

Recording and Monitoring

Zoë Randle, Senior Surveys Officer

Megan Lowe & Ian Middlebrook



**Butterfly
Conservation**

Saving butterflies, moths and our environment

Small Copper (Will La

Talk overview

Recording Schemes:

National Moth Recording Scheme (NMRS)
Butterflies for the New Millennium (BNM)
(BBC, Garden Butterfly Survey, Moth Night & Migrant Watch)

Monitoring Schemes:

UK Butterfly Monitoring Scheme (UKBMS)
Wider Countryside Butterfly Survey (WCBS)



Patrick Clement



David Dennis



Robert Thompson



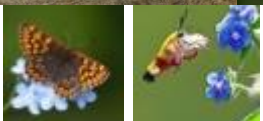
David Dennis



Robert Thompson



David Dennis



BC's overarching recording schemes



Established in 2007

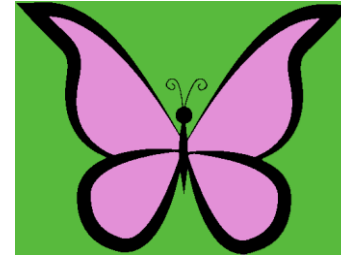
UK, Isle of Man & Channel Islands

c.900 macro-moths
(April 2016 + c.1,500 micro-moths)

32 million macro-moth records

3 million micro-moth records

1741 – 2020 (279 years)



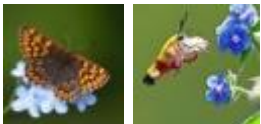
Established in 1995

UK, Isle of Man & Channel Islands

c. 59 species

15.9 million records!

1690 – 2019 (329 years)

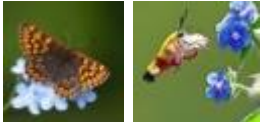
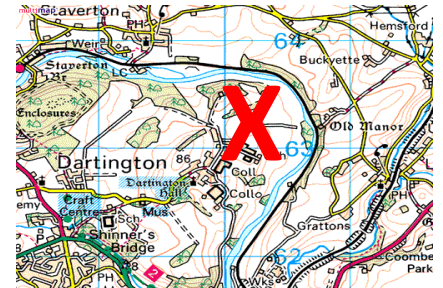


What is a recording scheme?

Depository for biological records

What is a biological record?

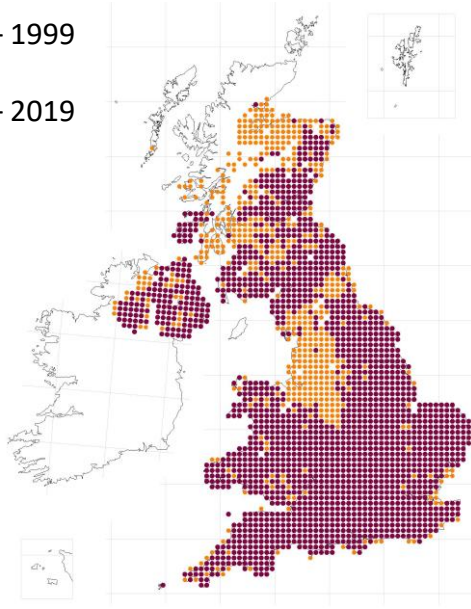
- Species
- Recorder and determiner
- Date (the night the trap was run)
- Grid reference and location



Distribution maps



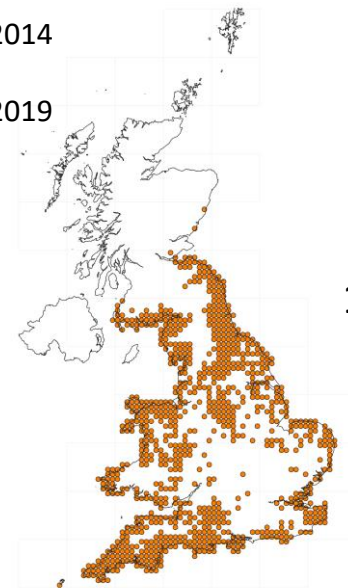
- 1995 – 1999
- 2015 – 2019



63%
1976 – 2014



- 1995 – 2014
- 2015 – 2019



-77%
1976 – 2014

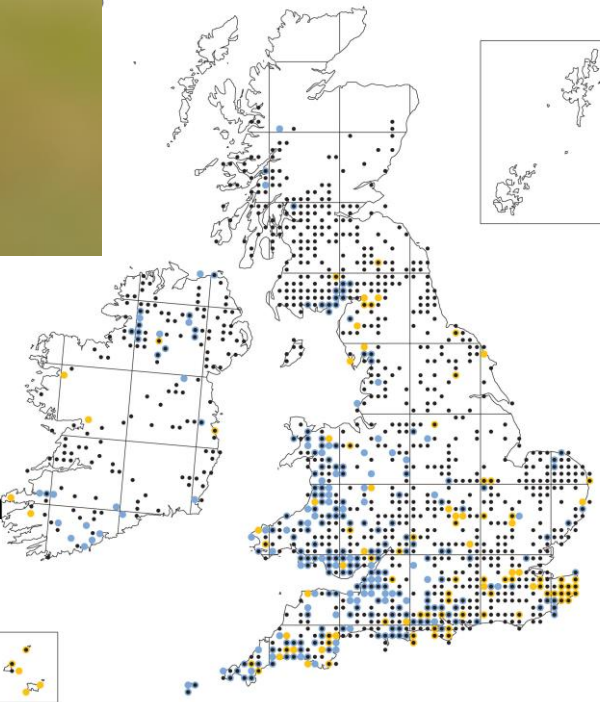


Distribution maps

Red-necked Footman (Iain H Leach)



- Pre 1970
- 1970-1999
- 2000 onwards



66%

GB distribution
trend
(1990 – 2016)

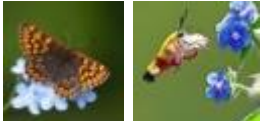
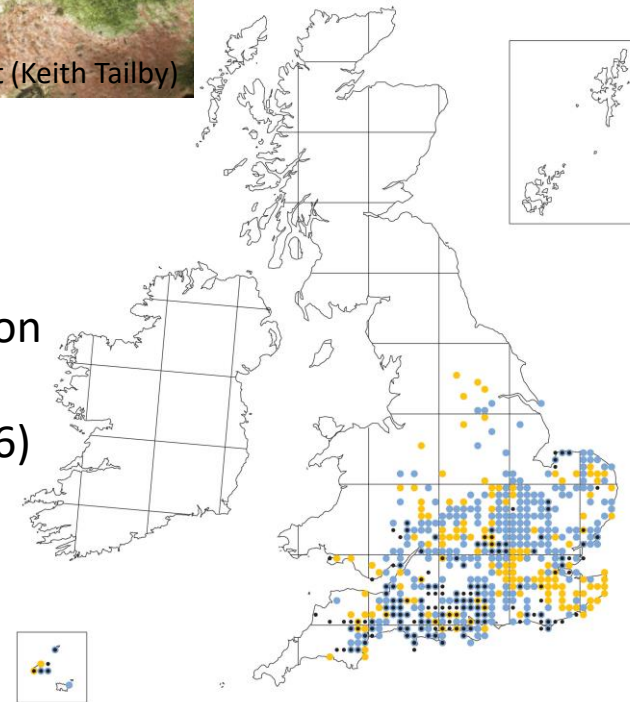


Lappet (Keith Tailby)

- Pre 1970
- 1970-1999
- 2000 onwards

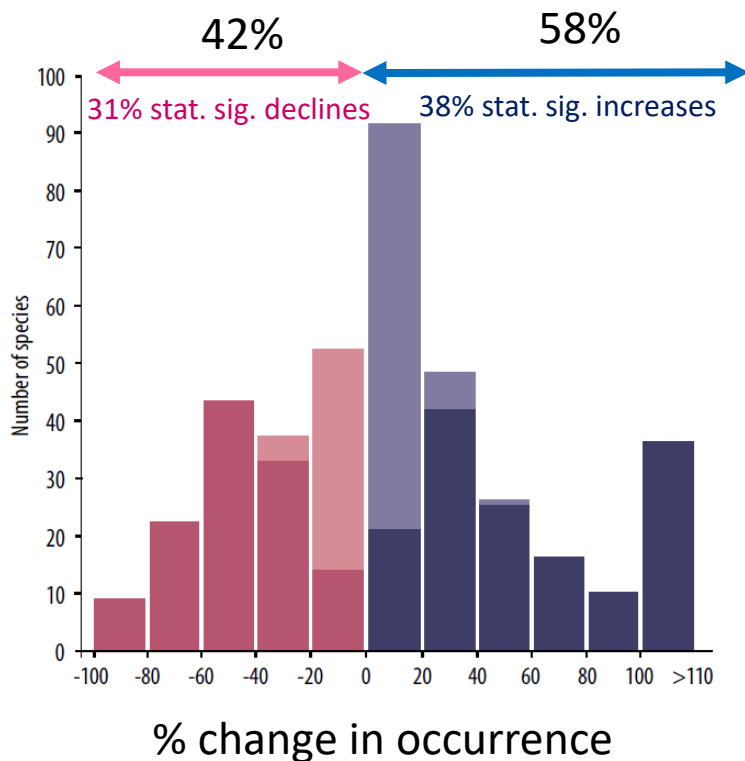
-61%

GB distribution
trend
(1980 – 2016)

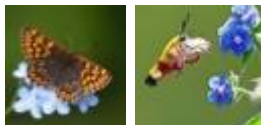
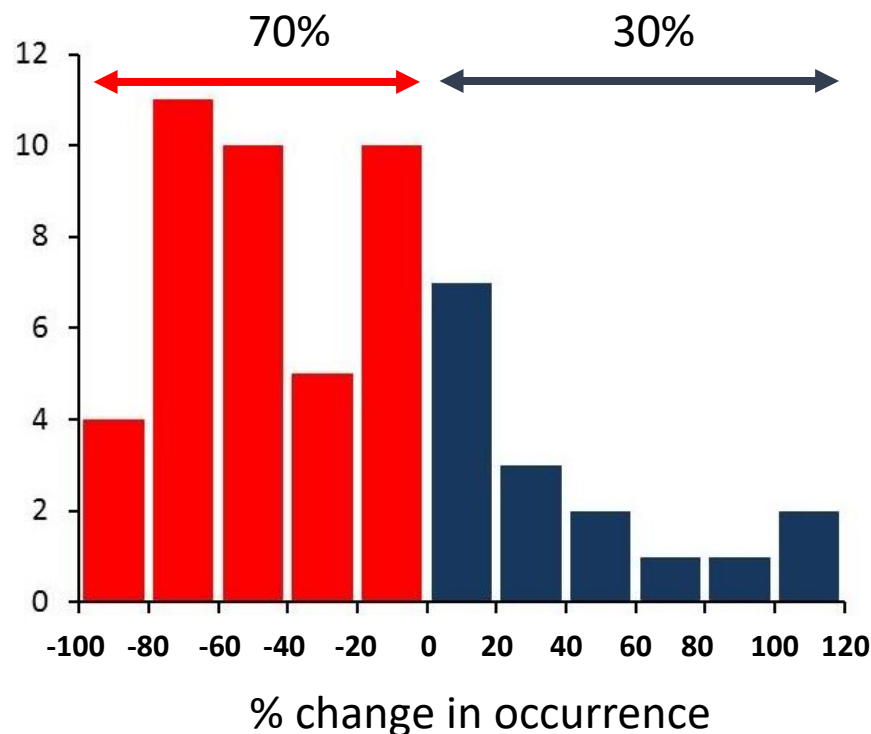


