

E-moth Update May 2023

Welcome to the May edition of E-moth. Spring night-time temperatures remained low for many weeks this year, with lots of clear sky and a stubborn northerly wind.

Unsurprisingly, therefore, a scan of the Moths UK Flying tonight Facebook group revealed people across the UK and beyond were recording very few moths of very few species.

Many of us will have been pondering, when will the season arrive and moth numbers pick up?



Brimstone Moth (Mark Parsons)

As the month of May has progressed, the sun has been shining and the temperature has picked up, although reports of numbers of moths trapped remain worryingly low, particularly in gardens.

Data from iRecord have been used to determine what moths have been recorded so far this month. These (verified and accepted as correct) data show that Shuttle-shaped Dart has the most records (633), followed by Light Brown Apple Moth with 599 records and Brimstone Moth with 587 records. The top ten recorded moths so far in May 2023 are as follows:

Common name	Scientific name	No. of records
Shuttle-shaped Dart	<i>Agrotis puta</i>	633
Light Brown Apple Moth	<i>Epiphyas postvittana</i>	599
Brimstone Moth	<i>Opisthograptis luteolata</i>	587
Silver Y	<i>Autographa gamma</i>	543
Treble Lines	<i>Charanyca trigrammica</i>	490
Muslin Moth	<i>Diaphora mendica</i>	452
Hebrew Character	<i>Orthosia gothica</i>	445
Garden Carpet	<i>Xanthorhoe fluctuata</i>	314
Flame Shoulder	<i>Ochropleura plecta</i>	310
Speckled Yellow	<i>Pseudopanthera macularia</i>	289

National Moth Recording Scheme update

Data import into the National Moth Recording Scheme (NMRS) database has resumed and is happening alongside the migration of the entire Butterflies for the New Millennium (BNM) dataset, some 17 million records, to Recorder 6. Once this migration is complete, data processing and data management will be more streamlined with all data from our two major recording schemes; NMRS and BNM, being held in one central database. The NMRS currently consists of 32.9 million macro-moth records and 5.5 million micro-moth records. Many thanks to the County Moth Recorder network and their Verification Assistants for their efforts in collating and verifying local datasets for submission to the NMRS, it is much appreciated.



We encourage County Moth Recorders to submit their datasets to the NMRS as soon as possible so they are in the queue for processing and import to the NMRS.

As part of our Supporting Science outputs, Butterfly Conservation will once again be sharing NMRS data with the NBN Atlas. In future, to ensure annual updates of vice-county datasets are included in annual refreshes to the NBN Atlas, the 31 March deadline for data submission will need to be met as far as possible. In addition to this, keeping the NMRS up to date enables Butterfly Conservation, our conservation partners, and scientific researchers to use the most recent data to inform their work to help understand the changing fortunes of our moth fauna. The records you submit to the National Moth Recording Scheme are incredibly valuable and informative and we are making these data work harder than ever. The article on page 3 *The impact of climate change on cool-adapted moths* describes some recently published research that used NMRS data.

UK Moth Recorders' Meeting 2023

The UK Moth Recorders' Meeting was held virtually, via Zoom, on Saturday 28 January 2023. The recording of the meeting is available [here](#) and if you've not watched it yet, you're in for a treat!

It was a great meeting, with a super line-up of speakers. We had the usual update on the National Moth Recording Scheme, Emma Pestrige from BC's Kent's Magnificent Moths project shared some exciting news on the recording, monitoring and conservation of some of Kent's rarest moth species. She also reported impressive figures on the numerous public and community engagement activities the project has provided. Dr Jamie Alison from Aarhus University, Denmark and UKCEH shared his research findings on the role of moths as pollinators of Red Clover, adding to the growing body of literature about the importance of moths as pollinators – 'bees of the night-time'. This was followed Dr Durwyn Liley who told us about his excitement upon finding Speckled Footman in a moth trap at his office, near the Dorset Heaths. This re-invigorated the annual searches for this species, which for many years previously had been un-successful. You can read all about this in the article on page 6 of this edition of E-moth. And last, and by certainly no means least, we had Professor Eric Warrant from the University of Lund and adjunct Australian National University in Canberra, who spoke about the iconic, threatened and long-distance nocturnal

navigator, the Bogong Moth *Agrotis infusa* in Australia. This talk was absolutely fascinating, and the moth is an utter marvel of nature!

