

Citizen scientists as phenology recorders: The challenges and benefits of mass public data collection

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Nature's Calendar

The UK's largest phenology database,
with nearly 3 million records dating back to 1736
Around 3,500 participants per year



Bluebell first flowering. Credit: Lorianne Whittle

- Background and historical context
- What phenology data is collected and how
- Example of a key science outcome
- Our recorders, recording patterns and challenges

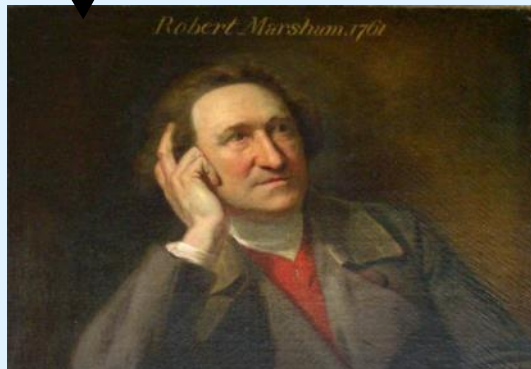
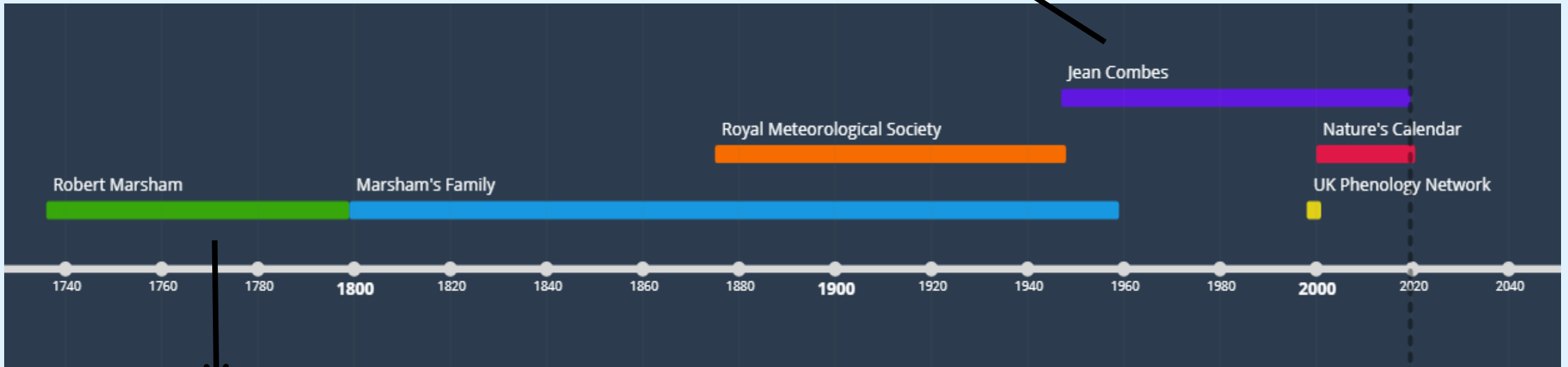
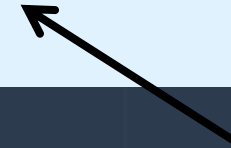


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Jean Combes started her phenological records in 1947.

They provide invaluable information about the important post-war period.



Robert Marsham was the UK's first phenologist and recorded his 'Indications of Spring' from 1736 to his death in 1797.



