

Review of Autumn 2004 from Nick Collinson, Woodland Trust Conservation Policy Advisor and Dr Tim Sparks, Centre for Ecology and Hydrology

The following report is adapted from a paper in British Wildlife April 2005 (vol 16 number 4 p 251-256)

SUMMARY

Autumn 2004 results by event (dates averaged across all similar events)

- **Departing birds** – 1 day later than 2003
- **Winter arrival birds** – 3 days earlier than 2003
- **Tree first tint** – 7 days later than last year- while the temperature was much the same as last year (which would suggest similar timing) rainfall was not limited in 2004, and hence first tint was later
- **Tree full tint** – only 3 days later than last year. While the temperature was slightly higher in 2004 during this period (late September–October) i.e. we would anticipate a delayed timing by at least as much as first tint (7 days), this also coincides with the drop in rainfall, which perhaps fractionally hastened full tint
- **Tree leaf fall** – similar to full tint – 4 days earlier
- **Tree bare** – 3 days later than in 2003
- **Fruit ripe** – 1 day later than 2003

Overall temperature was similar to 2003, but events were generally later. The drought of 2003 certainly seems to be reflected in leaf tint dates that were earlier than others over recent recording years. 2004 was much more akin to these other years. This, but particularly the similar average temperatures in late 2003 and 2004, further suggest that rainfall is a limiting factor in autumn phenology.

Autumn 2004

Over 36,000 records were made in autumn 2004 with last lawn cut and fruit ripening of blackberry neck and neck for the most recorded event.

The weather was mild. Average August-December Central England Temperature (10.9°C) in 2004 was 1.1°C above the 30-year average for that period. Compared to 2003, 2004 was very close to (only 0.3°C above) the average temperature for the same period in 2003, only October showing any real difference (October 2004 was warmer by 1.4°C) (Figure 1). Following reports of the likely effects of late summer rainfall on autumn phenology (Collinson & Sparks 2004) it seems fair to suggest that rainfall was not a limiting factor in 2004.

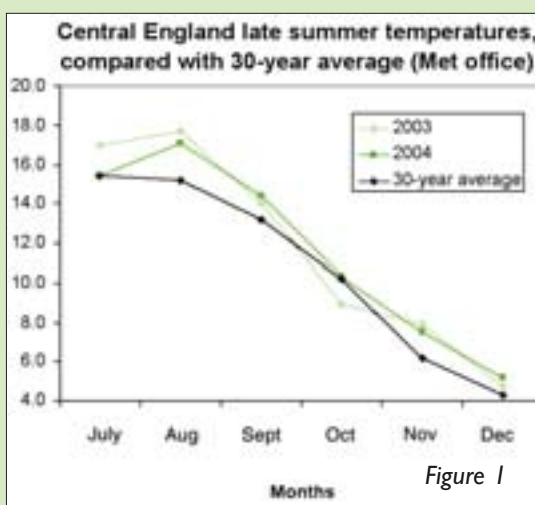


Figure 1

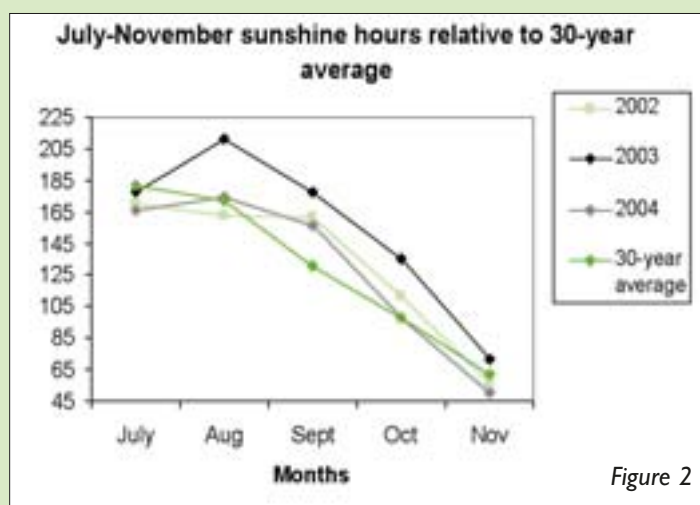


Figure 2

Figure 1: Only October showed any real difference in late year temperatures between 2003 and 2004

Figure 2: Longer than normal sunshine hours, together with only 59 per cent of the usual rainfall, produced stunning autumn colours in 2003

Given the below average August-November rainfall 2003, but particularly the extraordinary autumn colours of 2003, the sunshine hours (Figure 2) show an interesting picture. A key factor in autumn colours is not only lack of rainfall, which helps to concentrate sugar in the leaves, but also lots of sunshine (both are important factors in the production of the red pigment anthocyanin). Figure 2 shows what a remarkably sunny second half of the year we had in 2003, with sunshine hours between August and November nearly 130 per cent of the norm.



