

UK Ladybird Survey

The value of citizen science

Helen Roy

Defining citizen science

...volunteer collection of biodiversity and environmental data which contributes to expanding our knowledge of the natural environment, including biological monitoring and the collection or interpretation of environmental observations



Approaches to citizen science

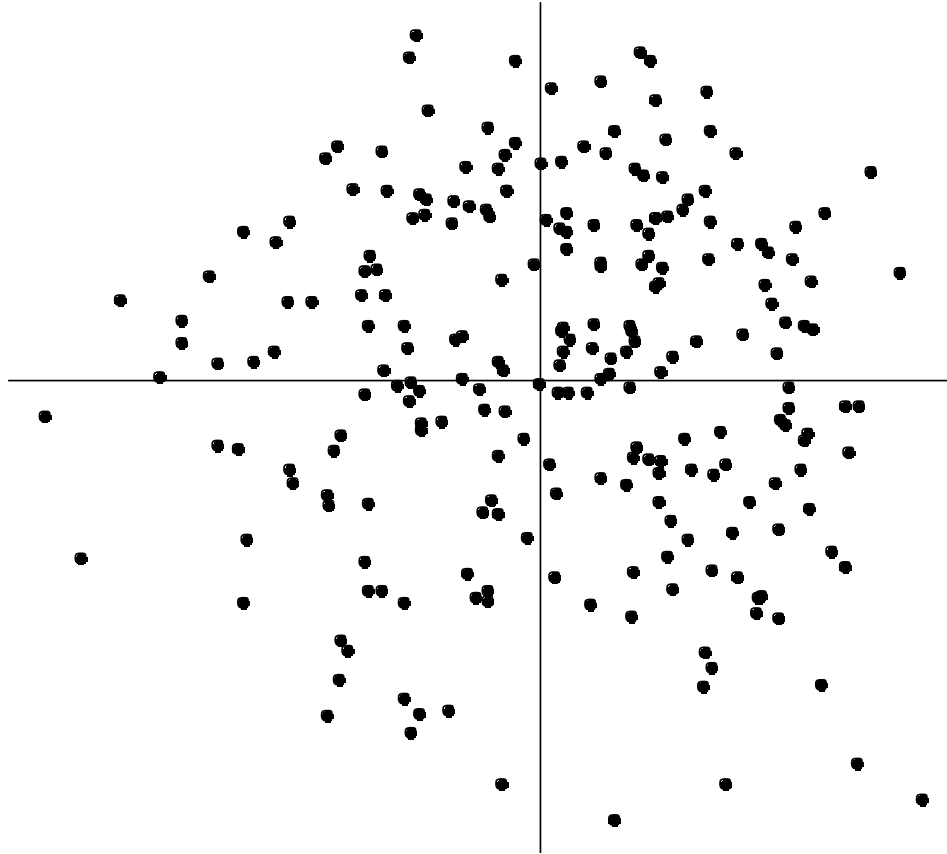
- Contributory projects – designed by professional scientists; members of the public primarily contribute data.
- Collaborative projects - designed by professional scientists; members of the public contribute data and inform the way in which the questions are addressed, analyze data and disseminate findings.
- Co-created projects - designed by professional scientists and members of the public working together and for which some of the volunteer participants are involved in most or all steps of the scientific process.
- Volunteers work together on all stages of the project without involvement of professional scientists. Such a model is characteristic of, for example, local biodiversity atlas projects in Britain.

Systematic review of citizen science projects

The screenshot shows a web-based data entry form for citizen science projects. The form is organized into several columns and sections. The first column contains basic project information: ProjectName (Conker Tree Scien), Website (http://www.conk...), Reference, BriefDescription (A hypothesis-led...), SourceOfLink, DateOfAccess (11/06/2012), and RelatedProjects. The second column includes 'Is project still active?' (checked), StartYear (2010), StartPeriod, FinishYear, and FinishPeriod. The third column has 'TypeOfSupport' (SupportingMaterial checked), 'BackgroundContext' (Content-rich checked), 'Targetted at...' (School Children? and Anyone? checked), 'Is registration required?' (Yes), 'Is it entirely computer based?' (Yes), 'One-off snap-shots sufficient?' (Yes), and 'Are repeat visits required?' (Yes). The fourth column covers 'Types of data questions' (1 selected), 'SpecialEquipmentRequired' (No), 'Notes on special equipment' (plastic bag), 'Type of data' (Location, Text or score, Photo checked), 'Best quality of data' (Quantitative checked), 'Is quality assurance explicit?' (No), and 'Data available to download?' (No public access to download selected). The fifth column contains 'Data resolution to view' (Summary checked), 'Dynamism of data' (Live and up-to-date selected), 'Volume of data (if KNOWN):' (4000), 'Volume of data (if ESTIMATED):', 'Units for data: Records 2010', 'Health_Safety' (brief selected), 'VeryGoodExample' (checkbox), 'Why a very good example?', 'VeryBadExample' (checkbox), 'Why a very bad example?', 'Any general notes?', and 'More notes?'. The bottom of the form shows a status bar with 'Record: 1 of 244', 'No Filter', and a search field.

- Simplified the data and plotted on 2 axes

Landscape of citizen science



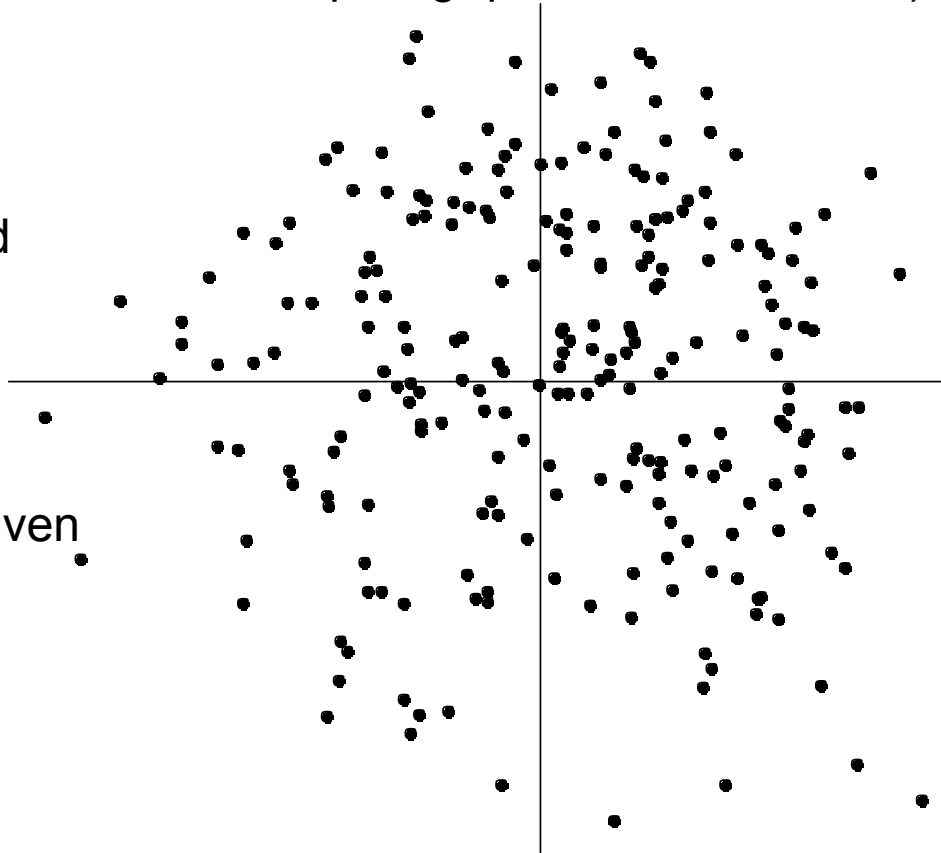
Landscape of citizen science

High investment, high return

- Well developed supporting materials
- But asking for richer data (lots of questions and requiring quantitative answers)

Scientific sampling

- Designed, repeated sampling
- Often more local
- Requiring special equipment
- Personal training given



