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A full reptile census has not been possible since 2000, the first hiatus since 1988. This was when the early observations at a few sites, begun in the late 1970s, was extended to a full survey of 54 sites, 42 of which supported adders at that time, with a total of 208 individuals identified. More sites were included over the next 3 years, until in 1991 a total of 61 out of 76 were known to be inhabited by adders, and there were 267 mature adders seen in these sites. The other areas were included because of previous records, suitability



Knowles Mill

and/or proximity to known locations.

Two years later in 1993 the numbers were little changed at 59 sites and 256 adults: a discrepancy of 4% being readily explained by the virtual impossibility of locating the non-breeding females that in any given year may represent approximately one-third of the total female population. After this, however, the decline in both occupied sites and number of individuals was both obvious and dramatic.

In 2002 the decision was taken to survey 20 selected sites in Wyre Forest, all of which had supported adders prior to the foot and mouth disease restrictions that curtailed surveys in 2001. Seven of these were found, after repeated explorations, to be completely devoid of adders. These are discussed in detail below.

**Sites 8 and 33A:** Remain inherently suitable habitats, but no females have been recorded in either of these areas for several years. The remaining males did not re-appear this year.

**Site 10:** During the winter of 2001-2002 the hedgerow covering the hibernaculum was layered, the ground vegetation stripped, and a post-and-wire fence erected. This is the first year that no adders have been seen here: it is possible that they were killed in hibernation by the hedge laying work (stakes are driven into the ground at regular intervals to support the laid stems).

**Site 21B:** This is a clearing that has been designated as a wild-flower meadow, and managed by mowing and scarifying to this end. The coarse grassland that supported adders no longer exists over much of the site, although the hibernaculum area has not been disturbed.

**Site 32:** The population site has been in decline for years due to the proximity to a well-frequented forest track that is used by dog-walkers, horses, and mountain bikers. Two dead adders, victims of persecution, have been found here in the past.

**Site 45:** The gorse scrub used by the adders has been shaded out by a developing birch canopy. The surrounding area is too bare, having no gorse, heather, or grassy tussocks suitable for basking and shelter. Remedial conservation work by the land-owners has been suggested, but this may be too late if the former occupants are dead or have relocated.

**Site 45B:** A combination of shading out (as in site 45), together with deliberate grubbing out of the gorse. The site is now no longer suitable adder habitat.

The dwindling numbers of occupied sites are now presenting the remaining population a major problem: that of spatial separation. As the distance between sites increases, the likelihood of contact between them, with the essential cross-breeding that it can provide, decreases. During the 22 years of observing known individuals, males have been known to travel from their hibernacula to find females, and hunting adders of both sexes will journey as far or further in search of prey. It was observed that during the active season each adder establishes a home range of approximately one square kilometre. In a well-populated area this will overlap with the ranges of others, the animals are not territorial and do not defend their ranges.

Juveniles will often disappear for long periods, and it is believed that they are following the scent trails left by their elders in order to find good hunting



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areas and safe retreats. If they survive this period they invariably return to the place of their birth, ready for mating in the 4<sup>th</sup> or 5<sup>th</sup> year. This indicates strongly that when sites become isolated, populations face extinction: sites relict for any length of time have never been repopulated despite the retention of ideal habitats. This is because adders rarely move beyond the well-established home range, which provides the essential opportunities for basking, breeding, hunting, and hibernation.

## Weather Report for 2002

Weather records have been taken since 1981 and are recorded in the garden at Knowles Mill, Dowles Valley, in the Forest of Wyre, elevation 30m above mean sea level.

**JANUARY** began with sparkling hoar frosts, which lay for several days. The night of the second proved to be the coldest of the year, with an air temperature of  $-11.0^{\circ}\text{C}$  and the ground at  $-12.5^{\circ}\text{C}$ . On the 7<sup>th</sup> temperatures began to rise, giving murky, foggy conditions, the frost returning at night. Mild conditions arrived on the 20<sup>th</sup>, and London recorded its warmest ever January day on the 21<sup>st</sup> with an air temperature of  $14^{\circ}\text{C}$ <sup>1</sup>. The warmest day at Knowles Mill was the 27<sup>th</sup>, recording  $12.5^{\circ}\text{C}$  (air). Gale force winds roared in on the 28<sup>th</sup>, gusting to 70 – 80 mph. Other sites around the country (in northern England, Scotland, and Ireland) saw 100mph. On the 30<sup>th</sup> the first local herpetofauna record of the year was made by common frogs croaking in a garden pond near Bewdley.

