

FIRST FLOWERING DATES 2013

In 2013 I once again recorded first flowering dates (FFDs) in the Taunton area for 339 vascular plant species, part of a study begun in 2008 to compare FFDs today with 'average first flowering times' recorded in Somerset by Walter Watson in the first half of the 20th century (Watson 1949; Leach 2011 *et seq.*). Recording methods and sites visited were the same as in previous years.

A summary is given here of FFDs recorded, along with the main features of the weather in winter (December-February), spring (March-May) and summer (June-August), based on my own observations and regional (S.W. England and S. Wales) data and analyses available on the Met Office website (<http://metoffice.gov.uk/climate/uk/>). As usual, records of snowfall, snow lying and air or ground frosts were from my back garden in Taunton.

The weather

The winter period was relatively mild at the start, with daily mean temperatures in December 0.5°C above the regional long term (1981-2010) average; but it became colder thereafter, being 0.3°C and 1.1°C below average in January and February respectively. Winter precipitation mirrored daily mean temperatures, 169% of the long term average in December, 106% in January, but only 65% in February. Winter snowfall was restricted to the second half of January, with snow observed falling on seven days and lying on eight mornings.

A fairly 'average' winter was followed by a cold spring. March, in particular, was exceptionally cold, with temperatures 2.3°C below average (4.4°C colder than the relatively mild March of 2012) and sleet or snow falling on two days. April and May both had temperatures 0.6-0.7°C below average. In contrast, summer was generally warmer (and drier and sunnier) than average, with temperatures in July being particularly warm (2.5°C above average).

In terms of 'frost-days', there were 10 in December, 15 in January, 14 in February, 20 in March, seven in April and one in May – a total of 67, which was 30 more than in 2012. Unusually, the three coldest nights recorded between December and May were all in spring (March) rather than winter.

First flowering dates

The FFDs recorded in 2013 are compared with average FFDs given by Watson in Fig. 1, and with both Watson's dates and those recorded by me between 2008 and 2012 in Table 1. The constituent species within the monthly groups in Table 1 are determined by Watson's dates; so, for example, the 'April' group comprises 55 species for which Watson's FFDs fell in the month of April, ie between days 92 and 122.

Presumably due to the relatively mild autumn and early winter, all but two of the species within Watson's January and February groups had begun to flower by the end of the first week of January, the only exceptions being Snowdrop (*Galanthus nivalis*) and Barren Strawberry (*Potentilla sterilis*).

Watson's March group was about as early as in previous years, although this generalisation masks a remarkably wide variation in FFDs. While some, such as Cow Parsley (*Anthriscus sylvestris*), Ivy-leaved Toadflax (*Cymbalaria muralis*) and White Dead-nettle (*Lamium album*), were already in flower at the beginning of January, others were remarkably late: Wild Strawberry (*Fragaria vesca*), Greater Chickweed (*Stellaria neglecta*) and Common Dog-violet (*Viola riviniana*), for instance, were all 4-7 weeks later than Watson's dates.

The most noteworthy feature of 2013, however, was the marked delay in FFDs of many late-spring and early-summer species, no doubt due to the record-breaking low temperatures in March – the second equal-coldest March in the last hundred years – and continuing below-average temperatures in April and May. Of 144 species comprising Watson's April and May groups, 76 (52.8%) had their latest or equal-latest FFDs since 2008 in 2013.

Casual observations also suggested that peak flowering times of a number of spring-flowering species were severely delayed: Bluebells (*Hyacinthoides non-scripta*), for example, reached peak flowering in about the third week of May, two weeks later than in 2012 and at least five weeks later than in the (exceptionally mild) spring of 2011.

Summer-flowering species in Watson's June and July groups were also delayed (Table 1), the much-improved weather apparently doing little to speed things up after such a cold spring. A number of grassland species were particularly late coming into flower: Tufted Vetch (*Vicia cracca*), Agrimony