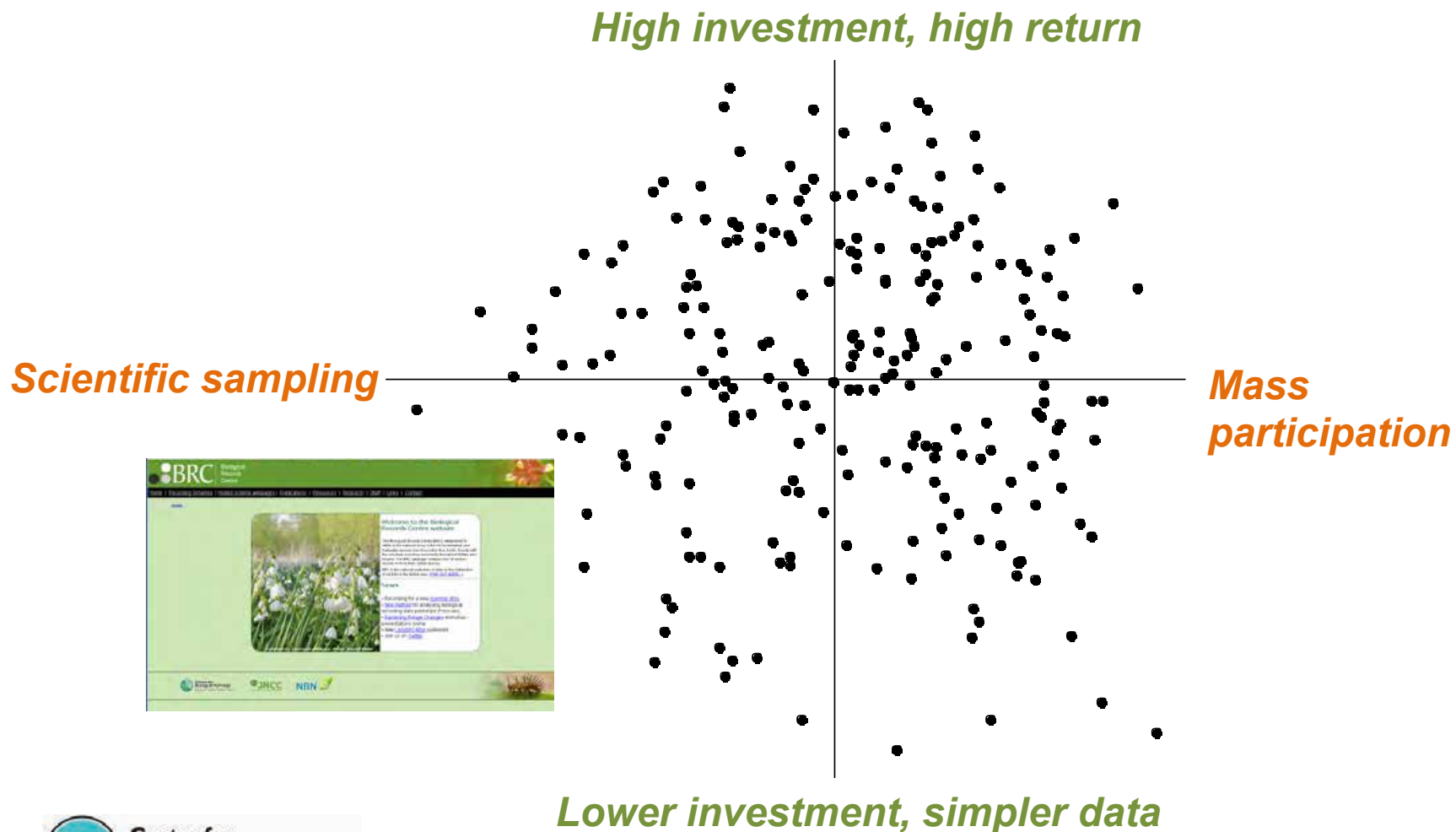
Mass participation

- People take part anywhere, anyhow
- Easy to take part
- Support via the web

Lower investment, simpler data

- Simpler projects, requiring less to be involved
- Asking for simpler data (presence)

Landscape of citizen science



What is biological recording?

A group of five hikers with backpacks are walking along a dirt path in a lush, green landscape. The foreground is filled with tall grass and numerous bright yellow wildflowers. The background shows a dense forest of green trees. The scene is brightly lit, suggesting a sunny day.

Who are the “citizen scientists”?



Oldfield Park
Infants School





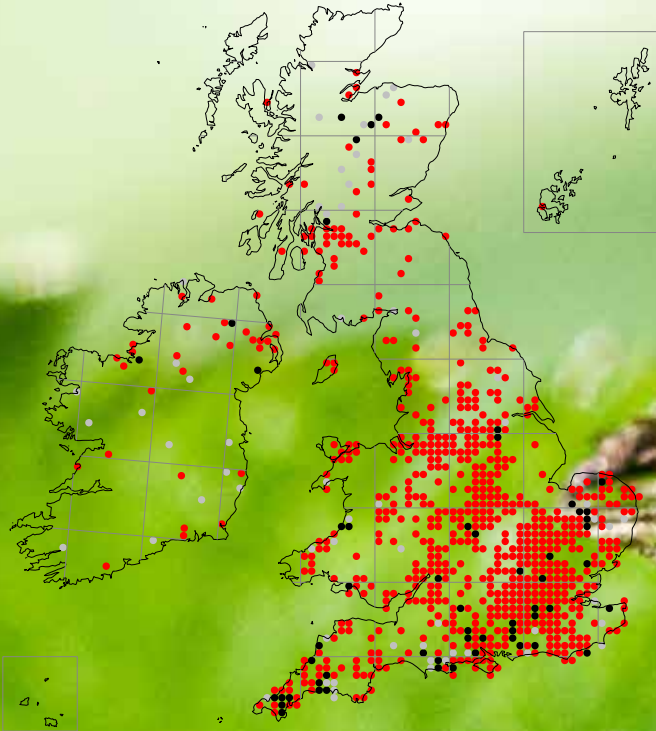
Is biological recording fit for purpose?

- What is the purpose?
 - Describing species' distributions
 - Detecting and attributing change over time



