Review of Herpetofauna Behaviour correlated with Weather 2013, 2014

SYLVIA SHELDON AND CHRIS BRADLEY

Male Adder recently sloughed, 14 April 2014 Sylvia Sheldon

Summary of Seasonal Weather 2013, 2014

Winter 2012 /2013

December 2012, January and February 2013, were slightly colder than average, and a little wetter with average sunshine. However, as usual, the period encompassed a wide variety of weather, with snow having fallen on 14 days, which lay for 18 days due to the icy conditions.

Spring 2013

March, April and May were particularly disappointing, with snow falling on 10 days in March. This persisted for 12 days, accompanied by very cold east/north easterly winds, colder than any experienced during the winter months. April still produced occasional snow flurries and frosty nights. Consequently, the average temperature for the month was well below normal. May also saw unseasonably strong winds, and the wettest day of the year, with 28mm of rain recorded on the 14th.

Summer 2013

June, July and August, continued unsettled, with a cold windy June, and only brief warm spells. However, summer eventually arrived in July, when the warmest days of the year were recorded on the 13th and 19th, with air temperatures reaching 30˚C. There was no significant rainfall recorded on the first 21 days of the month, although wetter weather, with thunder and lightning, occurred on the 23rd and 29th. August rainfall was below average.

Autumn 2013

September, October and November. September was both milder and drier than average. October was also mild, but dull and and very wet, indeed, the wettest month of the year, with 155.3mm of rain recorded. November likewise began wet and unsettled with strong winds. However, frosts became much more prevalent during the second half of the month.

Winter 2013/ 2014

December, January and February. December was milder than average, dominated by a series of deep depressions (troughs of low pressure) moving in off the Atlantic, that began in mid-month and continued largely unabated into January, which again was stormy with strong winds and above average rainfall. In fact, some places in southern England received the equivalent of 5 months rainfall in just 7 weeks, resulting in the wettest January for 100 years. With 157.4mm of rain recorded at Knowles Mill, this was the wettest month of the year. There were 13 major storms, which affected mainly the south of England, and Wales, with major flooding on the Somerset Levels,and 18 people lost their lives as a direct result. February was also very wet and windy, but again unseasonably mild.

Spring 2014

March, April and May. March was drier and warmer than average, with sunshine hours likewise somewhat above normal. This provided an early taste of spring. April continued the trend, becoming the 5th month in succession to return above average temperatures. May

was mild but much wetter. Nevertheless, as a whole, Spring 2014, was the 3rd warmest on record.

Summer 2014

June, July and August. Average temperatures remained high throughout June, making this one of the warmest, (equal 9th) since 1910. Rainfall was below average. July was also warmer than average, with once again, rainfall somewhat below the norm. However, August was wetter, cooler and unsettled, with the aftermath of Hurricane Bertha, reaching Britain on the 10th and 11th. This was the coolest August since 1993.

Autumn 2014

September was dry and warm, October, very wet at times, with above average temperatures, while November, the 3rd warmest on record.

Table 1: Rainfall at Knowles Mill

Year	Total rainfall mms.	Total rainfall inches	Days with 0.2mm minimum rainfall	Maximum daily rainfall (mm)	Date of maximum rainfall
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	41.25	184	74.7	Jul-20
2008	930	36.67	197	37.2	Sep-05
2009	724.5	28.6	184	25	Jun-06
2010	659.2	25.99	168	27	Aug-25
2011	498.6	19.66	166	18.7	May-07
2012	1077.1	42.47	202	82.3	May-23,24
2013	807.7	31.35	169	28	May-14
2014	976	38.48	212	26.7	Aug-25

2013 Annual Weather Data

Total Rainfall/Precipitation = 807.7mm = 31.85".
Rain Days with +0.2mm = 169.
Rain Days with +1.0mm = 135.
Wettest Day, with 28.0mm was on 14th May.
Wettest Month, with 155.3mm was October.
Warmest Days with 30˚C were recorded 13th & 19th July.
Coldest Night, with an air temperature of -8˚C and ground temperature of -9˚C was on 14th March.
There were 169 Air Frosts & 135 Ground Frosts with Snow lying for 24 days: January 9 days, February 5 days, and March 10 days.
Highest Barometric Pressure =1036/30.59 on 26th November.
Lowest Barometric Pressure = 970/28.64 on 24th & 26th December.