Long-term distribution trends

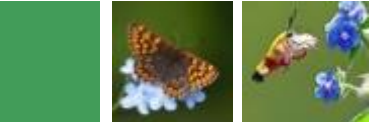
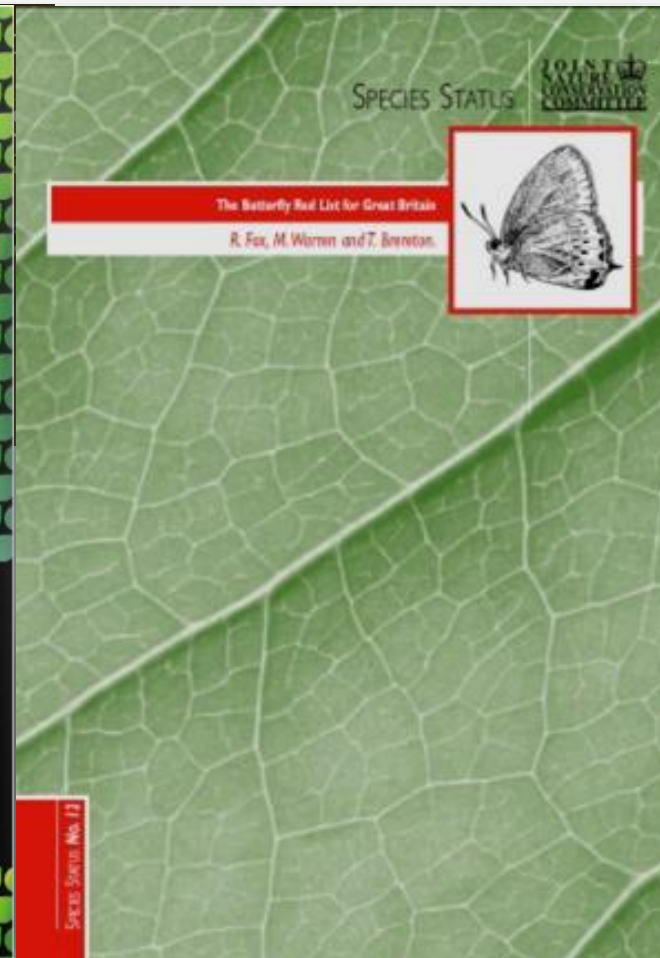
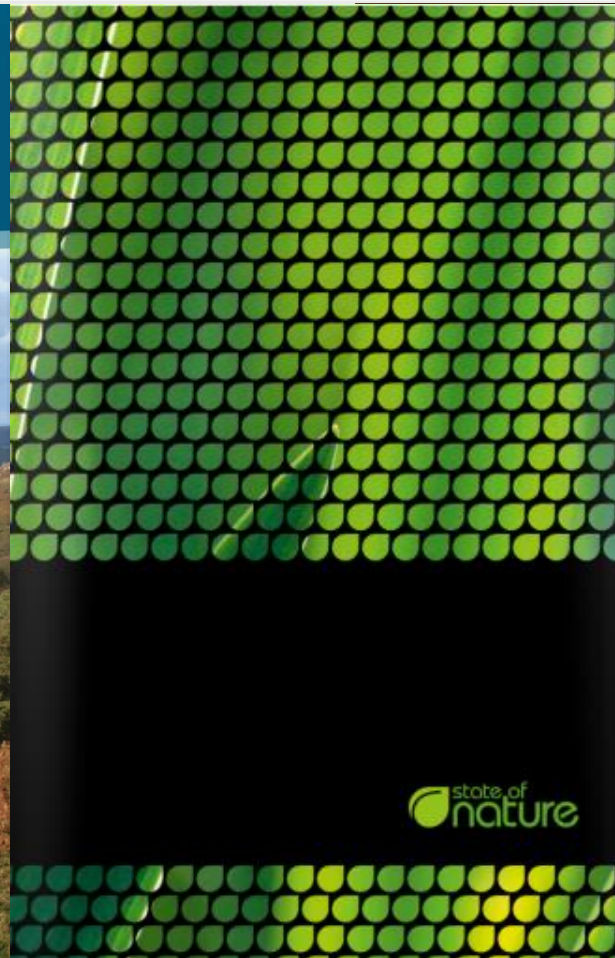
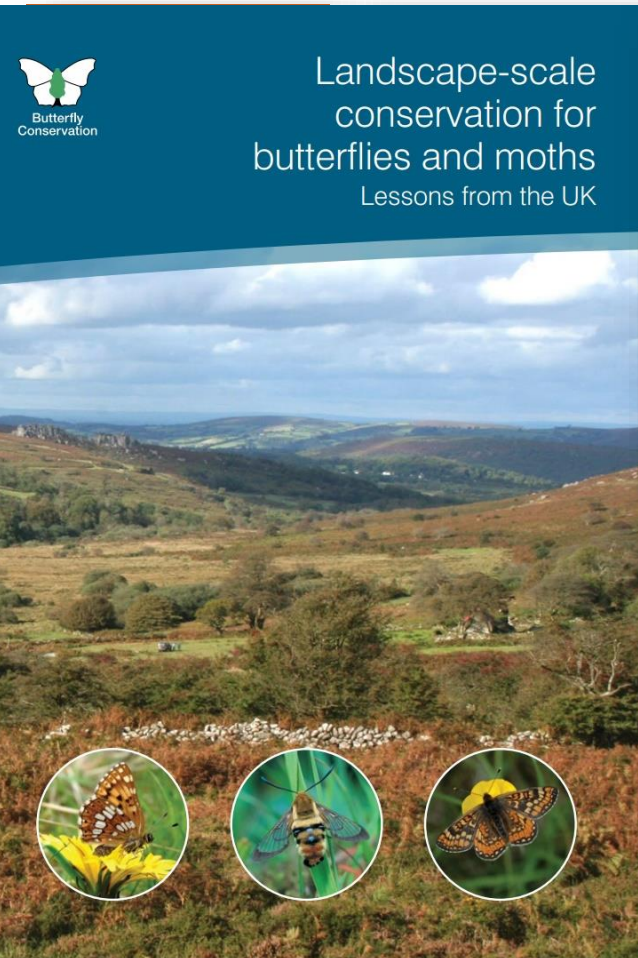
Moths long-term trends (1970-2016)



Butterflies long-term trends (1976-2014)



NMRS and BNM outputs (and inputs)



NMRS and BNM data users



Cyfoeth Naturiol Cymru
Natural Resources Wales



**Forestry and
Land Scotland**
Coilltearachd agus
Fearann Alba



NatureScot

Scotland's Nature Agency
Buidheann Nàdair na h-Alba



Forestry Commission



Northern Ireland
Environment
Agency

www.daera-ni.gov.uk



JNCC

Joint Nature Conservation Committee



defra

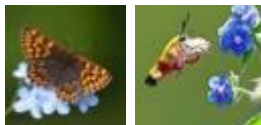
Department for Environment
Food and Rural Affairs



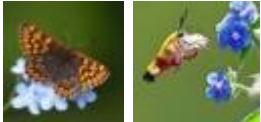
**Butterfly
Conservation**

Saving butterflies, moths and our environment

NMRS and BNM scientific papers



NMRS and BNM informs



Online data capture



Butterfly recording is the foundation for protecting these beautiful animals. Simply by submitting your sightings of butterflies to the UK recording scheme, Butterflies for the New Millennium, whether from garden buddleia, local walk or remote mountain top, you can make a real contribution to their conservation across the UK. More information about Butterflies for the New Millennium.

All new users of this BNM Online portal will need to [create a new account](#).

This portal links to iRecord. If you want to link to an existing iRecord account (for example if you use the iRecord butterflies app) then simply **use the same email address when you create your BNM Online account**.

Records submitted via this system are publicly available to view through iRecord. To find out more about what happens to your records, click [here](#).

If you already submit your records to your County Butterfly Recorder via another route then please continue to do so. This will help to avoid duplication of data.

Try our mobile app for recording butterflies by clicking on one of the links below.



Login

Username*

zoo rande

Password*

☐ Remember me

[Log in](#)

[Create new account](#)

[Reset your password](#)



Moth recording is the foundation for protecting these beautiful animals. Simply by submitting your sightings of moths to the UK's National Moth Recording Scheme, whether from kitchen window, back garden moth-trap or remote mountain top, you can make a real contribution to their conservation across the UK. More information about the National Moth Recording Scheme.

All new users of this NMRS Online portal will need to create a new account.

This portal links to iRecord. If you want to link to an existing iRecord account (for example if you use the iRecord app) then simply use the same email address when you create your NMRS Online account.

Records submitted via this system are publicly available to view through iRecord. To find out more about what happens to your records, click [here](#).

If you already submit your records to your County Moth Recorder via another route then please continue to do so. This will help to avoid duplication of data.

