

STEYNING DOWNLAND SCHEME

MOTH SURVEY REPORT 2023

BACKGROUND

BRITISH MOTHS

Britain has around 2500 species of moth: c.900 'macro' (generally butterfly-sized) moths and over 1600 micro-moths. The exact number of species is always changing, but particularly so in recent years, with increasing numbers of extinctions, as well as increasing numbers of colonists, most likely driven by climate change. This huge number of species demonstrates extraordinary variation in form and ecology, with a great range of habitats, foodplants, life cycles and behaviours.

The most recent 'State of Britain's Moths' report (Butterfly Conservation 2021) states that the abundance trend for 41% of the 427 macro moth species studied had decreased, while only 10% had increased. Losses are also greater in the southern half of Britain than in the northern half. Meanwhile, 37% of species studied showed increased distribution, but 32% showed decreased distribution. What is perhaps most alarming is that it isn't just specialists that are suffering, it's generalists too.

SURVEYING MOTHS

It is well known that invertebrates are important indicator species, and, with their great number of species and ecological variation, moths are particularly so. It is also relatively easy to survey them relatively thoroughly. Most species are attracted to light, so using a light trap around the time of a new moon and with minimal ambient light, you can be fairly sure that you will attract a fair number of the moths in the area. Ideally, the trap should be run all night, as different species fly at different times of night, and also on a few nights around each new moon with different weather conditions (excepting significant wind and/or rain).

SDS MOTH SURVEYS

I chose the Rifle Range for all the surveys, because of its sheltered aspect and easy vehicular access (the traps and generator are bulky and heavy). I used my Robinson MV (mercury vapour bulb) 125W trap at every survey, and at least one other surveyor also brought an MV trap to every survey, mostly Robinson but also including one Skinner. The Sussex Wildlife Trust very kindly loaned their generator for most surveys.



The Rifle Range lit up by two Robinson MV traps.

There are moths flying all year round, but I decided to run the surveys from April to September, to keep in line with the butterfly surveys; this is also when most moths are on the wing, and obviously when conditions are more clement for being out at night for a prolonged period. It was difficult for me to commit to more than one survey per month, so I chose nights as close to a new moon as possible. Unfortunately, we were unable to leave the traps running all night as the area is open to the public, but we ran them until at least 11pm (April) and as late as 1am (June).

We were very fortunate that we were able to go ahead with almost all the surveys. I only had to cancel September, due to high winds. This was a shame as September is generally a good month for moths and was particularly so in 2023.

All of this was only possible with the invaluable assistance and friendly company of some of the members of the Sussex Moth Group who very kindly supported me. We have also now recruited a few volunteers through the SDS and look forward to introducing more local people to the wonders of moths and training up some surveyors for the future.

APRIL

Thursday 13th April was cool and extraordinarily wet. Only my car was able to navigate the quagmire to get into the Rifle Range (where it received a thorough licking from the Dexter cattle), and it needed physical assistance from two fellow moth-ers to get out again. With a grand total of 14 moths of 6 species, we packed up and left at 11pm. We wiled away the

hours by temporarily becoming a mollusc monitoring group and got incredibly excited whenever we saw an actual moth.



MAY

Friday 19th May was still relatively cool and wet, but a significant improvement on April, with 53+ moths of 15 species. The highlight was dozens of mint (in both condition and colour) Green Carpets emerging fresh from the grass. These are very pretty moths that rapidly lose their green scales and generally arrive in traps looking decidedly beige, so we were all delighted to see so many at their best.

The Dexters were very disappointed that we all elected to leave our cars at the final gate rather than take advantage of the free cow-wash, but they did their best to become acquainted with a generator instead.



Green Carpet



JUNE

Friday 16th June was our best night, and was also the last day of GCSE exams for many schoolchildren, so we were treated to the slightly merry and genuinely delightful company of a group of Steyning Grammar pupils. With 439+ moths of 93 species, it is difficult to select a highlight, but the most abundant species were Barred Yellow, Straw Dot, White Plume, and over a hundred Common Swift. Perhaps the most memorable sight was 10 Ghost Moths lekking and mating as we arrived. This is a very beautiful, sexually dimorphic species, with very shiny white males and larger golden females. The males display by floating up and down, like a cartoon ghost.



Ghost Moth male



Ghost Moth female



Ghost Moth pair in cop



Barred Yellow



White Plume



Glow-worm male

JULY

Sunday 16th July was a very stormy day, but we were fortunate that it settled sufficiently, in the Rifle Range at least, just in time for trapping, and yielded another successful haul, with 357+ moths of 84 species. The night was dominated by Dusky Sallow and Smoky Wainscot, and there were even more Ghost Moths than the previous month. Arguably the stars of the show were a couple of Drinkers: chunky ginger moths with peculiar snouts whose caterpillars drink dewdrops.



