



NATURE'S CALENDAR

Spring analysis 2024

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Summary

2024 was a warm and wet spring, with the warmest February on record since 1779 and the sixth wettest April on record since 1836.

The consistently warm temperatures from January-May led to many species' events being

observed early. 87 of the 94 events that are recorded in spring had average dates that were earlier than the benchmark year. 2024 also saw some of the earliest average tree flowering and leafing dates on record, plus the earliest average dates for the presence of frogspawn and tadpoles.



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Temperature

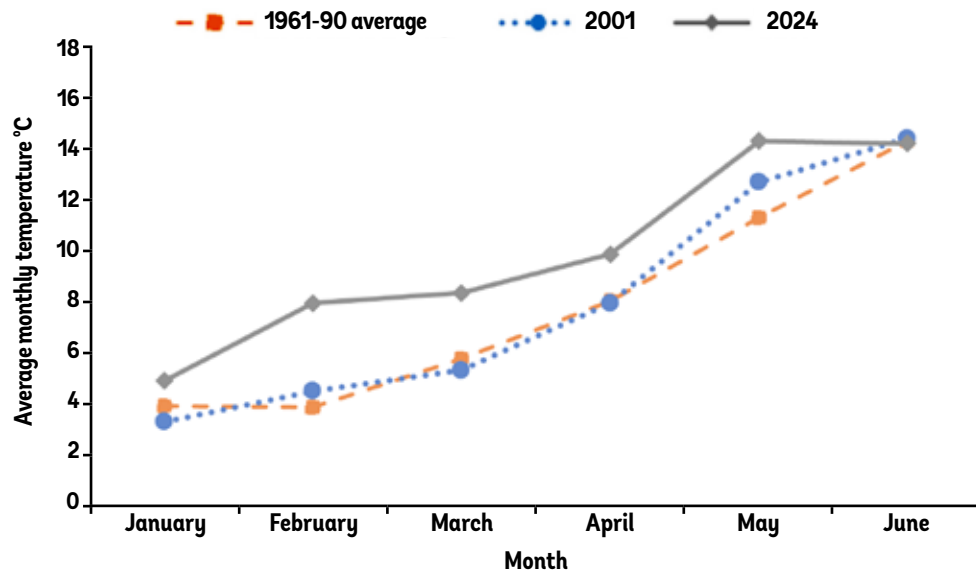


Figure 1: Average monthly temperatures 2024 (Central England Temperature*¹) compared with 30-year average (1961-90) and 2001 benchmark** year.

- Spring 2024 was warm compared to the 30-year average (1961-90).
- Average monthly temperatures for January-May 2024 were 1-4°C greater than the 30-year average. June's average temperature was 14°C, which was 0.1°C lower than the 30-year average (14.1°C), and 0.2°C lower than the 2001 baseline (14.2°C).
- February, March and May were particularly warm compared to the 30-year averages. February 2024 was the warmest February (7.8°C) in the CET

dataset since 1779 (7.9°C), while May was the warmest May (14°C) in the CET dataset since 1833 (15.1°C).

* The Central England Temperature (CET) dataset is a record from a roughly triangular area of the UK, enclosed by Bristol, Lancashire and London.

** 2001 is used as a benchmark year because the mean monthly temperatures in spring were similar to the 30-year average (1961-90) temperatures.

Rainfall

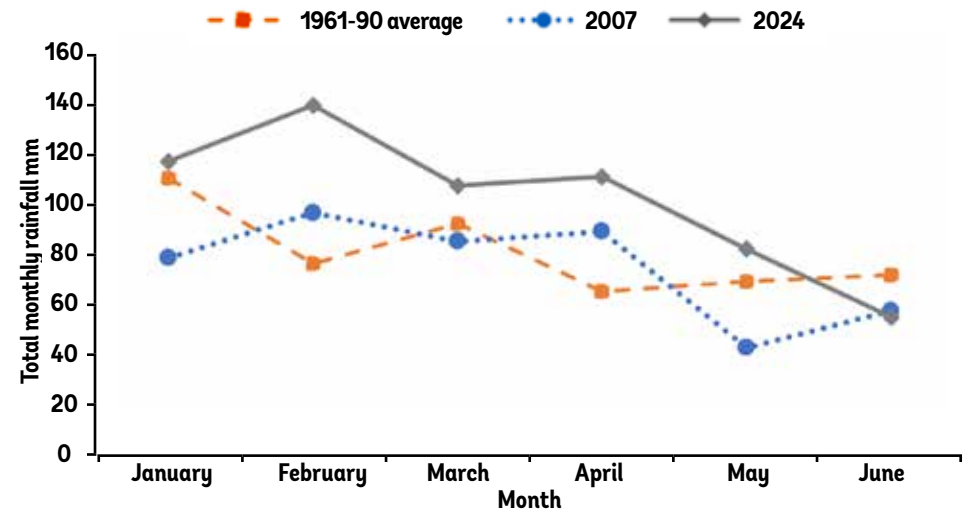


Figure 2: Monthly rainfall totals 2024 (HadUK-Grid²) compared with 30-year average (1961-90) and 2001 benchmark year.