Username*

Password*

[Log in](#)

[Create new account](#)

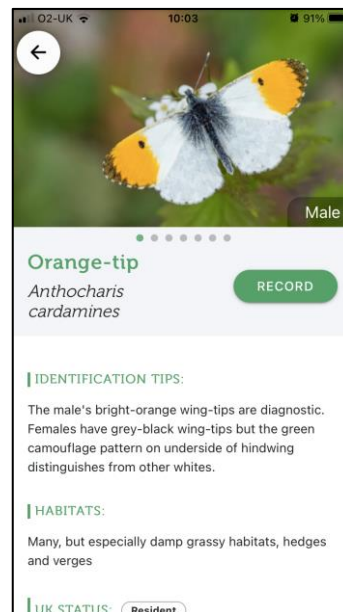
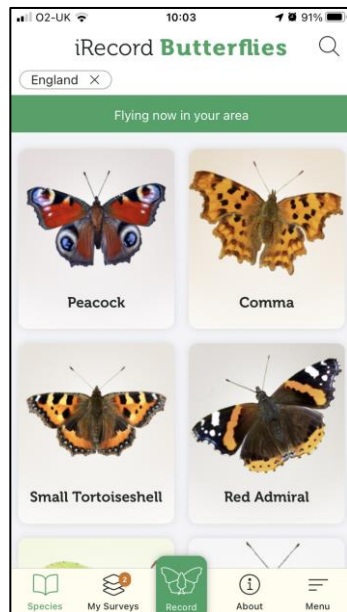
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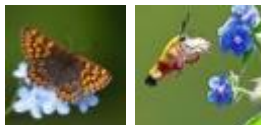


iRecord Butterflies app: re-development

- > 510,000 butterfly records submitted to BNM
- > 14,300 different people since its launch in 2014



UK Centre for
Ecology & Hydrology



Local data capture: the County Recorder Network

Volunteers

Local experts

Encouraging recording

Promotion of moths and butterflies

Feedback to recorders

Collation of local datasets

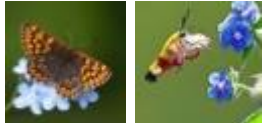
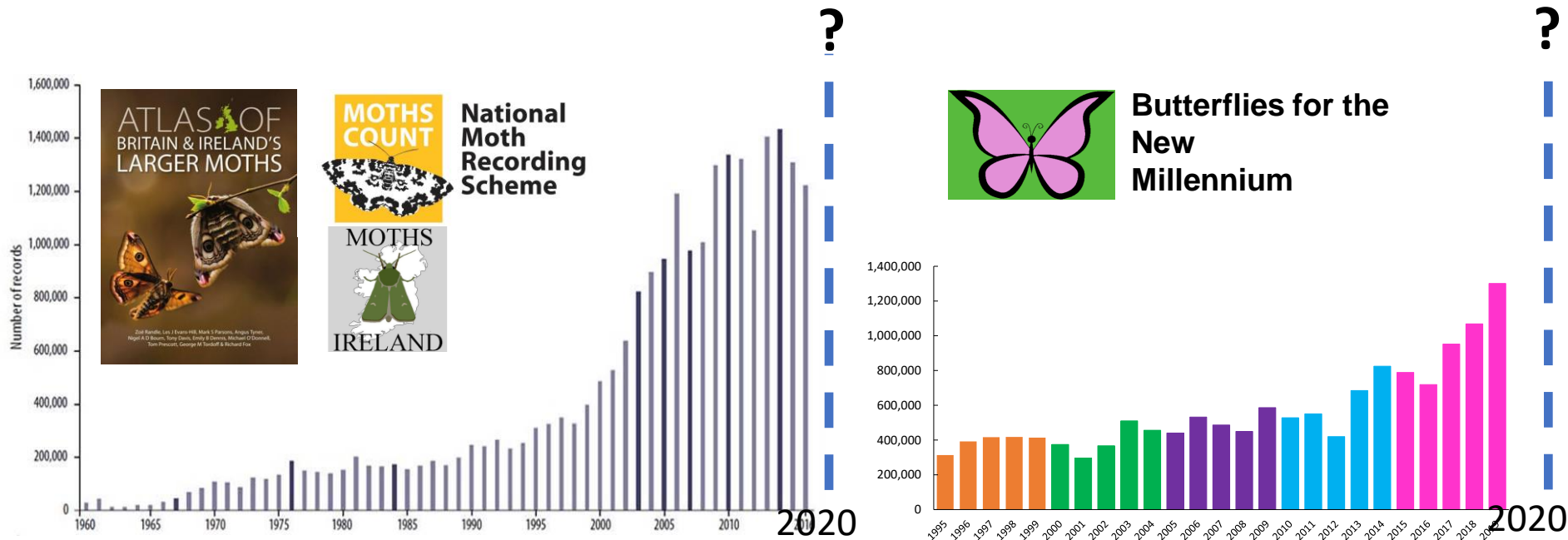
Verification of records

Submission of records to NMRS and BNM
(and other places in some cases)

.....and often loads more...!



Growth in moth and butterfly recording



Supporting Science



rconway@butterfly-conservation.org



Training for County Recorders
and or their assistants

Find your County Recorder tool on BC website

County Recorder tool-kit:

Software training, County Recorder guidance,
best practice guidance & verification portal



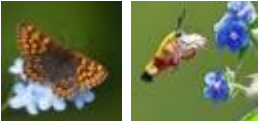
Culture
Recovery Fund
for Heritage

The
National Lottery
Heritage Fund

Historic
England



Department for
Digital, Culture,
Media & Sport



Butterfly
Conservation
Saving butterflies, moths and our environment

Supporting Science

Engaging new audiences:

Black2Nature – Mya-Rose Craig AKA Birdgirl

Black Environment Network

Local mental health groups

A Focus on Nature AFON – Youth Nature Network

Redevelopment of Garden Butterfly Survey website

Succession planning – training and mentorship with County Recorders to build teams

iRecord training- verification of species with photographs

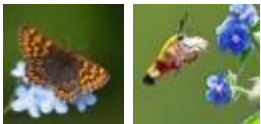


The
National Lottery
Heritage Fund

Historic
England



Department for
Digital, Culture,
Media & Sport



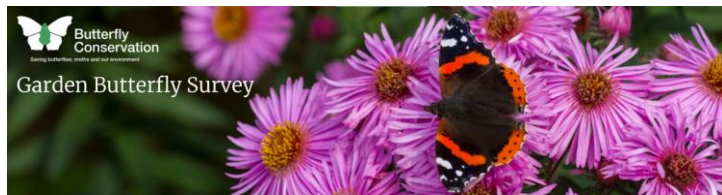
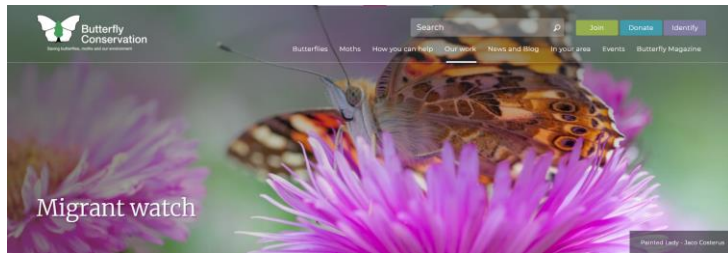
Citizen science surveys that contribute to NMRS and BNM

mothnight
8-10th July 2021

Home About Moth Night Themes Taking part Public Events Prizes
Submitting records Essential reading Moth Night Reports Useful links Contact us



8th - 10th July Reedbeds and Wetlands




Garden butterfly sightings logged monthly
throughout year, 1,344 gardens (2020)

Ideal next step for Big Butterfly Count participants.



Big Butterfly Count



Filters

Filter by boundary...

From: To:

Filter by species...

CLEAR ALL FILTERS


Stats

Number of counts	152,035
Number of citizen scientists	107,195
Number of butterflies	1,392,426


Top 5 Butterflies

1. Small White	279,388
2. Large White	255,271
3. Meadow Brown	208,367
4. Gatekeeper	141,932
5. Red Admiral	94,911

18:52 4G 53%



Butterfly Conservation's **BIG BUTTERFLY COUNT**



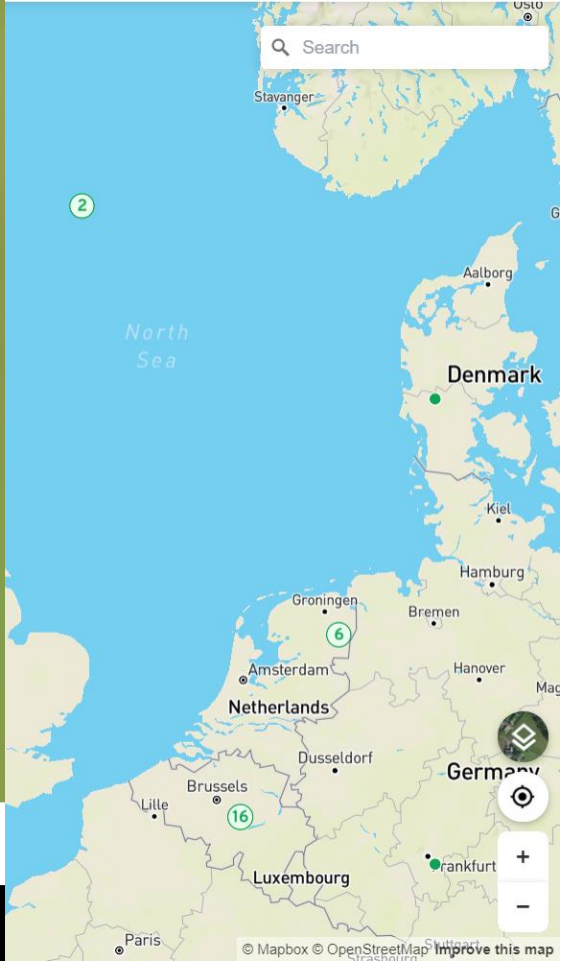
Start counting >

HOME MAP RECORDS ID GUIDE MORE


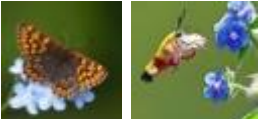
mapbox

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© Mapbox © OpenStreetMap Improve this map



Butterfly Conservation
Saving butterflies, moths and our environment

Big Butterfly Count 2021

BIG
BUTTERFLY
COUNT

152,215 counts submitted

>1.2 million butterflies (and moths!) counted

38,053 hours counting butterflies = 4 calendar years!



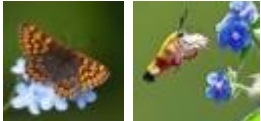
Jersey Tiger (Mark Parsons)



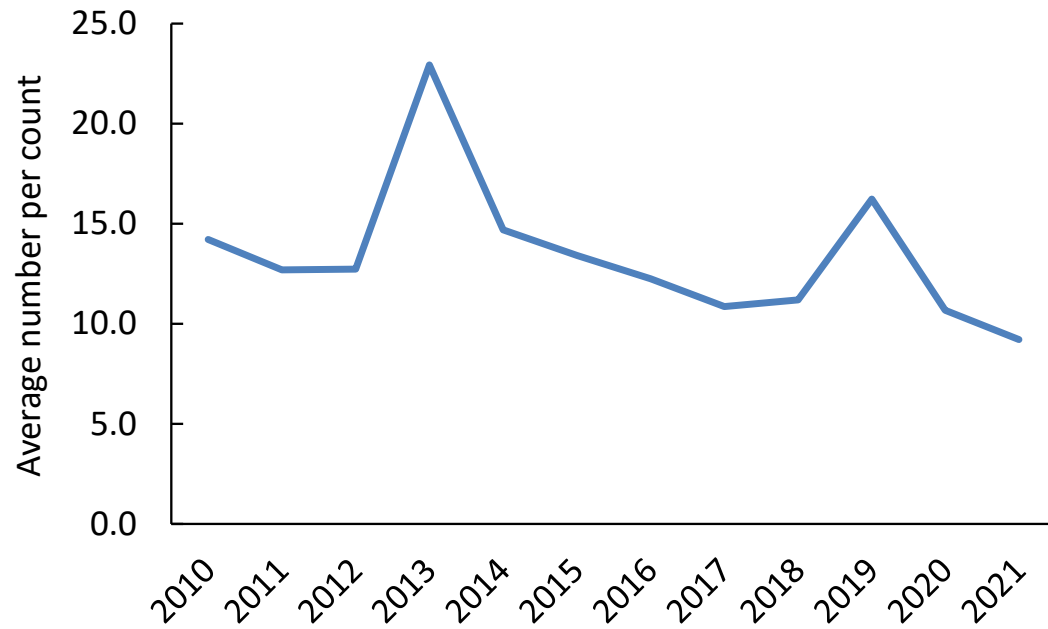
Scotch Argus (Iain H Leach)

DFN
Charitable Foundation

Vivara.co.uk
Garden Wildlife Specialists
vivara



Big Butterfly Count 2021 overall species results



Conservation Biology

Contributed Paper

Using citizen science butterfly counts to predict species population trends

Emily B. Dennis^{1,2*}, Byron J.T. Morgan,¹ Tom M. Brereton,² David B. Roy,³ and Richard Fox²

¹School of Mathematics, Statistics and Actuarial Science, University of Kent, Canterbury, CT2 7FS, U.K.

