



Wyre Forest Study Group

Review of Herpetofauna Behaviour correlated with Weather 2009

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Daily weather records have been taken at Knowles Mill, 31 metres above sea level, since 1981, at approximately 9 a.m., Greenwich Meantime. Below average temperatures are frequently recorded, as the Dowles Valley acts as a frost pocket, with only a limited amount of sunshine. During reptile surveys, a digital thermometer is used to record temperature on site. Weather conditions play a vital role in the life of reptiles, as being poikilothermic/cold-blooded, they require sunshine to warm up and maintain body temperature at optimum levels. Morning is often the best time to find reptiles, as they are more inclined to bask in the open if still warming up, and are much less active, allowing a close approach for individual recognition and photography. Later in the day, direct sunshine may prove too hot for them and they invariably retreat into thick cover and are consequently more difficult to locate.

JANUARY began with high pressure, which dominated the first ten days, and produced several sharp frosts and snow flurries. The coldest nights of the month occurred on the 6th and 7th, when an air frost of -10°C was recorded. The day temperature remained below or near freezing point during this very cold spell. However, Atlantic fronts brought milder wetter weather from the 11th onwards. The mildest days were the 11th and 12th with air temperatures of 9.5°C . Rain fell on 17 of the remaining 20 days. The wettest day fell on the 17th with 12.9mm of rain. The last few days of the month turned cold again with an easterly wind.

Mean Monthly Maximum 4.7°C
Mean Monthly Minimum -1.5°C
Total Rainfall 77.2mm., Mean Humidity (9am) 82%
Air Frosts 23, Ground Frosts 26
Snow on 4th & 6th, Fog on 3 days
Lowest Barometric Pressure 974/28.65 was on 23rd
Highest Barometric Pressure 1036/30.62 was on 1st, 2nd, 3rd, 8th & 9th

FEBRUARY was a cold month, with snow falling on 7 of the first 10 days. The lowest temperature recorded was on the 7th and 12th, with a ground frost of -6°C . Snowmelt measured 27.2mm. The remainder of the month saw milder settled weather, with only 4.4mm of rain recorded between the 11th-28th. The **FIRST MALE ADDER** was observed basking on the 16th, when the ground temperature was 13.7°C , and the air temperature 11.7°C , this was the warmest day of the month. **FROGS** were reported croaking on the 13th and were **SPAWNING** on the 18th. The **FIRST SLOW WORM** was observed on the 25th.

Mean Monthly Maximum 6.7°C
Mean Monthly Minimum 0.7°C

Total Rainfall 31.6mm., Mean Humidity 80%
Air Frosts 16, Ground Frosts 20, Snow on 7 days
Lowest Barometric Pressure 991/29.26 was on 5th
Highest Barometric Pressure 1038/30.64 was on 20th & 21st

MARCH was drier and warmer than average. The **FIRST FEMALE ADDERS** and **LIZARDS** were recorded on the 2nd in an air temperature of 11°C and ground temperature of 17°C . The wettest day of the month was the 3rd, with 10mm of rain. The **FIRST GRASS SNAKES** were recorded on the 17th in an air temperature of 14°C , and by the 21st had already engaged in courtship. The first male adder **SLOUGH** was found on the 26th.

Mean Monthly Maximum 11.5°C
Mean Monthly Minimum 0.8°C
Total Rainfall 23.7mm., Mean Humidity 77%
Air Frosts 16, Ground Frosts 22, Snow/Sleet on 8th
Hail on 5 days, Fog on 3 days
Lowest Barometric Pressure 982/29.0 was on 4th
Highest Barometric Pressure 1041/30.74 was on 17th

APRIL was the third warmest since 1914, with high pressure dominating for much of the month. **GRASS SNAKES** were observed **MATING** on the 2nd and also male adders basking with females. **ADDERS** were seen **MATING** on the 11th, in an air temperature of 14°C , with a ground reading of 32°C . The warmest day fell on the 21st with an air temperature of 19.5°C . The coldest night was the 5th, the temperature falling to -2.5°C . The wettest day was on the 16th with 17.8mm of rain recorded. Adder courtship was observed up to the 30th.

