Review of Herpetofauna Behaviour, Correlated with Weather Conditions ~ 2005

Sylvia Sheldon & Alonza Garbett

Daily weather records have been taken at Knowles Mill, in the Dowles Valley, Wyre Forest, since 1981, at approximately 9a.m. Greenwich Mean Time. The Dowles Valley at this point lies at 31 metres above sea level. Below average temperatures tend to be recorded as the valley acts as a frost pocket, with a limited amount of sunshine. During reptile surveys a digital thermometer is used on site.

JANUARY was a windy unsettled month with gales on the 7th and 8th, when winds speeds of 50-60 mph were recorded across the Midlands. The north and west of Britain experienced 70-90 mph gusts. There were 19 rainy days but no exceptional rainfall. The wettest day fell on the 7th with 5.3mm. There were several brief cold spells with wintry showers of sleet and snow on the 22nd. The coldest night was on the 23rd with a ground frost of -6°C. In between the cold spells there were 10 mild days when day temperatures reached 11°C, including the 31st when frogs were reported croaking in a garden pond near Bewdley. It was the mildest January since 1990 and drier than average.
Mean Monthly Maximum 7.4°C.
Mean Monthly Minimum 1.6°C.
Rainfall 28.8mm.
Mean Humidity 80%.
11 Air Frosts.
25 Ground Frosts.
2 days with Sleet and Snow.

FEBRUARY began with mild rainy days. The wettest day of the month fell on the 5th with 17.2mm of rain. The first frogspawn was reported on the 9th in air and ground temperatures of 9.5°C. Gale force winds from the north on the 11th and 12th eased on the 13th to give clear skies and bright sun. On the 14th and 15th air temperatures rose to 10°C and ground temperatures reached 14°C, which drew the first male adders and a lizard above ground. The clear skies gave sharp night frosts. The coldest nights of the month were on the 15th and 16th with ground readings of -6°C. The following days were accompanied by very cold NNE winds bringing hail, sleet and snow, which persisted to the end of the month - the frogs stopped spawning and the adders retreated to their underground dens after mid-month.
Mean Monthly Maximum 6.5°C.
Mean Monthly Minimum 0.8°C.

Knowles Mill *Chris Bradley*

Rainfall 51.2mm.
Mean Humidity 81%.
14 Air Frosts.
20 Ground Frosts.
10 days with Hail, Sleet and Snow.

MARCH began as February ended, with an extremely cold spell, bitterly cold NE winds, hail, sleet and snow showers with severe night frosts. The coldest night of the month fell on the 7th with a ground frost of -5.5°C. But even during this cold spell, on calm sunny days some male adders were tempted above ground to bask in sheltered spots in the March sunshine. On the 15th the winds veered from the north to the south-west allowing temperatures to rise. Frogs resumed spawning, which overlapped with the toads. The warmest day of the month fell on the 18th with an air temperature of 17.5°C and a ground reading of 28.5°C, which lured slow worms and female adders in breeding condition, above ground. The first grass snake was seen on the 21st when ground temperatures registered 16°C. Every effort was made to survey as many sites as possible when the weather permitted - which, unfortunately, wasn't always suitable as there were 8 rainy days before the end of the month, but any bright spells were taken advantage of and 15 sites were surveyed.
Mean Monthly Maximum 10.2°C.
Mean Monthly Minimum 2.8°C.
Rainfall 66.3mm.
Mean Humidity 80%.

This article is an extract from the Wyre Forest Study Group annual Review 2006

12 Air Frosts.
14 Ground Frosts.
3 days with Sleet and Snow.

APRIL temperatures fluctuated wildly and gave a mixture of warm sunshine, cool, cloudy and showery days. Grass snakes were observed mating on the 4th in an air temperature of 13.5°C with a ground reading of 24°C. Hail showers on the 6th and snow flurries on the 8th slowed reptile activity down. The first male adder slough was reported from the Malvern Hills on the 11th, the first from Wyre Forest was found on the 16th, in both cases the ground temperature registered 16.5°C. The wettest day occurred on the 17th with 15.4mm. The changeable weather continued with easterly winds, rain and sunny spells. Reptile surveys were undertaken when the weather permitted. The first adder courtship, combat and copulation was observed on the 27th in an air temperature of 16°C and a ground reading of 32.5°C.
Mean Monthly Maximum 13°C.
Mean Monthly Minimum 4.2°C.
Rainfall 69mm.
Mean Humidity 77%.
6 Air Frosts.
12 Ground Frosts.
1 day with Hail and Snow Flurries.

