



Wyre Forest Study Group

REVIEW OF ADDER BEHAVIOUR AND WEATHER CONDITIONS - 2000

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Introduction

The correlation between weather and reptile behaviour continues to interest and intrigue the herpetologist. Climatological records have been taken at Knowles Mill since 1982, and since 1991 have been sent to Birmingham University for inclusion in the monthly summary for the West Midlands region.

Reptile observations have been ongoing since 1978 in several sites within the vicinity of Knowles Mill. During the 1980's, concerted efforts were made to locate as many sites as possible in Wyre Forest. In 1988, 54 sites were surveyed, 39 were found to support Adders, giving a total of 208 mature individuals, with 142 males and 66 females. During the 1990's the discovery of additional sites has been accompanied by the loss of some of the original ones. In 2000, 87 sites were surveyed with only 24 supporting Adders, giving a total of 82 mature individuals, some 69 males and 13 females. Graph 1 illustrates the decline in Adder population.

JANUARY 2000 began with a cold frosty day under a clear blue sky with a bright, low wintry sun: but it was not to be typical of the month. Although relatively dry with below-average rainfall of 22.7mm, there were dull, cloudy periods with showers. It became very windy and mild late in the month, with a high of 11.5°C in the last three days. There were 24 air and 25 ground frosts. The coldest nights were on the 10th and 26th, when ground temperatures of -6°C were recorded.

Mean monthly maximum = 5.4°C

Mean monthly minimum = 0.7 °C

First herpetofauna records of the year - Common Frog and Smooth Newt, both seen on 29 January

FEBRUARY was a wetter month with rain falling on 23 days, giving a total of 70.9mm. The mild days were generally dull or wet. The warmest day, on the 6th was cloudy with light rain, and an air temperature of 11.0°C. The first dry sunny day was quite cool with a keen wind, but the sunshine was enough to bring out the first male adders on the 19th with an air temperature of 6.3°C, and a ground temperature of 12.5°C. Lizards and frogspawn were also seen on the same day. The last week of the month was unsettled and reptiles did not appear above ground again. There were 16 air and 21 ground frosts.

Mean monthly maximum = 7.7°C

Mean monthly minimum = 1.2°C

First male Adder, Lizard and frogspawn records on 19 February

MARCH began unsettled, cloudy cool and showery. This weather was not at all suitable for adder

surveys, but the frog populations were spawning well. The coldest night was on the fourth with a ground frost dipping to -5°C. Temperatures began to rise on the 6th, and continued to give fine spells throughout the month, allowing surveys to be undertaken on 21 days. Thirty sites were visited, with 57 males and 11 females counted. The first female Adder, first Grass Snake and Slowworm were recorded on the 9th, when temperatures reached 15.5°C in the air and 23.0°C on the ground. The females were seen to be very fat, as if in breeding condition. The coldest night was on the fourth with a ground frost of -5°C and there were 11 air and 17 ground frosts in all. Rainfall for the month added up to 30.2mm.

Mean monthly maximum = 10.8°C

Mean monthly minimum = 2.9°C

First female Adder, Grass Snake, Slow-worm record on 9th March

APRIL was very wet, with 162mm of rain in the Knowles Mill gauge. There were a total of 21 rainy days. Nationally, this was the wettest April since 1818. It started with two rainy days, followed by two cold days and nights, with 36 hours of snow showers. The coldest night was the 6th, with a temperature of -6.0°C. Over the next 5 days conditions improved, with sunny spells allowing surveys to resume until the 10th. Several males sloughed their skins during this period. From the 11th to the 15th the weather deteriorated to give thunderstorms, sleet, snow, hail, and prolonged periods of rain. Temperatures lifted on the 16th, and despite the unsettled weather which continued for another 10 days, attempts were made to persevere with surveying in any bright spells. Some males were now observed to be in the vicinity of females in breeding condition. The last 4 days of April became settled and very warm. At this time a well-known female, seen several times throughout March, and noted as fat and apparently in breeding condition, underwent a dramatic change. When seen on the 29th she appeared extremely thin, indicating that she had recently given birth, and therefore must have carried her eggs through hibernation. At another site, two more females had also similarly shrunk in girth, and near one of them a tiny baby adder was found. On the 30th (the warmest day of the month, with an air temperature of 17.5°C) courtship and copulation were observed, but only three females were involved in this activity. There were 5 air and 12 ground frosts.

Mean monthly maximum = 11.4°C

Mean monthly minimum = 3.5°C

First Adder slough on 7th April. First Adder courtship and copulation on 30th April.



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The first two weeks of **MAY** were settled, warm, and dry. Several sites in Worcestershire and the bordering areas were surveyed during this spell of fine weather. Adder courtship and copulation was observed up to the 9th. No other females apart from the three already recorded were seen to attract males or participate in courtship, and after this date any females found were alone. The highest air temperature of 25°C was recorded on the 15th. The next day the rain returned and fell on every successive day for the latter half of the month giving a total of 54.7mm. No air frosts were recorded but three ground frosts occurred.

Mean monthly maximum = 16.7°C

Mean monthly minimum = 6.2°C

Last Adder courtship on 9th May.

JUNE was quite a warm month, cloudy, showery, and dull; apart from three hot sunny days on the 17th, 18th and 19th. The highest air temperature of 29.5°C recorded on the 18th made it the hottest day of the summer. No frosts were recorded, and rainfall for the month totalled 31.8mm. The last adder record of the year was collected this month. The remainder of the summer was either too wet or (less often) too hot to find specimens; the autumn was also too wet.