Fruiting score

Recorders have been asked to record fruiting abundance scores in addition to autumn phenology since 1999. Currently an indication of the abundance of 16 species is requested on a five point scale with 1 indicating no fruit and 5 an exceptional crop. To date over 54,000 scores have been recorded, or to put it another way an average of more than 500 scores per species per year. In Table 1 we summarise the mean values for 2004 in relation to the average for the preceding five years. This confirms the perception that beech, field maple, hawthorn, hazel, holly and the two oaks had productive years in 2004. At one point last autumn there was extensive press coverage that the high berry crop, particularly of holly, meant an imminent and hard winter; however despite the late February cold snap, winter 2004/2005 was actually very mild.

Species	Mean 1999 – 2003	2004	Species	Mean 1999 – 2003	2004
Ash	3.5	3.6	Hazel	2.7	3.2
Beech	3.0	4.1	Holly	3.4	4.2
Blackthorn	3.2	3.1	Horse chestnut	3.4	3.7
Bramble	3.8	3.9	Ivy	4.1	4.1
Dog rose	3.7	3.8	Pedunculate oak	3.0	3.5
Elder	3.2	3.8	Rowan	3.7	4.1
Field maple	3.7	3.7	Sessile oak	3.8	3.5
Hawthorn	3.2	4.2	Sycamore	3.4	3.6

Table 1: Mean fruit scores in 2004 in relation to the 1999 – 2003 average

Although we have only six years of fruit score results they are pointing out some interesting features. Some species, for example ash, beech and holly, show high variability from year to year while others, for example, dog rose, ivy and elder are much more consistent. Beech, in particular, has had alternative high and low seed years in the last six years, characteristic of heavy fruit 'masting' tree species.

Annual variation in fruiting is likely to be dependent on climatic factors in the year of study and the preceding year. With only six years we may detect some spurious correlations, but the correlation between beech fruiting and July temperatures in the previous year ($P < 0.001$) and between ivy fruiting and September temperature ($P < 0.01$) look very convincing. High September temperatures may be critical in encouraging insect activity and pollination of ivy flowers and given the high energy investment in producing large seeds it is perhaps no surprise that a mast year in beech is dependent on the preceding summer's growing conditions. Indeed, while 1999-2004 July temperatures have varied, all have been equal to or higher than the 30-year average, suggesting good growing conditions, perhaps explaining how beech has managed to mast relatively frequently, in alternate years. More work is needed on this interesting and, pardon the pun, fruitful area of research.

References

COLLINSON, N.H., SPARKS T.H. (2005) Nature's Calendar. 2004 results from the UK Phenology Network. *British Wildlife Vol. 16 No.4 251-256*