Amphibians



Birds



Flowers



Fungi



Grasses



Insects



Shrubs



Trees

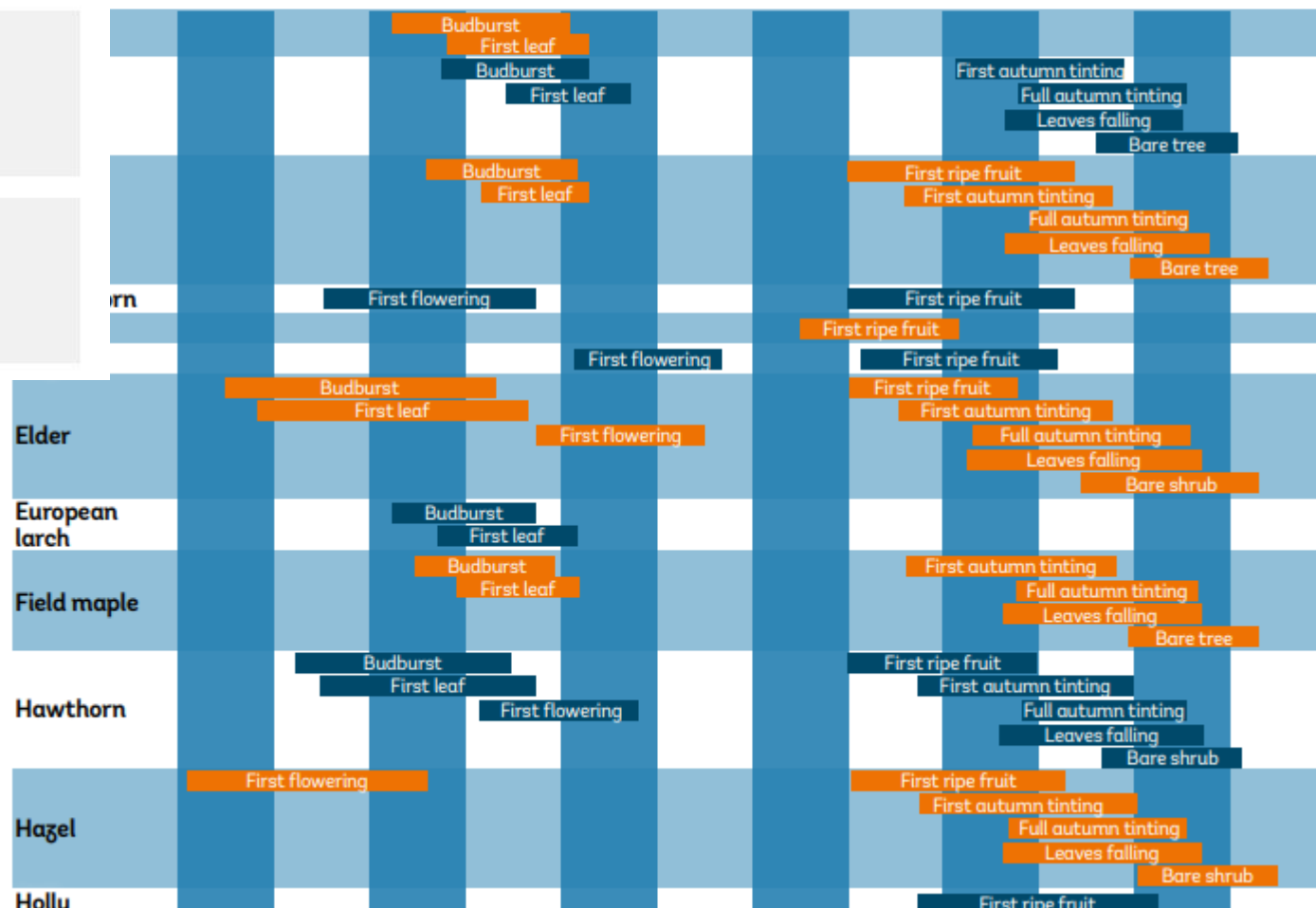
Nature's Calendar

naturescalendar.woodlandtrust.org.uk



Here's a list of the species and events that you can record for Nature's Calendar. This list has been carefully selected by scientists to help us understand how wildlife is affected by weather and climate change.