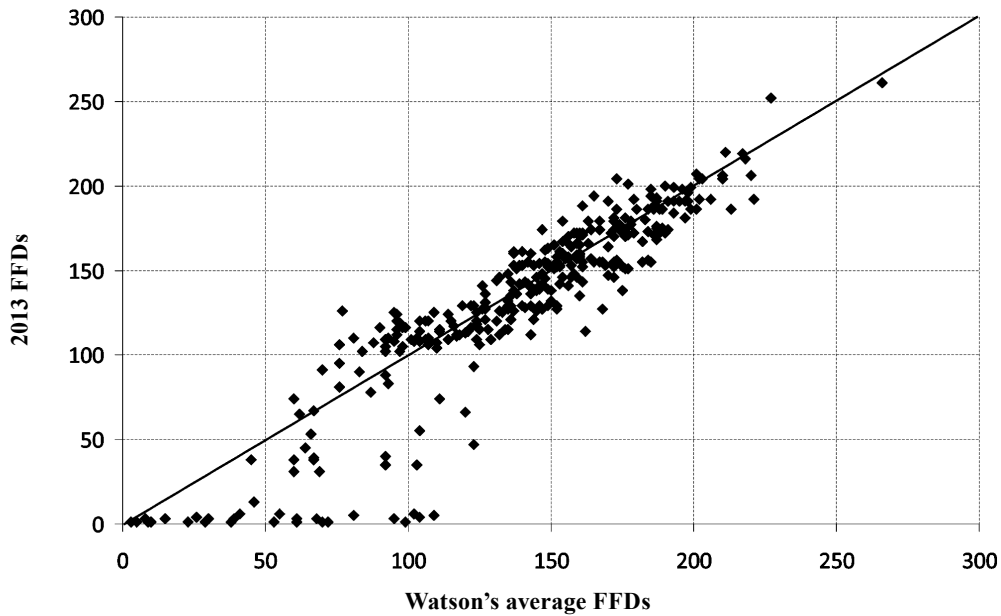


Fig. 1 First flowering dates (FFDs) for 339 species in 2013, plotted against 'average first flowering times' given by Watson. Dates are shown as day numbers (day 1 = 1st January). The diagonal line marks the line along which the data-points would lie if 2013 FFDs were identical to those given by Watson; above the line the 2013 date is later than Watson's date, below the line is earlier

(*Agrimonia eupatoria*) and Upright Hedge-parsley (*Torilis japonica*), for example, all had their latest FFDs since the start of this study and were more than 3 weeks later than the dates given by Watson.

Stinking Iris (*Iris foetidissima*) (Fig. 2) was also notably late to make an appearance, being 12 days later than Watson's date and 8-24 days later than in 2008-12.

TABLE 1: DEVIATION (IN DAYS) BETWEEN MONTHLY AVERAGE FFDs IN 2008-13 AND THOSE GIVEN BY WATSON. NEGATIVE VALUES INDICATE EARLIER FLOWERING THAN WATSON'S DATES, POSITIVE VALUES LATER FLOWERING. THE NUMBER OF SPECIES (n) COMPRISING EACH MONTHLY GROUP IS SHOWN IN THE RIGHT-HAND COLUMN, WHILE IN THE BOTTOM ROW THE AVERAGE DEVIATION EACH YEAR FROM WATSON'S DATES IS GIVEN FOR ALL SPECIES COMBINED

Month	2008	2009	2010	2011	2012	2013	n
Jan	-10.5	0.1	7.5	-1.7	-12.5	-12.4	12
Feb	-17.9	-17.6	1.7	-18.4	-32.3	-35.6	7
Mar	-14.8	-8.0	14.8	-10.1	-27.2	-12.9	27
Apr	-21.4	-10.8	3.3	-13.3	-24.5	-8.4	55
May	-11.4	-16.5	-3.7	-28.1	-18.7	-3.3	89
Jun	-9.6	-13.5	-7.0	-23.1	-13.5	-3.6	93
Jul	-6.9	-13.7	-11.2	-20.1	-5.3	-6.6	49
Aug	-8.0	-10.3	-11.3	-21.9	-6.1	-7.1	7
All species	-12.2	-12.9	-2.7	-20.3	-16.8	-6.5	339

TABLE 2: FFDs FOR A RANGE OF SPRING-FLOWERING WOODLAND HERBS, 2008-2013. FIGURES ARE DAY NUMBERS (1 = 1ST JANUARY). SPECIES ARE ORDERED ACCORDING TO THEIR 'WATSONIAN' DATES, FROM EARLIEST TO LATEST. AVERAGE FFDs ARE ROUNDED TO THE NEAREST FULL DAY; FOR EACH SPECIES THE DIFFERENCE BETWEEN 2008-13 AVERAGE AND WATSON'S AVERAGE IS SHOWN (COLUMN HEADED '2008-13 cf WATSON'), A NEGATIVE FIGURE INDICATING FFD NOW EARLIER THAN WATSON'S DATE, A POSITIVE FIGURE THAT FFD NOW LATER. COLUMN HEADED '2008-13 RANGE' SHOWS FOR EACH SPECIES THE NUMBER OF DAYS BETWEEN THE EARLIEST AND LATEST FFDs RECORDED DURING THE PERIOD 2008-2013