Drinker



Glow-worm female

AUGUST

Tuesday 15th August was a little clearer and cooler than the ideal and yielded 'only' 233+ moths of 63 species, still a very respectable total. The only abundant species was the catchily named Lesser Broad-bordered Yellow Underwing. We were probably most excited to catch a female Four-spotted Footman, a large, sexually dimorphic species that is nationally scarce and resident only in the south-west, but also migrates from the continent, so most of us had never seen one.



Four-spotted Footman female



Pretty Chalk Carpet

SEPTEMBER

Disappointingly, as previously mentioned, high and very changeable winds forced cancellation on Tuesday 19th September. So far September had proved to be exceptional for moths and we were all excited to see what the Rifle Range might produce, but it was not to be this year.

2023 DATA

MOST ABUNDANT SPECIES

COMMON NAME	SCIENTIFIC NAME	TOTAL
Common Swift	<i>Korscheltellus lupulina</i>	103+
Dusky Sallow	<i>Eremobia ochroleuca</i>	60+
Smoky Wainscot	<i>Mythimna impura</i>	60+
Common Wainscot	<i>Mythimna pallens</i>	40
Lesser Broad-bordered Yellow Underwing	<i>Noctua janthe</i>	33+
Ghost Moth	<i>Hepialus humuli</i>	32+
Straw Dot	<i>Rivula sericealis</i>	32+
Green Carpet	<i>Colostygia pectinataria</i>	30+
Flame Shoulder	<i>Ochropleura plecta</i>	29
White Plume	<i>Pterophorus pentadactyla</i>	29+
Coronet	<i>Craniophora ligustri</i>	21
Barred Yellow	<i>Cidaria fulvata</i>	20+
Garden Grass-veneer	<i>Chrysoteuchia culmella</i>	20

All those species totals marked + were particularly abundant on one survey, with perhaps a few numbers on other nights. Unsurprisingly, most of these species are grassland specialists, with the exception of Lesser Broad-bordered Yellow Underwing, Green Carpet and Flame Shoulder, which are generalists, and Coronet and Barred Yellow, which favour anywhere with Ash and Dog-rose respectively, their main foodplants, but do like calcareous soil.

SPECIES ON THE IUCN RED LIST

COMMON NAME	SCIENTIFIC NAME	TOTAL	RIFLE RANGE NICHE
Grass Rivulet	<i>Perizoma albulata</i>	3	grassland, pref calcareous
Blood-vein	<i>Timandra comae</i>	2	herb-rich vegetation
Brindled Beauty	<i>Lycia hirtaria</i>	1	broadleaved woodland, hedgerows & scrub
Buff Arches	<i>Habrosyne pyritoides</i>	8	open woodland & scrubby grassland
Ghost Moth	<i>Hepialus humuli</i>	32	grassland
Lackey	<i>Malacosoma neustria</i>	1	open & sunny situation
Pretty Chalk Carpet	<i>Melanthia procellata</i>	4	pref calcareous soil
Rustic	<i>Hoplodrina blanda</i>	3	herbaceous plants, eg docks & plantains
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	1	open grassland; likes calcareous soil
Shoulder-striped Wainscot	<i>Leucania comma</i>	2	grassland
Small Phoenix	<i>Ecliptopera silaceata</i>	1	pref sheltered site; likes calcareous soil
Small Square-spot	<i>Diarsia rubi</i>	1	herbaceous plants, eg docks & dandelions; likes woodland
White Ermine	<i>Spilosoma lubricipeda</i>	3	herbaceous plants, eg docks & nettles

The International Union for Conservation of Nature has classified the Grass Rivulet as Endangered because its numbers have declined by >90% (96% in fact) in the last 35 years. The other species are all classified as Vulnerable because they have all declined by 70-90% in the last 35 years. It is worth noting, however, that this is a list of global biodiversity concerns and that none of these species are currently on Britain's Biodiversity Action Plan (BAP). However, they are all, apart from Buff Arches, on the BAP Research list of rapidly declining species. It's particularly pleasing, therefore, to see high numbers of Ghost Moth.

I have included in this table the ecological niche that the Rifle Range provides each of these species. As you can see, the key features of the Rifle Range that are required by these species include: the open, yet sheltered, and sunny situation; calcareous soil; grassland; rich variety of herbaceous plants (docks seem particularly popular); scrub; broadleaved woodland and hedgerows. Many of these features are ones that are increasingly lacking in Britain.

