



Contribute
butterfly
records with

Key themes

Recording Schemes

Atlases

Datasets

Indicators

Climate Change Ecology

Invasion Biology

Emerging Habitats

Air Pollution

Insect-Plant Interactions

Technology

Citizen Science

History of Recording

Developing BRC

Partnerships

- A national focus for terrestrial and freshwater biological recording
- Expertise in including botany, zoology, quantitative ecologists, data specialists and web developers


Welcome to the

The Biological Records Centre (BRC), established in 1984, is a national focus in the UK for terrestrial and freshwater species recording. BRC works closely with the voluntary recording community, principally through support of national recording schemes and societies.


A booklet reviewing the first 50 years of BRC can be download [here](#).

BRC is supported by the [Joint Nature Conservation Committee](#) and the [Centre for Ecology & Hydrology](#) within the [Natural Environment Research Council](#).

The work of BRC is a major component of the [National Biodiversity Network](#).



iRecord Grasshoppers
mobile app

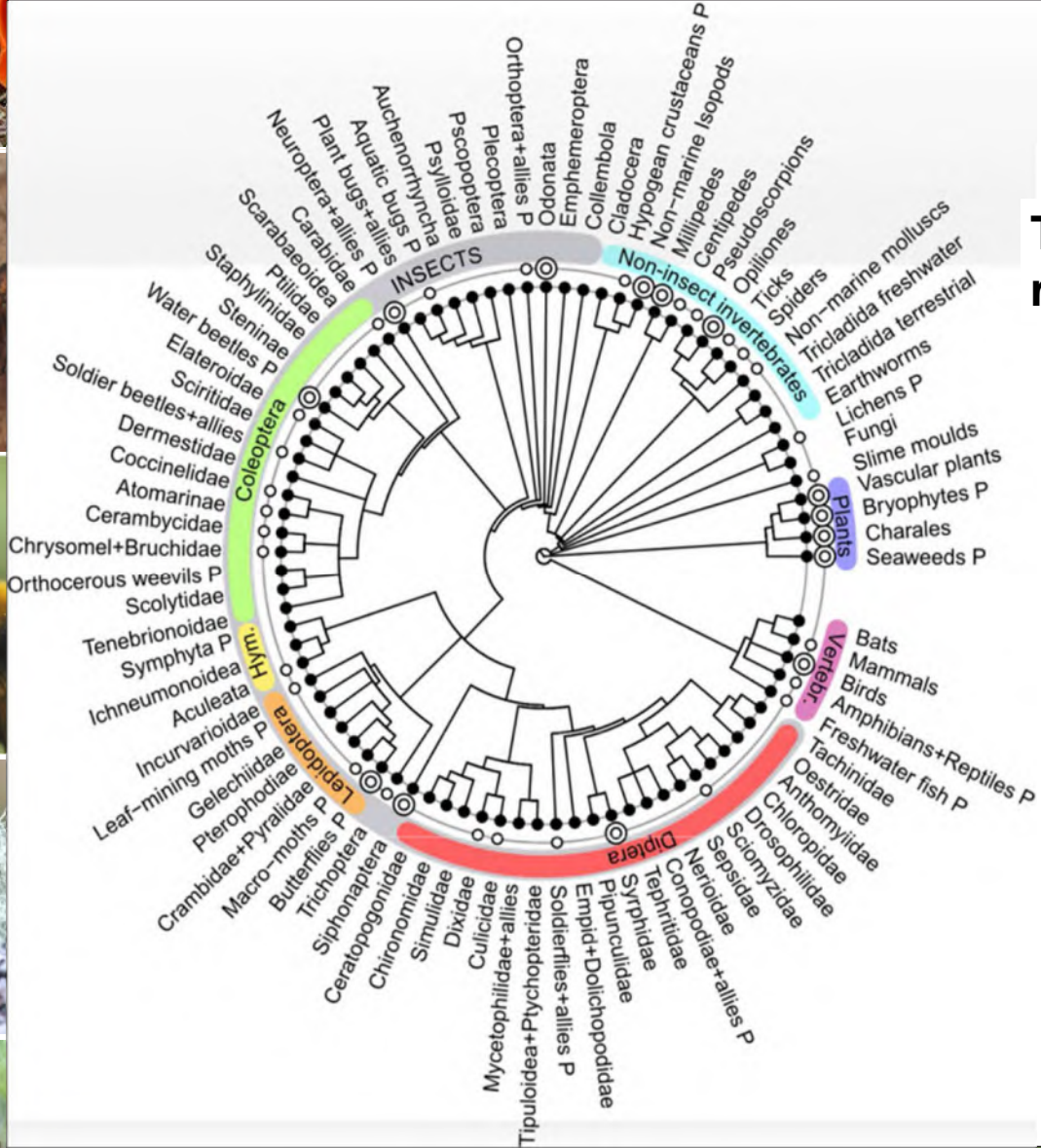
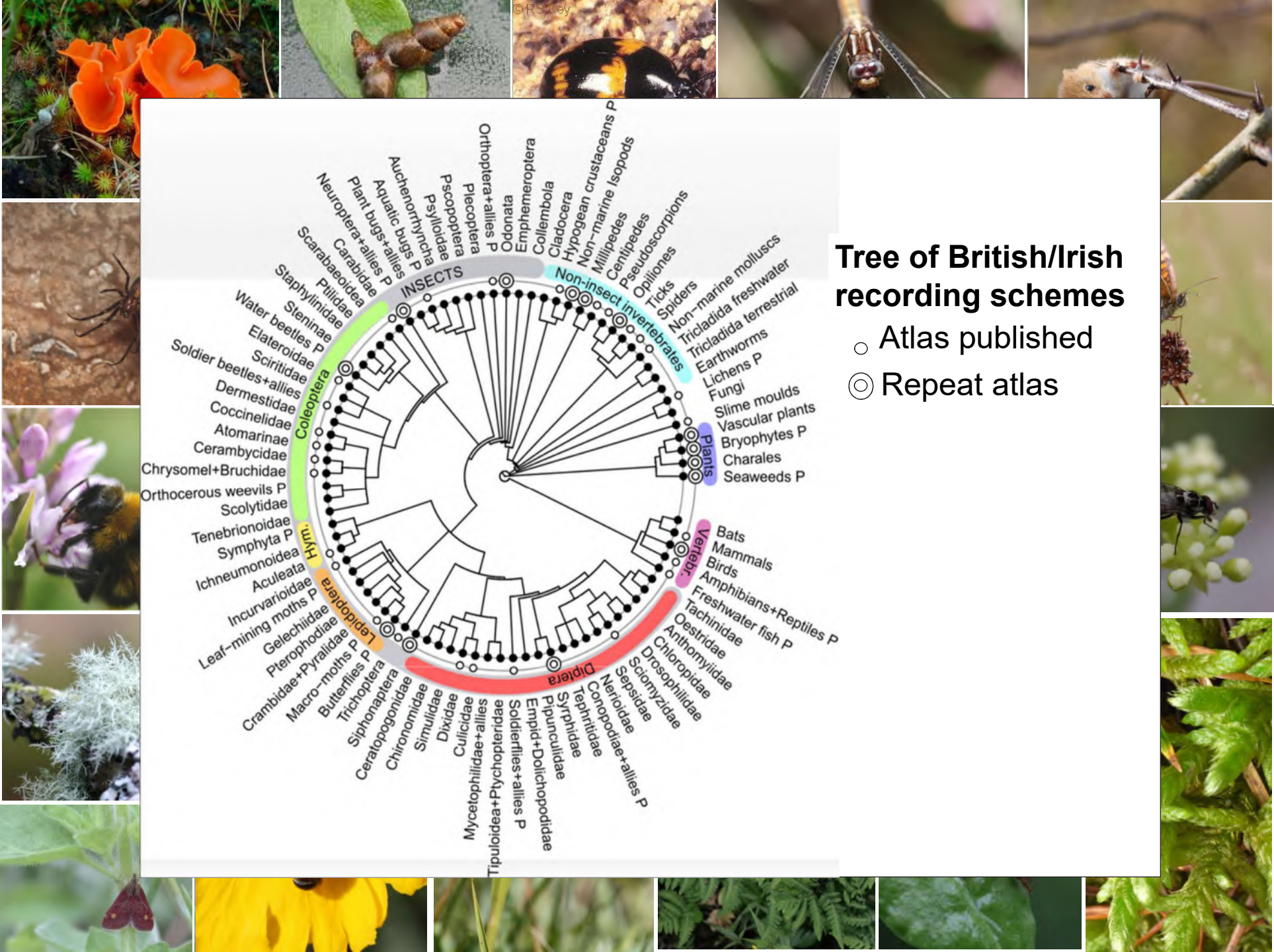


