0.59	Marbled Minor agg.	0.70	Copper Underwing agg.	0.43	Agriphila tristella	0.58	Rustic Shoulder- knot	0.73
18	Willow Beauty	0.52	Common Quaker	0.58	Brimstone Moth	0.70	Silver Y	0.43	Lunar Underwing	0.47	Shuttle-shaped Dart	0.71
19	Agriphila geniculea	0.52	Common Marbled Carpet	0.56	Marbled Beauty	0.62	Clouded Drab	0.39	Rustic Shoulder- knot	0.45	Marbled Minor agg	0.56
20	Agriphila straminella	0.52	Hebrew Character	0.56	Common Marbled Carpet	0.54	Mother of Pearl	0.36	Marbled Minor agg	0.36	Mother of Pearl	0.54

Table 4: Top Twenty Moth Records for Weeks 28 to 36 2010 thru 2015 (Average Number of Moths per Recording Night)

### Acknowledgements

Many thanks again to Simon Roddis and Graham Birkett for their kind permission to use their excellent photographs within the report.



Red Underwing *Catocala nupta*Simon Roddis

### **APPENDIX 1- List of All EM Moth Species Recorded in Q4 2015**

B&F No.	Species	No.
15	Orange Swift	1
647	Brown House Moth	15
648	White-shouldered House Moth	14
998	Light Brown Apple Moth	511
1033	Green Oak Tortrix	8
1048	Garden Rose Tortrix	74
1063	Celypha striana	3
1076	Celypha lacunana	4
1293	Garden Grass-veneer	2
1309	Agriphila geniculea	19
1356	Garden Pebble	3
1395	Rusty-dot Pearl	2
1405	Mother of Pearl	9
1413	Gold Triangle	3
1524	Emmelina monodactyla	19
1631	December Moth	5
1663	March Moth	1
1707	Small Dusty Wave	7
1708	Single-dotted Wave	2
1713	Riband Wave	1
1722	Flame Carpet	1
1728	Garden Carpet	68
1732	Shaded Broad-bar	3
1738	Common Carpet	4
1742	Yellow Shell	3
1760	Red-green Carpet	40
1764	Common Marbled Carpet	96
1768	Grey Pine Carpet	8
1769	Spruce Carpet	16
1771	Juniper Carpet	70
1776	Green Carpet	10
1795x	November Moth agg.	117
1825	Lime-speck Pug	1
1862	Double-striped Pug	3
1867	Treble-bar	3
1884	Magpie Moth	1
1906	Brimstone Moth	48