Next year's event will be held **in person** at the Birmingham and Midland Institute on Saturday 27th January. We hope you will join us for our first in-person UK Moth Recorders' Meeting since 2020. We're looking forward to seeing you all and feeling that buzz in the air! Details on how to book and the programme for the day will be revealed in due course.



Bogong Moths aestivating on cave walls (Eric Warrant)

New research: Impact of climate change on cool-adapted moths

A new study led by Butterfly Conservation, in collaboration with Northumbria University, has shown that moths adapted to cooler conditions are being lost from parts of Britain as a result of climate change. Around 10% of the macro-moth species in Britain are naturally restricted to areas and habitats with cooler climates. The majority of these species are found in northern parts of Britain, but some occur in the south too, especially in the west and/or at higher elevations. From the Atlas of Britain & Ireland's Larger Moths, 84% of these cool-adapted moths with GB distribution trends have declined between 1970 and 2016, with climate change cited as a possible cause. These species are particularly vulnerable to climate change as they may already be restricted to higher latitudes and elevations, reducing their ability to move and track climate change.

To find out more about the impacts of climate change on cool-adapted moths, the researchers used our excellent volunteer-collected data from the National Moth Recording

Scheme to identify how these moths have shifted their distributions over a 40-year period, and whether these changes are linked to temperature and precipitation.

The researchers first found that the southern limit of cool-adapted moths' distribution (i.e., the warm range edge) has retracted to higher latitudes over time. This occurs as the climate becomes less suitable at the warm edge resulting in local extinctions where these moths are already at their thermal limits. Looking more closely at these movements, the study showed that different cool-adapted moth species have moved in a variety of directions over time, but with a significant average shift towards the north-west. These species have shifted in such directions to ensure they track and remain within their historical temperature and precipitation range.



The Bog Squad are rewetting peat bogs in Scotland, this is vital work to safeguard species from climate change.

Some species in the study have become locally extinct in more southerly and easterly parts of Britain. The new study showed that local extinctions of cool-adapted moths were more likely in areas where temperatures were high. However, in these warmest areas, the threat to moths was greatly reduced when annual rainfall was also high in the area. This is believed to be because the larval host plants of these moths survive better when there is more rainfall.

These results highlight the importance of considering water availability in the landscape as part of our response to climate change. Changes in management such as reducing overgrazing, increasing tree cover, slowing rivers, and blocking drainage ditches on peatlands could help retain water and benefit moths and other wildlife, as well as increasing carbon capture and reducing flooding. Existing Butterfly Conservation projects such as the Bog Squad, which is re-wetting damaged peat bogs in Scotland, are already providing such benefits but much more is required to protect wildlife and people as the climate crisis grows.



Northern Spinach (Iain H Leach) which is declining in distribution, could benefit from management to increase water availability under climate change.

You can read the full scientific paper here:
<https://onlinelibrary.wiley.com/doi/10.1111/ele.14195>

Contributed by: Dr Lisbeth Hordley, Postdoctoral Researcher, Butterfly Conservation