Improving Plant
Monitoring



more

Follow @BRC



Tree of British/Irish recording schemes

- Atlas published
- ⊙ Repeat atlas

Pocock, M.J., Roy, H.E., Preston, C.D. & Roy, D.B. 2015. The Biological Records Centre: a pioneer of citizen science. *Biological Journal of the Linnean Society*, 115(3), 475-493.

Volunteer-based plant abundance monitoring: a new frontier?

- Distributional analyses good at detecting change where plants restricted to particular habitats are strongly affected e.g. arable weeds / lowland mires
- More subtle changes within habitats not so easily tracked with larger scale approaches
- **“Establishing a robust plant surveillance scheme will vastly improve the UK’s ability to report on and respond to the state of the natural environment”**

Walker, K.J. *et al.* (2010) *Designing a new plant monitoring scheme for the UK*. JNCC Report 440. JNCC: Peterborough.



Main aim: Annual habitat quality indicators

- Habitat-focused
- Select 1 km squares (weighted-random)
- Plot-based recording (systematic-random)
- Different participation levels
 - Habitat / species ID
- **Careful design → representative indicators**



What is the National Plant Monitoring Scheme?

The NPMS is a habitat-based plant monitoring scheme carried out by volunteer surveyors nationwide. Data is collected to provide an indication of changes in plant abundance, diversity and ultimately help us to assess the health of our habitats.

It was designed and developed by **BSBI**, **UK CEH**, **Plantlife** and **JNCC**.



RECENT BLOG POSTS

- Spring has sprung! How are our wild flora responding to environmental change?

Small plot habitat samples

Systematic-random plot placement helps to minimise bias



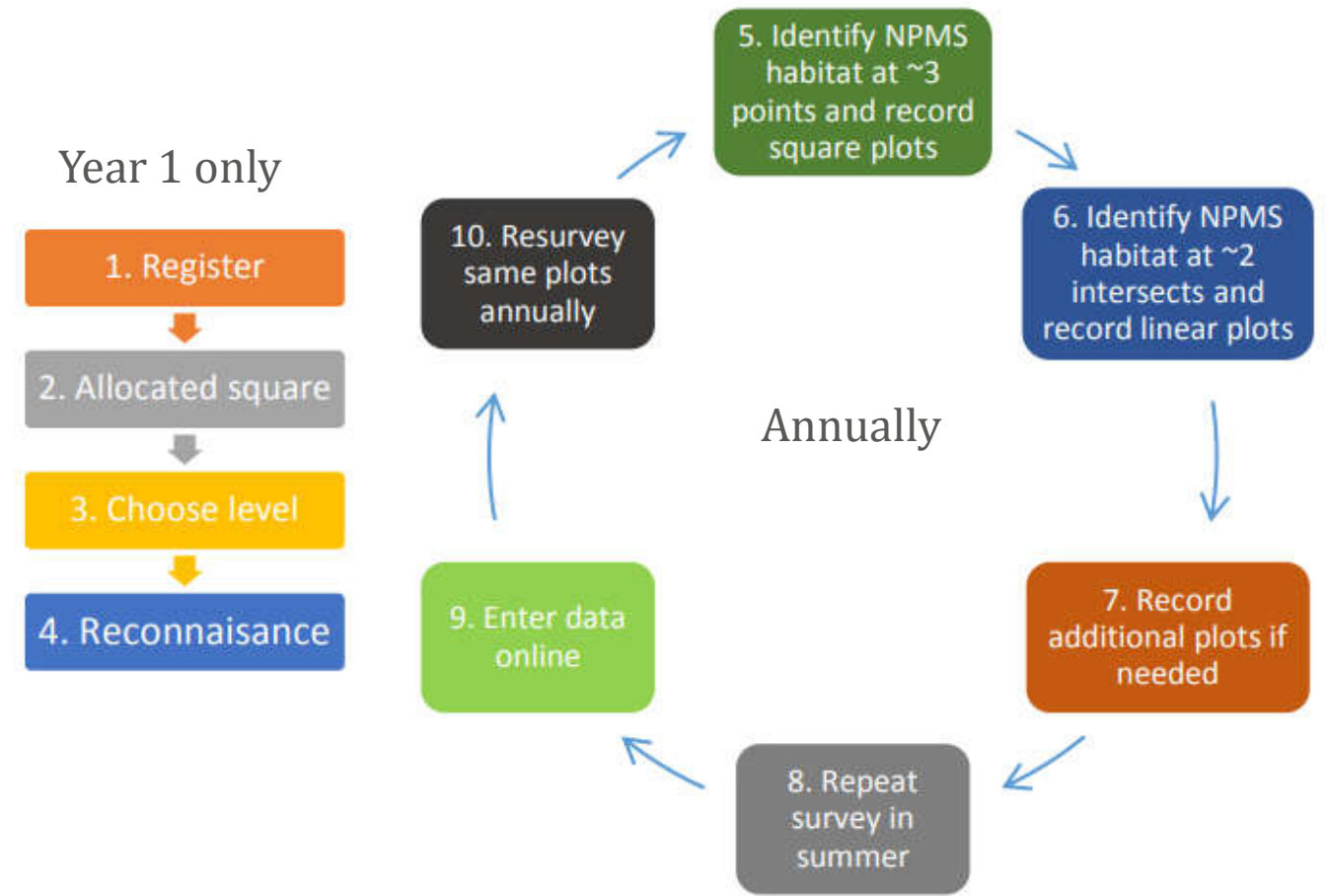
Habitats (Predicted)



Pescott *et al.* (2019).
PLoS ONE 14(4):
e0215891

Flexibility *and* rigour?