1913         Canary-shouldered Thorn         49           1917         Early Thorn         1           1921         Scalloped Oak         1           1923         Feathered Thorn         75           1930         Oak Beauty         1           1937         Willow Beauty         14           1961         Light Emerald         8           2087         Turnip Moth         9           2091         Dark Sword-grass         1           2092         Shuttle-shaped Dart         23           2102         Flame Shoulder         12           2107         Large Yellow Underwing         2397           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow         26           Underwing         1         15           2110         Broad-bordered Yellow         26           Underwing         1         1           2111         Lesser Broad-bordered         15           Yellow Underwing         1         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew	B&F No.	Species	No.
1917       Early Thorn       1         1921       Scalloped Oak       1         1923       Feathered Thorn       75         1930       Oak Beauty       1         1937       Willow Beauty       14         1961       Light Emerald       8         2087       Turnip Moth       9         2091       Dark Sword-grass       1         2092       Shuttle-shaped Dart       23         2102       Flame Shoulder       12         2107       Large Yellow Underwing       2397         2109       Lesser Yellow Underwing       373         2110       Broad-bordered Yellow       26         Underwing       1       15         2111       Lesser Broad-bordered Yellow       26         Underwing       1       1         2112       Least Yellow Underwing       1         2120       Ingrailed Clay       1         2121       Setaceous Hebrew       438         Character       4         2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2198 <td< td=""><td>1913</td><td>Canary-shouldered Thorn</td><td>12</td></td<>	1913	Canary-shouldered Thorn	12
1921         Scalloped Oak         1           1923         Feathered Thorn         75           1930         Oak Beauty         1           1937         Willow Beauty         14           1961         Light Emerald         8           2087         Turnip Moth         9           2091         Dark Sword-grass         1           2092         Shuttle-shaped Dart         23           2102         Flame Shoulder         12           2107         Large Yellow Underwing         373           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow Underwing         26           2111         Lesser Broad-bordered Yellow Underwing         1           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1	1914	Dusky Thorn	49
1923         Feathered Thorn         75           1930         Oak Beauty         1           1937         Willow Beauty         14           1961         Light Emerald         8           2087         Turnip Moth         9           2091         Dark Sword-grass         1           2092         Shuttle-shaped Dart         23           2102         Flame Shoulder         12           2107         Large Yellow Underwing         2397           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow         26           Underwing         26         15           2111         Lesser Broad-bordered Yellow         26           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2121         Least Yellow Underwing         1           2123         Small Square-spot         80           2126         Setaceous Hebrew         438           Character         4         2           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab<	1917	Early Thorn	1
1930         Oak Beauty         1           1937         Willow Beauty         14           1961         Light Emerald         8           2087         Turnip Moth         9           2091         Dark Sword-grass         1           2092         Shuttle-shaped Dart         23           2102         Flame Shoulder         12           2107         Large Yellow Underwing         2397           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow Underwing         26           2111         Lesser Broad-bordered Yellow Underwing         1           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2134         Square-spot Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116 <t< td=""><td>1921</td><td>Scalloped Oak</td><td>1</td></t<>	1921	Scalloped Oak	1
1937         Willow Beauty         14           1961         Light Emerald         8           2087         Turnip Moth         9           2091         Dark Sword-grass         1           2092         Shuttle-shaped Dart         23           2102         Flame Shoulder         12           2107         Large Yellow Underwing         2397           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow         26           Underwing         2         1           2111         Lesser Broad-bordered         15           Yellow Underwing         1         1           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew         438           Character         4         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2198         Smoky Wainscot         6           2199         Common Wainscot	1923	Feathered Thorn	75
1961         Light Emerald         8           2087         Turnip Moth         9           2091         Dark Sword-grass         1           2092         Shuttle-shaped Dart         23           2102         Flame Shoulder         12           2107         Large Yellow Underwing         2397           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow Underwing         26           2111         Lesser Broad-bordered Yellow Underwing         1           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116           2232         Black Rustic         81           2237         Grey Shoulder-knot         3	1930	Oak Beauty	1
Turnip Moth  2091 Dark Sword-grass  1 2092 Shuttle-shaped Dart  2102 Flame Shoulder  2107 Large Yellow Underwing  2109 Lesser Yellow Underwing  2110 Broad-bordered Yellow Underwing  2111 Lesser Broad-bordered Yellow Underwing  2112 Least Yellow Underwing  2112 Least Yellow Underwing  2120 Ingrailed Clay  2123 Small Square-spot  2126 Setaceous Hebrew Character  2133 Six-striped Rustic  2134 Square-spot Rustic  2136 Gothic  2188 Clouded Drab  2198 Smoky Wainscot  2199 Common Wainscot  2116  2232 Black Rustic  31  231  242  253  267  275  286  287  288  299  299  200  200  201  201  201  201	1937	Willow Beauty	14