Trees and Shrubs



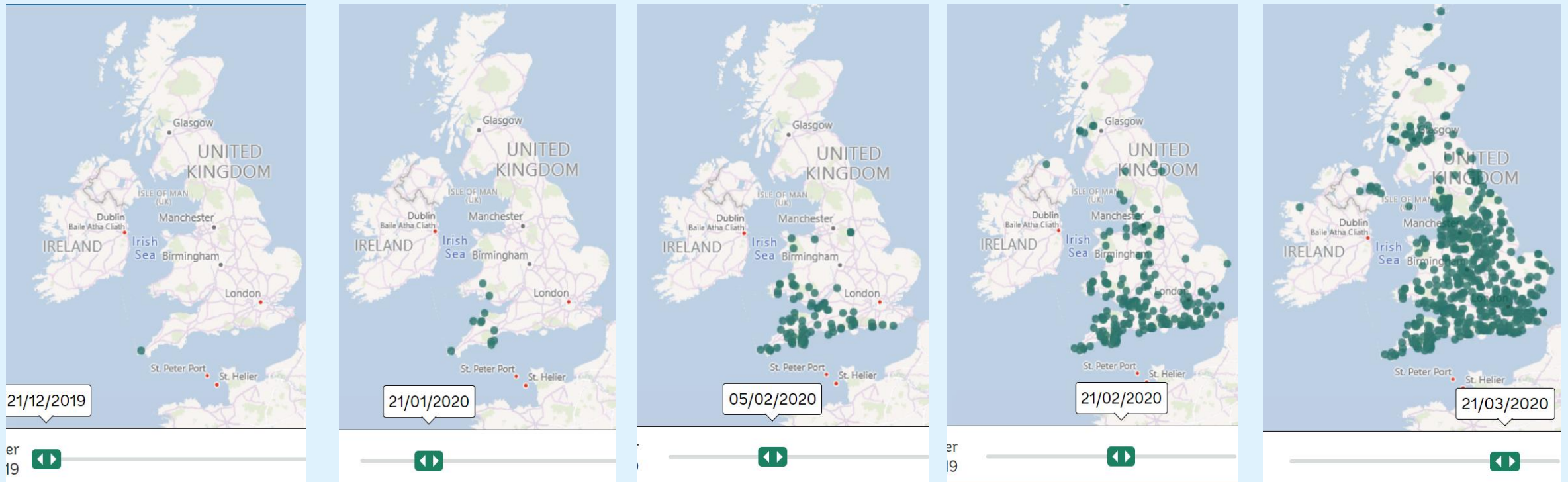
There are 69 species and over 150 seasonal events to record with Nature's Calendar

What happens to the records?

Records submitted instantly appear on our live maps



Frogspawn records 2019/2020



Records also go straight into a database which is made available to students, scientists and the government for research.

Nature's Calendar science: is spring getting earlier?

- The UK Spring Index is calculated annually from the average observation date of four natural events:

hawthorn
first flowering



horse chestnut
first flowering



orange-tip butterfly
first recorded in spring



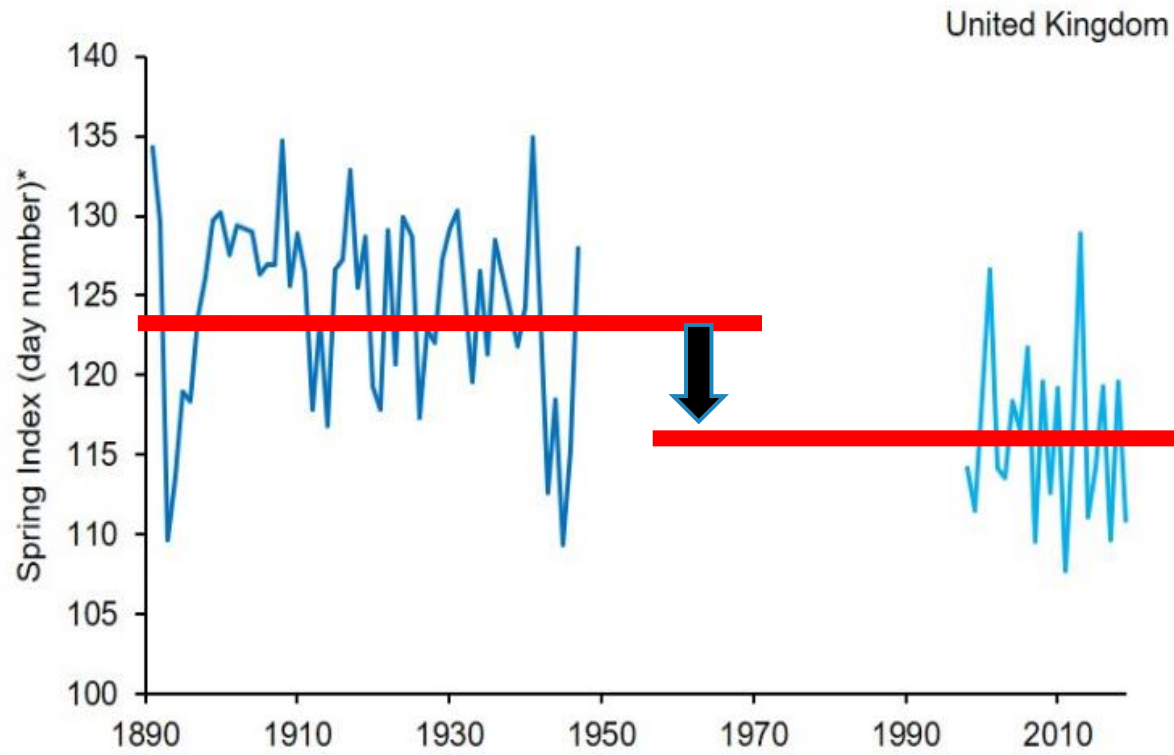
swallow
first spring sighting



- It shows the impact of temperature on the timing of natural events.
- The Spring Index is JNCC's Biodiversity Indicator for the '*Pressure of Climate Change*'.

Nature's Calendar science: is spring getting earlier?

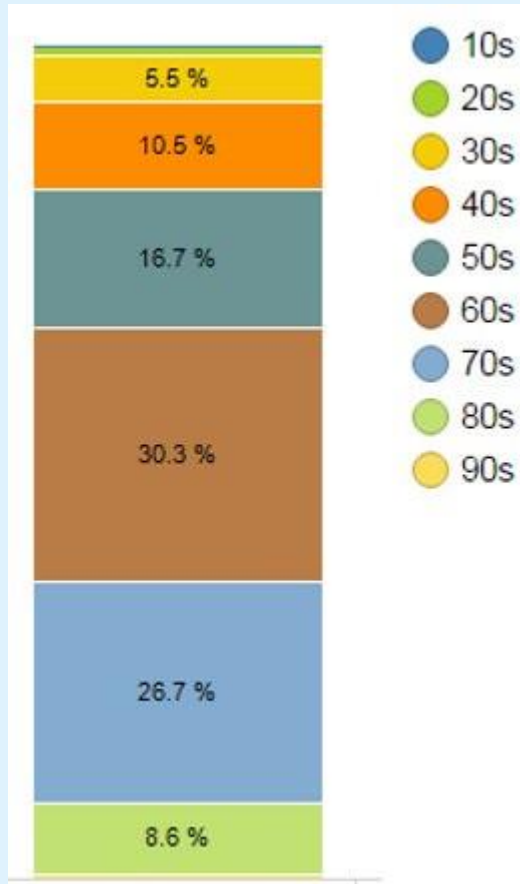
Figure B4i. Index of the timing of biological spring events (number of days after 31 December) in the UK, 1891 to 1947, and 1998 to 2019.



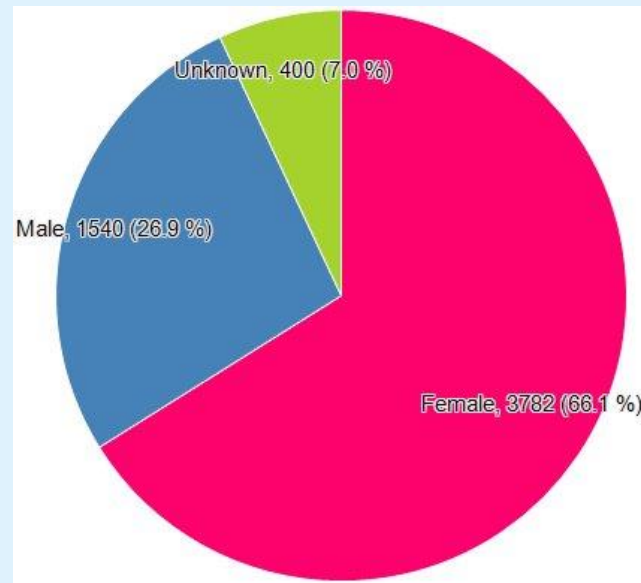
Between 1998-2020 the Spring Index is, on average, over 8 days earlier than 1891-1947



Who are the recorders?