²Butterfly Conservation, Manor Yard, East Lulworth, Wareham, BH20 5QP, U.K.

³Centre for Ecology & Hydrology, Benson Lane, Crowmarsh Gifford, Wallingford, OX10 8BB, U.K.

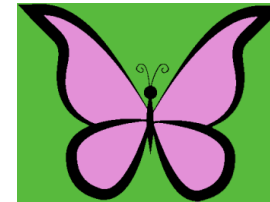
BIG
BUTTERFLY
COUNT



UK Butterfly
Monitoring Scheme



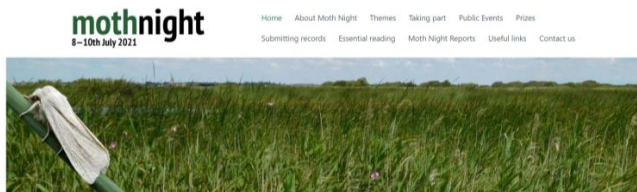
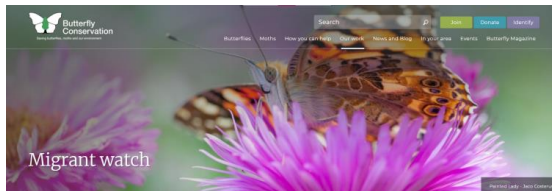
Schemes and data sources - summary



**Butterflies for the
New
Millennium**

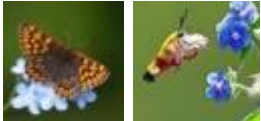
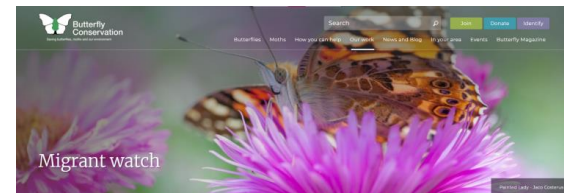
County Moth Recorders

**BIG
BUTTERFLY
COUNT**

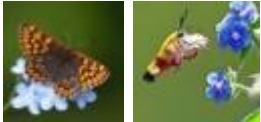
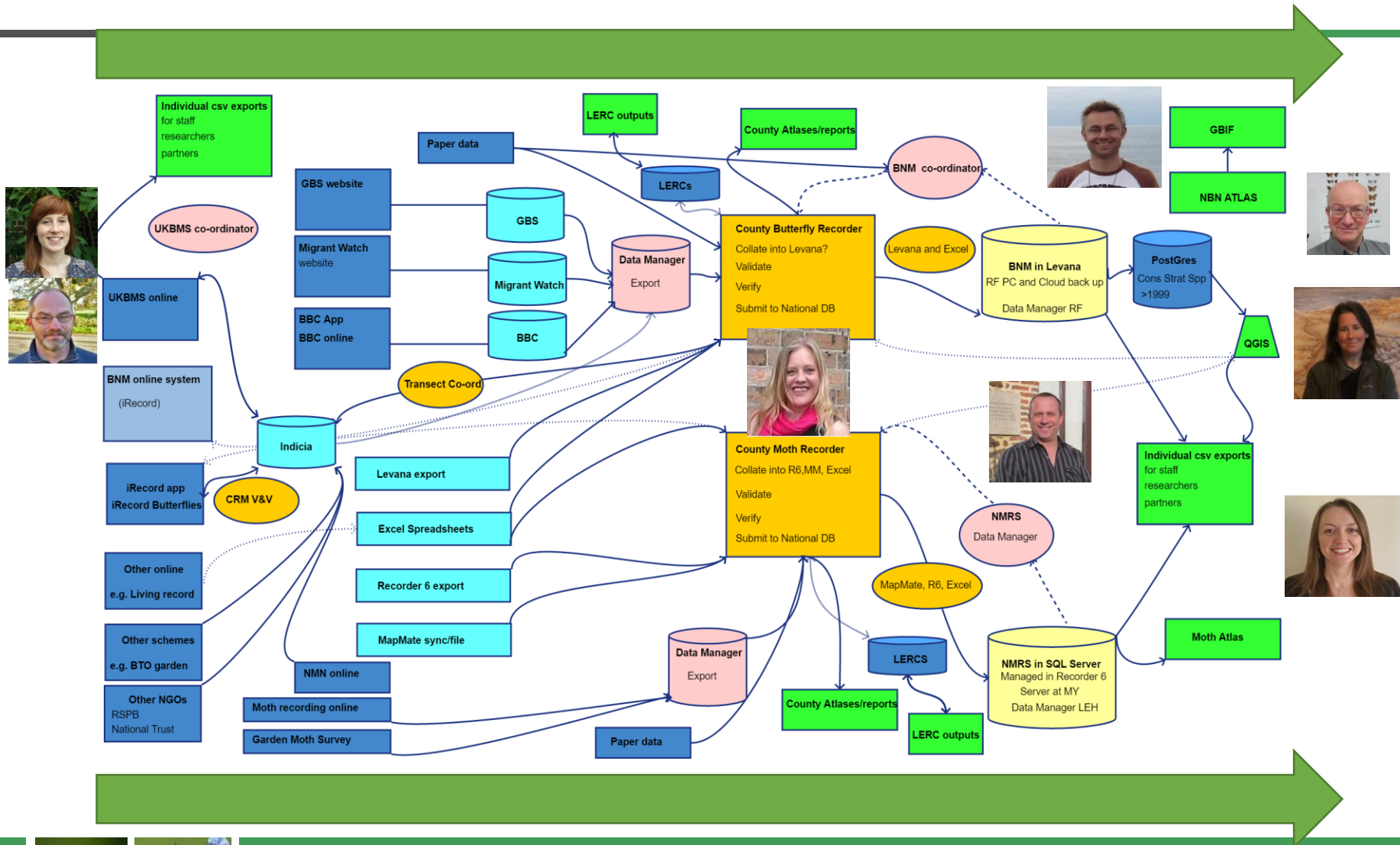


County Butterfly Recorders

**BIG
BUTTERFLY
COUNT**



Data flow – a bit messy!



Data flow – tidier!



Chloë Smith - Head of Biological Data

Data Review Recommendations

September 2020

Katie Cruickshanks, Senior Data Ecologist

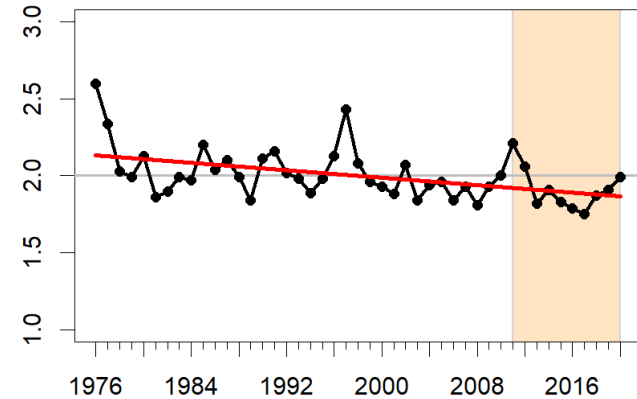




Mother Shipton (Mark Parsons)

Butterfly Monitoring

- What is monitoring:
- (verb) to *observe* and check the progress or quality of (something) *over a period of time*; keep under systematic review.
- For butterfly monitoring, we *observe* their abundance, *over a period of time*.
- This tells us whether they are increasing or decreasing (where and by how much).

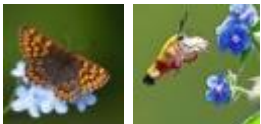


Butterfly Monitoring

- Monitoring Butterflies = UKBMS
- Collecting data through the UK Butterfly Monitoring Scheme



- UKBMS Data requirements:
 - annual indices which represent relative abundance
 - collected by applying strict field methods
 - to sample a consistent proportion of the population
 - allowing year-on-year comparisons