Opportunities

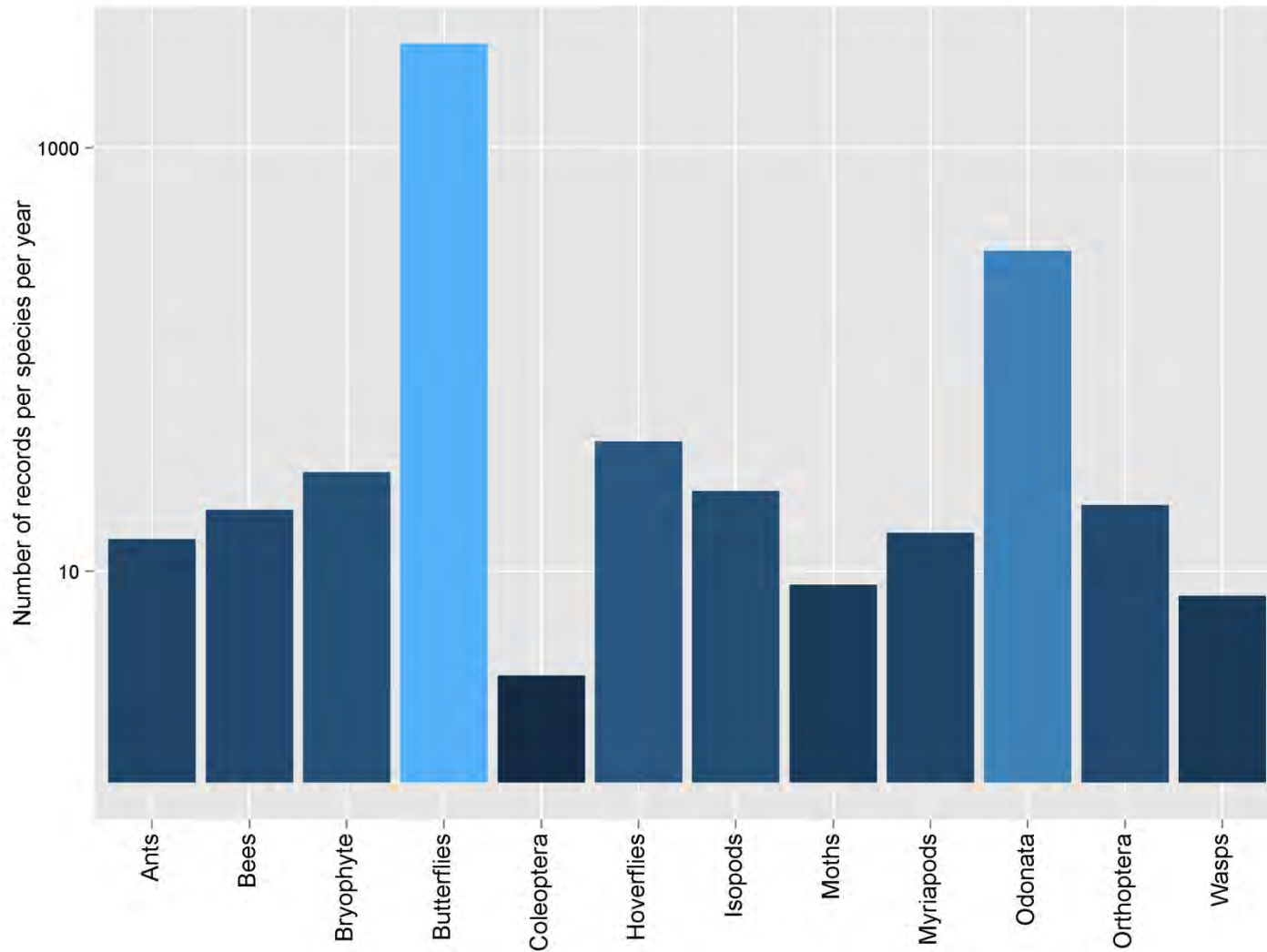
- Before 1990
- Before and after 1990
- After 1990