MAY began with violent thunderstorms in the early hours of the 1st, from 1am to 2.35am. A damp cloudy morning followed with sunny spells pm. The next few days continued showery with warm sunny spells, during which, the adders were seen to resume courtship and mating until the 5th. After this date females were found alone. North winds brought cooler weather from the 7th, with hail on the 8th, followed by 9 dry, cool days. The coldest nights fell on the 11th and 12th, with ground frosts registering -3°C.The wettest day gave 12.5mm of rain on the 21st. The warmest day was recorded on the 27th with an air temperature of 25°C.
Mean Monthly Maximum 16.1°C.
Mean Monthly Minimum 6.1°C.
Rainfall 40.3mm.
Mean Humidity 75%.
5 Air Frosts.
7 Ground Frosts.
1 day with Hail.

JUNE began with 3 rainy days, followed by 13 dry days with warm sunny spells, which broke on the 19th producing thunderstorms and also gave the hottest day of the summer with an air temperature of 30°C. in the Dowles Valley. Female adders sloughed during the warm weather and moved to their summer areas to incubate their young. Female grass snakes will have laid their eggs in compost heaps before moving off to feed. Changeable weather set in from the 19th with more thunderstorms on the 21st, 28th and 29th.
Mean Monthly Maximum 19.2°C.
Mean Monthly Minimum 8.5°C.
Rainfall 57.8mm.
Mean Humidity 77%.
No Frosts.
4 days with Thunderstorms.

JULY continued as June ended with an unsettled, cool, rainy spell with a thunderstorm on the 4th. On the 7th, high pressure moved in bringing fine, warm weather with 17 consecutive dry days. The warmest days of the month occurred during this period, with temperatures of 27.0°C recorded on 6 days in the Dowles Valley, although higher temperatures up to 31.7°C were recorded in Kent.
Pregnant female adders were seen on a regular basis, basking in their summer areas. Grass snakes were observed looking drab and dull as they approached sloughing. The weather became unsettled during the last 10 days of the month. The wettest day of the month, and the year, occurred on the 24th with 35.3mm of rain. The 27th was an unusually cold July day, with a maximum temperature of 14°C. On the following day a Tornado hit Kings Heath in the south of Birmingham, causing severe structural damage.
Mean Monthly Maximum 20.4°C.
Mean Monthly Minimum 11.5°C.
Rainfall 90.4mm.
Mean Humidity 85%.
Thunderstorm on 4th July.
A Tornado hit Birmingham on the 28th.

AUGUST was drier than average with negligible rainfall during the first 12 days. The warmest day of the month fell on the 11th with an air temperature of 25°C. The wettest day fell on the 13th with 16.3mm of rain, followed by a settled spell from the 14th to the 21st. Changeable conditions set in when a unseasonably deep low pressure developed on the 24th, with thunderstorms on the 25th. The last 6 days of the month were fine, sunny and warm. Pregnant females, fat with young, left their summer areas and moved to hibernation sites. The morning of the 31st, after a mild night, dawned misty, which dissolved by 8.30am in warm hazy sun, when temperatures rose quickly. At 11am a female

This article is an extract from the Wyre Forest Study Group annual Review 2006

was found to have given birth to 5 young and was still lying with them. Some of the young had already sloughed. This was a month earlier than the first recorded birth in Wyre Forest in 2004. The air temperature was 24.5°C, the ground temperature recorded 30°C.
Mean Monthly Maximum 20°C.
Mean Monthly Minimum 9.6°C.
Rainfall 38.8mm.
Mean Humidity 82%.
Thunderstorms on the 25th.