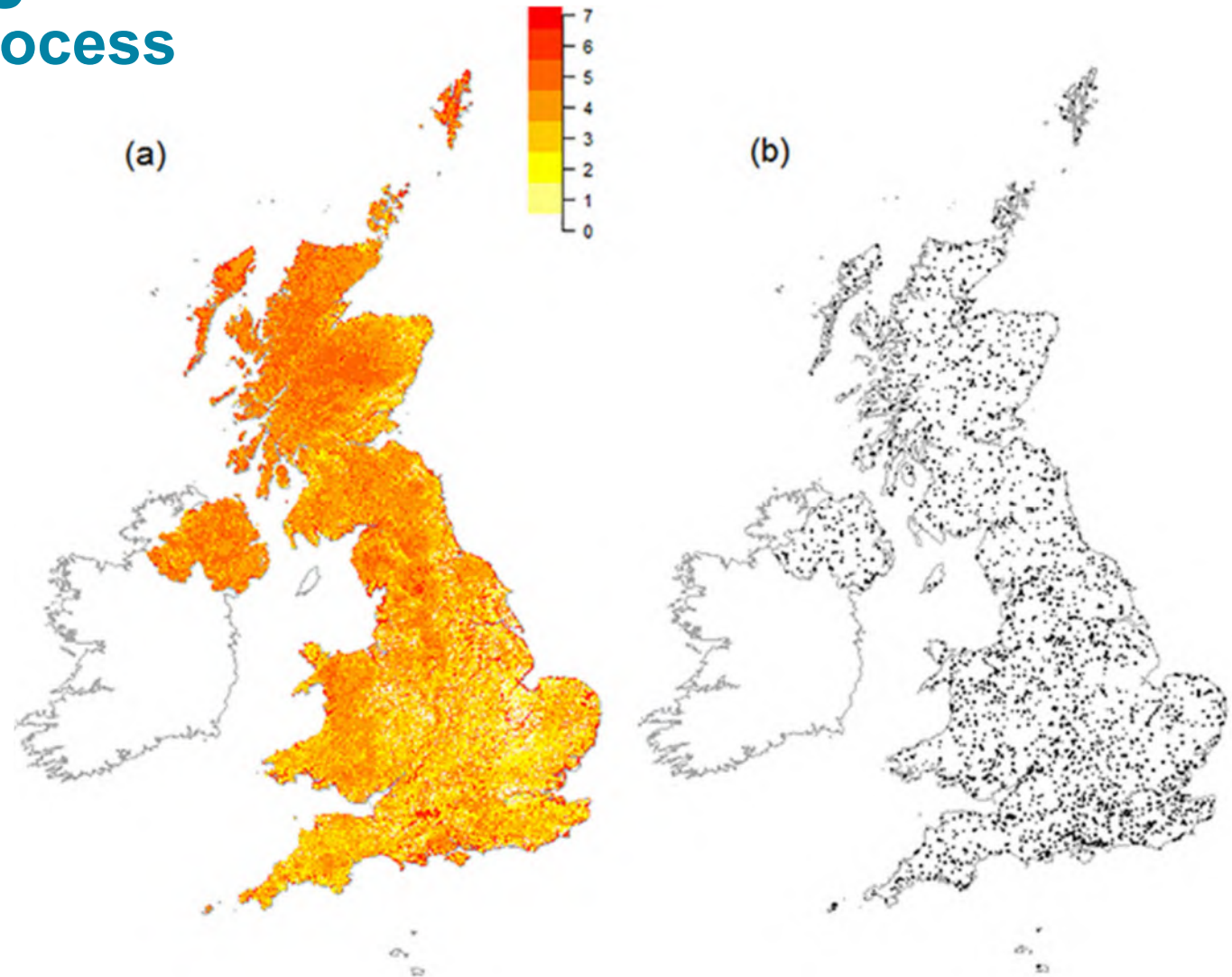
- Process resulted from:
 - Volunteer field trials
 - Volunteer questionnaires
 - Statistical workshop



Rigour, but not very flexible?

The 1 km square selection process

- Regionally targeted towards squares with more semi-natural habitat
- Stratified by 100 x 100 km grid square to even out coverage



Accommodating the many

Levels of participation

Broad category	Fine-scale habitat(s) included	Wildflower	Indicator
Arable field margins	Arable field margins	15	30
Bog & wet heath	Blanket bog; raised bog; wet heath	31	53
Broadleaved woodland	Dry deciduous woodland; hedgerows of native species; wet woodland	49	75
Coast	Coastal saltmarsh; coastal sand-dunes; coastal vegetated shingle; machair; maritime cliff-tops and slopes	65	110
Freshwater	Nutrient-poor lakes and ponds; nutrient-rich lakes and ponds; rivers and streams	29	56
Heathland	Dry heathland; dry montane heathland	28	48
Lowland grassland	Dry acid grassland; dry calcareous grassland; neutral damp grassland; neutral pastures and meadows	62	98
Marsh & fen	Acid fens, flushes, mires and springs; base-rich fens, flushes, mires and springs	33	51
Upland grassland	Montane acid grassland; montane calcareous grassland	31	53
Native pinewood & juniper scrub	Conifer woods and juniper scrub	21	29
Rock outcrops, cliffs & screes	Inland rocks and scree; montane rocks and scree	34	52

- Also, “**Inventory**” level = record everything
- Can vary by visit

Allowing for potential ID difficulties



Blue / Purple

Viola reichenbachiana
Early Dog-violet

J F M A M J J A S O N D

Low growing herb. Flowers 15-20mm across with narrow, pale blue-violet petals with darker veins, spur darker than petals. Record as *Viola riviniana* / *Viola reichenbachiana*.

LEAVES AND STEMS
Heart-shaped leaves in a basal rosette and on flowering shoots.

CONFUSED WITH
Common Dog-violet (*Viola riviniana*)
Common Dog-violet has petals darker than the spur which is curved, blunt and notched.

Viola riviniana
Common Dog-violet

J F M A M J J A S O N D

Low growing herb. Flowers 15-25mm across with rounded blue-violet petals with darker veins, spur paler than petals. Record as *Viola riviniana* / *Viola reichenbachiana*.

LEAVES AND STEMS
Heart-shaped leaves in a basal rosette and on flowering shoots.

CONFUSED WITH
Early Dog-violet (*Viola reichenbachiana*)
Early Dog-violet has petals lighter than the spur which is straight, pointed and not notched.