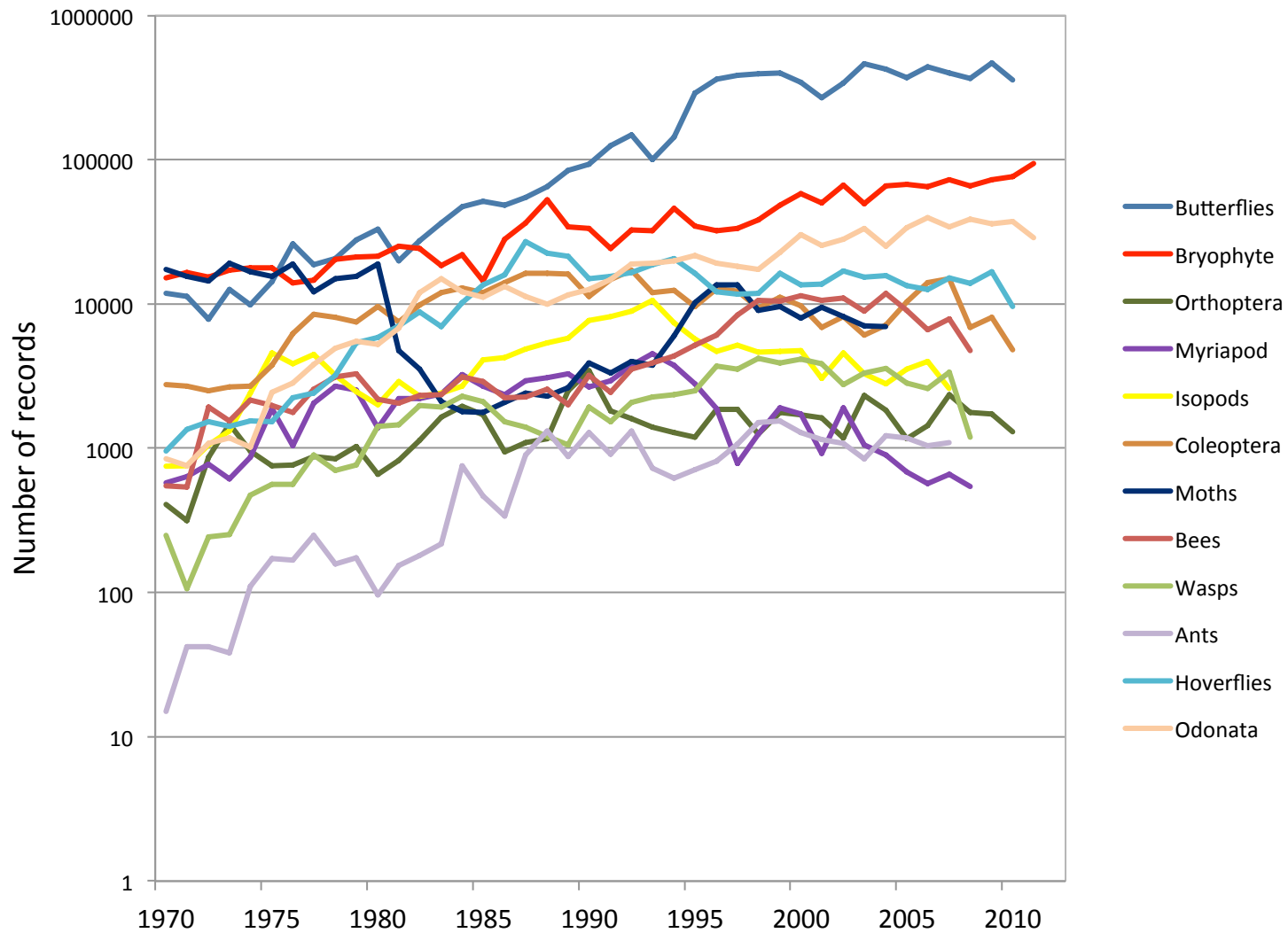
Challenges



Recording intensity varies among taxa

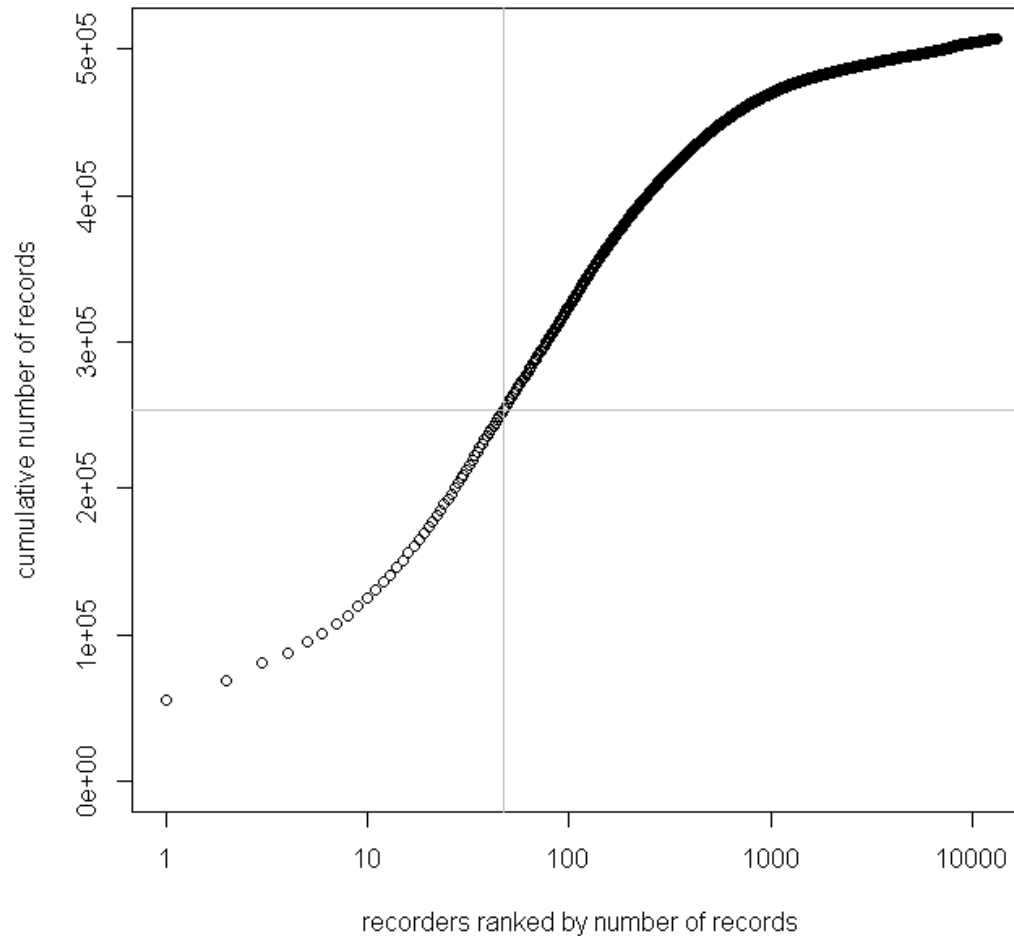


Recording intensity has increased over time



Most records come from a few recorders

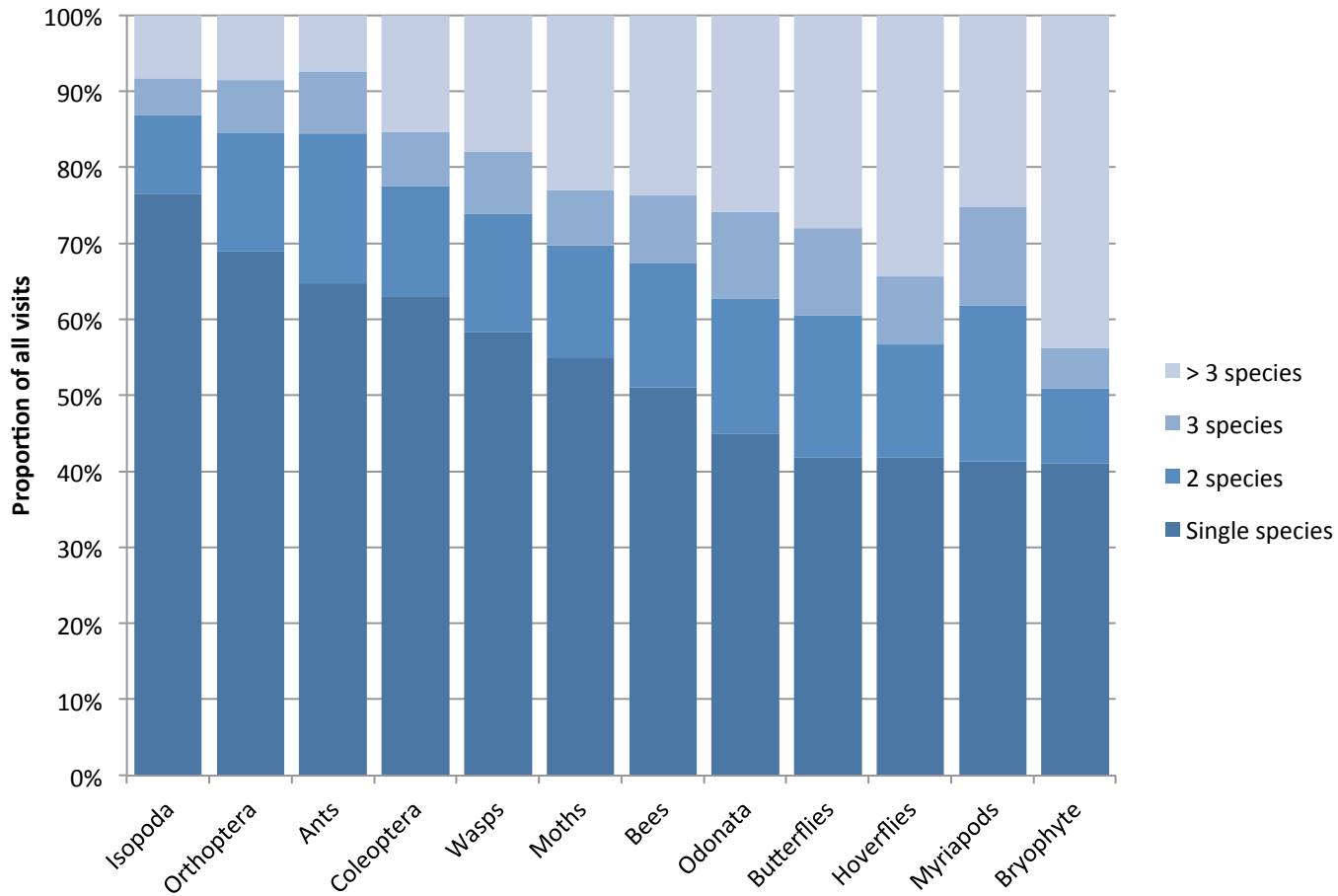
Coleoptera: 50% records come from 47 recorders



Bryophytes: 18
Myriapods: 11
Moths: 102
Orthoptera: 39

Most lists are incomplete

For most groups, ~50% of visits produce 'incidental records'



Spatial pattern of recording behaviour

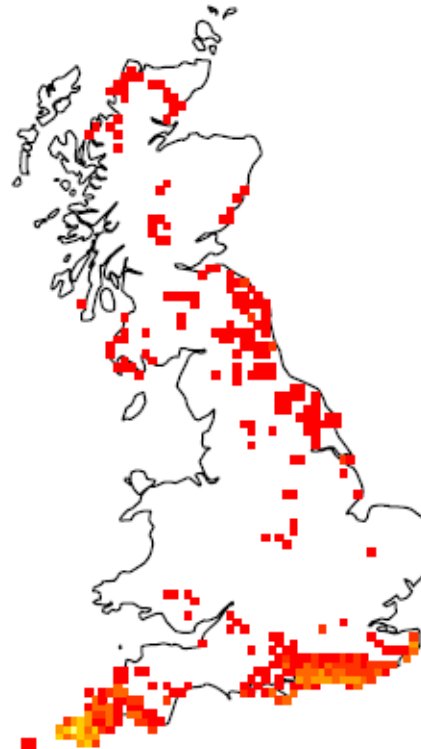
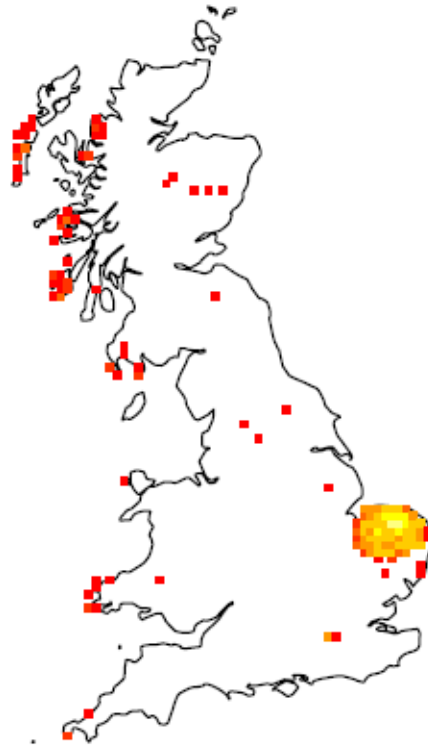
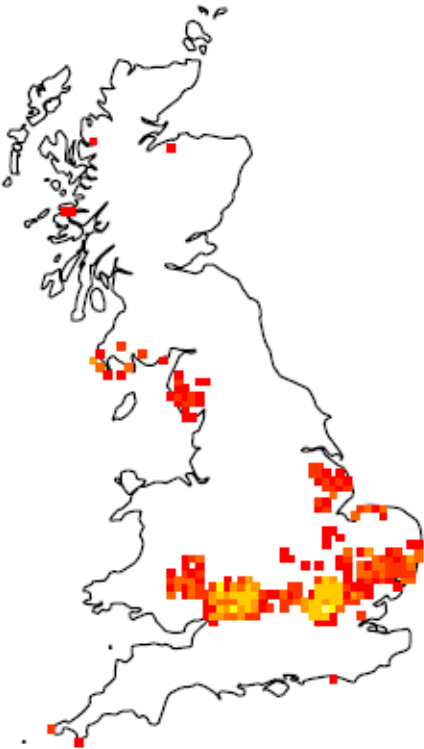
Orthoptera 1970-2011: top 4 recorders made 14% of all visits