Year	UK Average 2000	UK Average 2001	UK Average 2002	UK Average 2003	UK Average 2004	England Average 2004	Wales Average 2004	Scotland Average 2004	NI Average 2004
Birds – Summer departures									
House martin	7 Oct	1 Oct	23 Sep	20 Sep	23 Sep	24 Sep	26 Sep	20 Sep	22 Sep
Swallow	28 Sep	24 Sep	23 Sep	21 Sep	24 Sep	24 Sep	25 Sep	21 Sep	24 Sep
Swift	26 Aug	26 Aug	20 Aug	20 Aug	18 Aug	18 Aug	15 Aug	18 Sep	17 Aug
Birds – Winter arrivals									
Fieldfare	4 Nov	3 Nov	1 Nov	26 Oct	25 Oct	26 Oct	24 Oct	20 Oct	25 Oct
Redwing	6 Nov	7 Nov	5 Nov	31 Oct	27 Oct	28 Oct	28 Oct	20 Oct	20 Oct
Trees – First tint									
Ash	10 Oct	7 Oct	7 Oct	27 Sep	4 Oct	4 Oct	29 Sep	1 Oct	4 Oct
Silver birch	25 Sep	26 Sep	19 Sep	13 Sep	21 Sep	22 Sep	21 Sep	12 Sep	17 Sep
Horse chestnut	21 Sep	21 Sep	18 Sep	10 Sep	15 Sep	15 Sep	16 Sep	13 Sep	11 Sep
Pedunculate oak	8 Oct	6 Oct	3 Oct	29 Sep	3 Oct	4 Oct	1 Oct	2 Oct	26 Sep
Sycamore	2 Oct	28 Sep	27 Sep	20 Sep	23 Sep	24 Sep	17 Sep	19 Sep	16 Sep
Full tint									
Ash	23 Oct	27 Oct	21 Oct	16 Oct	20 Oct	21 Oct	18 Oct	14 Oct	16 Oct
Silver birch	23 Oct	30 Oct	18 Oct	19 Oct	19 Oct	20 Oct	18 Oct	11 Oct	16 Oct
Horse chestnut	16 Oct	20 Oct	16 Oct	12 Oct	13 Oct	13 Oct	16 Oct	10 Oct	10 Oct
Pedunculate oak	2 Nov	11 Nov	31 Oct	29 Oct	31 Oct	31 Oct	26 Oct	30 Oct	18 Oct
Sycamore	22 Oct	29 Oct	19 Oct	17 Oct	17 Oct	17 Oct	16 Oct	11 Oct	13 Oct
Leaf fall									
Ash	28 Oct	29 Oct	24 Oct	18 Oct	22 Oct	22 Oct	17 Oct	19 Oct	20 Oct
Silver birch	26 Oct	31 Oct	18 Oct	19 Oct	21 Oct	22 Oct	18 Oct	12 Oct	22 Oct
Horse chestnut	24 Oct	26 Oct	22 Oct	17 Oct	19 Oct	20 Oct	22 Oct	15 Oct	19 Oct
Field maple	2 Nov	7 Nov	27 Oct	22 Oct	28 Oct	28 Oct	23 Oct	22 Oct	28 Oct
Pedunculate oak	5 Nov	11 Nov	3 Nov	1 Nov	4 Nov	4 Nov	4 Nov	29 Oct	6 Nov
Sycamore	26 Oct	29 Oct	20 Oct	16 Oct	19 Oct	19 Oct	16 Oct	12 Oct	9 Oct
Bare									
Ash	10 Nov	19 Nov	8 Nov	6 Nov	7 Nov	7 Nov	2 Nov	4 Nov	7 Nov
Silver birch	15 Nov	25 Nov	12 Nov	16 Nov	14 Nov	15 Nov	15 Nov	7 Nov	13 Nov
Horse chestnut	14 Nov	22 Nov	10 Nov	10 Nov	13 Nov	13 Nov	14 Nov	8 Nov	13 Nov
Pedunculate oak	25 Nov	5 Dec	26 Nov	23 Nov	2 Dec	2 Dec	29 Nov	26 Nov	1 Dec
Sycamore	15 Nov	25 Nov	10 Nov	11 Nov	10 Nov	11 Nov	3 Nov	5 Nov	6 Nov
Fruit ripe									
Elder	10 Sep	8 Sep	5 Sep	27 Aug	29 Aug	28 Aug	1 Sep	15 Sep	4 Sep
Hawthorn	16 Sep	20 Sep	12 Sep	7 Sep	7 Sep	7 Sep	6 Sep	14 Sep	7 Sep
Hazel	25 Sep	25 Sep	19 Sep	10 Sep	17 Sep	16 Sep	18 Sep	2 Oct	17 Sep
Horse chestnut	27 Sep	26 Sep	23 Sep	19 Sep	19 Sep	18 Sep	25 Sep	18 Sep	19 Sep
Pedunculate oak	5 Oct	29 Sep	25 Sep	20 Sep	23 Sep	22 Sep	28 Sep	5 Oct	30 Sep
Rowan	5 Sep	1 Sep	26 Aug	24 Aug	22 Aug	22 Aug	17 Aug	25 Aug	25 Aug
Additional fruiting									
Blackberry	30 Aug	27 Aug	25 Aug	14 Aug	14 Aug	13 Aug	14 Aug	30 Aug	14 Aug
Blackthorn	19 Sep	19 Sep	15 Sep	7 Sep	11 Sep	11 Sep	9 Sep	25 Sep	12 Sep
Other events									
Lawn last cut	21 Oct	5 Nov	24 Oct	21 Oct	1 Nov	3 Nov	30 Oct	18 Oct	28 Oct