Mean Monthly Maximum 6.60C  
Mean Monthly Minimum 0.60C  
Rainfall 74.1mm  
Mean Humidity 86%  
Air frosts: 16 Ground frosts: 22

**FEBRUARY**, by contrast was very wet, with a total rainfall of 107.4mm ( $4\frac{1}{4}$  inch) and mild: some  $3^{\circ}\text{C}$  warmer than average. The wettest day was the 2<sup>nd</sup>, with 18.2mm of rain, and the warmest was the 11<sup>th</sup> at  $13.5^{\circ}\text{C}$ , when the first male adder was reported, basking on ground registering  $16.0^{\circ}\text{C}$ . As the month progressed, more males were seen on the milder days. The first frogspawn had been recorded on the 6<sup>th</sup>. Winter re-established itself on the 23<sup>rd</sup> with blizzards of sleet and snow. These cold windy conditions returned on the 27<sup>th</sup> to give a wintry end to the month.

Mean Monthly Maximum 9.50C  
Mean Monthly Minimum 3.20C  
Rainfall 107.4mm  
Mean Humidity 82%  
Air frosts: 9 Ground frosts: 19

**MARCH** was  $2^{\circ}\text{C}$  warmer than average, and the driest month of the year with only a little more than an inch of rain. Common lizards were seen on the 7<sup>th</sup>, when the air temperature was  $13.5^{\circ}\text{C}$ . This was followed by slow-worms and the first female adder on the 12<sup>th</sup>, with the ground temperature at  $24.0^{\circ}\text{C}$ , in bright sunshine. The weather became unsettled by mid-month. The first grass snake on the 22<sup>nd</sup>, and frog tadpoles were seen on the 23<sup>rd</sup>, and. That same day the eyes of some male adders were seen to be opaque, indicating that sloughing was imminent – the new skin and the brille that covers the eyes were well developed. The warmest day of the month was the 30<sup>th</sup>, when  $15.5^{\circ}\text{C}$  was recorded.

Mean Monthly Maximum 11.10C  
Mean Monthly Minimum 2.50C  
Rainfall 28.3mm  
Mean Humidity 80%  
Air frosts: 10 Ground frosts: 20

**APRIL** was the hottest for 15 years, with 50 hours more sunshine than the average. The warm sunny weather lasted up to the 23<sup>rd</sup>, which the warmest day at  $20.5^{\circ}\text{C}$ . Grass snakes were found mating on the 3<sup>rd</sup> (air temperature  $17.5^{\circ}\text{C}$ , ground  $23.0^{\circ}\text{C}$ ), this activity continued for several days. On the 9<sup>th</sup> the first male adder to slough his skin was observed, this was followed by combat between makes on the 15<sup>th</sup>. Courtship continued, and copulation was observed on the 21<sup>st</sup>. The weather changed on the 25<sup>th</sup> to become cooler, cloudy and windy with showers, but combat and courtship continued in bright sunny intervals. The wettest day was the 28<sup>th</sup> with 15.3mm in the rain gauge – about a third of the total for the whole month.

Mean Monthly Maximum 14.10C  
Mean Monthly Minimum 3.00C  
Rainfall 47.2mm  
Mean Humidity 79%  
Air frosts: 9 Ground frosts: 18

**MAY** saw a continuation of the changeable weather, with cloud, showers, and sunny spells. There was rain on 17 days of the month, with thunderstorms on the 17<sup>th</sup>. Mating activity continued amongst the adder population in the clement spells until the 3<sup>rd</sup>. After this time the females were found alone, indicating that it had ceased for the season. With the exception of the impregnated females (who would not feed until after giving birth in late summer), the rest of the adder population would now be actively hunting for prey for the next 3 months. The warmest was again the 23<sup>rd</sup> at  $23.0^{\circ}\text{C}$ .