#1: tot=1646 max=65

#2: tot=1533 max=90

#3: tot=1020 max=74

#4: tot=892 max=198



Power to detect a genuine decline

	A Even Recording	B Increasing Intensity	C1 Incomplete even	C2 Incomplete increasing
Change Index	0.574	0.461	0.37	0.316
nRecords	0.642	0	0.449	0
Visit Rate	0.739	0.606	0.507	0
MM2sp	0.665	0.424	0.319	0
MM4sp	0.615	0.363	0.211	0.208
Frescalo	0.612	0	0.34	0.308

iRecord – ensuring quality

Logged in as *DavidRoy* >> [My Account](#) [Logout](#)

iRecord [Search](#)

[Home](#) [Record](#) [Explore](#) [Summarise](#) [Verify](#)


Welcome back David.

Recent sightings


The following list of records includes verified records and those awaiting verification of species groups you are interested in which have been recently added in your area.

Species	Site name	Grid Ref	Date	Recorder
<i>Bombus hypnorum</i> Tree Bumblebee	Carmel college	SU61068749	2012-06-10	David.Roy
<i>Phyllobius (Metaphyllobius) pomaceus</i>	Crowmarsh Gifford	SU617892	2012-06-18	David.Roy
<i>Psyllobora vigintiduopunctata</i> 22-Spot Ladybird	Crowmarsh Gifford	SU617892	2012-06-18	David.Roy
<i>Xanthorhoe fluctuata</i> Garden Carpet	Crowmarsh Gifford	SU617892	2012-06-10	David.Roy
<i>Agrotis exclamationis</i> Heart and Dart	Crowmarsh Gifford	SU617892	2012-06-10	David.Roy


[first](#) [prev](#) [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [next](#) [last](#) Showing records 1 to 5 of 204



Bombus hypnorum | Tree Bumblebee



Phyllobius (Metaphyllobius) pomaceus



Psyllobora vigintiduopunctata | 22-Spot Ladybird

[first](#) [prev](#) [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [next](#) [last](#) Showing records 1 to 3 of 29

Data: CC-BY-SA by OpenStreetMap

Messages

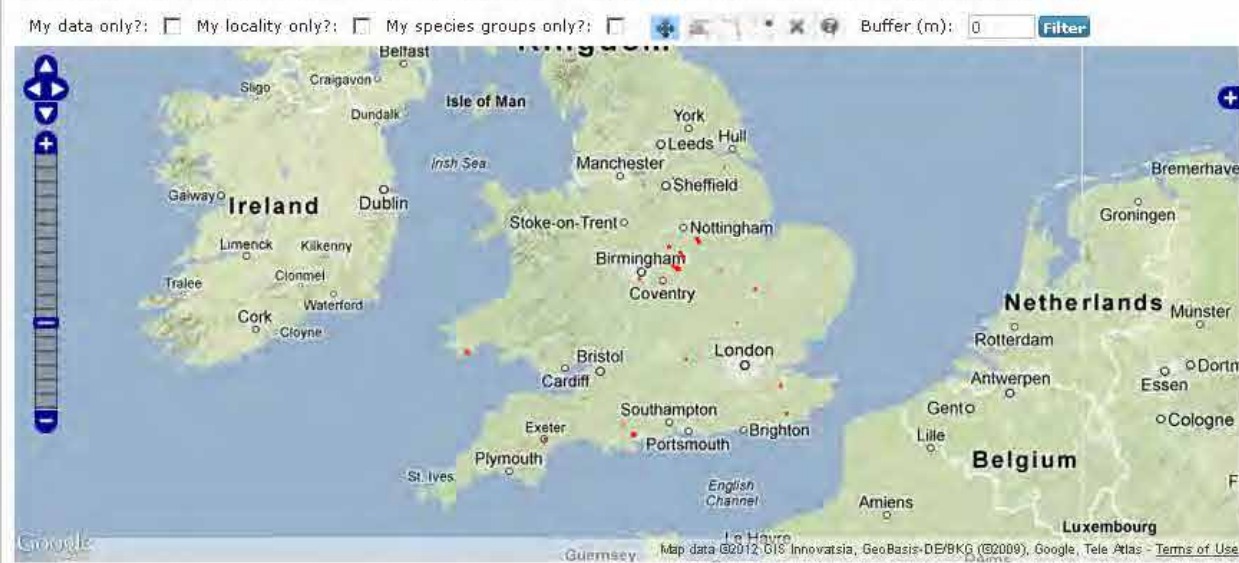
Filter for in [information](#) [Filter](#)

[first](#) [prev](#) [next](#) [last](#) No records

iRecord – rich reporting



Explore
 The following list of records includes verified records and those awaiting verification which have been recently added in your area.

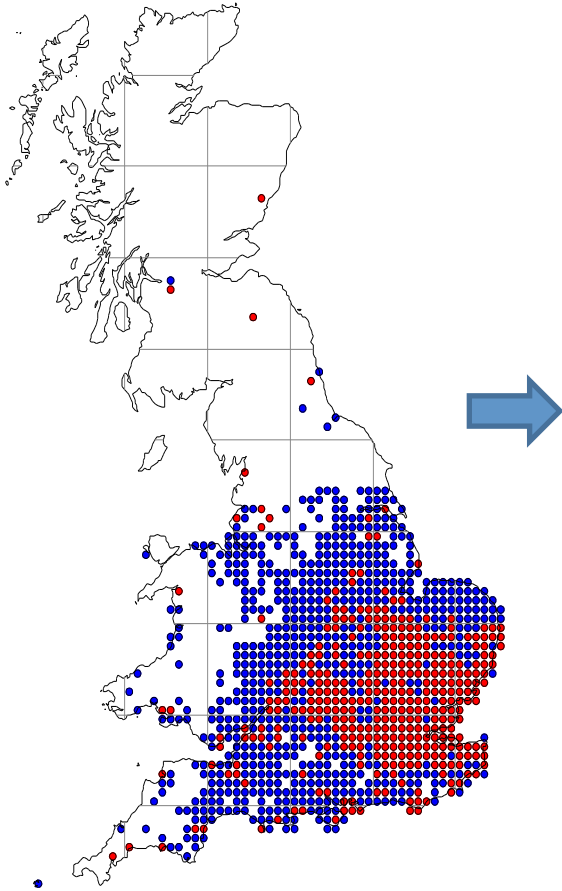


ID	Source	Species	Taxon Group	Site name	Grid Ref	Date	Recorder	Actions
56398	BWARS Single Species Surveys	Tree Bee	Insect - hymenopteran	Garden	TA018086	2012-06-20		
56377	NNSS RISC MBA	Chinese Mitten Crab	Crustaceans	Allington Lock, Maidstone	TQ744 582	2012-06-20		
56748	NatureSpot NatureSpot Leicestershire and Rutland	Andrena cineraria Grey Mining Bee	Bees, Wasps, Ants	Holwell Nature Reserve	SK74252377	2012-06-20		
56747	NatureSpot NatureSpot Leicestershire and Rutland	Cantharis rustica	Beetles	Holwell Nature Reserve	SK74252377	2012-06-20		
56746	NatureSpot NatureSpot Leicestershire and Rutland	Euclidia glyphica Burnet Companion	Moths	Holwell Nature Reserve	SK74252377	2012-06-20		
56749	NatureSpot NatureSpot Leicestershire and Rutland	Polyommatus icarus Common Blue	Butterflies	Holwell Nature Reserve	SK74252377	2012-06-20		
56215	BWARS Single Species Surveys	Tree Bee	Insect - hymenopteran	Exeter	SN78752220	2012-06-19		
56244	BWARS Single Species Surveys	Tree Bee	Insect - hymenopteran	Barn Close Birmingham	SP05898058	2012-06-19		
56342	NatureSpot NatureSpot	Nemophora degeerella	Moths	Long Clawson	SK72162737	2012-06-19		