- Monthly rainfall totals in January-May were above the 30-year average.
- April had the highest monthly total (111.4mm) since 2012, and the sixth highest total in the series since 1836.
- June's rainfall (55.4mm) was 16.8mm below the 30-year average (72.2mm) and 2.6mm below the 2001 baseline (58mm).

Nature's Calendar records

- During 2024, our volunteers recorded an amazing 16,832 observations, monitoring 94 different seasonal events in spring from all over the UK.
- For each species and event, all the records are combined and a UK average

date is calculated. These average dates are compared to the average dates in the benchmark year of 2001.

On the following pages we take a look at some of the findings from the species and events recorded in 2024.

Migrant birds

- Swallows and chiffchaffs were the most popular migrant birds recorded this spring.
- Swallows arrived one day earlier (24

April), house martins arrived two days earlier (29 April) and chiffchaffs 15 days earlier (23 March) than the benchmark year.

- Swifts arrived three days later (15 May) than the benchmark year, possibly because they tend to arrive later in the year compared to swallows, house martins and chiffchaffs. In 2024 this arrival time coincided with a wetter than average April and May, which would have reduced the number of flying insects for them to feed on and so potentially delayed their arrival further.
- Several of the migrant birds that can be recorded for Nature's Calendar are now listed in the Birds of Conservation Concern report³ (also known as the UK Red List). Their population numbers are decreasing in the UK and therefore our volunteers are less likely to spot



Chiffchaff

JOHN BRIDGES/WTML

and record their arrival after winter migration. We received less than 20 records of spotted flycatcher and nightingale this spring, and only three records of turtle dove.

Nesting birds

- The nesting dates of blackbird (16 March), blue tit (25 March), great tit (2 April) and rook (1 March) were observed 6-12 days earlier this spring than in the benchmark year.
- Consequently, feeding of young was also recorded 5-11 days earlier than during the benchmark year.

Insects

- Brimstone butterfly was the most popular insect recorded this spring, followed by the orange-tip butterfly and peacock butterfly. It was also the sixth most popular event to be recorded overall, despite it only being common in England and Wales.
- All butterfly species emerged earlier than the benchmark year, ranging from a few days to three weeks earlier. The comma (20 April), small tortoiseshell (13 April) and green-veined white (5 May) emerged 1-7 days earlier. The peacock (2 April), small white (28 April) and speckled wood (29 April) emerged 9-13 days earlier, while the holly blue (24 April), brimstone (18 March), orange-tip (19 April) and red admiral (17 April) emerged 17-22 days earlier.
- Butterfly records were lower in April 2024 compared to 2023, and we had a few first recorded dates as late as July and August. This is possibly due to the wet weather in spring. Lots of rain would have reduced the amount of time that the insects were on the wing, and may also have reduced the amount of time that volunteers were spending outside observing them. Despite that, there were lots of records from February and

March, and even a few in January, so the average recorded dates for butterflies were still earlier than the benchmark year.

- The comma butterfly had its second latest average date on record after 2013, while the red-tailed bumblebee was the only insect species to emerge later than the benchmark year (by 6 days), on 1 April.
- Insects are vital for the pollination of many plant species and since the insect activity would have been reduced in mid-spring due to the rain, we will be



Comma butterfly

JOHN BRIDGES/WTML

interested to learn how the fruit yield for insect-pollinated tree and shrub species were affected in autumn 2024.

Amphibians

- The first appearance of frogspawn was the third most recorded event overall. In 2024 the average date was 24 February – 17 days earlier than during the benchmark year. This is the earliest date recorded since Nature's Calendar began in 2000. Tadpoles were also 17 days early and again had the earliest date on

record, averaging at 24 March.

- The earliest frogspawn records were observed in January and the earliest tadpoles were observed in February. Both months were warmer than the 1961-1990 average, with February being the hottest on record since 1779.

Flowers

- Snowdrop retained its title as the most popular event recorded this spring. With the average first flowering date of 21

January, this was the earliest spring event recorded overall, closely followed by first flowering of hazel, which was three days later.



Lesser celandine

ROBERT READ/WTML

- Bluebell (5 April) and lesser celandine (19 February) were also in the top five recorded events overall. Lesser celandine flowered on average 25 days earlier than the benchmark year – the second earliest average date for this event after 2016.
- All flowering events had an average date that was over two weeks earlier than the benchmark year, likely due to the consistently higher than average temperatures from January-May.