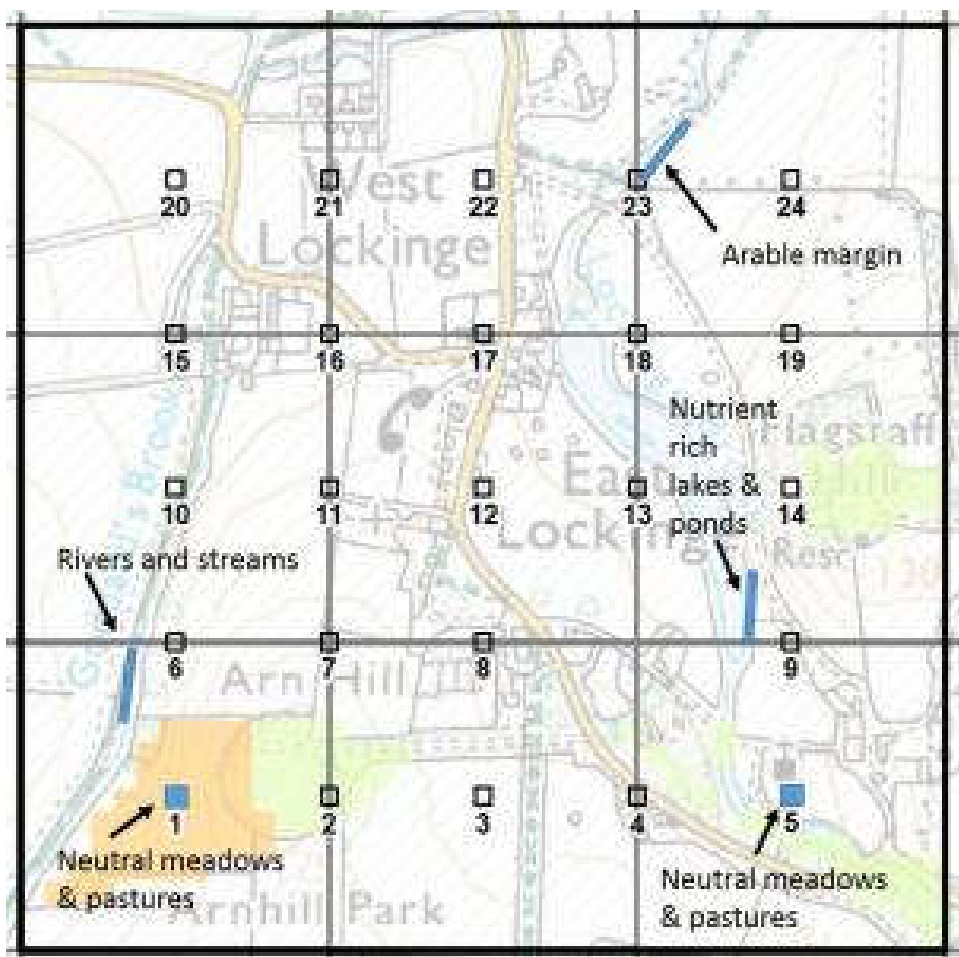
Species Identification Guide



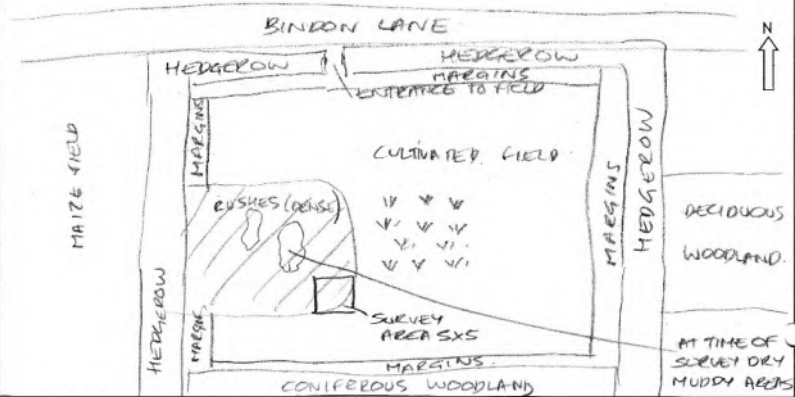
Dry deciduous woodland

Name	Common name			
<i>Allium ursinum</i>	Ramsons			
<i>Campanula latifolia</i>	Giant Bellflower			
<i>Campanula trachelium</i>	Nettle-leaved Bellflower			
<i>Carex sylvatica</i>	Wood-sedge			
<i>Ceratocarpus claviculata</i>	Climbing Corydalis	☼	+	9
<i>Corylus avellana</i>	Hazel	☼	+	149
<i>Cynoglossum officinale</i>	Hound's-tongue		+	63
<i>Daphne laureola</i>	Spurge-laurel		+	108
<i>Euphorbia amygdaloides</i>	Wood Spurge	☼	+	109
<i>Galium aparine</i>	Cleavers / Goosegrass	☼	-	14
<i>Galium odoratum</i>	Woodruff	☼	+	15
<i>Geum urbanum</i>	Wood Avens	☼	+	37
<i>Hedera helix</i>	Common Ivy	☼	-	110
<i>Ilex aquifolium</i>	Holly	☼	+	150
<i>Lamium galeobdolon</i>	Yellow Archangel	☼	+	43
<i>Melica uniflora</i>	Wood Melick	☼	+	135
<i>Mercurialis perennis</i>	Dog's Mercury	☼	+	110
<i>Milium effusum</i>	Wood Millet		+	136
<i>Moehringia trinervia</i>	Three-nerved Sandwort	☼	+	21
<i>Mycelis muralis</i>	Wall Lettuce		+	47
<i>Neottia ovata (Listera ovata)</i>	Common Twayblade		+	111
<i>Rhododendron panticum</i>	Rhododendron	☼	-	152
<i>Ruscus aculeatus</i>	Butcher's-broom		+	26
<i>Sanicula europaea</i>	Sanicle	☼	+	27
<i>Silene dioica</i>	Red Campion	☼	+	77
<i>Symphoricarpos albus</i>	Snowberry	☼	-	153
<i>Teucrium scorodonia</i>	Wood Sage	☼	+	116
<i>Urtica dioica</i>	Common Nettle	☼	-	117
<i>Veronica montana</i>	Wood Speedwell		+	103
<i>Viola riviniana / reichenbachiana</i>	Common Dog-violet / Early Dog-violet	☼	+	105

Data



Please make a sketch that would aid someone else in relocating your plot, or take a maximum of two photos to upload to the website.



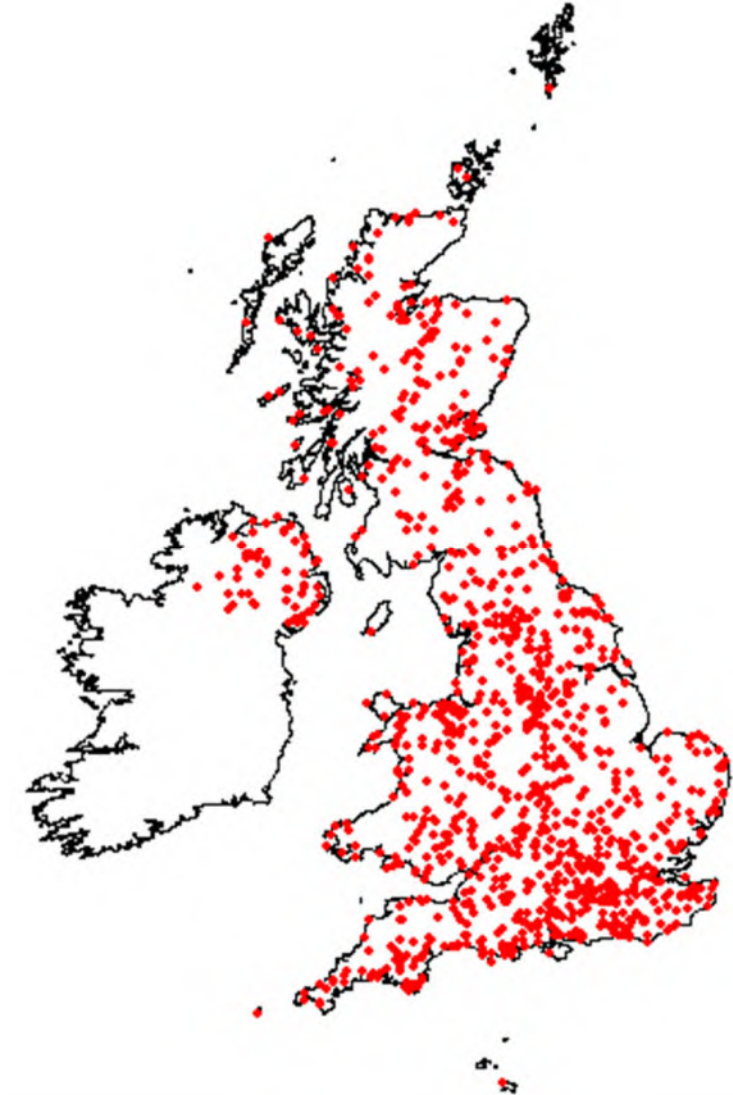
For your plot, allocate an abundance score for each species using the Domin scale below (also see inside the back cover of the guidance notes). Please also include scores for the extra items listed at the end of the table below if possible.

