



## **Moths of Poole Harbour: A Project of Birds of Poole Harbour**

### **Lesser Butterfly Orchids and Moths on Hartland Moor 2018 and 2019**

As part of the 'Back from the Brink' project for Lesser Butterfly Orchid *Platanthera bifolia*, Moths of Poole Harbour (MoPH) was asked to run moth traps around the known remaining Dorset colony on Hartland Moor to try to determine which species of moth may be involved in pollinating the orchids. 4 traps were run at the site over a total of 6 nights. In 2018 4 trapping sessions were held between the 17<sup>th</sup> and 25<sup>th</sup> June. In 2019 2 nights trapping were conducted on the 30<sup>th</sup> June and 4<sup>th</sup> July. Both years the Orchids were fully flowering, the dates reflecting the relatively early flowering in 2018.

The light traps, on all occasions were 3 Mercury-vapour (MV) Robinson traps, powered by a petrol generator and 1 actinic (Ultra-violet) (UV) Heath trap powered by a rechargeable battery.

The presumption is that for Lesser Butterfly orchid, as for Greater Butterfly Orchid, the main pollinators are Hawk-moth species (*Sphingidae*).

A significantly greater catch was achieved from just 2 nights effort in 2019 reflecting a combination of sub-optimal weather and full moon in 2018.

In 2019, perhaps not surprisingly, the *Sphingidae* comprised a far smaller percentage of the overall moth catch at the site when compared to 2018. The weather conditions, combined with a full moon, in 2018 having been far less conducive to substantial catches overall. The unusually hot weather in 2018 had already begun to manifest itself as a drought by June with the year proving to be one of the driest on record and this had a noticeable effect on moth catches.



*Fig.1 Lesser Butterfly Orchid*

Average catch size in 2018, over 4 nights trapping was 123 moths. This compared with an average from the 2 sessions conducted in 2019 of 697. Consequently, the high ratio of Hawk-moth species to all others, experienced in 2018, was not repeated in the following year.

Of the 5 species of Hawk-moths recorded from the site, Pine Hawk and Poplar Hawk were found in 2018 but not recorded in 2019 (perhaps surprisingly in the case of Poplar). However, Elephant Hawk, Eyed Hawk and Privet Hawk were recorded in both years.

The species of *Smerinthinae*, Poplar and Eyed Hawk-moths, have a reduced proboscis and do not feed as adults and are therefore not implicated in the pollination of the Orchids.

No conclusive proof was found for which species are responsible for pollinating the orchids but the results do not detract from the theory that Hawk-moths may be responsible.

**Table 1. Numbers of Hawk-moths recorded in 2018 and 2019**

Species	No. recorded in 2018	No. recorded in 2019	TOTAL RECORDED
Elephant Hawk-moth	38	10	48
Eyed hawk-moth	1	1	2
Pine Hawk-moth	1	0	1
Poplar Hawk-moth	2	0	2
Privet Hawk-moth	3	3	6

Overall, despite majorly contrasting weather conditions a similar species total was found in both years. 77 species were recorded in 2018 and 80 species in 2019. In total, for the two years combined, 115 full species have been identified at the site, with an additional five species at least, recorded as aggregates (e.g. *Coleophora* and *Gelechiidae* species). 32 of the species are micro-moths and 83 species macros.



*Fig.2 MV moth trap in situ at the Hartland Moor Lesser Butterfly Orchid site, June 2018  
2 flowering Orchids are just visible in the background*

Only 42 species were recorded in both years, including 3 aggregate (agg.) species (Marbled Minor agg. and Common Rustic agg. as well as Rustic / Uncertain agg.).

**Table 2. Species recorded from the Hartland Moor Lesser Butterfly Orchid site in both years: 2018 and 2019**

Macro Moths	Micro-Moths
Angle Shades	<i>Aroga velocella</i>
Beautiful Hook-tip	<i>Chrysoteuchia culmella</i>
Beautiful Yellow Underwing	<i>Crambus pascuella</i>
Broom Moth	<i>Notocelia uddmanniana</i>
Buff Ermine	
Buff-tip	
Burnished Brass	
Cinnabar	
Clay	
Clouded Buff	
Common Footman	
Dark Arches	
Elephant Hawk	
Eyed Hawk	
Fan-foot	
Flame Shoulder	
Four-dotted Footman	
Fox Moth	
Grass Emerald	
Grey Arches	
Heart and Club	
Heart and Dart	
Horse Chestnut	
Ingrailed Clay	
Large Yellow Underwing	
Lesser Swallow Prominent	
Mottled Rustic	
Peppered	
Privet Hawk	
Riband Wave	
Shears	
Shoulder-striped wainscot	
Smoky Wainscot	
True Lover's Knot	
White-line Dart	

Attempts at direct observation of pollinating moths did not produce any results.

Use of a camera trap by Sophie Lake in 2019 revealed a single (almost certainly) Privet Hawk moth apparently nectaring at one of the flowers.

In total 1,862 moths were identified to species level on the 6 nights of trapping. These comprised 118 species of which 34 were micro-moths or aggregate micro-moth species and 84 were macro moths.