Trees

- The most recorded tree species in spring 2024 was the hawthorn, with average dates of budburst (1 March), first leaf (10 March) and first flowering (17 April) that were 22, 24 and 24 days earlier than the benchmark year.
- First flowering dates for hawthorn, blackthorn (1 March), elder (6 May) and lilac (15 April) were all the earliest on record, between 24-33 days before the benchmark year.
- Budburst saw several species averaging at their joint earliest dates. Silver birch (28 March), hawthorn (1 March) and pedunculate oak (6 April), were 14, 22 and 21 days before the benchmark.
- Silver birch broke new records for the earliest average first leaf date (5 April) for that species, 17 days earlier than the benchmark year.
- There was over a week between horse

chestnut's average date of budburst (19 March) and first leaf (30 March), and both were earlier (14 and 16 days) than during the benchmark year.

- The budburst and first leafing dates for all tree species were 11-19 days earlier than the benchmark year.
- These early averages are consistent across the spring for species events that happen both early in the season and later on. This is likely due to the consistently warmer-than-average weather from January-May.



Blackthorn first flowering

WTML

Project news

Autumn tree identification webinar

In August 2024 we hosted another Nature's Calendar webinar. This one was more interactive than our usual webinar style, and it focussed mostly on tree identification skills. We introduced some simple leaf terminology and the basics of how to use leaves to identify a species. The webinar also included information on why recording leaf timings is important and what those records are used for.

This webinar was recorded and can be watched on our website at: naturescalendar.woodlandtrust.org.uk/blog/2024/autumn-tree-identification-webinar

State of the UK Climate 2023

Nature's Calendar data was used in the phenology section of the State of the UK Climate 2023 report⁴, published in July 2024 by the Royal Meteorological Society. The report included an analysis of four woody plant species, four flower species, four invertebrate species and four vertebrate species.

The 2023 UK average date for each of these seasonal events was compared to a 'baseline' average.

We used the baseline 1999-2022 which incorporates all of the data since the start of the Nature's Calendar project, including

its pilot year in 1999. We would ideally like to use a 30-year average, as this is used in the rest of the State of UK Climate report and is the World Meteorological Organization's climatological best practice, but the project isn't quite old enough yet. We're getting there!

Key findings:

Most events were near-baseline in 2023 with a few exceptions.

Insect activity was generally later than baseline. Although there were record-breaking temperatures in 2023 (particularly in June), March and April – the important months for the emergence of insects in the spring – had near-average temperatures. March was also a very wet month meaning fewer insects on the wing.

Hazel had its earliest flowering date in the series from 1999. Hazel flowers early

in the year and is influenced by winter temperatures in December-February. February temperatures were well above average in 2023.

Hazel flowering is starting to show an advance over the 1999-2023 period. We'll be keeping an eye on this over the coming years. What implications might this have for those with pollen allergies? How will it affect the ripening of hazelnuts later in the year, or the wildlife like dormice that feed on them? Will these dates stay in sync?

Overall, the leaf-on season (the time from first leaf in spring to bare tree in autumn) was four days longer than the baseline, largely due to a mild and therefore later autumn, rather than an earlier spring.

To find out more and read the report, visit: naturescalendar.woodlandtrust.org.uk/analysis/research-reports

Thank you

None of this valuable insight and scientific research would be possible without the dedication of our recorders. Thank you so much for continuing to record your local seasonal changes for the Nature's Calendar project.

As a special thank you, and a celebration of 25 years of Nature's Calendar at the Woodland Trust, you will find enclosed a selection of postcards. The illustrations on these postcards were drawn by a fellow Nature's Calendar volunteer and important phenologist, Jean Combes OBE, who passed away in 2023 aged 96.

Jean was passionate about trees, plants, birds and butterflies. Every year from the age of 20, she recorded the dates when four tree species came into leaf. What

started as a youthful project, driven by a simple love of nature, eventually demonstrated with text-book clarity that the long-term trend is for spring to start significantly earlier. Her 76-year dataset – used by climate scientists to model and prove the effects of climate change – earned her national recognition in 2008 with the award of an OBE.

Jean's fine pencil drawings of tree buds, catkins and leaves were exhibited annually for 10 years at the Botanical Society of Britain and Ireland. They're now yours to admire in postcard form. We hope you enjoy them.

You can learn more about Jean Combes at: naturescalendar.woodlandtrust.org.uk/blog/2024/jean-combes

References

- ¹ Parker, D.E., Legg, T.P. and Folland, C.K. (1992) A new daily Central England Temperature Series, 1772-1991. *International Journal of Climatology*, 12, 317-342.
- ² Hollis, D., McCarthy, M., Kendon, M., Legg, T. and Simpson, I. (2018) HadUK-Grid gridded and regional average climate observations for the UK. *Centre for Environmental Data Analysis*.
- ³ Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A.I., Lindley, P., McCulloch, N., Noble, D.G. and Win, I. (2021) Birds of Conservation Concern 5. *British Birds*, 114.
- ⁴ Kendon et al. (2024). State of the UK Climate 2023. *International Journal of Climatology*, 44(S1), 1-117.

Thank you so much for your continued support.
We hugely appreciate all the time and effort
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