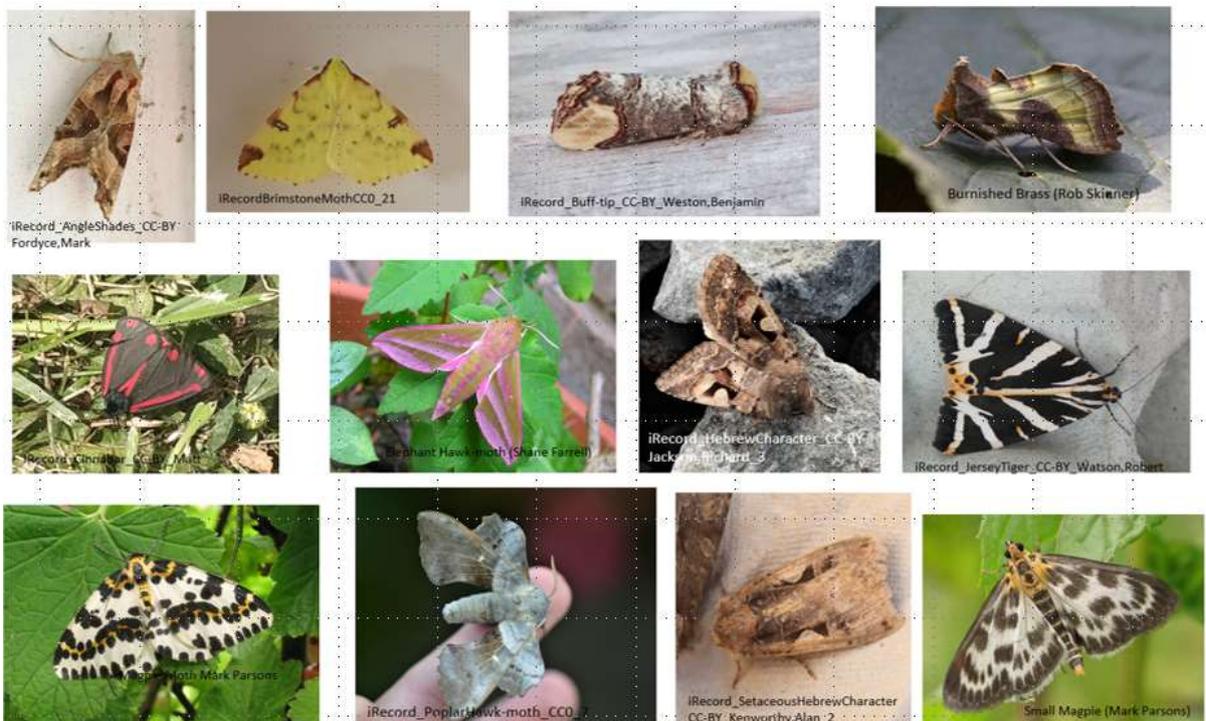
Supporting Science

We were fortunate to be awarded an extension to our grant from the National Heritage Lottery Fund for the Supporting Science project. Key outcomes from this extended delivery phase will include additional moth training.

Supporting Science has created a pathway of training courses and materials to support recorders and data volunteers. We experimented with new approaches, including online self-led courses and partnering with the Field Studies Council. In the summer we are expanding on this part of the project and we are re-running the self-led Identifying Distinctive Moths course from June. This was a really popular course last year, with 842 people completing it and 99.5% of learners saying they'd recommend the course to others. [Registration is now open](#) until 2nd July (access to the training from 4th July to 30th November). **Please share!**

Advanced training was also developed by the project last year, working with Field Studies Council. For County Recorders and existing volunteers, we ran a course to support and build iRecord skills within the verification community. And a second verification course was run for new trainee verifiers, mostly participants from the Discovering iRecord and Identifying Distinctive Moths/Butterflies courses. Following on from the training, 20 learners have since gone on to volunteer within the network as new Verification Assistants. We warmly welcome the new volunteers to the community and thank the existing volunteers who've supported this new initiative.

Next, we are going to embed the iRecord verification training content within our new volunteer training platform that will be launched in the next year. This is fantastic because it means it will be available to new or trainee volunteers on an ongoing basis and it will link up with our other systems like the upcoming volunteer database.



Twelve distinctive moth species featured in the ID training.

The Supporting Science project aims to improve data flow and better support our recorders and volunteers. We will improve access to natural heritage and grow digital skills by developing tools and collaboration. This project received DCMS and National Lottery funding, distributed by The Heritage Fund as part of their Digital Skills for Heritage initiative. We are also grateful to Henry C. Hoare Charitable Trust, Sophia Webster Ltd. and The Lochlands Trust for their support.