Over half of all the moths recorded (just over 64%) comprised just 3 species: Large Yellow Underwing (39.4% of all the moths), True Lover's Knot (14% of all the moths) and Dark Arches (almost 10% of all the moths).

Just over 3% of all the moths recorded were various Hawk-moth species.

**Table 3. Full species list for moths recorded at the Orchid site on Hartland Moor from 6 visits in June 2018 and June and July 2019**

SPECIES	TIMES RECORDED	NUMBER RECORDED
<i>Acleris ferrugana / notana agg.</i>	1	1
<i>Aethes cnicana</i>	1	1
Angle Shades	2	2
<i>Anthophila fabriciana</i>	1	1
<i>Apotomis turbidana</i>	2	2
<i>Aroga velocella</i>	2	5
<i>Bactra lancealana</i>	2	2
Barred Yellow	1	1
Beautiful Hook-tip	2	2
Beautiful Yellow Underwing	2	2
Bird's Wing	2	3
<i>Blastobasis adustella</i>	1	1
Bright-line Brown-eye	4	17
Broad-bordered Yellow Underwing	1	6
Broom	5	19
<i>Brown China-mark</i>	1	1
Brown Rustic	1	2
Buff Arches	2	3
Buff Ermine	3	5
Buff Footman	1	1
Buff-tip	5	13
Burnished Brass	3	3
<i>Capua vulgana*</i>	1	1
<i>Celypha striana</i>	1	1
<i>Chrysoteuchia culmella</i>	4	48

Cinnabar	4	9
Clay	3	5
Clouded Border	1	1
Clouded Buff	4	14
<i>Coleophora spp.</i>	5	12
Common Emerald	1	1
Common Footman	2	3
Common Pug	1	1
Common Rustic agg.	1	2
Common Wainscot	1	2
Common White Wave	1	2
<i>Crambus pascuella</i>	4	31
<i>Crambus perlilla</i>	1	1
Dark Arches	3	193
Delicate	1	2
<i>Diamond-back</i>	1	1
Double Square-spot	1	1
Double-striped Pug	2	2
Dusky Brocade	4	31
Dwarf Cream Wave	1	1
Elephant Hawk	6	48
<i>Eucosma campoliliana</i>	2	2
<i>Eudonia angustea</i>	1	1
<i>Eudonia mercurella</i>	1	4
<i>Eudonia pallida</i>	1	1
Eyed Hawk	2	2
Fan-foot	1	1
Flame	1	3
Flame Shoulder	2	2
Four-dotted Footman	6	43
Fox	2	3
<i>Glyphypterix thrasonella</i>	1	1
<i>Gracillaria syringella</i>	1	1
Grass Emerald	3	4
Green Carpet	1	1
Green Silver-lines	1	1
Grey Arches	3	3
Heart & Club	5	8
Heart & Dart	5	38
<i>Hedya salicella</i>	1	1
Horse Chestnut	5	14
Ingrailed Clay	3	5
Iron Prominent	1	1
Kent Black Arches	1	1
Large Emerald	2	2
Large Yellow Underwing	6	738
Lesser Swallow Prominent	3	4
Light Brocade	1	1
Marbled Minor	1	1
Marbled White-spot	1	1

Minor agg.	1	2
Mottled Rustic	3	6
Narrow-winged Pug	1	2
<i>Neofaculta ericetella</i>	1	1
<i>Nomophila noctuella</i>	1	1
<i>Notocelia uddmanniana</i>	2	2
<i>Ostrinia nubilalis</i>	1	1
Pebble Prominent	1	2
<i>Pempelia genistella</i>	1	1
<i>Pempelia palumbella</i>	1	1
Peppered	4	4
Pine Hawk	1	1
Plain Wave	2	2
Poplar Hawk	2	2
Privet Hawk	5	6
<i>Rhyacionia pinivorana</i>	1	1
Riband Wave	2	7
Rosy Marbled	1	1
Rustic / Uncertain agg.	3	11
Satin Wave	1	1
Scarce Footman	2	5
<i>Scoparia ambigualis</i>	1	1
<i>Scoparia basistrigalis</i>	1	1
Shears	4	11
Shoulder-striped Wainscot	5	22
Shuttle-shaped Dart	1	1
Single-dotted Wave	1	1
Small Angle Shades	2	2
<i>Small Magpie</i>	1	1
Small Seraphim	1	1
Small Square-spot	1	1
Smoky Wainscot	6	29
Snout	1	1
<i>Sophronia semicostella</i>	1	1
Straw Dot	1	1
Striped Wainscot	2	19
<i>Synaphe punctalis</i>	2	47
Treble Brown Spot	1	1
True Lover's Knot	6	263
Vine's Rustic	1	1
White Ermine	1	1
White-point	1	1
Willow Beauty	1	1

\*identification confirmed by Dr Phil Sterling.





*Fig. 3 Camera trap photo of an apparent Privet Hawk-moth attending Lesser Butterfly Orchid, Hartland Moor June 2019*  
*Fig. 4 Enlarged picture of moth. Photo: Sophie Lake*

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*Fig.5 Abby emptying moth traps in the field*