2091 Dark Sword-grass 1 2092 Shuttle-shaped Dart 23 2102 Flame Shoulder 12 2107 Large Yellow Underwing 2397 2109 Lesser Yellow Underwing 373 2110 Broad-bordered Yellow Underwing 26 Underwing 2111 Lesser Broad-bordered Yellow Underwing 1 2112 Least Yellow Underwing 1 2120 Ingrailed Clay 1 2123 Small Square-spot 80 2126 Setaceous Hebrew 438 Character 2133 Six-striped Rustic 4 2134 Square-spot Rustic 500 2136 Gothic 8 2188 Clouded Drab 1 2198 Smoky Wainscot 6 2199 Common Wainscot 116 2232 Black Rustic 81 2237 Grey Shoulder-knot 3	1961	Light Emerald	8
2092         Shuttle-shaped Dart         23           2102         Flame Shoulder         12           2107         Large Yellow Underwing         2397           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow Underwing         26           2111         Lesser Broad-bordered Yellow Underwing         1           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116           2232         Black Rustic         81           2237         Grey Shoulder-knot         3	2087	Turnip Moth	9
2102 Flame Shoulder 12 2107 Large Yellow Underwing 2397 2109 Lesser Yellow Underwing 373 2110 Broad-bordered Yellow 26 Underwing 2111 Lesser Broad-bordered Yellow Underwing 15 2112 Least Yellow Underwing 1 2120 Ingrailed Clay 1 2123 Small Square-spot 80 2126 Setaceous Hebrew 438 Character 2133 Six-striped Rustic 4 2134 Square-spot Rustic 500 2136 Gothic 8 2188 Clouded Drab 1 2198 Smoky Wainscot 6 2199 Common Wainscot 116 2232 Black Rustic 81 2237 Grey Shoulder-knot 3	2091	Dark Sword-grass	1
2107         Large Yellow Underwing         2397           2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow Underwing         26           2111         Lesser Broad-bordered Yellow Underwing         15           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116           2232         Black Rustic         81           2237         Grey Shoulder-knot         3	2092	Shuttle-shaped Dart	23
2109         Lesser Yellow Underwing         373           2110         Broad-bordered Yellow Underwing         26           2111         Lesser Broad-bordered Yellow Underwing         15           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116           2232         Black Rustic         81           2237         Grey Shoulder-knot         3	2102	Flame Shoulder	12
2110       Broad-bordered Yellow Underwing       26         2111       Lesser Broad-bordered Yellow Underwing       15         2112       Least Yellow Underwing       1         2120       Ingrailed Clay       1         2123       Small Square-spot       80         2126       Setaceous Hebrew Character       438         2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3	2107	Large Yellow Underwing	2397
Underwing         15           2111         Lesser Broad-bordered Yellow Underwing         15           2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116           2232         Black Rustic         81           2237         Grey Shoulder-knot         3	2109	Lesser Yellow Underwing	373
2111       Lesser Broad-bordered Yellow Underwing       15         2112       Least Yellow Underwing       1         2120       Ingrailed Clay       1         2123       Small Square-spot       80         2126       Setaceous Hebrew Character       438         2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3	2110	Broad-bordered Yellow	26
Yellow Underwing         2112       Least Yellow Underwing       1         2120       Ingrailed Clay       1         2123       Small Square-spot       80         2126       Setaceous Hebrew Character       438         2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3			
2112         Least Yellow Underwing         1           2120         Ingrailed Clay         1           2123         Small Square-spot         80           2126         Setaceous Hebrew Character         438           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116           2232         Black Rustic         81           2237         Grey Shoulder-knot         3	2111		15
2120       Ingrailed Clay       1         2123       Small Square-spot       80         2126       Setaceous Hebrew Character       438         2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3	2442		4
2123       Small Square-spot       80         2126       Setaceous Hebrew Character       438         2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3			
2126       Setaceous Hebrew Character       438         2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3		•	
Character         4           2133         Six-striped Rustic         4           2134         Square-spot Rustic         500           2136         Gothic         8           2188         Clouded Drab         1           2198         Smoky Wainscot         6           2199         Common Wainscot         116           2232         Black Rustic         81           2237         Grey Shoulder-knot         3			
2133       Six-striped Rustic       4         2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3	2126		438
2134       Square-spot Rustic       500         2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3	2133		4
2136       Gothic       8         2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3		·	
2188       Clouded Drab       1         2198       Smoky Wainscot       6         2199       Common Wainscot       116         2232       Black Rustic       81         2237       Grey Shoulder-knot       3			
2198Smoky Wainscot62199Common Wainscot1162232Black Rustic812237Grey Shoulder-knot3			
2199Common Wainscot1162232Black Rustic812237Grey Shoulder-knot3			
2232 Black Rustic 81 2237 Grey Shoulder-knot 3	2199	· · · · · · · · · · · · · · · · · · ·	116
-			
-		Grey Shoulder-knot	
	2240	· ·	132
2243 Early Grey 1			
2245 Green-brindled Crescent 48	2245		48
2247 Merveille du Jour 5	2247	Merveille du Jour	5
2248 Brindled Green 7	2248	Brindled Green	7
2255 Feathered Ranunculus 2	2255	Feathered Ranunculus	2
2256 Satellite 4	2256	Satellite	4