Mean Monthly Maximum 16.00C  
Mean Monthly Minimum 6.70C  
Rainfall 79.0mm  
Mean Humidity 79%  
Air frosts: 1 Ground frosts: 8

<sup>1</sup> This record lasted only a year – a Scottish site recording almost  $18^{\circ}\text{C}$  in January 2003





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The overall rainfall for **JUNE** was about average at 37.4mm, but it all fell in the first 15 days. Female adders remaining in the mating areas (probably pregnant, else they would have dispersed in search of food) now looked very dull, as they too prepared to slough their fading upper skins to expose the new growth below. The latter half of the month was dry with lots of sunshine, although the highest temperature was recorded on the 2<sup>nd</sup> at 25.0<sup>o</sup>C (air). There were no frosts.

Mean Monthly Maximum 19.70C  
Mean Monthly Minimum 9.40C  
Rainfall 37.4mm  
Mean Humidity 80%

**JULY** saw variable amounts of rainfall during the first 12 days, followed by 6 dry warm ones. On the eve of the 19<sup>th</sup> torrential rain preceded unsettled conditions which lasted until the 23<sup>rd</sup>. Another 6 dry very warm days followed, with the monthly maximum of 27.0<sup>o</sup>C seen on the 29<sup>th</sup> (in London 33.0<sup>o</sup>C was recorded). Pregnant female adders were regularly seen basking on such days. On the 30<sup>th</sup> after a very warm humid night and morning, thunderstorms developed by 2pm, resulting in 12.4mm (half an inch) of rain falling in a few hours. The thundery activity continued into the early hours of the 31<sup>st</sup>.

Mean Monthly Maximum 20.50C  
Mean Monthly Minimum 10.10C  
Rainfall 62.7mm  
Mean Humidity 81%

**AUGUST** had a total of 10 days with rain, 6 of these (3<sup>rd</sup>, 4<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, and 24<sup>th</sup>) including thunderstorms which produced very humid conditions. The period from the 12<sup>th</sup> to the 22<sup>nd</sup> was dry and warm, with the highest temperature of 23.5<sup>o</sup>C recorded on the 17<sup>th</sup>. After the thundery 24<sup>th</sup>, several dry sunny days ensued, although there were further heavy showers on the 30<sup>th</sup>.

Mean Monthly Maximum 20.30C  
Mean Monthly Minimum 11.30C  
Rainfall 43.6mm  
Mean Humidity 84%

**SEPTEMBER** was the warmest for 11 years, and the rainfall was only half the average. Of this, 17.2mm (two-thirds of both an inch and of the total) fell on the 9<sup>th</sup>, over a very wet 12 hours. Over 25 dry days there was a total of 143 hours on sunshine. On the 3<sup>rd</sup> a single infant adder was found near an adult female. Her very thin appearance suggested that she was the mother. It is very unlikely that she had produced only one baby, but despite searching the area several times during the month, no more were found.

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## Herpetofauna Data –Phenology

At approximately 1 am on the morning of the 23<sup>rd</sup> an earthquake measuring 5 on the Richter scale shuddered across the Midlands. The epicentre was determined to be in Dudley, West Midlands - or more accurately, some 10 to 15 miles below it. The last adder record of the year, one female, was made the following day on the 24<sup>th</sup>. The month ended frost-free.