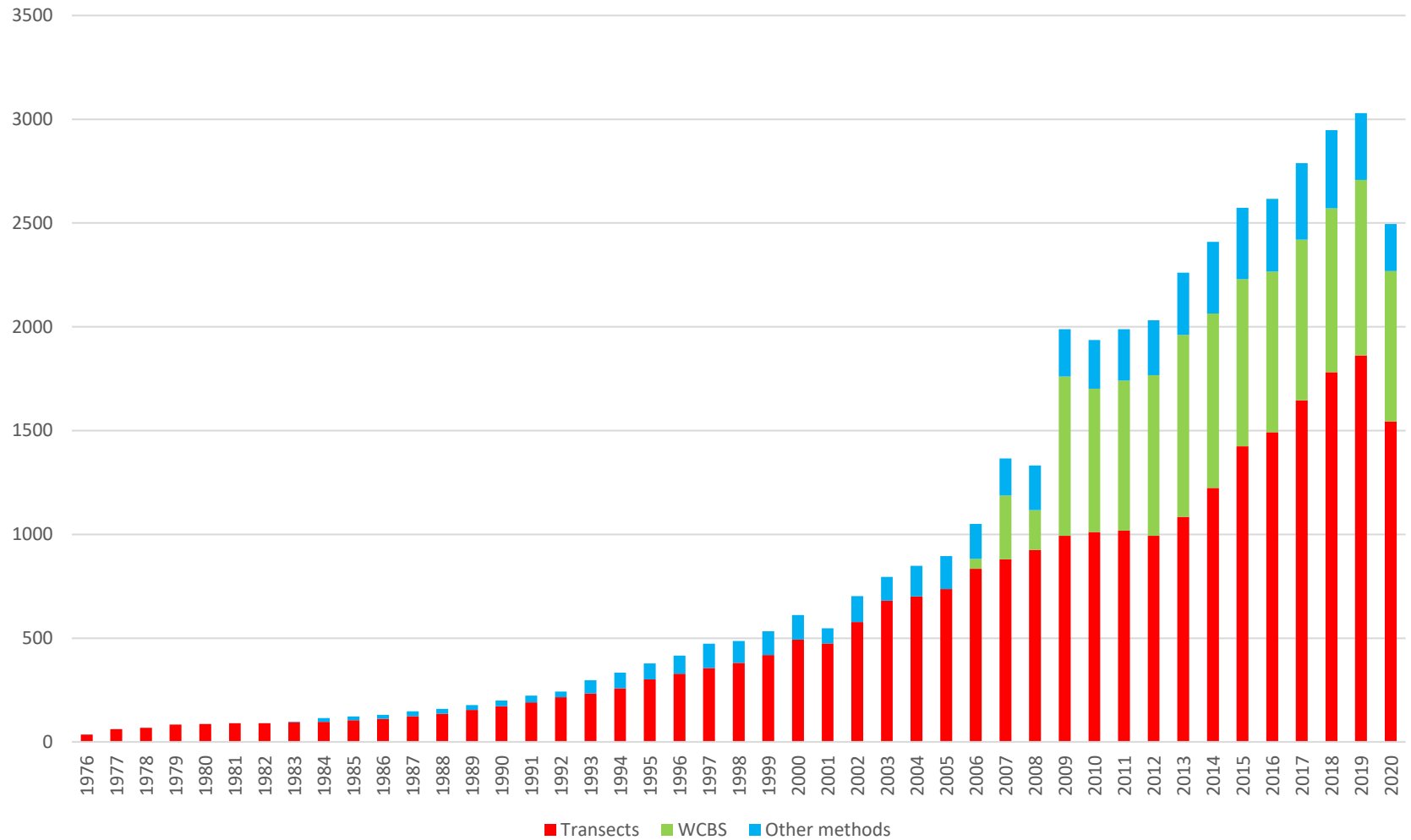


Butterfly Monitoring

- What field methods?
- Traditional butterfly transects (also known as Pollard Walks)
the gold standard, weekly walks, data back to 1976
- Wider Countryside Butterfly Survey (WCBS)
more to come from Megan
- Non-transect methods for priority species
(e.g. timed counts, larval web counts, egg counts)

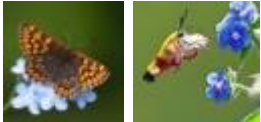
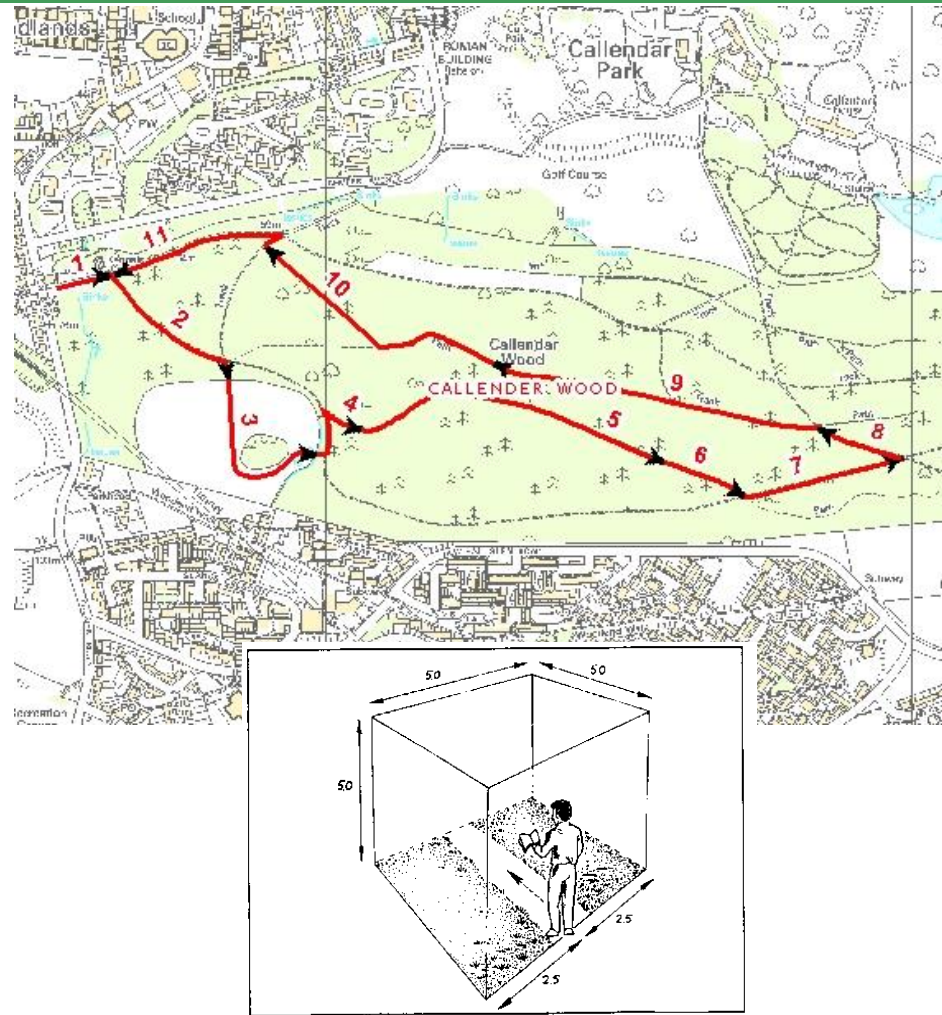


UKBMS – number of sites per year



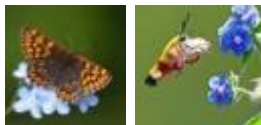
UKBMS – traditional transects

- A butterfly transect is walked every week from April to September
- Walkers follow a fixed route each week during suitable weather
- They count all butterflies seen in an imaginary 5m box as they walk along the route
- Site data and weekly butterfly counts can be entered online
- Annual population 'indices' are calculated for each species present at the site
- Each BC branch has a transect co-ordinator who can provide support and advice along with help from national staff