Speckled Footman on the Dorset Heaths

Speckled Footman is a Critically Endangered moth. Previously known across the Dorset heaths and the New Forest, little is known about its ecology and why it has declined. It seems that it has always been patchily recorded and in the 1970s there were high numbers (treble figures) caught at some sites in Dorset, yet records dwindled rapidly and with no records from the Dorset heaths at all 2014-2019 (despite some limited survey effort), it was feared extinct.

In 2019, with permission from Forestry England, we made a concerted effort to look for the moth in the Wareham Forest area, trying some of the areas where the moth had previously been recorded. Despite a large team and traps across the Forest, we failed to catch any (see James Lowen's book, *Much Ado About Nothing* for an account of the search). The following year, just as COVID restrictions lifted, it was therefore incredible to find a pristine adult male in the top of a moth trap run outside our office, on the edge of Wareham Forest.



Speckled Footman (Durwyn Liley)

That moth was a sign that the species was not extinct, yet we have run a trap at the office for hundreds of nights and over many years, so it was presumably a stray migrant from a remnant population somewhere in the broad area. In 2021, we therefore tried running traps across Wareham Forest from late June, trying different parts of the Forest each week. Amazingly, we caught 20 Speckled Footman, with records clustered in a particular area. The following year we increased the total further and found the moths over a wider area, however we failed to find any caterpillars and were still unclear as to why the moth was so patchy and elusive.



Speckled Footman larva (Durwyn Liley)

In January 2023, things changed when Tony Davis from Butterfly Conservation, joined the searches for larvae and following his critical insight, after looking at several areas in the forest over a number of hours, we found several larvae in one small area. Subsequent searches have led us to locate a relatively small and discrete area with large numbers of caterpillars (maximum count of 90 in a relatively short time). The area is a south facing slope of dry heathland and includes areas of open bare ground where tree clearance has taken place as well as mature/degenerate heather and a range of plants. We have been following the caterpillars through the year and because of this significant find we are beginning to get a better insight to the habitat requirements of the species. Working with other individuals and organisations we are trying to identify other similar areas to search in the future in the hope of securing the moths longer-term future in this country. With the help of several people other Dorset heathland sites with similar habitat have already been checked for larvae this spring but with no luck, although one or two may be investigated later this year with light traps.

The trapping and larval searches have been a team effort and thanks go to Tony Davis and Mark Parsons in particular. Thanks also to staff at Amphibian and Reptile Conservation (ARC), Dorset Environmental Records Centre, Dorset Wildlife Trust, Forestry England, Natural England and RSPB.

Contributed by Dr Durwyn Liley, volunteer moth recorder and Director of Footprint Ecology

Re-discovering the Irish Plume *Platyptilia tesseradactyla*

The Irish Plume is one of Ireland's most rare and threatened of species, listed in the Northern Ireland Micro Moth Species Report and Butterfly Conservation's Threatened Species list. It has two known breeding locations: the Burren, Co. Clare and the limestone grasslands and pavements of West Fermanagh, Northern Ireland.

Records are scant for this scarce moth, so it was an ambitious but hopeful small group of recorders that spent an evening in June 2022 putting out a range of traps at a site where the most recent record for Northern Ireland was taken 17 years previously.



Irish Plume *Platyptilia tesseradactyla* (Rose Cremin)

The weather conditions were good albeit the habitat was showing signs of under-grazing and disappointingly, we didn't locate the Irish Plume. We packed up, and after some debate, we agreed to visit another part of the site to try sweep-netting and visual checks, despite it being a bit cool and breezy. Habitat condition here was more favourable and we spread out to check the foodplant, Mountain Everlasting.

On the return of a sweeping-walk of the area our target was found by a recorder who has 'good form' for this sort of thing. The County Recorder was present and confirmed the sightings of eight individuals of this Irish rarity. A rewarding find for the effort made by all!

Contributed by Rose Cremin, Senior Conservation Officer, Northern Ireland

Notes from the far North-west



Belted Beauty (John Kemp)

The first three months of the year on the Outer Hebrides are usually very quiet on the moth front due to mostly uncooperative weather. Winds and rain or cold nights after a rare calm sunny day. I'm very envious of the mainland moth-ers who are already notching up a decent list of species.