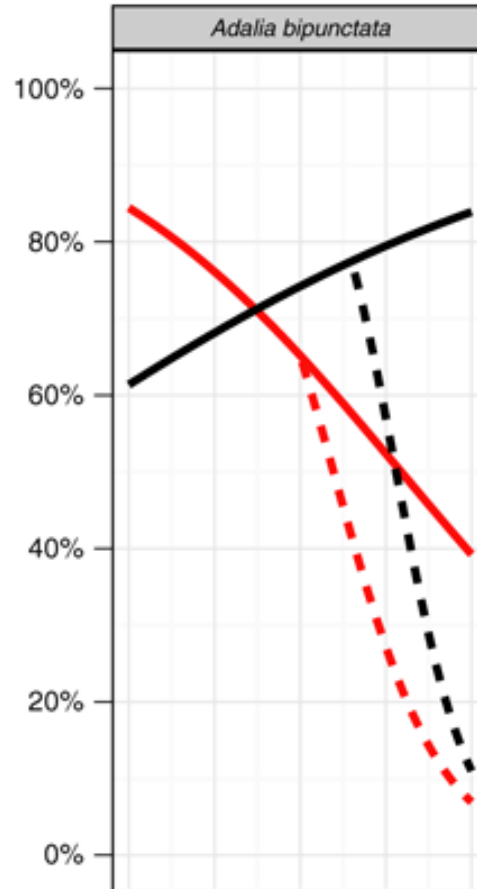
Click the row to highlight the record on the map. Double click to zoom in.

Past, present and future

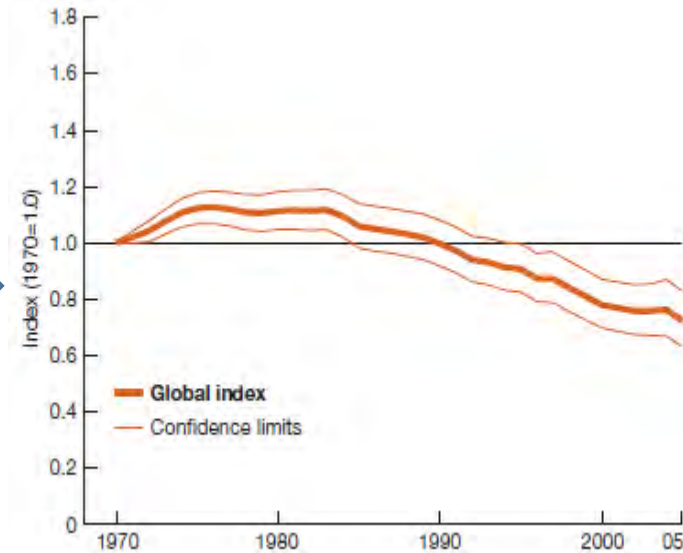
Describing change



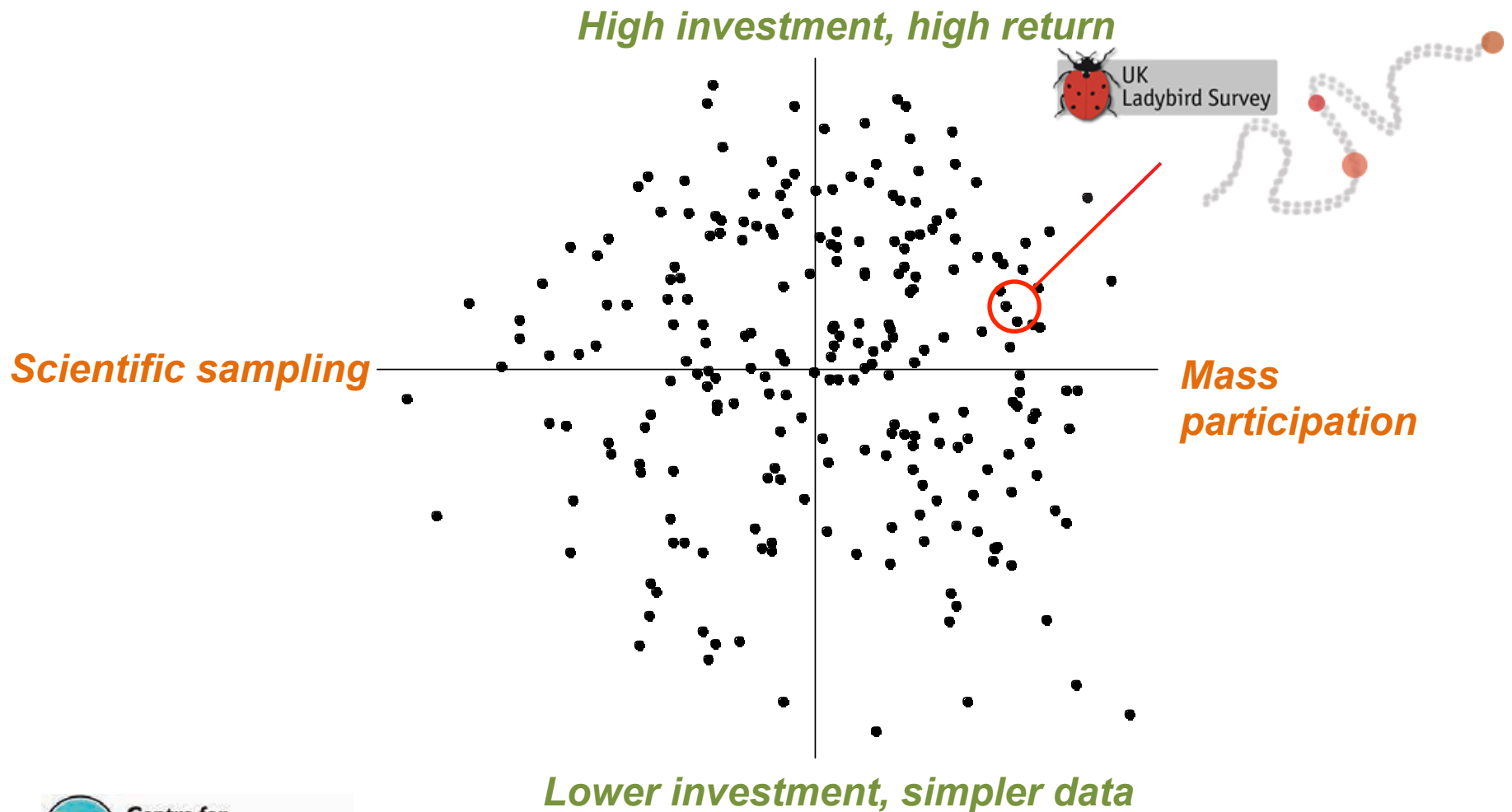
Attributing change



Biodiversity Indicators



UK Ladybird Survey





UK Ladybirds

BBC Breathing
Places

Harlequin invasion

Recording

Research

Children's pages

Ladybird gallery

Further information

Welcome to the UK Ladybird Survey website

The Ladybird Survey aims to facilitate the recording of all the UK's ladybirds.

On this website you will find lots of information to help you find and identify species, and online forms so that you can record your observations.

Ladybirds belong to the scientific family Coccinellidae. In Britain, some 46 species belong to this family, although only 26 of these are recognisably ladybirds.