		1
B&F No.	Species	No.
2258	Chestnut	10
2259	Dark Chestnut	3
2262	Brick	22
2263	Red-line Quaker	25
2264	Yellow-line Quaker	41
2266	Brown-spot Pinion	60
2267	Beaded Chestnut	225
2269	Centre-barred Sallow	22
2270	Lunar Underwing	940
2272	Barred Sallow	24
2273	Pink-barred Sallow	27
2274	Sallow	33
2289	Knot Grass	1
2293	Marbled Beauty	8
2297x	Copper Underwing agg.	42
2299	Mouse Moth	15
2305	Small Angle Shades	2

B&F No.	Species	No.
2306	Angle Shades	76
2321	Dark Arches	7
2343x	Common Rustic agg.	2
2353	Flounced Rustic	42
2361	Rosy Rustic	43
2364	Frosted Orange	13
2381x	Uncertain/Rustic agg.	9
2384	Vine's Rustic	61
2387	Mottled Rustic	5
2389	Pale Mottled Willow	31
2434	Burnished Brass	23
2439	Gold Spot	8
2441	Silver Y	84
2450	Spectacle	1
2452	Red Underwing	5
2474	Straw Dot	29
2477	Snout	8

### **APPENDIX 2- List of All EM Moth Species Recorded in 2015**

B&F No.	Species	No.
14	Ghost Moth	19
15	Orange Swift	79
17	Common Swift	89
464	Diamond-back Moth	23
647	Brown House Moth	166
	White-shouldered House	
648	Moth	49
658	Oak Longhorned	30
937	Agapeta hamana	72
970	Barred Fruit-tree Tortrix	65
998	Light Brown Apple Moth	1584
1033	Green Oak Tortrix	30
1048	Garden Rose Tortrix	122
1063	Celypha striana	126
1076	Celypha lacunana	123
1175	Bramble Shoot Moth	30
1288	Twenty-plume Moth	19
1293	Garden Grass-veneer	1410
1294	Crambus pascuella	264
1304	Agriphila straminella	597
1305	Agriphila tristella	894
1309	Agriphila geniculea	599
1345	Brown China-mark	17
1356	Garden Pebble	43
1376	Small Magpie	321
1378	Spotted Magpie	48
1392	Udea olivalis	52
1395	Rusty-dot Pearl	5
1398	Rush Veneer	23
1405	Mother of Pearl	554
1413	Gold Triangle	91
1424	Endotricha flammealis	69
1428	Bee Moth	266
1524	Emmelina monodactyla	144
1631	December Moth	5
1640	Drinker	20
1646	Oak Hook-tip	6
1648	Pebble Hook-tip	11