Mean Monthly Maximum 21.50C  
Mean Monthly Minimum 7.30C  
Rainfall 25.3mm  
Mean Humidity 84%

**OCTOBER** began with a continuation of the lovely “Indian Summer” weather. This lasted until the 10<sup>th</sup>, with 18.0<sup>o</sup>C recorded on both the 1<sup>st</sup> and 5<sup>th</sup>. This came to an abrupt end in the eve of the 11<sup>th</sup>, when torrential rain set in. Unsettled weather was the norm for the rest of the month, not surprisingly the rainfall total was above average. The first frosts of the autumn were on the nights of the 18<sup>th</sup> and 19<sup>th</sup>. On the 21<sup>st</sup> there was another earth tremor in the UK, but it was not felt in the Wyre Forest area. It was both further away (centred on Manchester), and gentler, at 3.2 on the Richter scale. On the 25<sup>th</sup> thundery showers were followed by strong, wild winds on the 26<sup>th</sup>, increasing to gale force on the 27<sup>th</sup> when they caused structural damage across the country, with trees uprooted and electricity supplies in some areas disrupted for days.

Mean Monthly Maximum 12.70C  
Mean Monthly Minimum 4.80C  
Rainfall 124.8mm  
Mean Humidity 85%

Air frosts: 5 Ground frosts: 5

**NOVEMBER** was the wettest since 1940, and very dull, with 5 foggy mornings. Rain fell on 24 days of the month.

Mean Monthly Maximum 9.70C  
Mean Monthly Minimum 3.80C  
Rainfall 114.6mm  
Mean Humidity 89%

Air frosts: 5 Ground frosts: 14

**DECEMBER** was another wet month, with 23 days of rain. The 20<sup>th</sup> set the rainfall record for the year with 22.8mm.

Mean Monthly Maximum 6.70C  
Mean Monthly Minimum 2.70C  
Rainfall 99.3mm  
Mean Humidity 84%

Air frosts: 5 Ground frosts: 14



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First frogspawn	06 February
First male adder	11 February
First common lizard	07 March
First female adder and slow-worm	12 March
First grass snake	22 March
First grass snake copulation	03 April
First male adder slough	09 April
First adder courtship / combat	15 April
First adder mating	21 April
Last adder courtship	03 May
Last adder	24 September
<b>2002 Phenological Data</b>	

Year	First Sighting	Air Temp. (°C)	Grass Temp. (°C)	First Slough
1990	5 February	13.0	14.0	08 April
1991	23 February	14.0	17.0	19 April
1992	23 February	13.0	15.0	22 April
1993	17 February	10.7	12.5	16 April
1994	10 February	10.0	15.0	18 April
1995	12 February	11.4	11.0	10 April
1996	16 February	12.2	15.0	24 April
1997	15 February	8.6	11.0	08 April
1998	11 February	13.6	12.5	17 April
1999	16 February	8.0	9.0	16 April
2000	19 February	6.3	12.5	07 April
2001	7 February	10.0	11.5	17 April
2002	11 February	13.5	16.0	09 April
<b>Cumulative Data for Adders</b>				

## Adder Population Data

Year	Sites Surveyed	Sites with Adders	Mature Males	Mature Females	Total	Average per Site
1990	56	50	185	55	240	4.8
1991	76	61	211	56	267	4.4
1992	78	55	159	33	192	3.5
1993	80	59	186	70	256	4.3
1994	76	50	153	29	182	3.6
1995	76	44	103	14	117	2.6
1996	80	41	112	32	144	3.5
1997	84	44	102	31	133	3.0
1998	85	42	103	34	137	3.3
1999	67	35	100	20	120	3.4
2000	87	24	69	13	82	3.4
2001	Data incomplete due to foot and mouth disease					
2002	20 *	13	36	17	53	2.6
<b>Adder Numbers</b>			*Survey restricted to selected sites			

## Other Reptiles Recorded in Wyre During Adder Census

Year	Grass Snakes		Slow-Worms		Lizards	
	Mature	Juvenile	Mature	Juvenile	Mature	Juvenile
1990	30	6	23	3	22	2
1991	16	4	24	11	20	0
1992	22	8	27	8	10	3
1993	45	4	57	5	35	3
1994	18	2	36	10	22	1
1995	19	4	23	13	11	0
1996	18	4	32	16	15	0
1997	25	3	42	11	42	0
1998	20	1	34	8	37	0
1999	26	8	32	9	18	1
2000	11	1	21	3	23	0
2001	Data incomplete due to foot and mouth disease					
2002	7	2	14	3	14	0