Domin % cover	1 <1% (1-2 Indivs)	2 <1% (several Indivs)	3 1-4%	4 5-10%	5 11-25%	6 26-33%	7 34-50%	8 51-75%	9 76-90%	10 91-100%
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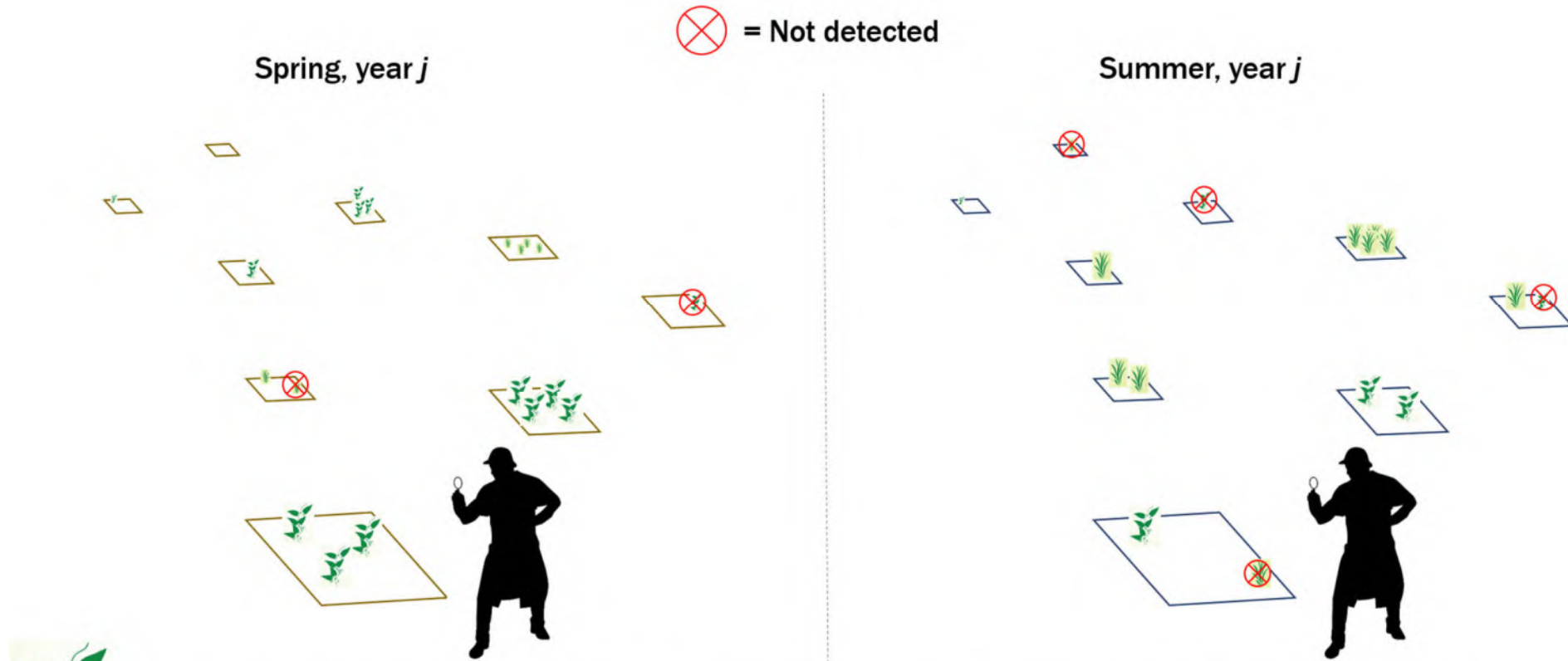
Species name	Domin visit 1	Domin visit 2	Species name	Domin visit 1	Domin visit 2
SELFHEAL	3				
OXEYE DAISY	4				
COMMON KNARWEED	7				
COMMON BIRUS FOOT TALLOW	3				
SOFT RUSH	9				
WILD CARROT	2				
WHITE CLOVER	2				
DAISY	2				
HEDGE BROWWED	3				
COMMON BENT	3				
CRESTED DOG'S TAIL	3				
TIMOTHY	6				
YORKSHIRE FOS	3				
CREeping WILLOW	3				
SQUARE STALKED ST JOHN'S WORT	1				
CREeping BUTTERCUP	1				
? BEDSTRAW	1				
Dandelion	1				
PERENNIAL RYEGRASS	3				
Bare soil					
Bare rock/gravel					
Litter					
Mosses & lichens				1	

Habitat plots established to date

Habitat plots: 2015-22	
Arable margins	385
Bog & wet heath	373
Broadleaved woodland etc.	1,490
Coast	304
Freshwater	324
Heathland	347
Lowland grassland	1,370
Marsh & fen	234
Upland grassland	147
Native pinewood & juniper scrub	52
Rock outcrops, cliffs & scree	73



Dealing with the flexibility



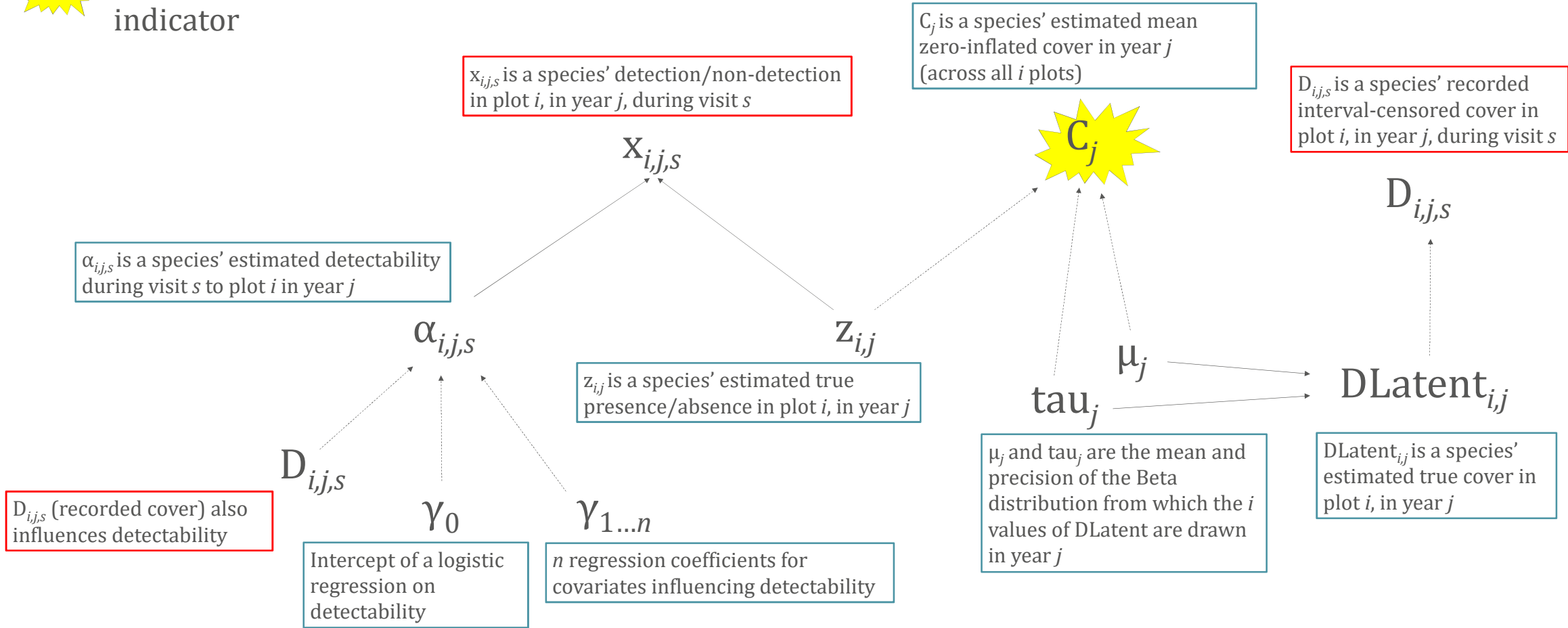
Species 1
1 icon = 5% cover

Species 2
1 icon = 5% cover

Species	Spring survey data		Summer survey data		Naive annual occupancy	Naive non-zero μ annual cover	True annual occupancy	True non-zero μ annual cover
	Plot detections	Non-zero μ cover	Plot detections	Non-zero μ cover				
1	5/6	12.0%	3/6	6.7%	5	9.4%	6	13.4%
2	2/6	12.5%	4/6	10.0%	4	11.3%	6	11.7%