B&F No.	Species	No.
1651	Chinese Character	53
1652	Peach Blossom	6
1653	Buff Arches	46
1654	Figure of Eighty	12
1663	March Moth	26
1669	Common Emerald	54
1682	Blood-vein	61
1690	Small Blood-vein	28
1699	Least Carpet	6
1702	Small Fan-footed Wave	59
1705	Dwarf Cream Wave	29
1707	Small Dusty Wave	40
1708	Single-dotted Wave	171
1711	Treble Brown Spot	3
1712	Small Scallop	3
1713	Riband Wave	1354
1722	Flame Carpet	35
1725	Dark-barred Twin-spot Carpet	13
1727	Silver-ground Carpet	95
1728	Garden Carpet	283
1732	Shaded Broad-bar	19
1738	Common Carpet	117
1742	Yellow Shell	75
1746	Shoulder Stripe	11
1747	Streamer	4
1757	Spinach	9
1758	Barred Straw	62
1759	Small Phoenix	19
1760	Red-green Carpet	42
1764	Common Marbled Carpet	235
1765	Barred Yellow	20
1768	Grey Pine Carpet	10
1769	Spruce Carpet	26
1771	Juniper Carpet	70
1776	Green Carpet	58
1777	July Highflyer	26
1795x	November Moth agg.	117

B&F No.	Species	No.
1802	Rivulet	3
1803	Small Rivulet	18
1817	Foxglove Pug	56
1825	Lime-speck Pug	25
1838	Tawny Speckled Pug	3
1839	Bordered Pug	6
1858	V-Pug	4
1860	Green Pug	93
1862	Double-striped Pug	81
1867	Treble-bar	8
1884	Magpie Moth	35
1887	Clouded Border	90
1893	Tawny-barred Angle	2
1894	Latticed Heath	20
1902	Brown Silver-line	7
1904	Scorched Wing	30
1906	Brimstone Moth	527
1913	Canary-shouldered Thorn	37
1914	Dusky Thorn	92
1917	Early Thorn	51
1919	Purple Thorn	5
1920	Scalloped Hazel	60
1921	Scalloped Oak	80
1922	Swallow-tailed Moth	148
1923	Feathered Thorn	75
1927	Brindled Beauty	5
1930	Oak Beauty	21
1931	Peppered Moth (Light)	76
	Peppered Moth	
1931	(Intermediate)	17
1931	Peppered Moth (Dark)	4
1934	Dotted Border	7
1936	Waved Umber	28
1937	Willow Beauty	603
1941	Mottled Beauty	63
1954	Bordered White	5
1955	Common White Wave	22
1956	Common Wave	18
1957	White-pinion Spotted	1

B&F No.	Species	No.
1958	Clouded Silver	185
1961	Light Emerald	54
1962	Barred Red	2
1976	Privet Hawk-moth	36
1979	Lime Hawk-moth	9
1980	Eyed Hawk-moth	6
1981	Poplar Hawk-moth	79
1991	Elephant Hawk-moth	322
1994	Buff-tip	39
1995	Puss Moth	1
1997	Sallow Kitten	8
2000	Iron Prominent	25
2003	Pebble Prominent	29
2006	Lesser Swallow Prominent	26
2007	Swallow Prominent	27
2008	Coxcomb Prominent	17
2011	Pale Prominent	20
2015	Lunar Marbled Brown	2
2026	Vapourer	2
2028	Pale Tussock	31
2030	Yellow-tail	54
2044	Dingy Footman	197
2047	Scarce Footman	96
2049	Buff Footman	13
2050	Common Footman	567
2057	Garden Tiger	2
2060	White Ermine	67
2061	Buff Ermine	433
2063	Muslin Moth	30
2064	Ruby Tiger	63
2069	Cinnabar	49
2077	Short-cloaked Moth	28
2087	Turnip Moth	47
2088	Heart and Club	92
2089	Heart and Dart	3574
2091	Dark Sword-grass	28
2092	Shuttle-shaped Dart	447
2098	Flame	391