Table 2. Weather conditions relating to Adder surveying

	Rainy days (0.2mm or more)		Sunny days (5 hours or more)		Number of Survey Days	
Year	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
2010	12	9	15	22	19	25
2011	7	4	20	22	16	25
2012	5	23	17	17	11	17
2013	11	11	9	17	6	11
2014	14	13	16	17	11	17

2014 Annual Weather Data

Total Rainfall/Precipitation = 976mm = 38.48".
Rain Days with +0.2mm = 212.
Rain Days with +1.0mm = 162.
Wettest Day, with 26.7mm was 25th August.
Wettest Month, with 157.4mm was January.
Warmest Day, with 28.0˚C, was recorded on 13th June.
Coldest Night, with an Air Temperature of -6.0˚C on 30th December, with a Ground Temperature -9.5˚C.
No Snow Recorded.
There were 212 Air Frosts & 162 Ground Frosts.
Highest Barometric Pressure = 1036/30.59 on 29th December.
Lowest Barometric Pressure = 965/28.49 on 5th February.

Table 3: Phenology data in the Wyre Forest

RECORD	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Frogs Croaking	23-Jan	31-Jan	18-Jan	12-Jan	16-Jan	13-Feb	24-Feb	18-Feb	03-Mar	07-Mar	18-Feb
First Frogspawn	16-Feb	09-Feb	26-Feb	15-Feb	09-Feb	18-Feb	26-Feb	22-Feb	03-Mar	08-Mar	21-Feb
First Male adder	04-Mar	15-Feb	15-Feb	14-Feb	12-Feb	16-Feb	20-Feb	12-Feb	21-Feb	17-Mar	19-Feb
First common lizard	25-Mar	15-Feb	22-Feb	07-Mar	12-Feb	02-Mar	07-Mar	12-Feb	25-Feb	13-Mar	24-Feb
First Slow-Worm	16-Mar	18-Mar	25-Mar	07-Mar	01-Mar	25-Feb	18-Feb	17-Mar	25-Feb	16-Apr	24-Feb
First female adder	16-Mar	18-Mar	26-Mar	14-Feb	21-Mar	02-Mar	14-Mar	12-Mar	17-Mar	18-Mar	18-Mar
First grass snake	02-Apr	21-Mar	12-Apr	07-Mar	27-Mar	06-Mar	21-Mar	12-Mar	25-Feb	23-Apr	17-Mar
First grass snake copulation	N/S	04-Apr	N/S	N/S	01-Apr	21-Mar	04-Apr	N/S	N/S	N/S	N/S
First male adder slough	19-Apr	16-Apr	19-Apr	06-Apr	02-Apr	26-Mar	13-Apr	08-Apr	17-Apr	24-Apr	08-Apr
First adder courtship, combat	24-Apr	27-Apr	25-Apr	12-Apr	22-Apr	03-Apr	14-Apr	08-Apr	17-Apr	N/S	16-Apr
First adder mating	25-Apr	27-Apr	26-Apr	12-Apr	23-Apr	11-Apr	14-Apr	08-Apr	17-Apr	N/S	18-Apr
Last adder courtship	07-May	06-May	07-May	27-Apr	03-May	29-Apr	05-May	30-Apr	26-Apr	N/S	28-Apr
Last adder	05-Oct	16-Oct	20-Oct	02-Nov	21-Oct	26-Sep	23-Sep	16-Oct	05-Nov	18-Sep	22-Sep

N.B.

The above weather data was recorded at Knowles Mill, in the Dowles Valley, Wyre Forest, at approximately 9am GMT. Below average temperatures are frequently recorded as the site lies only 31 metres above sea level, with the steep sided valley forming a frost pocket, and limiting sunshine to just a few hours, even during the summer months.