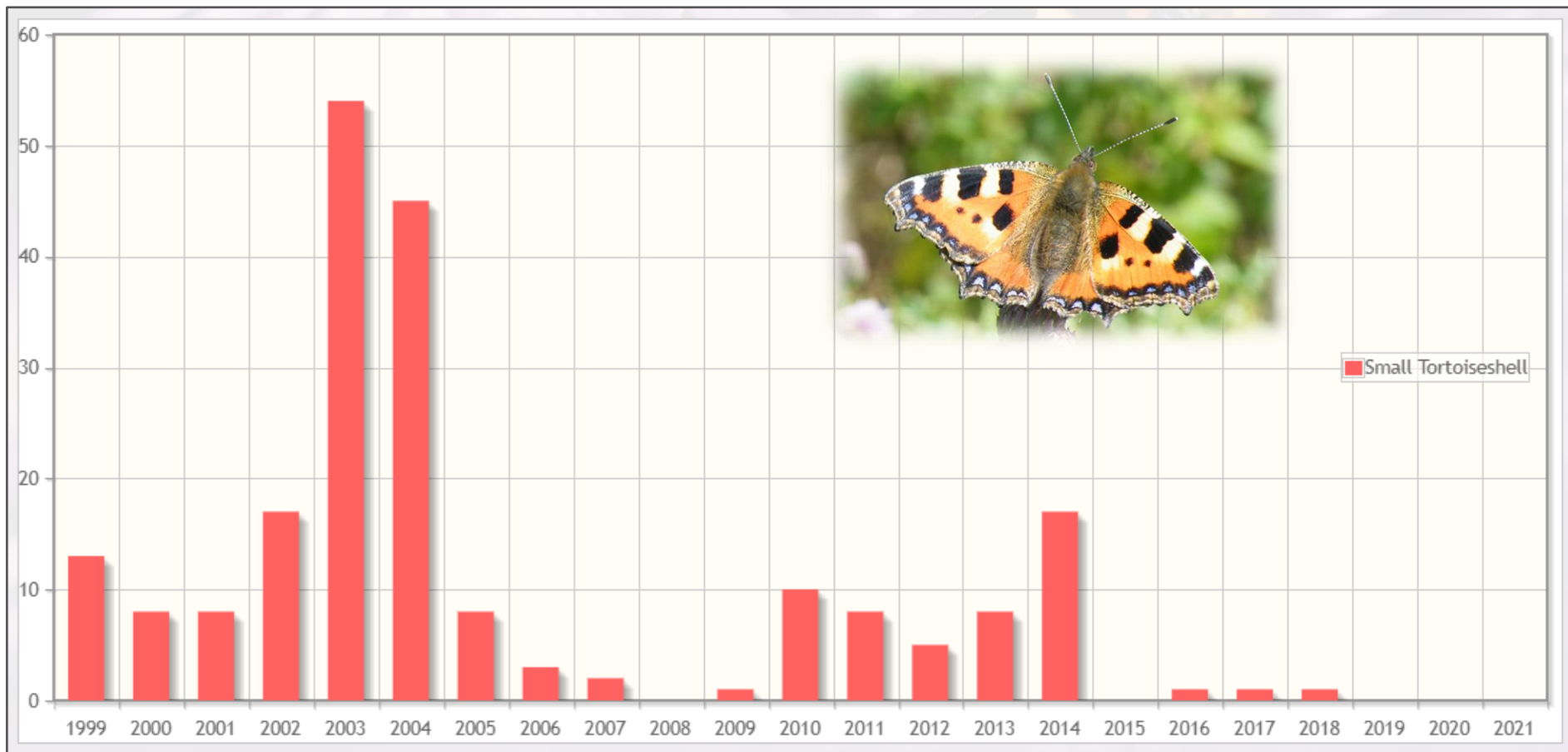


UKBMS data – Lulworth Lake 2017

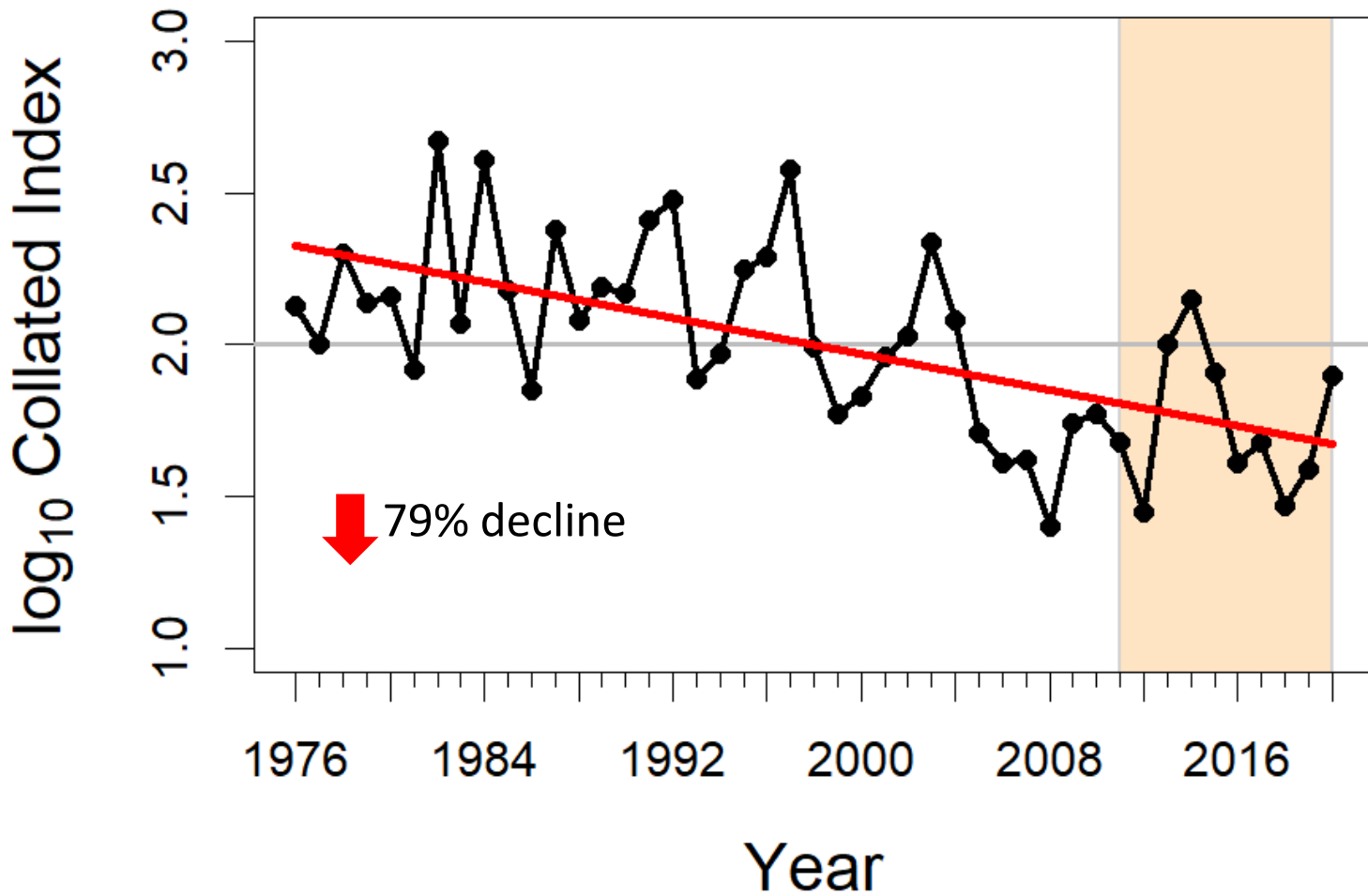
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Date	Apr 4	Apr 10	Apr 18	Apr 27	May 2	May 8	May 18	May 22	Jun 1	Jun 7	Jun 13	Jun 19	Jun 26	Jul 6	Jul 13	Jul 20	Jul 25	Aug 1	Aug 10	Aug 15	Aug 25	Aug 29	Sep 6	Sep 12	Sep 22	Sep 28
Small Skipper														2		1										
Large Skipper												1	1	2	1											
Brimstone																	2									
Large White							2						2	2	3	1	3	2								
Small White														3	1	1	1				1	1				
Green-veined White			2		11	3	3						1	2	2	1	2	2	2		2	1	1	1		
Orange Tip			1		1	1																				
Brown Argus										1																
Red Admiral		1			2								1	3	3	1	1	1			1				1	7
Small Tortoiseshell					1																					
Peacock		1	1		2				1	1			1		1		2		1	1				1		
Comma													1		1		1									
Silver-washed Fritillary															2		1									
Speckled Wood		4	2						6		2	1	1	3	4	3	5	2		4	4	4			2	1
Marbled White														1												
Gatekeeper														4	8	7	5									
Meadow Brown										1	6	53	64	42	42	27	23	10	13	4	1	3				
Ringlet														6	3											



UKBMS data – Small Tortoiseshell at Lulworth Lake

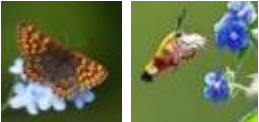
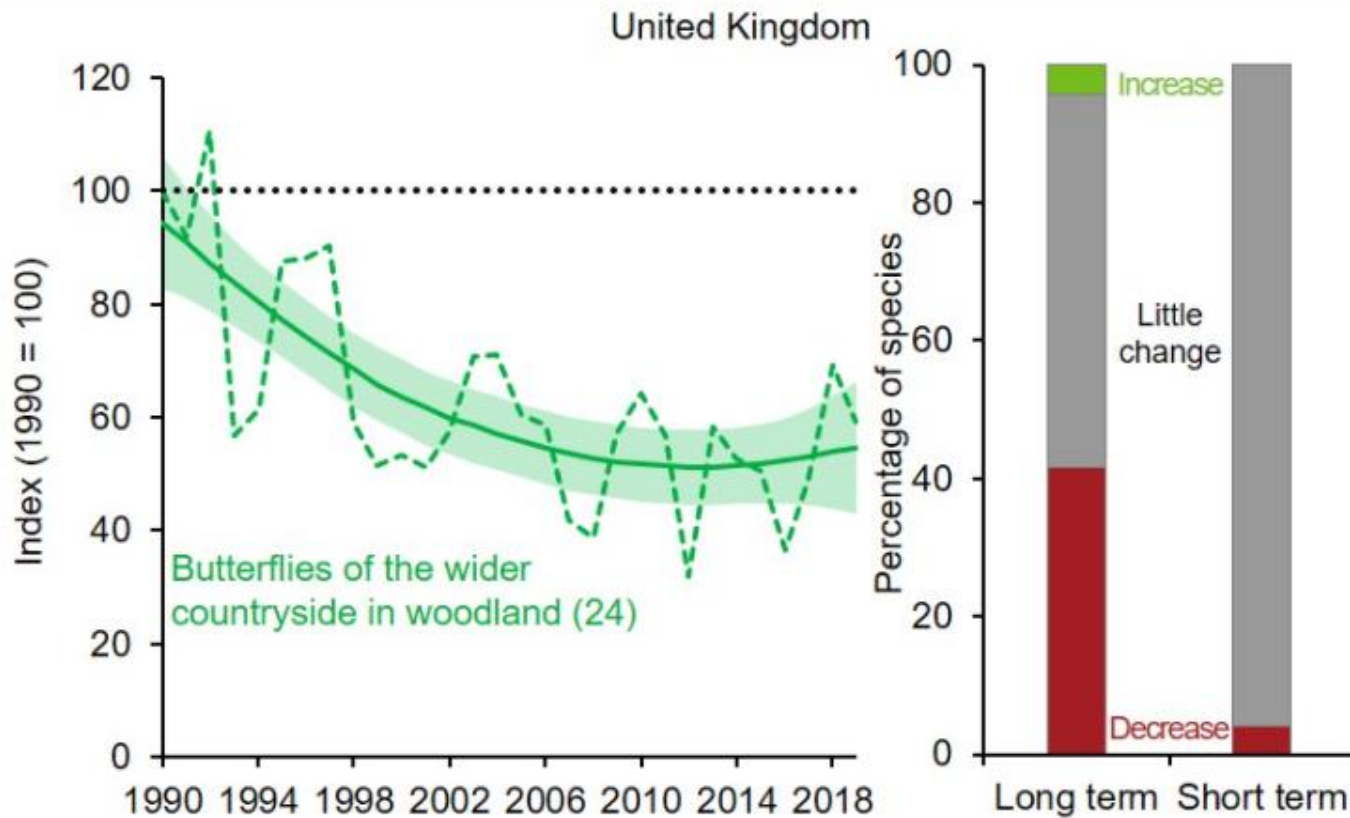


UKBMS data – Small Tortoiseshell in UK





UK Government biodiversity indicators

Figure C6iii. Trends for butterflies of the wider countryside in UK woodland, 1990 to 2019.



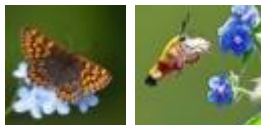
UKBMS – other monitoring methods

- Timed counts
 - A single visit to a site for a priority species (when weekly visits are not practical)
 - Ideally at the peak of the flight season for that species (but we can use transect data to calibrate)
- Larval Web Counts for Marsh FritillaryA close-up photograph showing several small, brown and black caterpillars of a Marsh Fritillary on a fine, silken web. The web is attached to green grass blades.
- Egg Counts for Brown HairstreakA close-up photograph of a tree branch with several small, white, oval-shaped eggs of a Brown Hairstreak butterfly. The branch is dark and textured.
- Currently testing a method for canopy counts of Purple Hairstreak



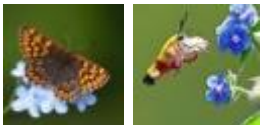
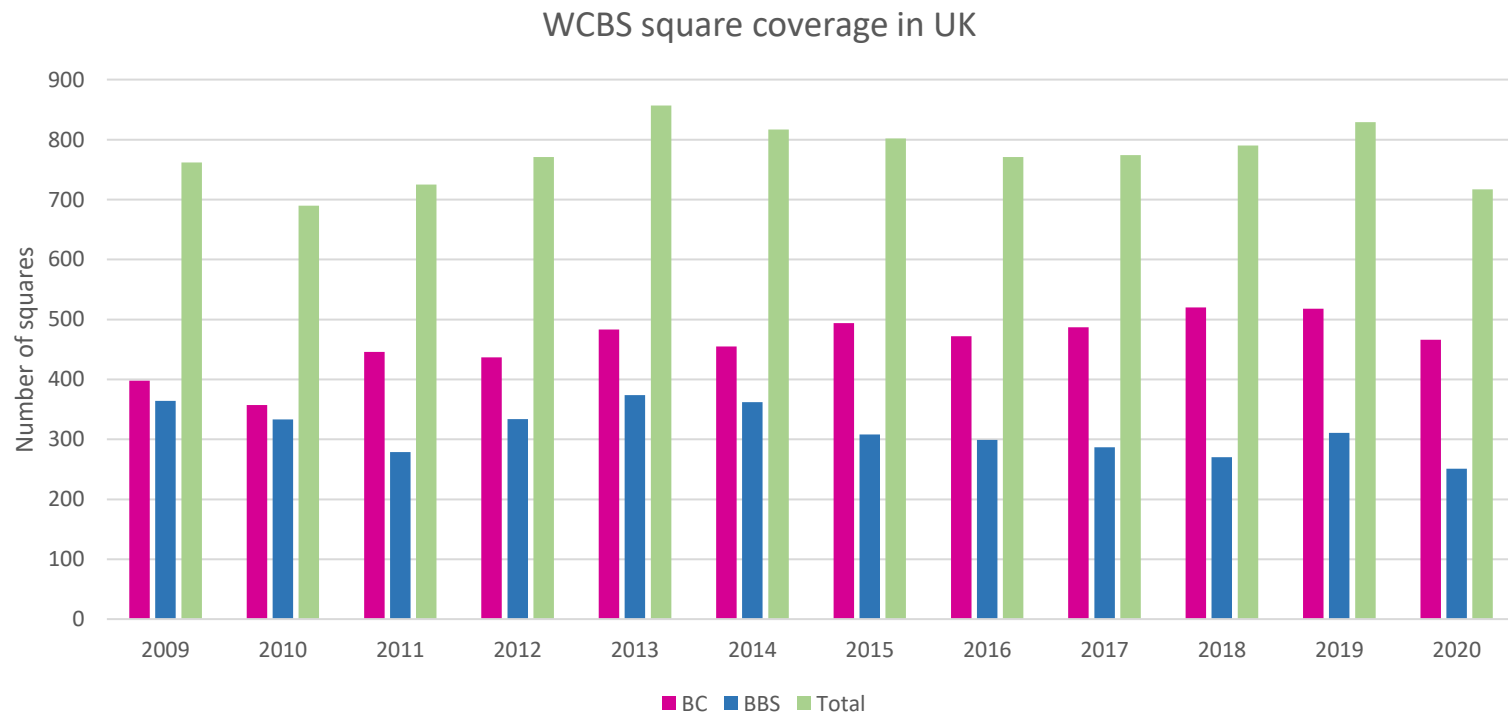
Wider Countryside Butterfly Survey