Mean Monthly Maximum 14.9°C
Mean Monthly Minimum 2.6°C
Total Rainfall 57.1mm., Mean Humidity 80%
Air Frosts 10, Ground Frosts 8, Hail on 7th, Thunder on 15th
Lowest Barometric Pressure 992/29.30 was on 27th
Highest Barometric Pressure 1030/30.42 was on 22nd

MAY was warmer and drier than average. No further mating activity was observed, and with the male adders having now dispersed to feed, the females were found alone. The coolest night was on the 4th, with a temperature of 0.5°C . The wettest day was the 14th with 13.5mm of rain, the warmest day the 29th, with an air temperature of 25°C .

Mean Monthly Maximum 17.5°C
Mean Monthly Minimum 5.6°C
Total Rainfall 50.2mm., Mean Humidity 76%
No Air or Ground Frosts, Hail on 16th, Thunder on 15th & 16th



Wyre Forest Study Group

Lowest Barometric Pressure 998/29.48 was on 16th
Highest Barometric Pressure 1035/30.56 was on 29th

JUNE started hot and sunny, with a temperature of 26.2°C recorded on the 2nd. However, the weather deteriorated after the 4th, producing heavy rain on the 5th and 6th, amounting to 21.8mm and 25mm respectively. This was the wettest spell of the month, with only small amounts of rain recorded thereafter. There were two cool nights, the 4th and 12th with temperatures of 2°C. The warmest day was the 29th, with an air temperature of 27°C.

Mean Monthly Maximum 20.7°C
Mean Monthly Minimum 7.1°C
Total Rainfall 62.7mm., Mean Humidity 77%
Hail on 27th, Thunder on the 29th
Lowest Barometric Pressure 998/29.48 was on 7th
Highest Barometric Pressure 1030/30.42 was on 1st

JULY began with four, very warm sunny days, involving the hottest day of the month, the 2nd with an air temperature of 29°C, which was also the hottest day of the year. The rest of the month was very wet with rain falling on 24 of the remaining 26 days. The wettest day, was the 6th, with 17.1mm of rain. The coolest nights were the 9th and 10th with an air temperature of 5°C.

Mean Monthly Maximum 20.3°C
Mean Monthly Minimum 10°C
Total Rainfall 114mm., Mean Humidity 81%
Lowest Barometric Pressure 995/29.38 was on 22nd
Highest Barometric Pressure 1022/30.18 was on 1st

AUGUST was drier and warmer than average, but rather cloudy and humid, with small amounts of rain on 17 days of the month, the highest daily rainfall only 5mm on the 1st. The warmest day was on the 11th with an air temperature of 25.5°C. The lowest minimum was 3°C on the 22nd.

Mean Monthly Maximum 20.6°C
Mean Monthly Minimum 10.5°C
Total Rainfall 35.6mm, Mean Humidity 81%
Hail on 25th, Thunder on 25th & 28th
Lowest Barometric Pressure 1001/29.56 was on 26th
Highest Barometric Pressure 1021/30.16 was on 22nd

SEPTEMBER, after a dismal summer, was warmer and drier than average, with rain falling on only 3 days of the month, the wettest day, the 2nd, producing 12.1mm of rain. The warmest day was the 8th with an air temperature of 23.5°C. Four NEONATE ADDERS were seen on the 16th with two females in the vicinity. High pressure dominated from the 9th to the end of the month.

Mean Monthly Maximum 18.5°C
Mean Monthly Minimum 8.2°C
Total Rainfall 15.8mm., Mean Humidity 80%
Lowest Barometric Pressure 993/29.32 was on 3rd
Highest Barometric Pressure 1039/30.70 was on 11th

OCTOBER started rather disappointedly with gusty winds and showers, giving 26.8mm of rain recorded during the first 10 days, thereafter, high pressure brought brighter, drier conditions from the 12th to the 19th, with brief sightings of adders, near their hibernaculums. The remainder of the month brought more unsettled weather with patchy rain, heavy at times.