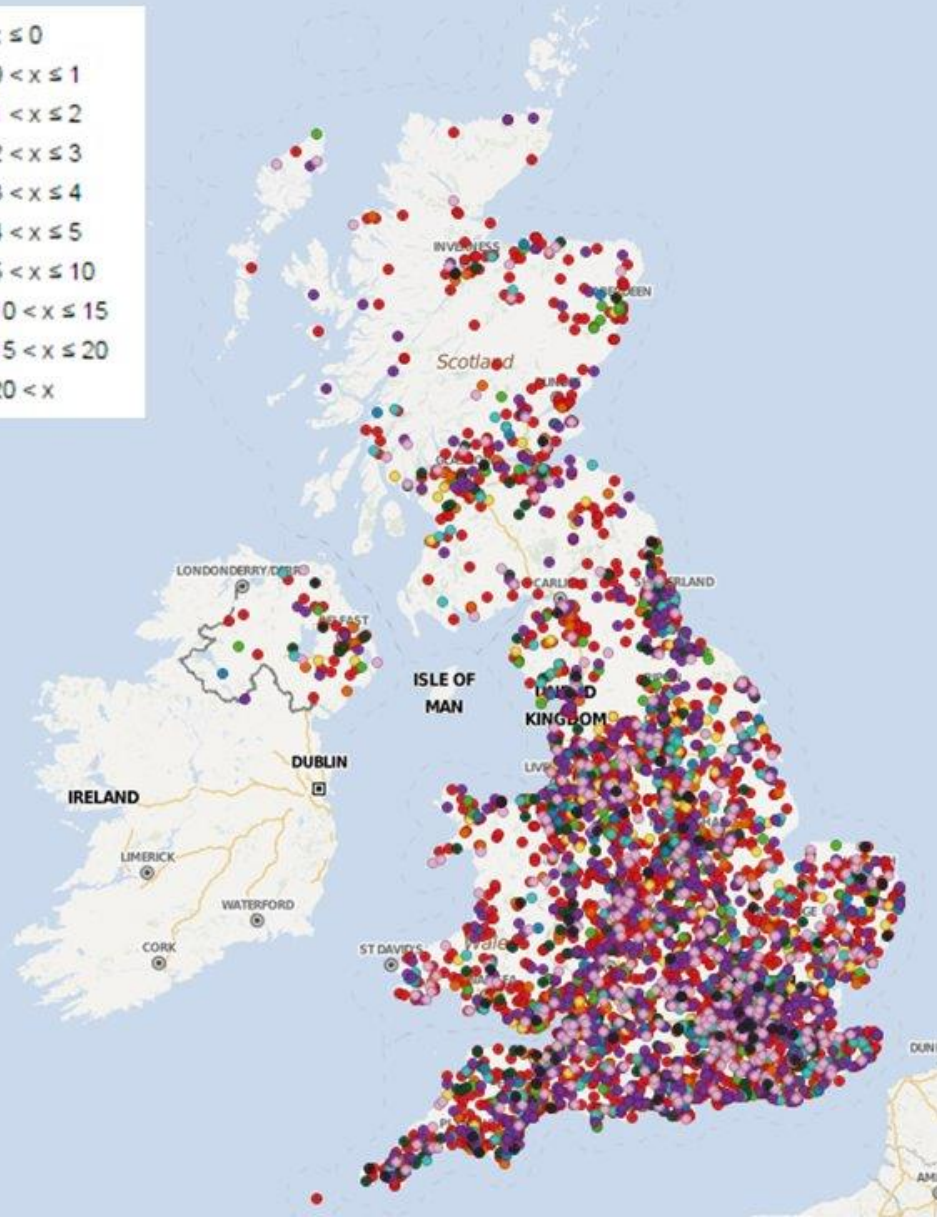
The majority (80%) of Nature's Calendar volunteer recorders have not disclosed their age; of those who have provided an age, the majority are over the age of 50.



Of the contacts whose gender is known, over twice as many are female than male.

Where are the recorders located?

Recorder Tenure (Years)



- The distribution of recorders is uneven and significantly south-centric
- The recorders broadly reflect the population density trends of the UK
- This creates a challenge for determining accurate UK averages
- The experience levels (in terms of years of participation) of Nature's Calendar recorders is varied in each area. Some have participated for >20 years

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Section

- Abstract
- 1. Introduction
- 2. Methods
- 3. Results
- 4. Discussion
- Ethics

Research articles

Plants in the UK flower a month earlier under recent warming

Ulf Büntgen✉, Alma Piermattei, Paul J. Krusic, Jan Esper, Tim Sparks and Alan Crivellaro

Published: 02 February 2022 | <https://doi.org/10.1098/rspb.2021.2456>

Review history

Abstract

Global temperatures are rising at an unprecedented rate, but environments are often difficult to recognize and quantify. Long-term observations of plant phenology, the annually recurring sequence of plant developmental stages, can provide measures of climate change and important information for ecosystem services. We present 419 354 recordings of the first flowering date from 406 plant species between 1753 and 2019 CE. Community-wide first flowering advanced by a month on average when comparing all observations before and after 1986 CE.