CALCAREOUS GRASSLAND PREFERENCES

COMMON NAME	SCIENTIFIC NAME	TOTAL
Barred Yellow	<i>Cidaria fulvata</i>	20+
Blackneck	<i>Lygephila pastinum</i>	1
Buff-tipped Marble	<i>Hedya ochroleucana</i>	3
Common Carpet	<i>Epirrhoe alternata</i>	12
Common Grass-veneer	<i>Agriphila tristella</i>	4
Common Knapweed Tortrix	<i>Eucosma hohenwartiana</i>	2
Common Marbled Carpet	<i>Dysstroma truncata</i>	1
Common/Lesser Rustic	<i>Mesapamea</i>	11
Coronet	<i>Craniophora ligustri</i>	21
Garden Grass-veneer	<i>Chrysoteuchia culmella</i>	20
Heart and Club	<i>Agrotis clavis</i>	2
Riband Wave	<i>Idaea aversata</i>	2
Scorched Carpet	<i>Ligdia adustata</i>	1
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	1
Shaded Pug	<i>Eupithecia subumbrata</i>	2
Small Phoenix	<i>Ecliptopera silaceata</i>	1
Straw Grass-veneer	<i>Agriphila straminella</i>	1
Straw Underwing	<i>Thalpophila matura</i>	3
Treble-bar	<i>Aplocera plagiata</i>	2
Twin-barred Knot-horn	<i>Homoeosoma sinuella</i>	3
Barred Rivulet	<i>Perizoma bifaciata</i>	5
Black-headed Conch	<i>Cochylichroa atricapitana</i>	1
Cloaked Minor	<i>Mesoligia furuncula</i>	5
Dusky Sallow	<i>Eremobia ochroleuca</i>	60+
Dwarf Cream Wave	<i>Idaea fuscovenosa</i>	1
Ermine Knot-horn agg.	<i>Phycitodes</i>	1
Grass Rivulet	<i>Perizoma albulata</i>	3
Hoary Belle	<i>Eucosma cana</i>	2
Kent Black Arches	<i>Meganola albula</i>	8
Knapweed Conch	<i>Agapeta zoegana</i>	8
Light Brocade	<i>Lacanobia w-latinum</i>	6
Marbled Bell	<i>Eucosma campoliliana</i>	11
Meadow Grey	<i>Scoparia pyralella</i>	2
Pretty Chalk Carpet	<i>Melanthia procellata</i>	2
Satin Wave	<i>Idaea subsericeata</i>	1
Small Elephant Hawk-moth	<i>Deilephila porcellus</i>	4
Dotted Ermel	<i>Ethmia dodececa</i>	1
Red Piercer	<i>Lathronympha strigana</i>	1

The 20 species in lightest green like calcareous grassland; the 16 species in medium green prefer calcareous grassland; and the 2 species in the darkest green are calcareous grassland specialists. So 38 of 185 species (20.5%) show some level of preference for calcareous grassland. It's good to see that a few of these are quite abundant, especially Dusky Sallow. Of the two calcareous specialists, *Ethmia dodececa* eats exclusively Common Gromwell *Lithospermum officinale*, which grows on limestone. *Lathronympha strigana* eats Perforate

St John's Wort *Hypericum perforatum* and Common Bird's-foot Trefoil *Lotus corniculatus*, which prefer well-draining and calcareous soils respectively.

SUMMARY

At this early stage, we haven't surveyed very frequently or extensively, only 5 partial nights on the Rifle Range, but we have already trapped over 1095 moths of 185 species, of which 20.5% have some level of preference for calcareous grassland, and 13 species which are on the IUCN red list. We haven't carried out any control surveys so have no data to compare officially, but all the moth-ers in the group agree informally that these are both very good totals. What is particularly notable is the abundance, both overall and of several individual species; the Rifle Range is palpably rich in moths. Perhaps in the future we will be able to obtain some sound comparison data.

I have already highlighted features of the Rifle Range that contribute to these numbers, but it must also be noted that there are general, clearly favourable conditions here that benefit most species: the lack of pesticides; the variety of plants, from broadleaved woodland through scrub to herbs and wildflowers; and the diversity of vegetation height, from mature trees to closely cropped grassland.

Over the next few years, I am looking forward to adding more species to the list and starting to see trends.

With heartfelt thanks to the wonderful Charles, Matt, Chris, Olly, Terry, Colin, Alice, Oscar, Bob and the Sussex Wildlife Trust, without whom none of this would have been possible!

Kat Dahl

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