Table 4: Cumulative data for Adders

Year	First Sightings	Air temp. (°C)	Grass temp. (°C)	First slough
1990	05-Feb	13	14	08-Apr
1991	23-Feb	14	17	19-Apr
1992	23-Feb	13	15	22-Apr
1993	17-Feb	10.7	12.5	16-Apr
1994	10-Feb	10	15	18-Apr
1995	12-Feb	11.4	11	10-Apr
1996	16-Feb	12.2	15	24-Apr
1997	15-Feb	8.6	11	08-Apr
1998	11-Feb	13.6	12.5	17-Apr
1999	16-Feb	8	9	16-Apr
2000	19-Feb	6.3	12.5	07-Apr
2001	07-Feb	10	11.5	17-Apr
2002	11-Feb	13.5	16	09-Apr
2003	23-Feb	11	23.8	31-Mar
2004	04-Mar	11	17.5	19-Apr
2005	15-Feb	10	14	16-Apr
2006	15-Feb	10	17.3	19-Apr
2007	14-Feb	11.3	19	06-Apr
2008	12-Feb	7	27	02-Apr
2009	16-Feb	11.7	13.7	26-Mar
2010	20-Feb	4	20	13-Apr
2011	12-Feb	11.5	15.6	08-Apr
2012	21-Feb	15	28	17-Apr
2013	17-Feb	5.5	13	24-Apr
2014	19-Feb	10	16	08-Apr

Table 5: Adder numbers

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	9	26	10	36	4
2004	47	20	40	19	59	3.6
2005	54	25	40* 65▪	16* 38▪	56*103▪	4.1* 2.4▪
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
2010	55	24	83	23	106	4.4
2011	44	20	59	27	86	4.3
2012	27	14	56	19	75	5.3
2013	26	12	35	22	57	4.78
2014	26	15	43	16	59	3.9

*Usual Sites without three new sites added

▪ Total when three new sites were added

FMD- Foot & Mouth Disease

Total number of adders divided by fourteen sites equals the average per site

Discussion

Crucially, only two of the five pregnant females followed throughout the latter stages of their pregnancy were known to have successfully given birth, one in late September 2012. Both were observed in Spring 2013, now in an emaciated condition. The other three, still gravid, when observed on October 21st, were not seen again either in 2013 or 2014, and therefore may have died in hibernation, or else perished during the very cold Spring of 2013.

As can be seen in Table 5, adder populations are still declining, and regretably, three further sites, at Pound Green Coppice, Wimperhill and Cleobury Woods, were all lost during 2014. It is important to note, that of

Table 6: 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 FMD					
2002	7	2	14	3	14	0
2003	5	0	10	0	26	0
2004	7		18		19	
2005	12/16*		53/71*		58/144*	
2006	11		49		70	
2007	12		45		52	
2008	34		129		169	
2009	18		156		98	
2010	28		124		90	
2011	26		59		117	
2012	16		43		34	
2013	13		42		21	
2014	19		43		23	
*the total with the three new sites added						
FDM - Foot & Mouth Disease						

the 15 remaining sites, (Table 5) , nine supported just 1 or 2 individuals, often lone males, while two other sites with 3 and 4 adders respectively, were observed during the active season and faired little better. Indeed, at only four sites, where 5 or more (mature) adders were recorded, could populations be considered remotely viable, at least in the short term, although, the lack


2 male Adders in combat, 21 April 2014 Sylvia Sheldon

of breeding females is a major cause for concern. Yet these few remaining sites still have no adequate legal protection, and with a policy of open access to the general public now pursued by Government Agencies, adders are continually at risk, facing either massive disturbance, injury, or even a painful death, by way of ignorance, over zealous photographers, dog walkers, and some lycra clad mountain bikers, ever intent on trashing the fragile Forest Eco-System.

Acknowledgements

I would like to thank Chris Bradley, and all the volunteers for the many hours of fieldwork involved in the census. Further, thanks to all Landowners on whose property the study has been undertaken, especially to the Forestry Commission, in particular Phil Rudlin, and Natural England.


2 male adders in combat, 21 April 2014 Sylvia Sheldon