Mean Monthly Maximum 13.5°C
Mean Monthly Minimum 7.2°C
Total Rainfall 48.4mm., Mean Humidity 82%
Air Frosts 3, Ground Frosts 3, Fog on 10th & 29th
Lowest Barometric Pressure 992/29.30 was on 20th, 21st & 22nd
Highest Barometric Pressure 1036/30.58 was on 16th

NOVEMBER was both wetter and warmer than average. Heavy rain fell in the early hours of the 1st, and persisted for several hours, to late a.m. producing 17.7mm of rain. It was the wettest and also the mildest day of the month with an air temperature of 15.5°C. Rain fell on a further 27 days, with substantial amounts on the 12th, 13th, 15th, 21st and 29th, and said to be the wettest November since 1914, by far the wettest month of the year. There were cold nights sandwiched between these mild wet spells, the coldest on the 7th with an air minimum of -1°C.

Mean Monthly Maximum 10.4°C
Mean Monthly Minimum 2.8°C
Total Rainfall 141.1mm., Mean Humidity 87%
Air Frosts 7, Ground Frosts 5, Fog on 10th & 11th
Lowest Barometric Pressure 980/28.64 was on 3rd, 4th, 14th & 29th
Highest Barometric Pressure 1020/30.12 on 9th

DECEMBER was a cold month with sharp night frosts. The coldest spell was from the 17th to the 23rd, when day temperatures stayed below freezing. The coldest day was the 22nd with a maximum of -7°C, followed by a night minimum of -10°C. There were 5 days with snow during this very cold spell. The mildest day was the 5th with an air maximum of 12.5°C, it was also the wettest day with 19mm of rain.

Mean Monthly Maximum 3.9°C
Mean Monthly Minimum -2.5°C
Total Precipitation 67.1mm., Mean Humidity 84%

Air Frosts 25, Ground Frosts 25, Days with snow 5, Fog on 3 days
 Lowest Barometric Pressure 983/29.15 was on 22nd
 Highest Barometric Pressure 1035/30.56 was on 11th & 12th

2009 Weather Summary

Total Rainfall 724.5mm (28.6inches)
 Wettest Month November 141.1mm.
 Wettest Day 6th June 25mm.
 Hottest Day 2nd July 29°C
 Coldest Night 6th & 7th January -10.5°C

BAROMETRIC PRESSURE

Lowest 974/28.65 on 23rd January
 Highest 1036/30.58 on the 1st January & 16th October

Discussion

2009 was the 2nd year of the Grow With Wyre Reptile Survey. This project employed a team of dedicated volunteers to record all reptile sightings on 55 specified sites, throughout the Wyre Forest. Table 5 illustrates the decline of sites supporting adders, from 61 in 1991 to just 22 in 2009. Grass snakes were recorded on 15 sites, slow worms on 26 sites and good numbers of common lizard on 27 sites.

The major concern is that the remaining 22 sites are now island populations in only four main areas, all spatially isolated from each other by at least 3 kilometres. This is generally considered to be too

great a distance for male adders to travel in search of receptive females. This could eventually result in inbreeding, and a significant reduction in the quality of the surviving gene pool, and a potential increase in disease and corresponding infertility.

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Female Adder , 26 April 2010

Rosemary Winnall

Year	Total Rainfall		Days with Minimum Of 0.2mm Rainfall	Maximum Daily Rainfall (mm)	Date of Maximum Rainfall
	mm	Inches			
1990	964.3	38	167	42.5	Jan-28
1991	633.5	24.9	158	33	Apr-30
1992	880.4	34.7	196	42.9	May-28
1993	785.9	30.9	177	38	Jun-10
1994	814	32	198	54.8	Aug-14
1995	625.9	24.6	164	41.3	Jul-10
1996	624.8	24.6	169	17.4	Apr-12
1997	753.7	29.7	161	32	Jun-25
1998	805.4	31.7	195	27.2	Jun-01
1999	968.6	38.1	212	45.6	Sep-19
2000	1011.6	39.9	223	36.8	Oct-29
2001	738.1	29.1	187	40.2	Jul-17
2002	843.7	33.3	191	22.8	Dec-20
2003	560.2	22.1	155	27.3	Oct-30
2004	849.6	33.4	209	46.3	Aug-03
2005	748.8	29.5	183	35.3	Jul-24
2006	652.5	25.7	191	20.1	Nov-24
2007	1046.0	41.25	184	74.7	July-20
2008	930.0	36.67	197	37.2	Sept-05
2009	724.5	28.6	184	25	Jun-06