- National scheme
- Helps monitor butterfly populations in the countryside
- Random sampling method – 1km squares
- Min. 2 visits a year



Survey Coverage

- 13th year in 2021
- Volunteer 'Champions'
- Contributes to national trends and indicators (UKBMS)
- Similar methodology applied to NTFBS and regional model

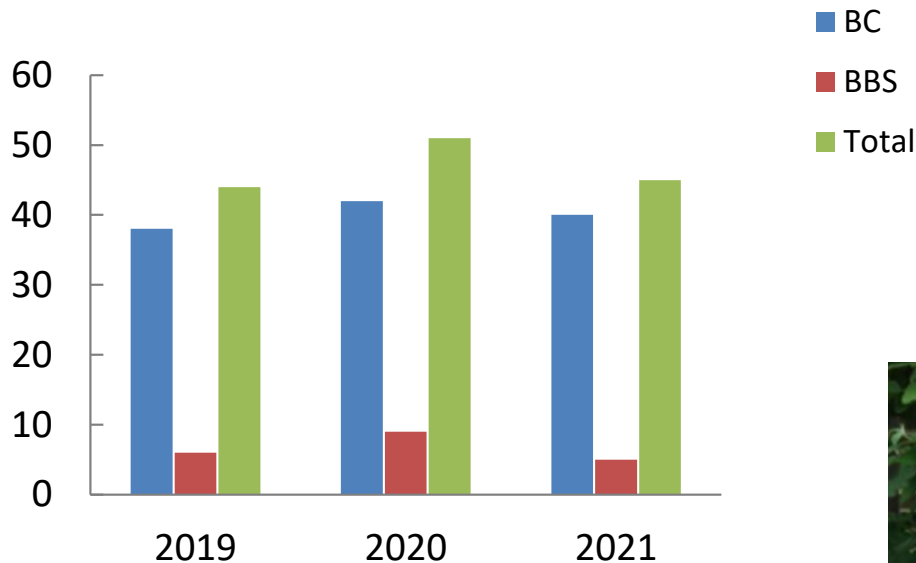


Survey Coverage 2021

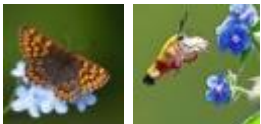
741 squares in 2021 (so far) UK-wide

45 in Gloucestershire (so far):

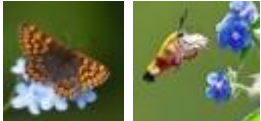
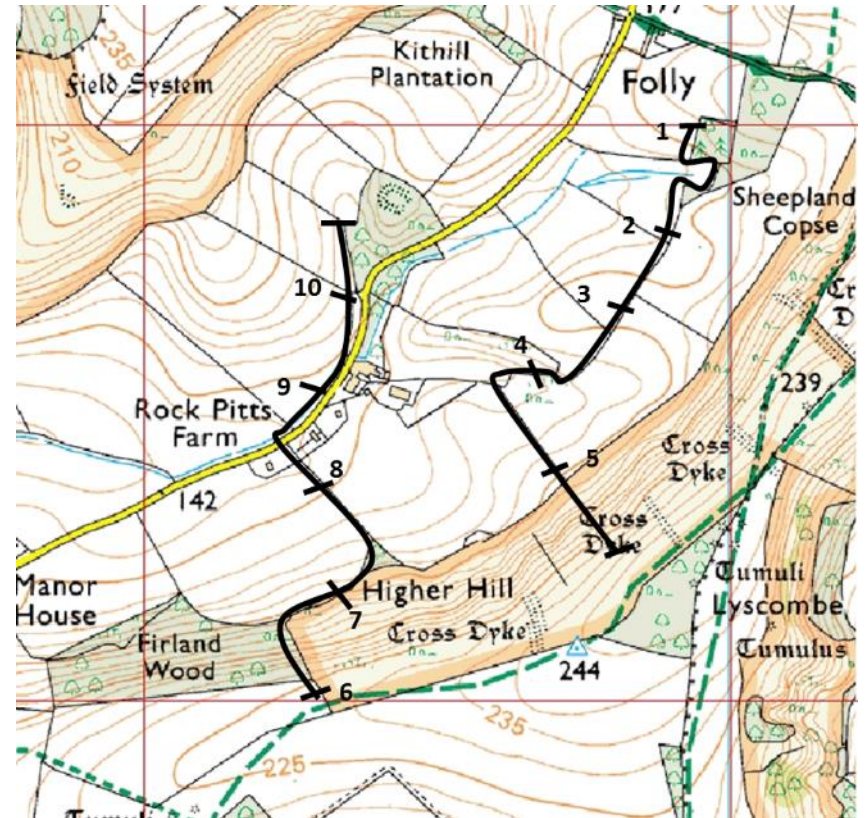
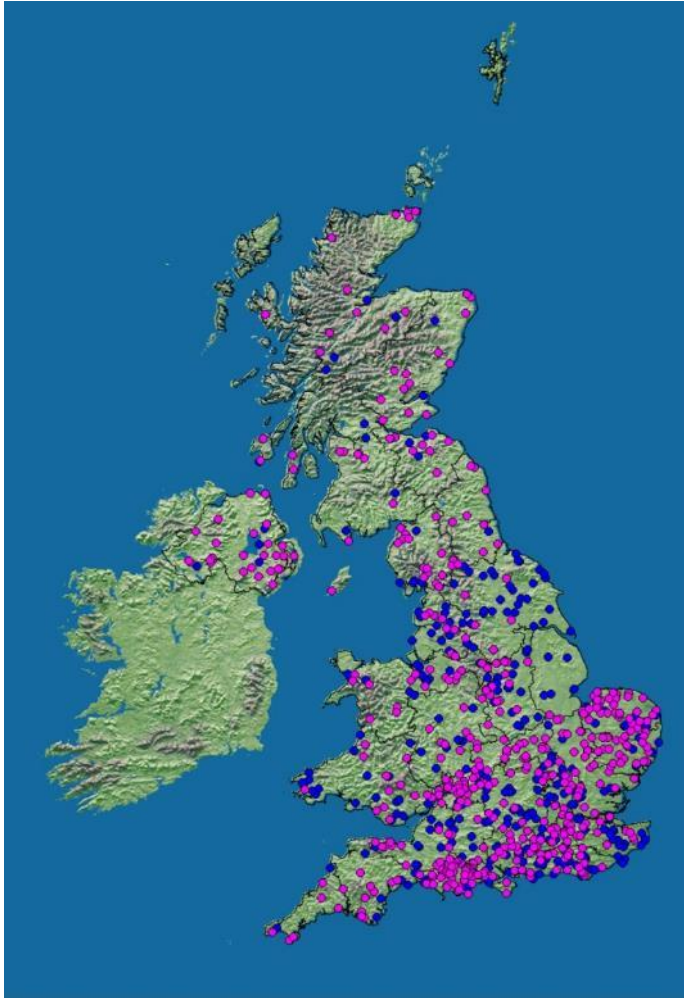
	BC	BBS	Total
2019	38	6	44
2020	42	9	51
2021	40	5	45



Many thanks to
Tricia and all the
survey volunteers

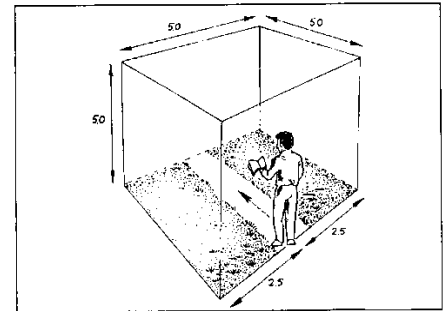


Survey Methodology



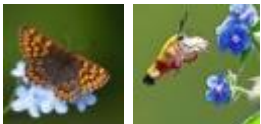
Survey Methodology

- Count all butterflies
- Optional: day-flying moths, dragonflies, other species (linked to iRecord)
- 2 – 5 visits (core: July and August), at least 10 days apart
- Standard UKBMS criteria should be followed



THE BEAUFORT SCALE:

Code	MPH	Description	Specifications on land
0	0-1	Calm	Smoke rises vertically
1	1-3	Light air	Slight smoke drift
2	4-7	Light Breeze	Wind felt on face & leaves rustle
3	8-12	Gentle Breeze	Leaves & twigs in constant motion
4	13-18	Moderate Breeze	Raises dust and small branches move
5	19-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Large branches move & trees sway



Get involved

www.ukbms.org

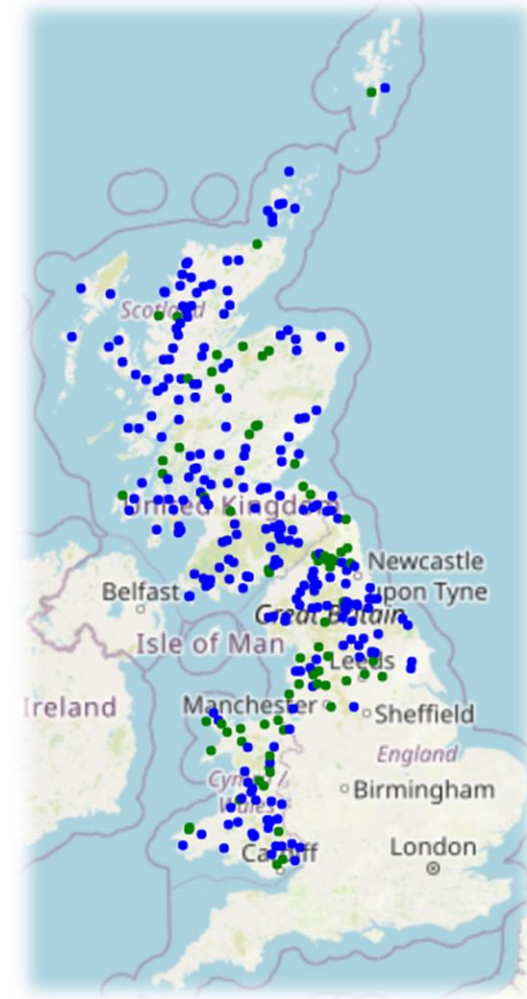
1. Contact your local Champion to be allocated a square