Combine plot annual occupancy with interval-censored % cover data

 = annual species abundance metric for indicator

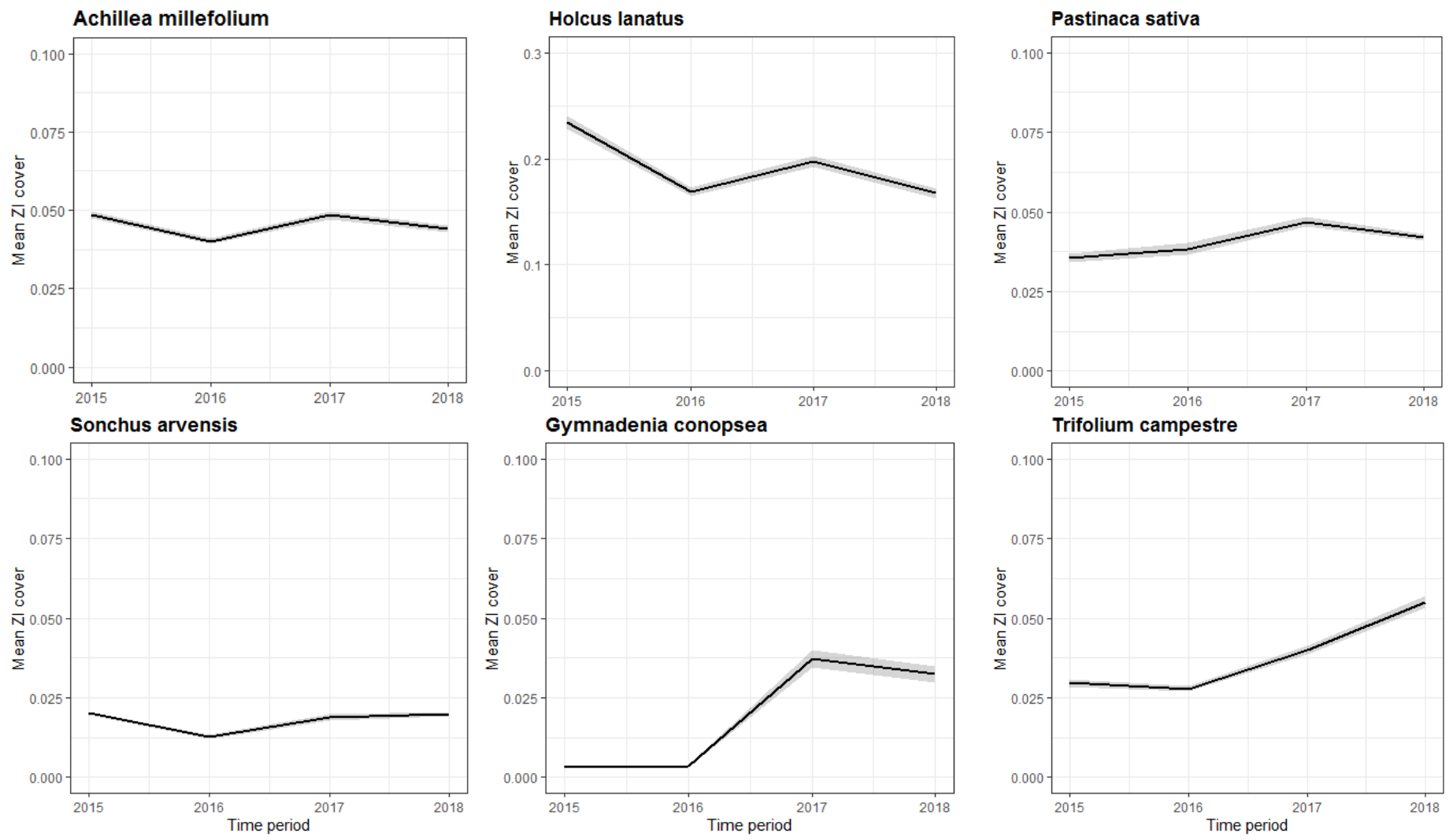


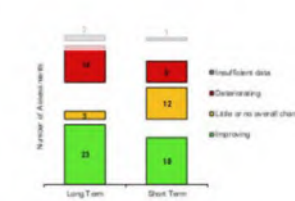
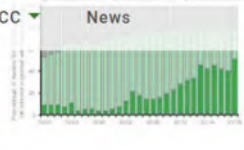
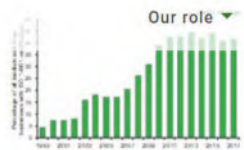
—————→ = stochastic process

.....→ = deterministic process

- Adapted from Pescott, Powney & Walker (2019). *Developing a Bayesian species occupancy/abundance indicator for the UK National Plant Monitoring Scheme*. DOI:10.13140/RG.2.2.23795.48161
- Note that Irvine, Wright et al. (2019) published a similar model in *MEE*

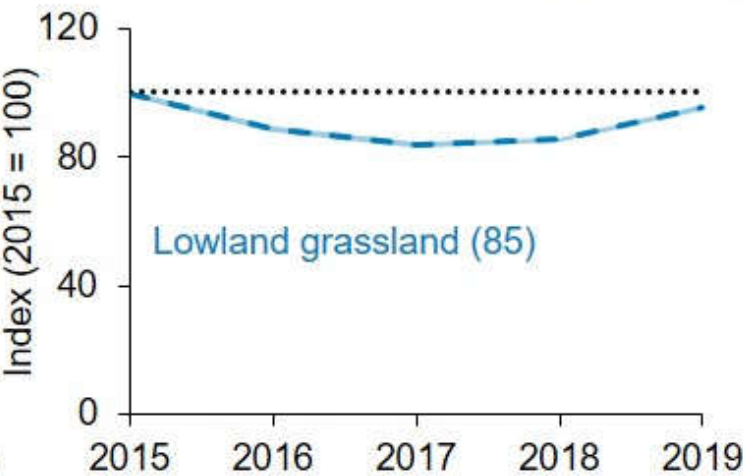
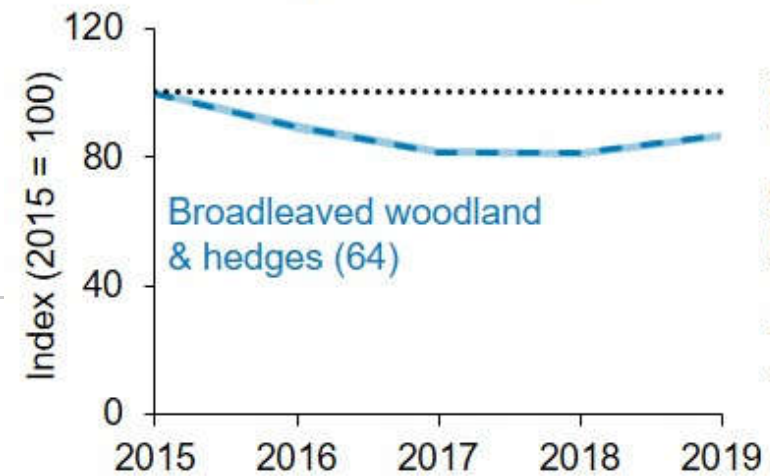
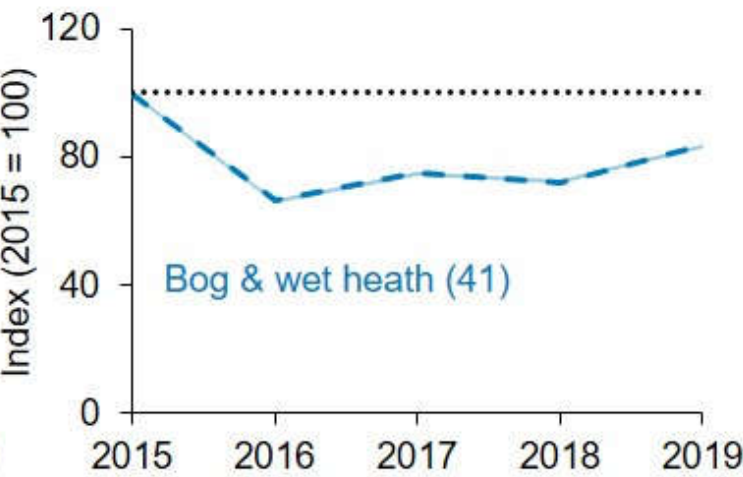
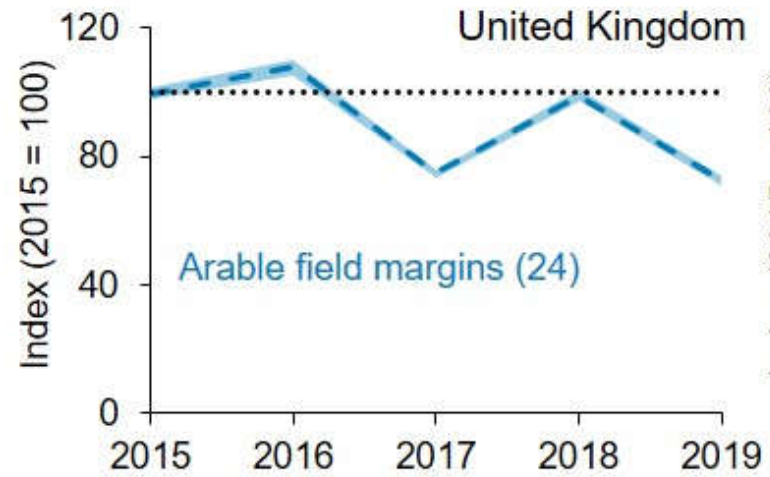
Lowland grassland species (cover means +/- s.e.)