Details References Related

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Flowers arriving a month early in UK as climate heats up

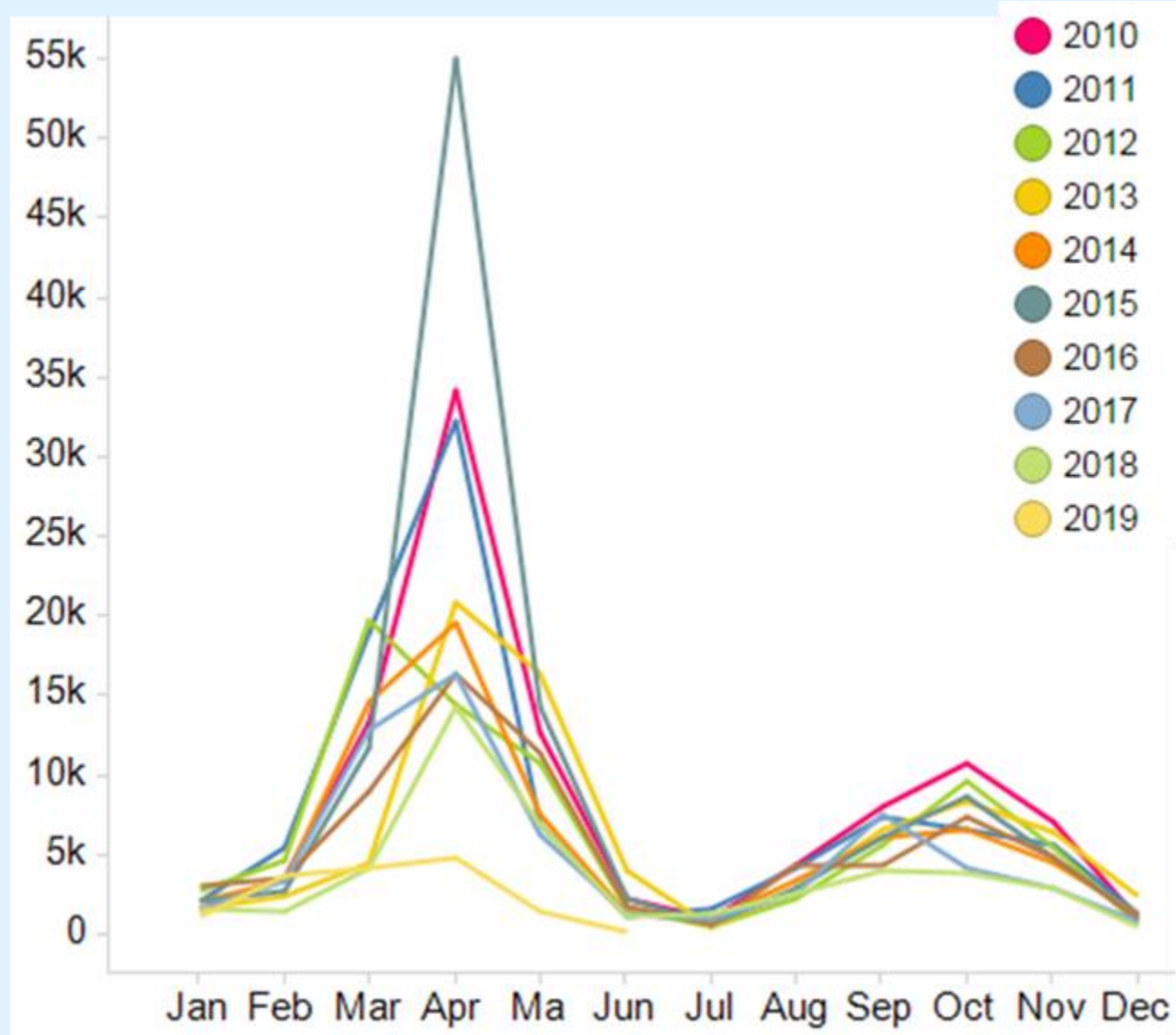
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UK plants flowering a month earlier due to climate change – study