Tricia Atkinson: vice-chair@gloucestershire-butterflies.org.uk

2. Register on UKBMS

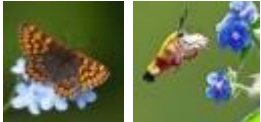
3. Visit/survey your square

4. Submit records on UKBMS

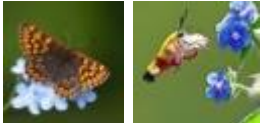
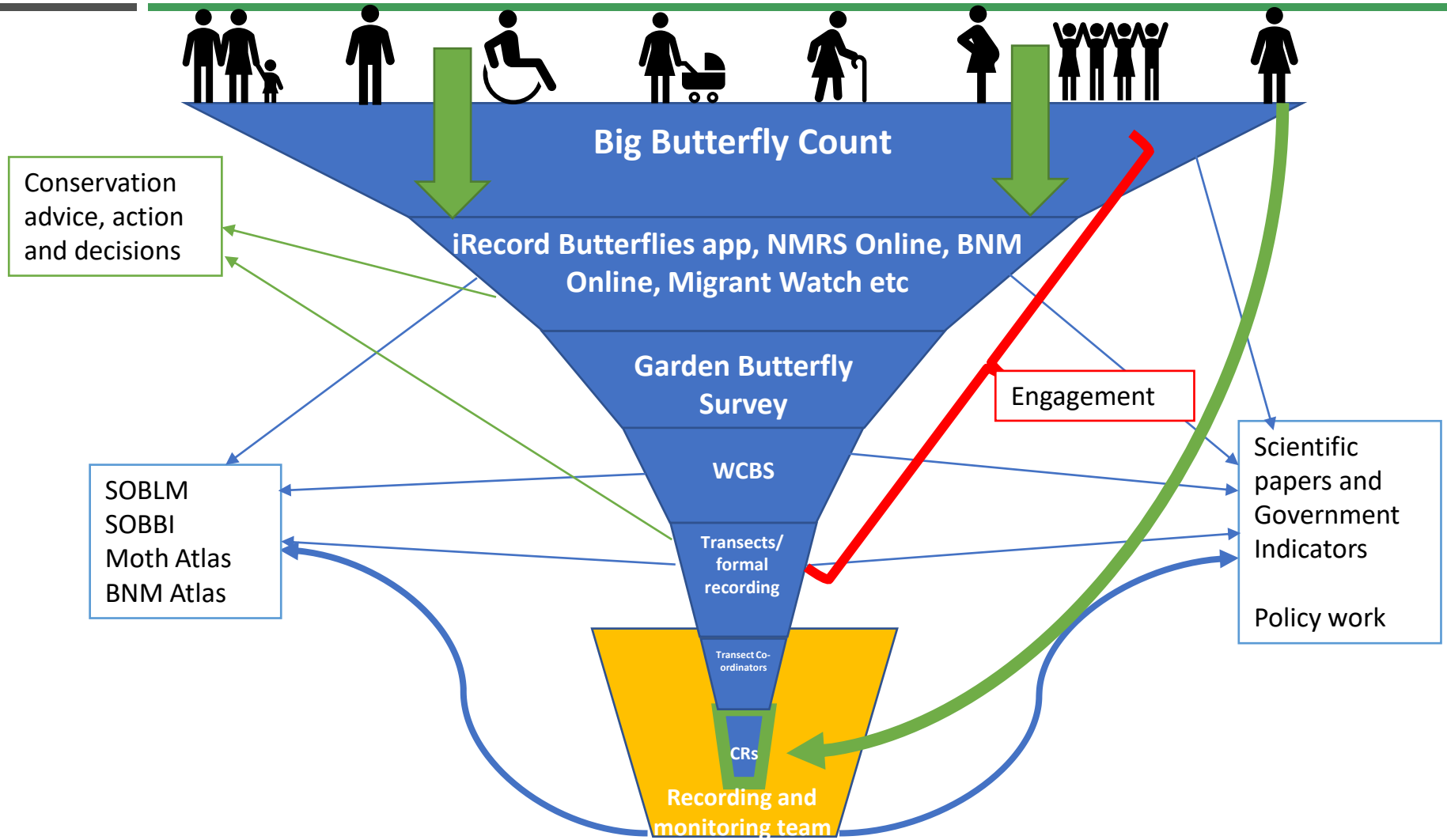


Holiday Squares

- Help increase coverage while on holiday
- Northern England, Wales, Scotland



Get involved



DECIDE – Square bashing for the 21st Century

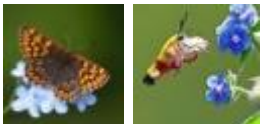
Delivering Enhanced Biodiversity Information with Adaptive Citizen Science and Intelligent Digital Engagements

Aims of DECIDE:

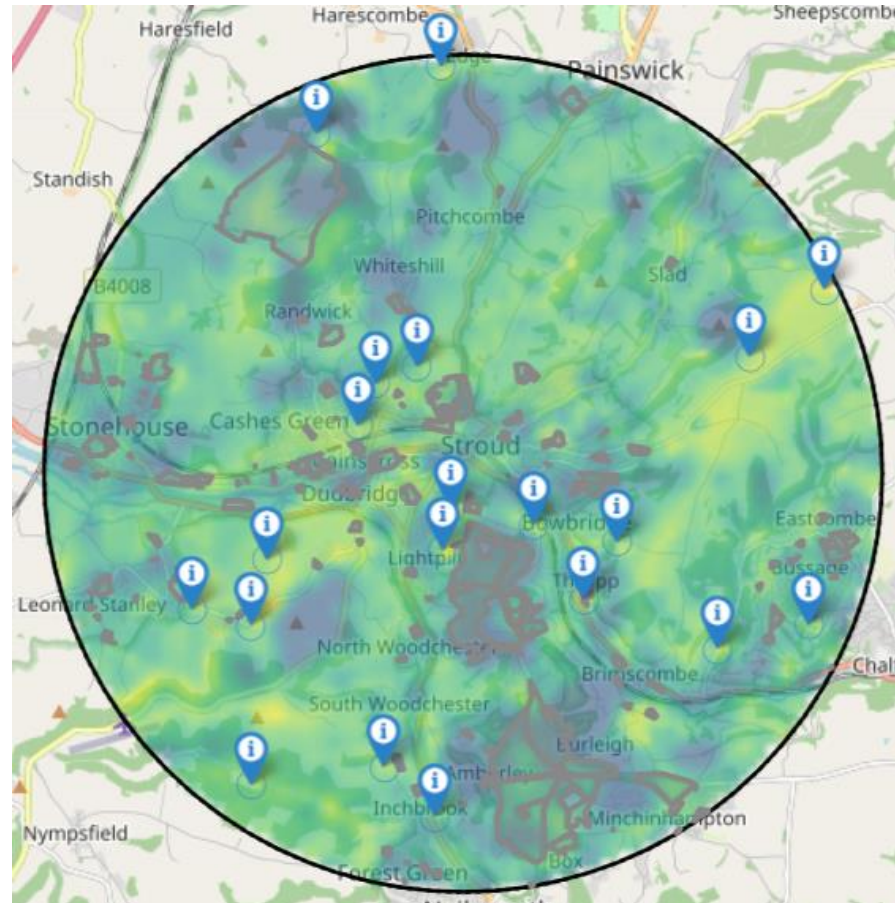
- Targeted recording of moths, (butterflies and grasshoppers) in under-recorded areas using ‘adaptive sampling’ – nudging recorders to new places
- More records in the places where they are needed most
- Development of species distribution models
- Accessible, high-quality, fine-scale information for data users for decision making at all levels to protect nature.



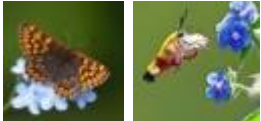
UK Centre for
Ecology & Hydrology



DECIDE – ‘square-bashing for the 20th Century



https://decide.ceh.ac.uk/info/decide_info

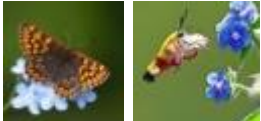


Butterfly Conservation and DECIDE

We think the DECIDE project has the potential to develop a useful tool.

Targeted recording of under-recorded areas means:

- **More records** in the places **where they are needed most**
- Development of up-to-date, optimised (through targeted sampling) species distribution models for better decision making and land management at a landscape scale.
- The potential is massive - the models could be used in the establishment of Nature Recovery Networks, Biodiversity Net Gain, Tree planting opportunity / risk mapping and other initiatives.
- Shift towards data users requiring Data Products rather than raw data.



Contacts

County Butterfly Recorder & Transect Coordinator:

Chris Wiltshire: butterfly-recorder@gloucestershire-butterflies.org.uk

Assistant Butterfly Recorder

Vic Polley: vic@gloucestershire-butterflies.org.uk

WCBS Champion:

Tricia Atkinson: vice-chair@gloucestershire-butterflies.org.uk

County Moth Recorders:

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Robert Homan: theapiary@hotmail.com

VC34 West Gloucestershire - east of the Severn

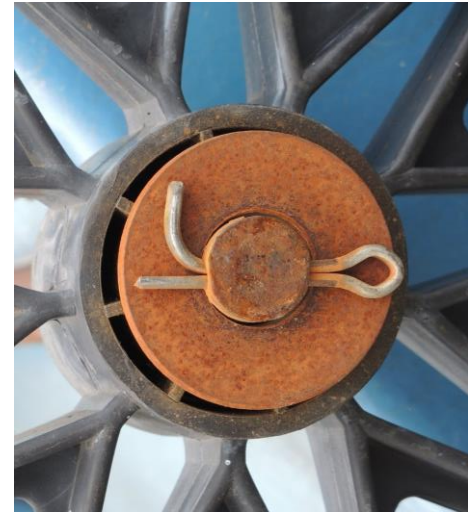
Ali Bourne: alibourne13@gmail.com

VC34 West Gloucestershire - west of the Severn

Michael Bradley: michaelw1184w@hotmail.co.uk

Moth Officer

Steve French: moth-officer@gloucestershire-butterflies.org.uk



Thank you

The entire recording community:
Butterfly Recorders
County Butterfly & Moth Recorders
Transect Coordinators
WCBS Champions

Photographers
Supporters
Funders
Partners

NATURAL
ENGLAND