SEPTEMBER was also drier and warmer than average. The warmest day was on the 1st with an air temperature of 25°C. During the first 15 days of the month, temperatures of 20°C and above were recorded. The birth site was visited daily, the female was last seen on the 1st. Up to 3 baby adders were seen on each visit, each one having moved several metres from the birth site, in various directions. The last sighting of a baby, was on the 5th, about 50 metres from the birth site. Other adders returned to their hibernation sites during the first 3 weeks of the month. There were 14 rain days during the month, the wettest fell on the 28th with 11mm of rain.
Mean Monthly Maximum 17.9°C.
Mean Monthly minimum 9°C.
Rainfall 46.2mm.
Mean Humidity 83%.
Thunderstorms on the 4th, during the evening.

OCTOBER was warmer and wetter than average and was the wettest month of the year. The warmest day fell on the 11th with an air temperature of 19°C. The wettest day was recorded on the 12th with 27.3mm of rain. Another tornado hit Birmingham on the 13th. The occasional reptile was seen basking in warm sunny spells. The last male adder was reported on the 16th. At the end of the month more unsettled weather moved across the country from the west.
Mean Monthly Maximum 14.4°C.
Mean Monthly Minimum 8.1°C.
Rainfall 135.4mm.
Mean Humidity 85%.
Another Tornado hit Birmingham on the 13th.

NOVEMBER began with 11 days of mild wet weather. The wettest day fell on the 8th with 15.6mm of rain. The warmest day was on the 10th with 14.5°C, recorded in the air and on the ground. On the 12th, the south westerly air stream veered to the north east and brought in dry cold weather. Temperatures dropped during the day, with sharp frosts every night. From the 17th to the 19th day temperatures stayed below freezing. The coldest nights fell on the 18th and 19th with -8°C recorded on the ground, accompanied by freezing fog on the 19th, 20th and 21st. Sleet and snow fell on the 24th, 25th and 28th. The last two weeks of the month were much colder than average.
Mean Monthly Maximum 7.6°C.
Mean Monthly Minimum 0.9°C.
Rainfall 62.3mm.
Mean Humidity 83%.
16 Air Frosts.
21 Ground Frosts.
3 days with Sleet and Snow.

DECEMBER began with a very wet day which gave 24.2mm of rain and was the wettest day of the month. The warmest days were on the 15th and 16th with an air temperature of 10°C, but overall it was a cold month. On the 27th, 28th and 29th temperatures stayed below freezing, the latter was also the coldest night with a ground frost of -9°C. There were snow flurries on the 27th and several hours of snow on the evening of the 29th, which turned to rain overnight, causing treacherous conditions on frozen ground by the morning of the 30th. The last day of the year was cold and bright with isolated showers, frost forming after dark.
Mean Monthly Maximum 5.6°C.
Mean Monthly Minimum -0.2°C.
Rainfall 62.3mm.
Mean Humidity 85%.
17 Air Frosts.
27 Ground Frosts.
2 days with Snow.