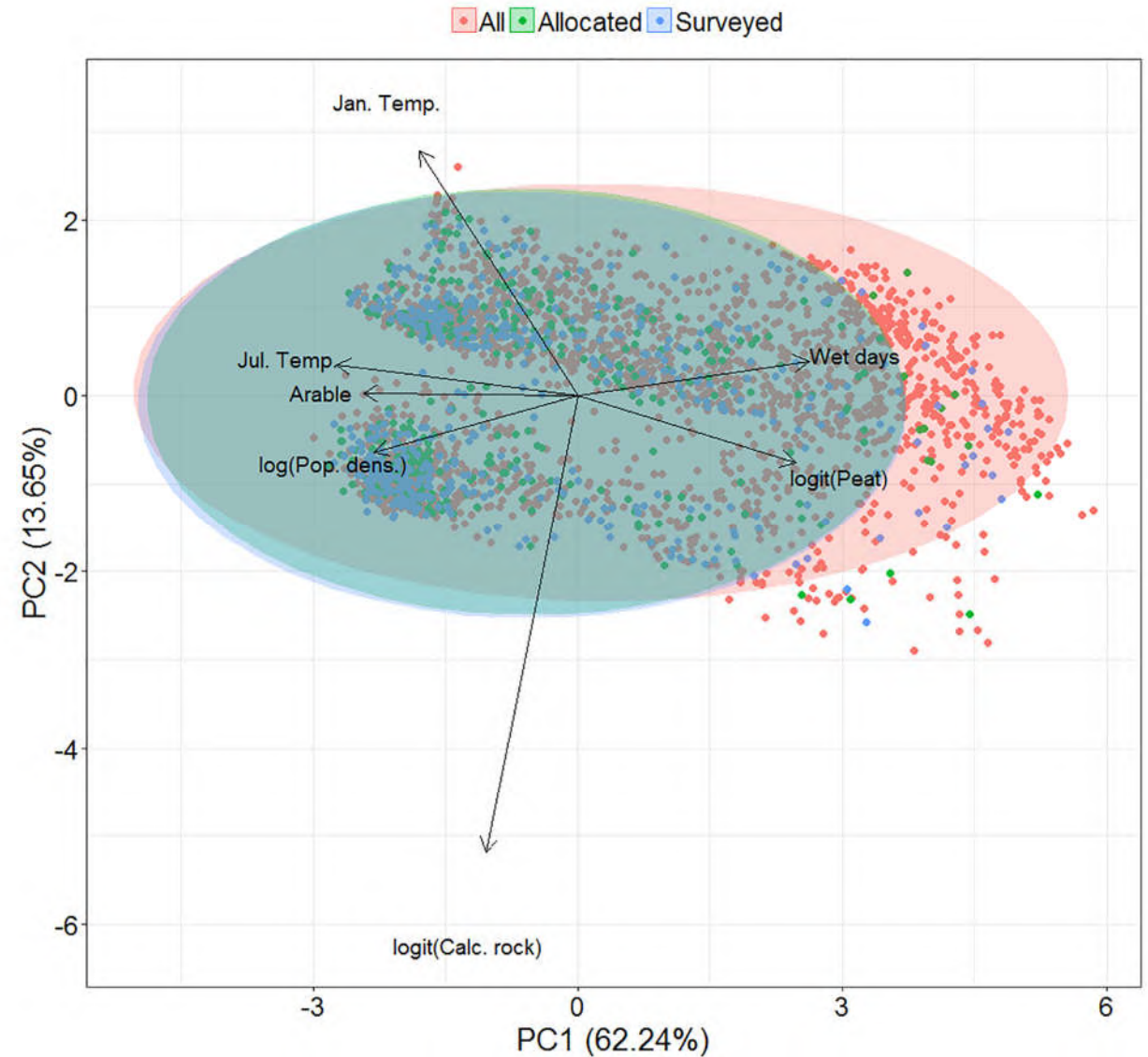
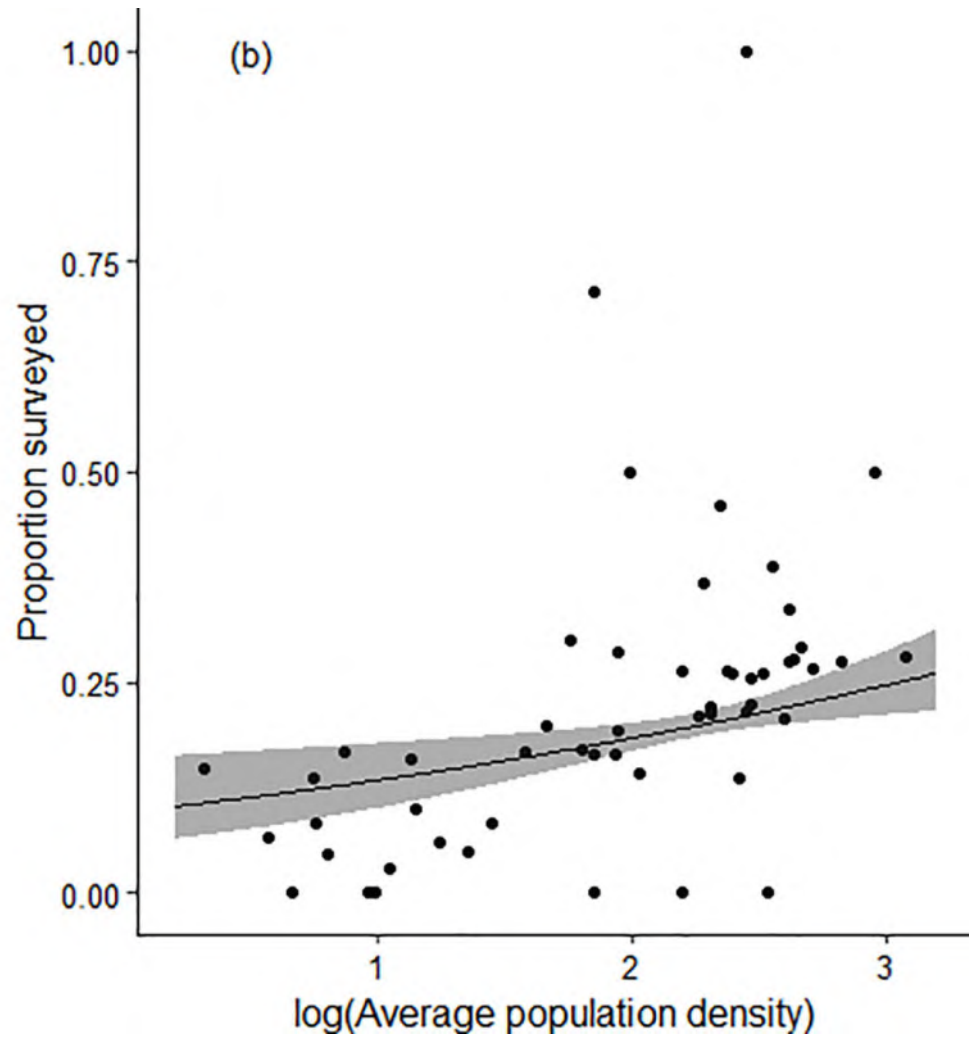