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Seasonality of observations

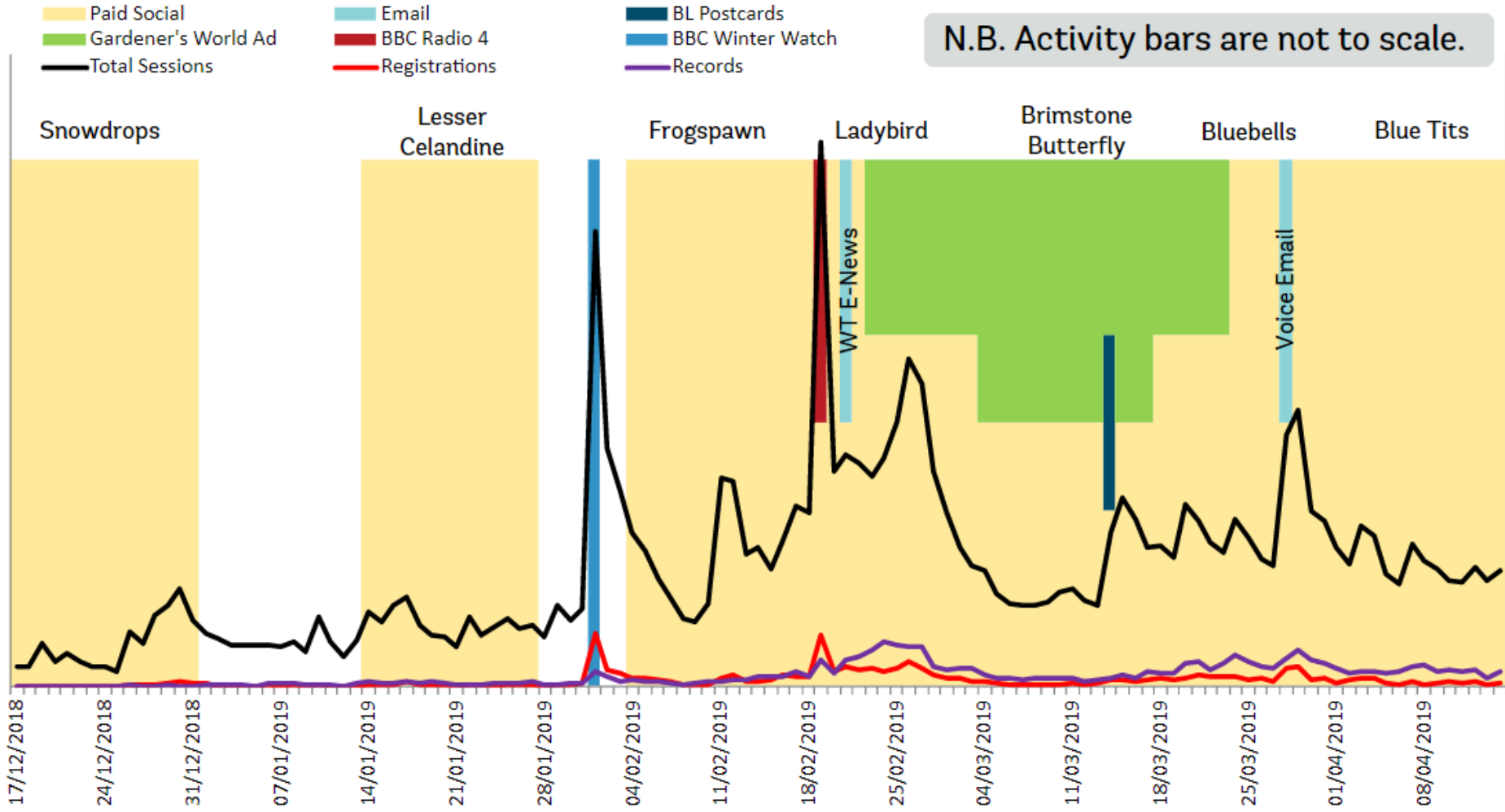


There have consistently been spikes in recording from March to May, and from August to November, with the earlier peak being larger.