The invasion of the harlequin ladybird (*Harmonia axyridis*) threatens our native populations. If you want to know more about this species in particular, or want to record sightings, please have a look at the [Harlequin Ladybird Survey](#) website.

Use the links in the menus at the sides of this page to find out more about ladybirds, and what you can do to help.



7-spot ladybird (photo: William Purvis)



New Ladybird Atlas Published

A stunning, 200-page, full-colour book, authoritatively written by the ladybird survey organisers.

The acknowledgements begin, "First and foremost we would like to thank the thousands of people who have contributed ladybird records to the Coccinellidae Recording Scheme, Harlequin Ladybird Survey, UK Ladybird Survey and Ladybirds of Ireland project."

Available from various outlets including [CEH](#), [FSC](#), and good bookshops. (Download [errata](#))

iRecord – Ladybird Recording Form



Logged in as *Helen Roy* >> [My Account](#) [Logout](#)

- [Home](#)
- [Record](#)
- [Explore](#)
- [Summarise](#)
- [Verify](#)
- [Download](#)
- [Forum](#)
- [How do I...?](#)

Enter ladybird records

What did you see and when?

Please enter the date and all the species you saw at one site on a single day and any other information about them. Then move to the **Where was it?** tab before submitting your records.

Date:



The date you saw this (dd/mm/yyyy)

Species	Colour form	Life stage	Quantity	Comment	Images
<input checked="" type="checkbox"/> <i>Harmonia axyridis</i> - Harlequin Ladybird	succinea	<input type="button" value="v"/> Adult	<input type="button" value="v"/> 1		add images
<input checked="" type="checkbox"/> <i>Adalia bipunctata</i> - Two-spot Ladybird	typica	<input type="button" value="v"/> Adult	<input type="button" value="v"/> 1		add images
	<i>select a species first.</i>	<input type="button" value="v"/>			<i>select a species first</i>

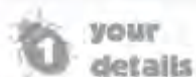
Use * as a wildcard when searching for species names.

[About](#) [Terms & Conditions](#) Powered by Indicia

Stethorus punctillum (Coccinellidae, Coccidulinae)

“...vane trap in an oak tree in Brasenose Wood, Oxford. The vane trap was in situ from 19.vi - 22.vii.2012.”





survey submitted

Which species? How many?

Narrow down your choice by selecting options in the Interactive Key. To set the number seen, click +/- buttons. For more details about any ladybird, point at its picture.

Interactive Key Show all

Select options that match:

Main colour (wing case) red black yellow brown ?

Spot colour light dark

Length up to 5mm over 5mm ?

Leg colour brown black

Number of spots Up to 10 11 or more



10-spot ladybird
f. decempunctata



24-spot ladybird

- Tweets
- Following
- Followers
- Favorites
- Lists

- Trends · Change
- #JanoskiansFirstEverFollowSpree
 - #IGrewUpWatching
 - #LatestPopDotCom
 - #FollowMeQuincy
 - #ThreeWordsSheWantsToHear
 - M&S
 - Morning
 - VIP
 - German
 - France



Helen Roy
 @UKLadybirds

UK Ladybird Survey recording all species of ladybird (Coleoptera: Coccinellidae)
 UK · <http://www.ladybird-survey.org>

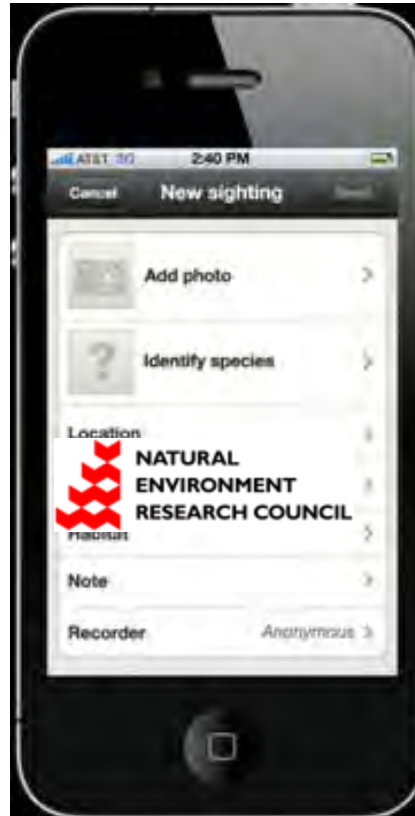
3,551 TWEETS 24 FOLLOWING 1,503 FOLLOWERS

Message icon Notification icon

- Tweets**
- 
Helen Roy @UKLadybirds 30s
 Very pleased to be one of the speakers at rigourandopenness.org - I'm debating the undebateable value of volunteer recording!
 Expand
 - 
Helen Roy @UKLadybirds 2m
 @devonmaid09 wonderful - a lovely sign of spring!
 View conversation
 - 
Helen Roy @UKLadybirds 3m
 @bensonbirdman almost ready for release - the prototype looks amazing!
 View conversation Reply Delete Favorite More



Smartphone app



Ladybirds at London Zoo





Only £1



Max 16C, min -3C

Friday May 18 2012 | thetimes.co.uk | No 70576

ZGMRRM

The year of the ladybird

Times2



times modern

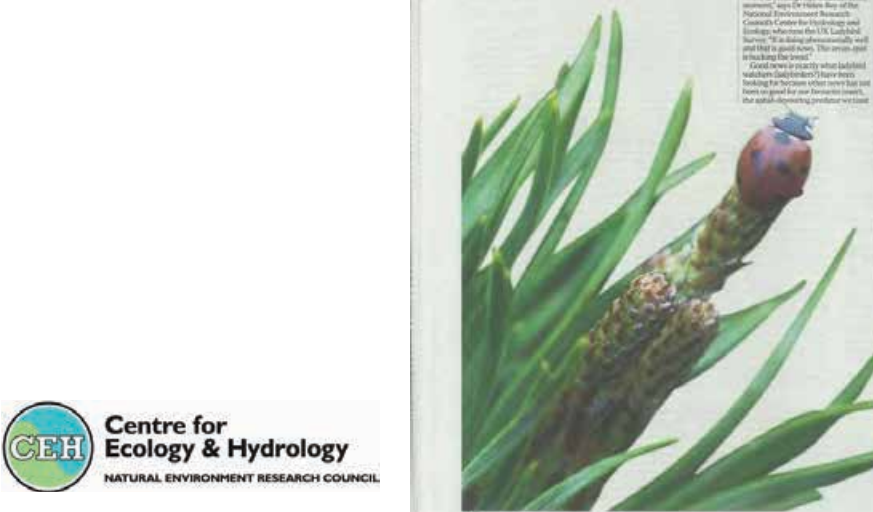
The ladybirds are coming!

In the summer of 1976, the nation's skies were filled with swarms of seven-spots. Now, experts tell Damian Whitworth, we are heading for a second Year of the Ladybird

At a distance of 30 years the experts need little white fluff on a dark back of the UK's "Year of the Ladybird". The year was a combination of "ladybirds on their feet" as your editor and down your neck. There were clear signs of a year of the ladybird in the clouds of eggs and they were found in their thousands on the ground. Things ladybirds love to eat are in abundance. The year was called "the year of the ladybird" as millions of them were marked against the dry, bright sunlight. The year was called "the year of the ladybird" as millions of them were marked against the dry, bright sunlight.

How to find and identify ladybirds

- Ladybirds** can be found in places where they eat their food. They are most common in places where they eat their food. They are most common in places where they eat their food.
- Check the ground** for ladybirds. They are most common in places where they eat their food.
- Look for ladybirds** in places where they eat their food. They are most common in places where they eat their food.
- Walk slowly** and scan the ground for ladybirds. They are most common in places where they eat their food.
- Use a magnifying glass** to look at ladybirds. They are most common in places where they eat their food.
- Use a hand lens** to look at ladybirds. They are most common in places where they eat their food.
- Use a microscope** to look at ladybirds. They are most common in places where they eat their food.
- Use a camera** to take pictures of ladybirds. They are most common in places where they eat their food.