Mean monthly maximum = 18.3°C

Mean monthly minimum = 6.9°C

Last Adder record of the year - one dead male.

JULY had rain on the first 13 days of the month, with thundery showers on the 2nd and 3rd, and another thunderstorm on the 6th. It remained cool through this period of very unsettled weather. The weather improved from the 14th to the 27th with 14 dry days. The warmest, sunniest day of the month occurred on the 21st, with an air temperature of 25.0°C. The fine spell broke on the 28th, with thundery showers for the last 3 days of the month. Total monthly rainfall was 54.1mm.

Mean monthly maximum = 19.8°C

Mean monthly minimum = 10.4°C

AUGUST can be summed up as “*fair, with sunny spells and showers, rather warm*”. There were 21 days with rain, 4 of which included thundery showers or storms, adding to the total of 50.3mm. The highest air temperature of 24.0°C was recorded on the 26th.

Mean monthly maximum = 20.8°C

Mean monthly minimum = 10.1°C

SEPTEMBER began quietly, with 12 relatively dry days, including some warm sunshine. By the 11th the air temperature peaked at 25.0°C. On the thirteenth the weather deteriorated to cloudy and wet, although still warm. Only two dry days followed throughout the rest of the month, giving a rainfall of 100.1mm. It was the start of a very wet autumn.

Mean monthly maximum = 17.3°C

Mean monthly minimum = 9.5°C

OCTOBER was a very wet month with rain on 25 days, accumulating towards a monthly total of 127.5mm. The wettest day of both the month and the year was the 29th, when 36.8mm (1½ inches) was recorded. The highest temperature of 17.0°C was recorded on the 3rd. Hurricane-force winds and gales caused power failures at the end of the month. Ground frosts were recorded on 6 mornings.

Mean monthly maximum = 12.2°C

Mean monthly minimum = 5.0°C

NOVEMBER was also extremely wet with rain on 23 days, totalling 141.4mm. This caused severe flooding in many riverside towns throughout England and Wales. As a result of the continued rainfall, the autumn of 2000 became the wettest since records began in 1766, with 369.0mm over the three months. There were 10 air and 22 ground frosts.

Mean monthly maximum = 8.2°C

Mean monthly minimum = 1.9°C

DECEMBER was even wetter: the wettest month of the year with a total of 165.9mm of precipitation. This included some snowfall at the end of the month. A very cold spell after Christmas gave 6 frosty days when temperatures remained below freezing. The coldest day of this spell was the 29th, when a ground temperature of -14.0°C was recorded. There were 12 air and 15 ground frosts.

Mean monthly maximum = 6.4°C

Mean monthly minimum = 3.1°C

Summary

The year 2000 will be remembered for poor, wet weather, with only a few short settled periods during the spring and summer, before a very wet autumn. The previous year had been the wettest in 20 years of recording rainfall at Knowles Mill. However, the rainfall in 2000 exceeded this, and set a new record with 1011.6mm (39.9 inches), falling on 223 days throughout the year. At the national level, 2000 was the wettest year since 1872, and also the fifth warmest since records began in 1766.



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Weather – Tabulated Data

Year	Rainy days (0.2mm or more)		Sunny days (5 hours or more)		No. of Survey Days	
	March	April	March	April	March	April
1990	6	12	15	20	21	22
1991	17	14	5	11	18	19
1992	24	18	2	9	18	20
1993	7	17	9	7	21	20
1994	22	15	12	12	22	23
1995	19	5	14	15	18	24
1996	15	15	1	8	9	25
1997	6	6	8	13	22	22
1998	13	25	6	10	20	20
1999	20	23	10	12	18	23
2000	12	21	14	12	22	19

Table 1: Weather Conditions Relating to Adder Surveying

Reptile 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
1998	85	42	103	34	137	3.3
1999	67	35	100	20	120	3.4
2000	87	24	69	13	82	3.4

Table 2: Adder Numbers

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

Table 3: Other Reptiles Recorded in Wyre During Adder Census

Discussion

The result of the spring Census for 2000 has given great cause for concern. The number of mature adders recorded in Wyre Forest plummeted to an all-time low of only 82 individuals, including just 13 females. Of these females, only three were seen in the company of males. Poor weather in the summer of 1999 could have accounted for this, preventing females from feeding and building up fat reserves sufficient to permit them to breed. A cool wet September that year may also have delayed birth in pregnant females. These would then have had to hibernate still pregnant, and give birth as soon as the weather in spring 2000 was warm enough.

This appears to have happened in at least three cases. These females were seen initially to be plump and apparently in breeding condition, but by the end of April they were much thinner, as if parturition had occurred. An apparently newborn infant adder was found in the vicinity of one of the females. None of them attracted a male, and overall the evidence seems conclusive. The other seven females seen in March 2000 had all disappeared by the time mating courtship began, and they did not participate either.

The effects of the summer of 1999 on the females appears obvious from the Census results. The effects on the male and the juvenile populations is unknown, other than what the Census indicates - that many did not survive hibernation!

Of the 87 currently or previously occupied sites surveyed in Wyre Forest, only 24 were found to support adders in 2000. Other sites were surveyed in Worcestershire during the spring, six were found to support adders with 22 males and seven females recorded. This brings the total overall to 111 mature adders in Worcestershire and the Wyre Forest (part of which is in Shropshire). Of these 91 are males and only 20 females. This represents another sharp decline in numbers and suggests that the future for adders in this survey area is bleak.

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Graph 1 - Adder Population Trend