Tracking the impact of our promotional work

Live Activity and Nature's Calendar Sessions

17/12/18 – 14/04/19

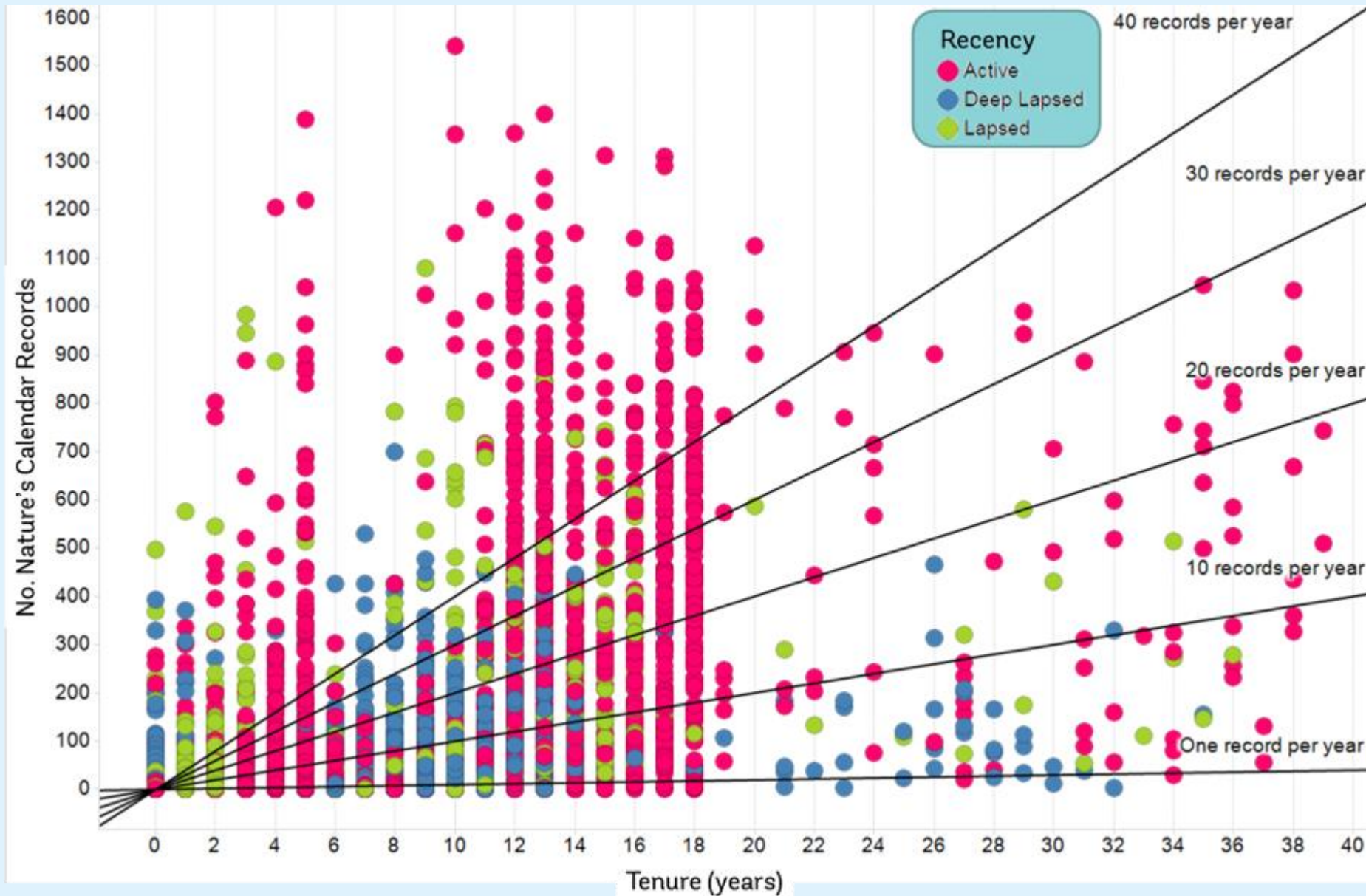


Retention Across Tasks

Stage of participation	Number
Reach	8000000
Seeking information (website visits)	184507
Complete registration (website)	11715
Take part at least once	5424
Take part more than once: within a year	3049
Take part more than once: in multiple years	1284
Take part in optional 'added extra' activities	6

NC data from 27/07/17-31/12/19 (from date of website launch)

Tenure/ No. Records Distribution



Thank you
for listening

Any questions?

naturescalendar.woodlandtrust.org.uk