CEH Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

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times modern

Ladybirds A guide

Seven-spot ladybird

Seven-spot ladybirds are the most common of all ladybirds. They are found in large numbers in the UK.

Two-spot ladybird

Two-spot ladybirds are found in large numbers in the UK. They are found in large numbers in the UK.

One-spot ladybird

One-spot ladybirds are found in large numbers in the UK. They are found in large numbers in the UK.

Black ladybird

Black ladybirds are found in large numbers in the UK. They are found in large numbers in the UK.

Green ladybird

Green ladybirds are found in large numbers in the UK. They are found in large numbers in the UK.

Blue ladybird

Blue ladybirds are found in large numbers in the UK. They are found in large numbers in the UK.

Red ladybird

Red ladybirds are found in large numbers in the UK. They are found in large numbers in the UK.



Ilkley College, a biological science research centre at the University of Leeds, and a ladybird expert. He has been studying ladybirds for 30 years and has written a book about them. He is a member of the British Entomological Society and the British Ladybird Society. He has been studying ladybirds for 30 years and has written a book about them. He is a member of the British Entomological Society and the British Ladybird Society.

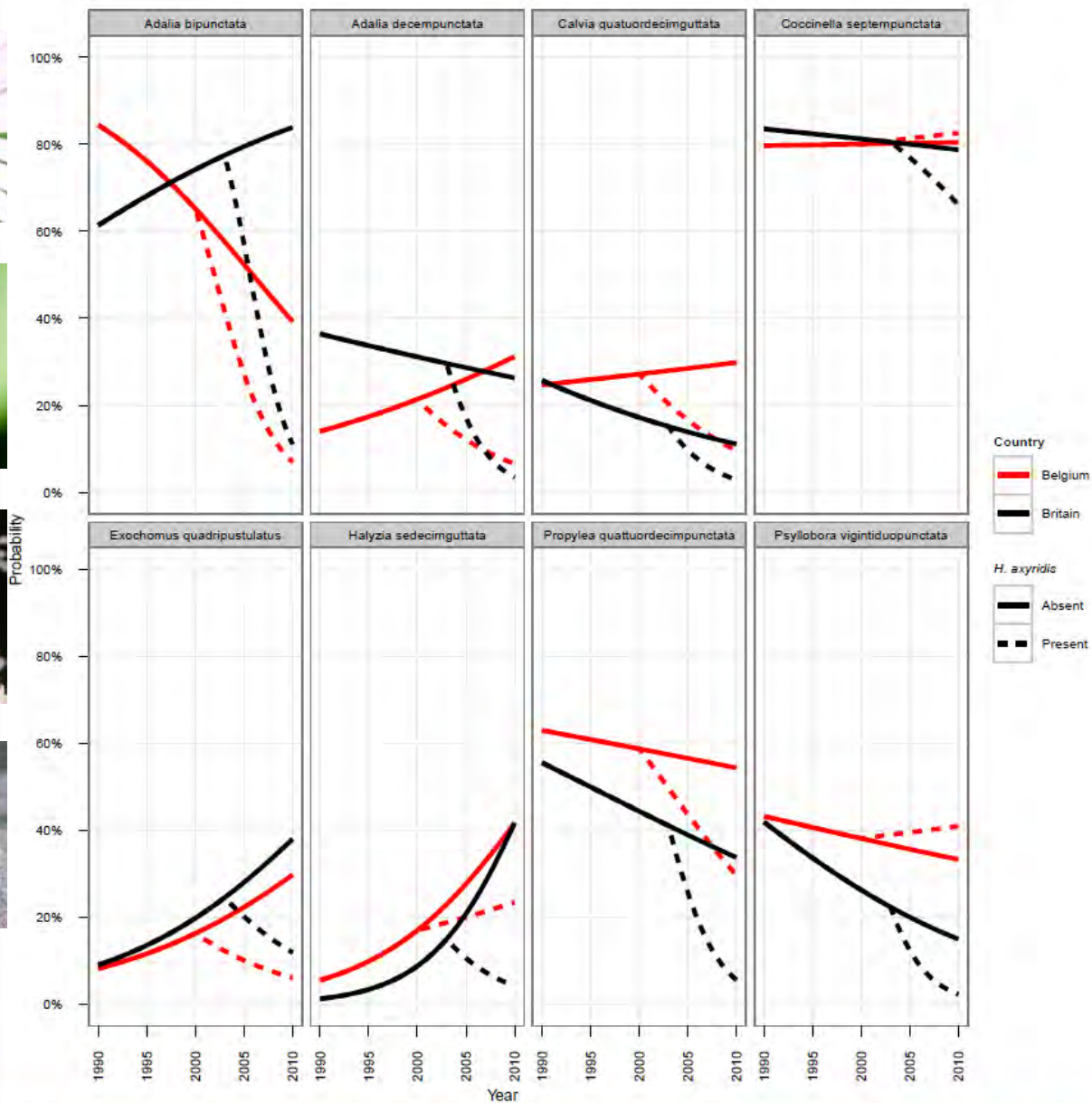


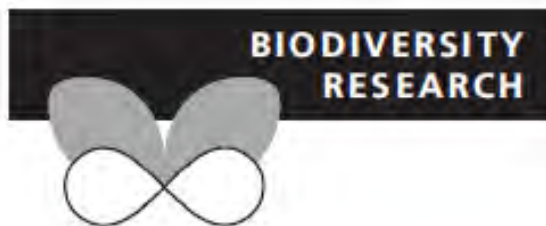
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Declines in native ladybirds





Invasive alien predator causes rapid declines of native European ladybirds

Helen E. Roy^{1*}, Tim Adriaens², Nick J. B. Isaac¹, Marc Kenis³, Thierry Onkelinx², Gilles San Martin⁴, Peter M. J. Brown⁵, Louis Hautier^{6,7}, Remy Poland⁸, David B. Roy¹, Richard Comont¹, René Eschen³, Robert Frost, Renate Zindel^{3,9}, Johan Van Vlaenderen³, Oldřich Nedvěd¹⁰, Hans Peter Ravn¹¹, Jean-Claude Grégoire⁷, Jean-Christophe de Biseau¹², Dirk Maes²

¹NERC Centre for Ecology & Hydrology, Benson Lane, Crowmarsh Gifford, Oxfordshire, OX10 8BB, UK, ²Research Institute for Nature and Forest (INBO), Kliniekstraat 25, B-1070 Brussels, Belgium, ³CABI Europe-Switzerland, 1 Rue des Grillons, 2800 Delémont, Switzerland, ⁴Behavioural Ecology and Conservation group, Biodiversity Research Centre, Earth and Life Institute, Université catholique de Louvain, Croix du Sud 4, B-1348 Louvain-la-Neuve, Belgium, ⁵Animal & Environmental Research Group, Department of Life Sciences, Anglia Ruskin University, East Road, Cambridge, CB1 1PT, UK, ⁶Unité Protection des plantes et écotoxicologie,

ABSTRACT

Aim Invasive alien species (IAS) are recognized as major drivers of biodiversity loss, but few causal relationships between IAS and species declines have been documented. In this study, we compare the distribution (Belgium and Britain) and abundance (Belgium, Britain and Switzerland) of formerly common and widespread native ladybirds before and after the arrival of *Harmonia axyridis*, a globally rapidly expanding IAS.

Location Europe

Methods We used generalized linear mixed-effects models (GLMMs) to assess the distribution trends of eight conspicuous and historically widespread and common species of ladybird within Belgium and Britain before and after the arrival of *H. axyridis*. The distribution data were collated largely through public participatory surveys but verified by a recognized expert. We also used GLMMs to

Non-native alerts through GB-NNSIP



Biological Recording for the 21st Century

- We have the tools to model biodiversity change using unstructured biological records
- This is only possible if records continue to be submitted to the database!
- We could be smarter about data collection
- We're only just beginning to exploit the potential of biological recording data
 - Indicators, Red Listing, ecosystem service provision, targeting Agri-environment schemes

Acknowledgements

All volunteer recorders &
co-ordinating organisations