UK Biodiversity Indicators 2020

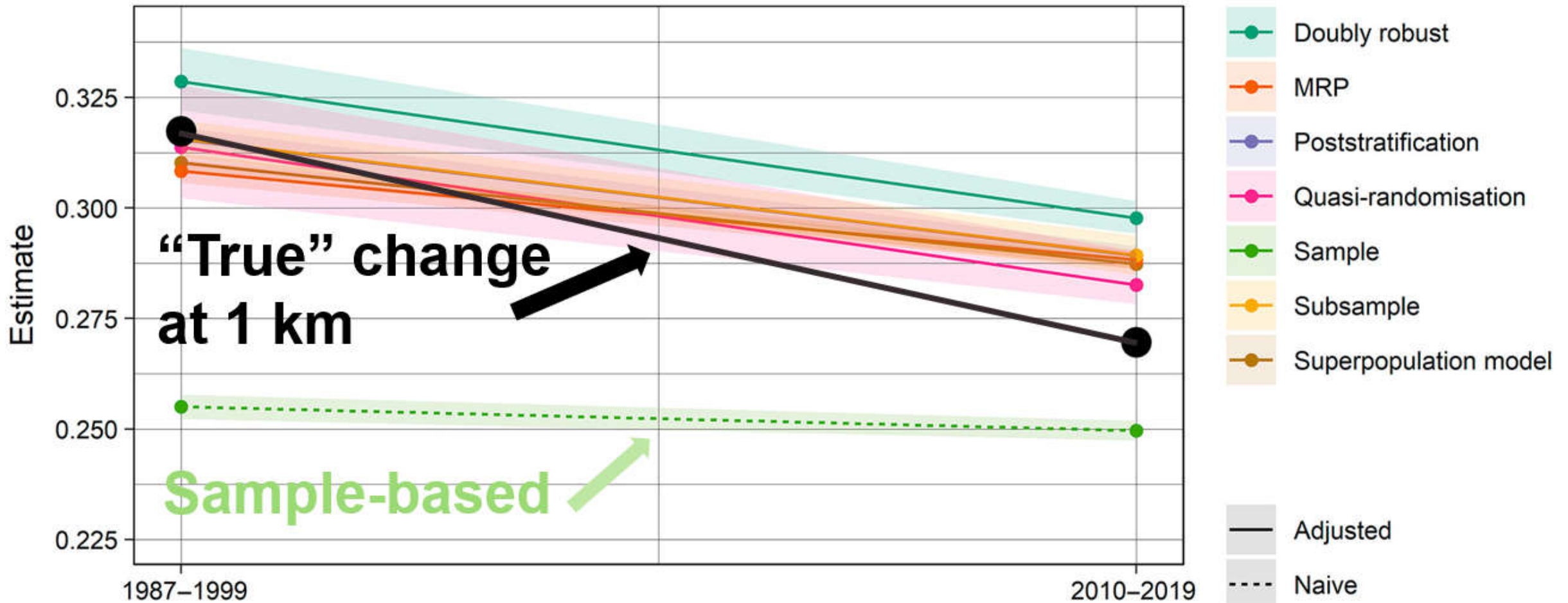
First time the annual habitat indicator (C7) has been contributed through volunteer effort



Sampling biases



Adjusting for sampling biases



Other data uses

- **NPMS data have...**
 - been used to look at agri-environmental scheme effects
 - contributed to an assessment of how brownfield sites support biodiversity across landscapes
 - were highlighted as an important resource for national models of plant communities (e.g. updates to the National Vegetation Classification)
- We make the NPMS data as accessible and user-friendly as possible to promote their use in research
- **Species records also go to:**
 - National Biodiversity Network (NBN)
 - BSBI
 - GBIF (global data)



Data from the National Plant Monitoring Scheme


This collection links together datasets from the National Plant Monitoring Scheme (NPMS). The NPMS is a habitat-based plant monitoring scheme designed by the Botanical Society for the British Isles (BSBI), the Centre for Ecology & Hydrology (CEH), Plantlife and the Joint Nature Conservation Committee (JNCC). The aim is to collect data to provide an annual indication of changes in plant abundance and diversity. It is a scientific survey, which involves recording plant 'indicator species' in five plots within a 1km square. The NPMS is indebted to all volunteers who contribute data to the scheme.





National Plant Monitoring Scheme

Feedback

This data collection contains these resources

 Dataset
Habitat samples from the National Plant Monitoring Scheme, 2015-2022

 Dataset
National Plant Monitoring Scheme, 2015 dataset

 Dataset
National Plant Monitoring Scheme, 2015 to 2016 dataset

Local insights Please keep in touch!

Stories about
on-the-ground
change are just
as key to the
NPMS as the
broad view



Looking across SE0173 towards Angram Reservoir, Upper Nidderdale. The plot in the foreground comprises montane heath and a 'peat hag' caused by late snow lie

My survey square is an exposed heather moorland in the Teesdale Valley, County Durham accessed via farmland and fields of rather intimidating young cows most years. In spite of this I relish the solitude and freedom it gives me to sit quietly and take a moment to myself in the wilderness. Visiting twice a year has really opened my eyes to the diversity of this habitat type and I am now very focused on the small changes occurring. This year I have been very keen to see whether the Roundleaved Sundews close to my survey plots are extending their range.



Have kayak, will travel! The view from Island Taggart



Sophie's linear plot on Hartland Moor, Dorset

A person wearing a blue long-sleeved shirt and dark trousers is working in a greenhouse. They are leaning over a piece of scientific equipment, possibly a spectrophotometer or similar instrument, which is connected to various tubes and wires. The greenhouse structure is made of a metal frame with a translucent covering. The background shows rows of plants in the greenhouse.

**Thank you to all NPMS volunteers
and the teams at BSBI, DAERA, JNCC,
Plantlife and UKCEH**

Any questions?