We trapped up four Dotted Borders in February and two Pale Brindled Beauty, the latter from their only known site on the islands. It's so easy to miss them if the weather is poor during its flight period. The same may be said for the Mottled Grey on 2nd March, last recorded on 1st March 2012. Belted Beauty is one reliable early species, first three examples found on South Uist coastal fence posts during a sunny day on 5th March. A mix of other species so far have included four Early Grey, two Red Sword-grass, a few Hebrew Characters and three Double-striped Pugs. Early micros now out from hibernation include an



Acleris hastiana (John Kemp)



Mottled Grey (John Kemp)

Agonopterix ocellana on 31st March and *Acleris hastiana* on 5th April. At the time of writing the weather forecast for the coming week doesn't inspire any optimism!

Contributed by John Kemp, micro-moth recorder, Outer Hebrides.

BC Symposium 2023

Butterfly Conservation's ninth International Symposium made a welcome return after five years. The event was held at Wyboston Conference Centre, Bedfordshire from 13 - 16 April 2023, with the theme: Conserving Lepidoptera in a Changing World. The latest science on the ecology of moths and butterflies, and how to conserve them and their habitats, in light of the numerous drivers of change were featured.

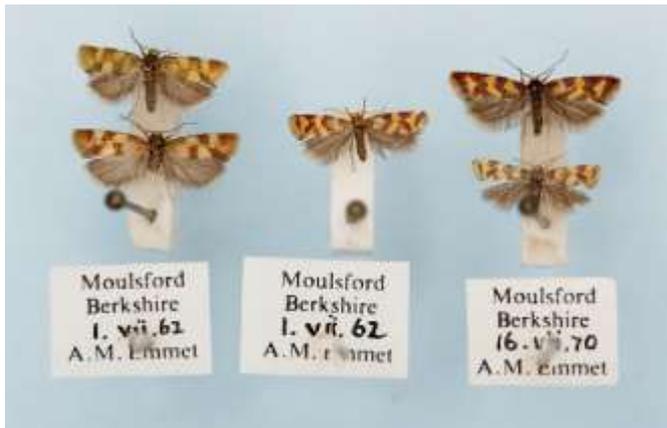
It was great that moths were featured in 30% of talks this year, a huge increase on previous symposia. An entire afternoon session was dedicated to the impact of light pollution on moths and other pollinators, this area of research is growing rapidly. BC's Max Anderson presented his work on pollination of brambles by moths, here is a link to his [blog post](#). In addition to this, the growing use of Artificial Intelligence and machine learning to identify moths was a very interesting session. A special edition of the Journal of Insect Conservation will be published in spring 2024 which will feature much of the research presented at the Symposium.



BC Symposium 2023 (Richard Fox)

Traveling back in time for a Berkshire micro-moth

Earlier this year, Mark Young contacted me in connection with a project on Priority Micro-moth verification that he has been conducting for Butterfly Conservation and JNCC. Mark was enquiring about the tortrix species *Aethes rutilana* (Juniper Conch). This attractive small moth feeds on Juniper. It has long been considered to occur in Berkshire, with county records being [mapped by Maitland Emmet](#) and mentioned in the Ray Society volumes on Tortricidae by Bradley, Tremewan and Smith; it was also listed in Brian Baker's 1994 book on the county's moths. The location was given as "Moulsford and Thurle Down". However, these sources were not clear about exactly who recorded the moth and when, making it difficult to consider the record as fully verified.



Maitland Emmet's Berkshire specimens of *Aethes rutilana*, from his collection now held at BENHS (Jon Cole)

I was initially unable to shed any further light on this, but my Berkshire colleagues Jon Cole and Ian Sims were able to check Maitland Emmet's moth collection, most of which is held at the headquarters of the British Entomological and Natural History Society (BENHS) in Reading. This also turned out not to be straightforward, as the tortrix specimens were not stored in the expected sequence, but Jon and Ian persevered. And the result was the discovery of three specimens of *A. rutilana* that Maitland Emmet had collected in Berkshire in 1962, 1963 and 1970, the latter record being later

than any date mentioned elsewhere and making Berkshire the location of the last-known specimen of this moth in southern England. The location is given on the data labels as just "Moulsford", which is assumed to refer to the Moulsford Downs area, part of which is a SSSI, and which used to support Juniper although it is not clear if the plant survives on the site.