Table 1: Rainfall at Knowles Mill



Wyre Forest Study Group

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
2001			Data incomplete due to FMD			
2002	10	12	14	18	13	20
2003	9	9	21	17	23	24
2004	20	17	9	15	17	20
2005	18	16	8	12	15	25
2006	20	13	7	20	11	24
2007	14	5	15	25	21	23
2008	19	23	15	11	16	23
2009	12	14	19	20	22	19

Table 2: Weather Conditions Relating to Adder Surveying

Year	First Sighting	Air Temp. (°C)	Grass Temp. (°C)	First Slough
1990	05-February	13	14	08-April
1991	23-February	14	17	19-April
1992	23-February	13	15	22-April
1993	17-February	10.7	12.5	16-April
1994	10-February	10	15	18-April
1995	12-February	11.4	11	10-April
1996	16-February	12.2	15	24-April
1997	15-February	8.6	11	08-April
1998	11-February	13.6	12.5	17-April
1999	16-February	8	9	16-April
2000	19-February	6.3	12.5	07-April
2001	07-February	10	11.5	17-April
2002	11-February	13.5	16	09-April
2003	23-February	11	23.8	31-March
2004	04-March	11	19.5	19-April
2005	15-February	10	14	16-April
2006	15-February	10	17.3	19-April
2007	14-February	11.3	19.0	6-April
2008	12-February	7	27	2-April
2009	16-February	11.7	13.7	26-March

Table 4: Cumulative Data for Adders
Readings taken from an electrical pocket thermometer

	2004	2005	2006	2007	2008	2009
Frogs Croaking	23-Jan	31-Jan	18-Jan	12-Jan	16-Jan	13-Feb
First Frogspawn	16-Feb	09-Feb	26-Feb	15-Feb	9-Feb	18-Feb
First Male adder	4-Mar	15-Feb	15-Feb	14-Feb	12-Feb	16-Feb
First common lizard	25-Mar	15-Feb	22-Feb	7-Mar	12-Feb	2-Mar
First Slow-Worm	16-Mar	18-Mar	25-Mar	7-Mar	1-Mar	25-Feb
First female adder	16-Mar	18-Mar	26-Mar	14-Feb	21-Mar	2-Mar
First grass snake	2-Apr	21-Mar	12-Apr	7-Mar	27-Mar	6-Mar
First grass snake copulation	N/S	04-Apr	N/S	N/S	1-Apr	21-Mar
First male adder slough	19-Apr	16-Apr	19-Apr	6-Apr	2-Apr	26-Mar
First adder courtship and combat	24-Apr	27-Apr	25-Apr	12-Apr	22-Apr	3-Apr
First adder mating	25-Apr	27-Apr	26-Apr	12-Apr	23-Apr	11-Apr
Last adder courtship	7-May	06-May	07-May	27-Apr	3-May	29-Apr
Last adder	5-Oct	16-Oct	20-Oct	2-Nov	21-Oct	26-Sep

Table 3: 2009 Phenological Data

WYRE FOREST ONLY

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
2001			Data incomplete due to FMD			
2002	20	13	36	17	53	4
2003	20	8	26	10	36	4
2004	47	20	40	19	59	3.6
2005	54	25	47	15	62	4.1
2006	38	21	74	26	100	2.1
2007	28	19	67	24	101	5.3
2008	51	24	120	35	155	6.5
2009	55	22	96	30	126	5.7

Table 5: Adder Numbers

*Usual Sites without three new sites added
* Total when three new sites were added

FDM – Foot & Mouth Disease

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 FMD			
2002	7	2	14	3	14	0
2003	5	0	10	0	26	0
2004	Grass Snakes		Slow-worms		Lizards	
2004	18	2	18	2	16	
2005	12/16*		53/71*		58/144*	
2006	11		48		70	
2007	12		48		52	
2008	34		129		169	
2009	18		156		98	

Table 6: Other Reptiles Recorded in Wyre During Adder Census

** the total with the three new sites added
FDM – Foot & Mouth Disease