Species	2008	2009	2010	2011	2012	2013	2008-13 mean FFD	Watson's FFD	2008- 13 cf Watson	2008-13 range
Primrose (<i>Primula vulgaris</i>)	1	4	66	44	1	4	20	26	-6	66
Dog's Mercury (<i>Mercurialis perennis</i>)	20	49	77	48	19	3	36	30	+6	74
Lesser Celandine (<i>Ficaria verna</i>)	1	19	48	34	1	6	18	41	-23	48
Barren Strawberry (<i>Potentilla sterilis</i>)	61	85	73	58	69	38	64	45	+19	47
Snowdrop (<i>Galanthus nivalis</i>)	22	26	23	34	14	13	22	46	-24	21
Early Dog-violet (<i>Viola reichenbachiana</i>)	49	60	78	53	62	67	62	67	-5	29
Moschatel (<i>Adoxa moschatellina</i>)	61	73	92	83	73	90	79	83	-4	31
Common Dog-violet (<i>Viola riviniana</i>)	83	85	102	86	91	116	94	90	+4	33
Wood Anemone (<i>Anemone nemorosa</i>)	69	67	90	83	77	83	78	93	-15	23
Wood Spurge (<i>Euphorbia amygdaloides</i>)	81	85	105	86	69	108	89	95	-6	39
Goldilocks Buttercup (<i>Ranunculus auricomus</i>)	97	94	105	92	98	116	100	99	+1	24
Bluebell (<i>Hyacinthoides non-scripta</i>)	67	85	103	90	69	108	87	102	-15	41
Woodruff (<i>Galium odoratum</i>)	96	103	114	97	106	120	106	104	+2	24
Yellow Archangel (<i>Lamium galeobdolon</i>)	94	104	114	97	86	120	103	106	-3	34
Ramsons (<i>Allium ursinum</i>)	85	88	102	93	63	107	90	110	-20	44
Sanicle (<i>Sanicula europaea</i>)	130	120	138	117	125	136	128	127	+1	21



Fig. 2 Stinking Iris (*Iris foetidissima*),
Thurlbear Wood

Taking all species combined, however, FFDs in 2013 were still an average of 6.5 days earlier than those recorded by Watson, although this was the second-latest figure since 2008 (Table 1).

Calculating average FFDs for individual species

A comparison of average FFDs (and year-to-year values) for each species with the average first flowering times given by Watson could be revealing; but six years' data is probably too short, not least because Watson's averages were, for the most part, based on observations spanning 'at least ten years' (Watson 1949). What does seem pretty clear already, though, is that different species respond in quite different ways to the climatic conditions thrown at them. A 'sneak preview' for 16 consistently and reliably recorded spring-flowering woodland herbs (Table 2) hints at some marked inter-specific differences – but, as one might expect, it raises many more questions than it answers.

Why, for example, do species like Snowdrop,

Wood Anemone (*Anemone nemorosa*) and Ramsons (*Allium ursinum*) all consistently come into flower so much earlier now than in Watson's day, while others such as Dog's Mercury (*Mercurialis perennis*), Common Dog-violet (*Viola riviniana*) and Barren Strawberry often seem to be 'late'? The contrast between my average FFDs for Snowdrop and Barren Strawberry is particularly striking: Watson's dates for these two species were just one day apart, yet in 2008-13 the average FFD for Snowdrop was 23 days earlier than Watson's date while Barren Strawberry was 19 days later. This means that now, on average, six weeks – rather than one day – separates the first flowering dates of these two species!

Another question: why should the range of FFDs in 2008-13 be so much wider for some species than for others? Why, for example, does Dog's Mercury (*Mercurialis perennis*) have FFDs spanning 10 weeks 4 days, while FFDs for Bluebell (*Hyacinthoides non-scripta*) span 5 weeks 6 days and those for Sanicle (*Sanicula europaea*) just 3 weeks? Some species clearly show much larger year-to-year variation than others in their FFDs, suggesting that their flowering times may be more responsive to changing weather conditions from one year to the next. More broadly, and in the longer term, data for such species could prove particularly useful to researchers monitoring the various impacts of 'climate change' on the timing of seasonal events in the natural world.

References

- Leach, S.J., 2011. 'How do first flowering dates today compare with those recorded by Walter Watson in the first half of the 20th century?', *SANH*, 154, 259-70 [and annual reports published in *SANH* in subsequent years]
 Watson, W., 1949. 'The average times of first flowering of Somerset's plants', *SANH*, 93 (1947), 108-28.

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