So, Mark's original query about this moth prompted some useful detective work, and this has once again shown the importance of maintaining well-curated collections, thanks to BENHS on this occasion. We now have fully confirmed and better-documented records for the county, although sadly it seems very unlikely that this lovely moth survives in southern England. Fortunately, it is known from a small number of locations in Scotland so is not lost as a UK species.

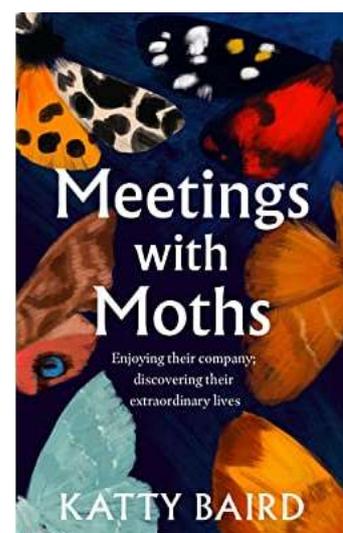
Contributed by Martin Harvey, County Moth Recorder, Berkshire

Meetings with Moths

My book, *Meetings with Moths*, has just been published! It is, of course, about moths.

More story than textbook, each chapter covers a different aspect of a moths' natural history, told through various encounters I and those I meet have had. From my own underground adventures for Heralds to tales of historic greats such as Fabre and Kettlewell and moth science from modern-day researchers, I've tried to include as much as I can about the fascinating lives of my favourite insects.

It is aimed primarily at those who don't know much about moths. My hope is to inspire and encourage new people to notice and become more curious about the wonderful world of moths that can be found all around us. However, even if my stories tell you nothing you didn't already know, they might bring back happy memories of your own early days spent in the field chasing after elusive species. For any questioning friends and family, it will provide a little insight into what moths are all about and why seeking them out can be so rewarding.





Katty with a Puss Moth

But Meetings with Moths is not just about the lives of moths. For me, the landscapes I've visited and the moth enthusiasts I've met have been an important part of my experience. If you've ever wondered what Zoë Randle's favourite (and least favourite) moths are, how Roy Leverton first attracted Small Elephant Hawk-moth to his Scottish croft or where Nigel Voaden was when he first got into moths: Meetings with Moths will tell you all these things, and more.

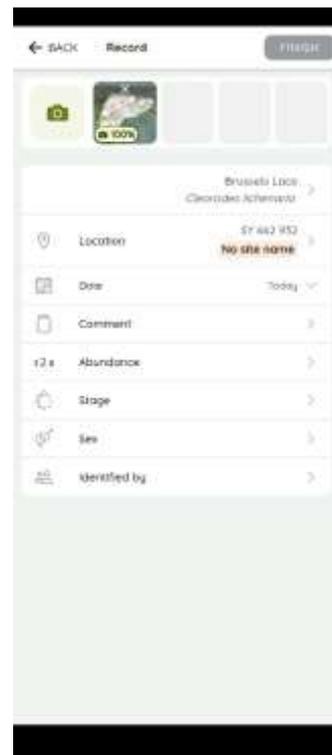
[Published by 4thEstate](#), it is available from all the usual booksellers.

Contributed by Katty Baird, volunteer moth recorder, East Lothian

iRecord app update – photographic recognition

The iRecord app has undergone a significant update and now includes automated image recognition in the general iRecord survey form. This new feature can be a helpful identification aid for people new to moth recording. Although, we would encourage double checking flight times, distributions and similar species in your field guide as even apps make mistakes! We're interested in hearing your views on this new feature, so please do try it out over the season. We will be asking for and collating feedback in the autumn.

Other update features include in-app verified record notifications; a map view of user records; image cropping functionality; and an updated species dictionary. Further information can be found [here](#).