B&F No.	Species	No.
2102	Flame Shoulder	535
2102	Large Yellow Underwing	10483
2107	Lesser Yellow Underwing	10483
2109	Broad-bordered Yellow	1076
2110	Underwing	110
	Lesser Broad-bordered Yellow	
2111	Underwing	883
2112	Least Yellow Underwing	17
2114	Double Dart	2
2118	True Lover's Knot	9
2120	Ingrailed Clay	93
2122	Purple Clay	38
2123	Small Square-spot	365
2126	Setaceous Hebrew Character	1225
2127	Triple-spotted Clay	2
2128	Double Square-spot	210
2130	Dotted Clay	36
2133	Six-striped Rustic	311
2134	Square-spot Rustic	1306
2136	Gothic	32
2145	Nutmeg	42
2147	Shears	10
2154	Cabbage Moth	43
2155	Dot Moth	170
2158	Pale-shouldered Brocade	22
2160	Bright-line Brown-eye	483
2163	Broom Moth	5
2164	Broad-barred White	7
2170	Varied Coronet	17
2176	Antler Moth	6
2179	Pine Beauty	6
2182	Small Quaker	94
2186	Powdered Quaker	19
2187	Common Quaker	637
2188	Clouded Drab	343
2189	Twin-spotted Quaker	21
2190	Hebrew Character	700
2192	Brown-line Bright Eye	53
2193	Clay	189

B&F No.	Species	No.
2198	Smoky Wainscot	299
2199	Common Wainscot	363
2205	Shoulder-striped Wainscot	76
2216	Shark	13
2221	Mullein	3
2232	Black Rustic	92
2237	Grey Shoulder-knot	10
2240	Blair's Shoulder-knot	132
2243	Early Grey	112
2245	Green-brindled Crescent	48
2247	Merveille du Jour	5
2248	Brindled Green	10
2254	Grey Chi	2
2255	Feathered Ranunculus	2
2256	Satellite	11
2258	Chestnut	18
2259	Dark Chestnut	5
2262	Brick	23
2263	Red-line Quaker	25
2264	Yellow-line Quaker	41
2266	Brown-spot Pinion	63
2267	Beaded Chestnut	225
2269	Centre-barred Sallow	47
2270	Lunar Underwing	941
2272	Barred Sallow	24
2273	Pink-barred Sallow	27
2274	Sallow	36
2278	Poplar Grey	34
2279	Sycamore	23
2280	Miller	23
2284x	Dark Dagger / Grey Dagger	90
2289	Knot Grass	20
2293	Marbled Beauty	574
2297x	Copper Underwing agg.	148
2299	Mouse Moth	77
2300	Old Lady	35
2302	Brown Rustic	27
2303	Straw Underwing	18

B&F No.	Species	No.
2305	Small Angle Shades	23
2306	Angle Shades	125
2318	Dun-bar	76
2321	Dark Arches	2135
2322	Light Arches	130
2326	Clouded-bordered Brindle	52
2327	Clouded Brindle	3
2330	Dusky Brocade	47
2334	Rustic Shoulder-knot	175
2335	Slender Brindle	3
2336	Double Lobed	3
2337x	Marbled Minor agg.	610
2340	Middle-barred Minor	126
2341	Cloaked Minor	28
2342	Rosy Minor	23
2343x	Common Rustic agg.	2770
2345	Small Dotted Buff	12
2352	Dusky Sallow	39
2353	Flounced Rustic	403
2361	Rosy Rustic	70
2364	Frosted Orange	15

B&F No.	Species	No.
2380	Treble Lines	54
2381x	Uncertain/Rustic agg.	1572
2384	Vine's Rustic	259
2387	Mottled Rustic	182
2389	Pale Mottled Willow	95
2422	Green Silver-lines	15
2434	Burnished Brass	135
2437	Golden Plusia	4
2439	Gold Spot	83
2441	Silver Y	308
2442	Beautiful Golden Y	20
2443	Plain Golden Y	19
2449	Dark Spectacle	4
2450	Spectacle	137
2452	Red Underwing	16
2469	Herald	8
2473	Beautiful Hook-tip	62
2474	Straw Dot	401
2477	Snout	193
2489	Fan-foot	116
2492	Small Fan-foot	18