JNCC would love to hear your thoughts on habitat recording!

Habitat information is important for conservation, so JNCC would like to explore the feasibility of increasing the amount of it collected by you, as volunteer citizen scientists. JNCC would very much appreciate if you are happy to contribute your thoughts on habitat recording through these two surveys to help them to design interesting and useful solutions for recording habitat.

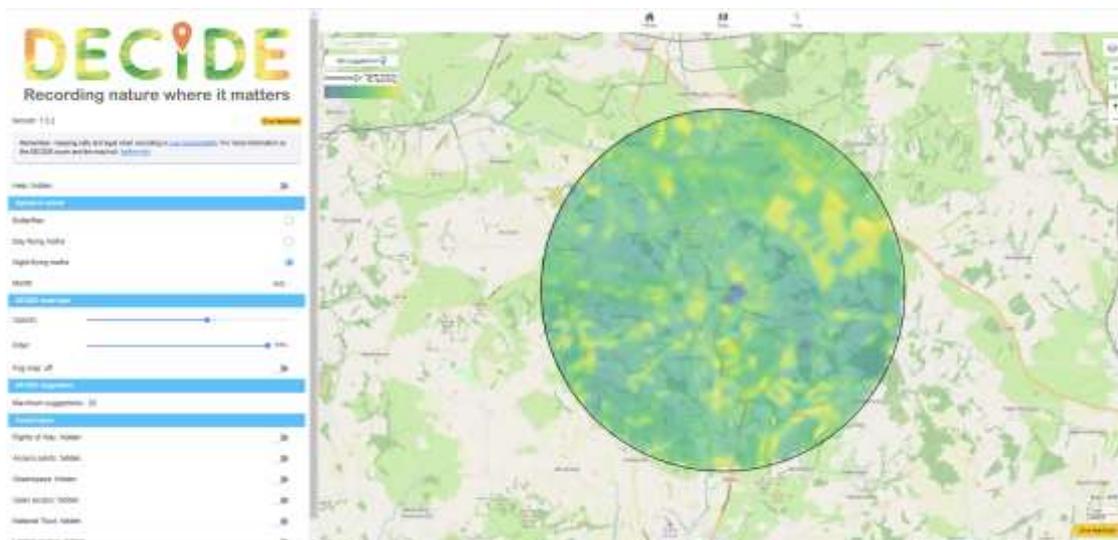
The first survey will help JNCC to understand perceptions about recording habitat information. It can be found [here](#), and should take no longer than 10 minutes to complete. You must be aged 18 or over and based in the UK.

The second aims to understand the user-friendliness of a new app for recording habitat data, which is one of several options being explored to help volunteers collect habitat data in the UK. It can be found [here](#). You will need to download and test the app before you can fill in the survey (see instructions at the start of the survey itself). Testing the app should take no longer than 5 minutes once you are in your chosen location with the app downloaded and have GPS signal. Filling in the survey should take no longer than 5 minutes. You must be aged 18 or over but can be based anywhere in the world. Thank you in advance for your views!

DECIDE- square bashing for the 21st Century

Although the DECIDE project has come to an end, the [DECIDE tool](#) is still available for you to use to collect records from places where they will be of most value in improving Species Distribution Models. This [blog post](#) explains why SDM's are important and presents some case studies of where SDMs have been used or where they could be useful.

The tool includes layers for day-flying moths, nocturnal moths and butterflies. If you're looking for inspiration for somewhere new to record, or are going on holiday with your moth trap, check out the DECIDE tool. The screen shot below shows the DECIDE map with the priority areas (yellow shading) for nocturnal moth records in the Beaminster, Dorset, area during July.



Sign up to Science News

Butterfly Conservation publishes a twice-yearly email newsletter that explores the wide range of science that we are involved in and explains how we are applying this to our conservation projects. The valuable data that you collect is our evidence base and is used to inform our conservation action. We work in collaboration with universities and other organisations around the world to produce scientific research to undertake conservation action. You can find out more or subscribe to Science News [here](#).



Rosy Footman (Patrick Clement)

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