2005 WEATHER SUMMARY

Rainfall Total
748.8mm

Highest Daily Rainfall
35.3mm on the 24th July

Rain Days with +0.2mm
183

Rain Days with +1.0mm
37

Wettest Month
October with 135.4mm

Warmest Day
Sunday 19th June with 30°C

Coldest Night
Thursday 29th December with -9°c

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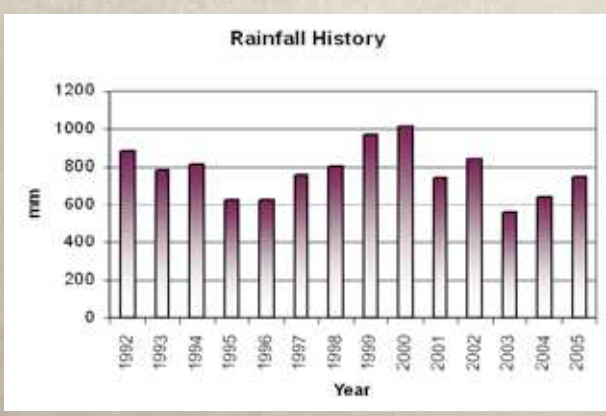
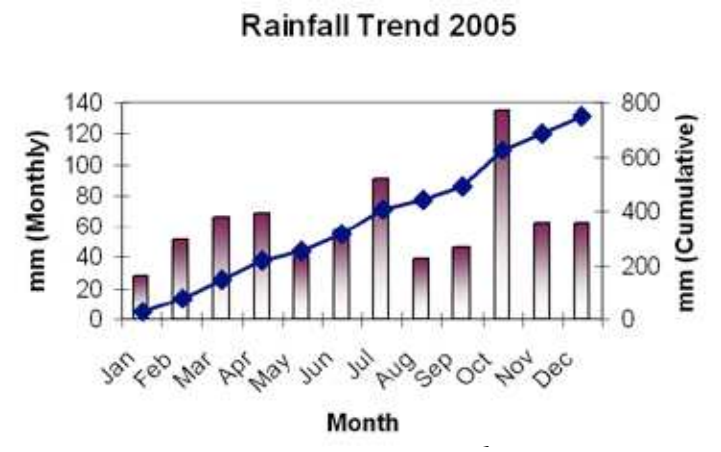
Year	Total Rainfall		Days with Minimum Of 0.2mm Rainfall	Maximum Daily Rainfall (mm)	Date of Maximum Rainfall
	mm	inches			
1990	964.3	38.0	167	42.5	Jan 28
1991	633.5	24.9	158	33.0	Apr 30
1992	880.4	34.7	196	42.9	May 28
1993	785.9	30.9	177	38.0	Jun 10
1994	814.0	32.0	198	54.8	Aug 14
1995	625.9	24.6	164	41.3	Jul 10
1996	624.8	24.6	169	17.4	Apr 12
1997	753.7	29.7	161	32.0	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 3
2005	748.8	29.5	183	35.3	Jul 24

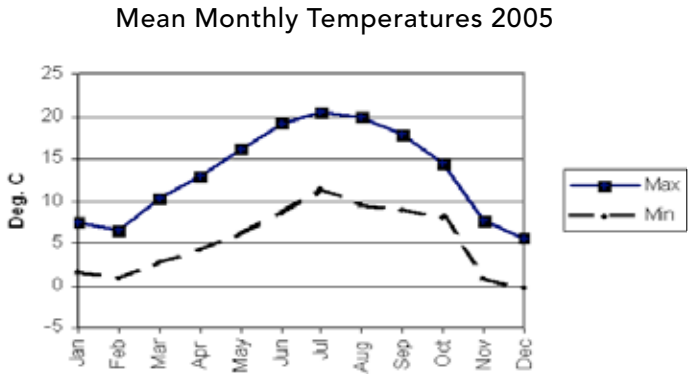
Table 1: Rainfall at Knowles Mill

	Rainy days (0.2mm or more)		Sunny days (5 hours or more)		No. 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

Table 2: Weather Conditions Relating to Adder Surveying







Frogs Croaking	31 January
First frogspawn	9 February
First male adder	15 February
First common lizard	15 February
First female adder and slow-worm	18 March
First grass snake	21 March
First grass snake copulation	4 April
First male adder slough	16 April
First adder courtship and combat	27 April
First adder mating	27 April
Last adder courtship	6 May
Last adder	16 October

Table 3: 2005 Phenological Data

Year	First Sighting	Air Temp. (°C)	Grass Temp. (°C)	First Slough
1990	5 February	13.0	14.0	8 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	8 April
1998	11 February	13.6	12.5	17 April
1999	16 February	8.0	11.0	16 April
2000	19 February	6.3	12.5	7 April
2001	7 February	10.0	11.5	17 April
2002	11 February	13.5	16.0	9 April
2003	23 February	11.0	23.8	31 March
2004	4 March	11.0	17.5	19 April
2005	15 February	10.0	14.0	16 April

Table 4: Cumulative Data for Adders

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	4.0
2003	20 *	9	26	10	36	4.0
2004	47	20	40	19	58	3.6
2005	54	23	40** 65***	16** 38***	56**103**	2.4** 4.1***

Table 5: Adder Numbers

*Selected sites

**Usual Sites without three new sites added

*** Total when three new sites were added

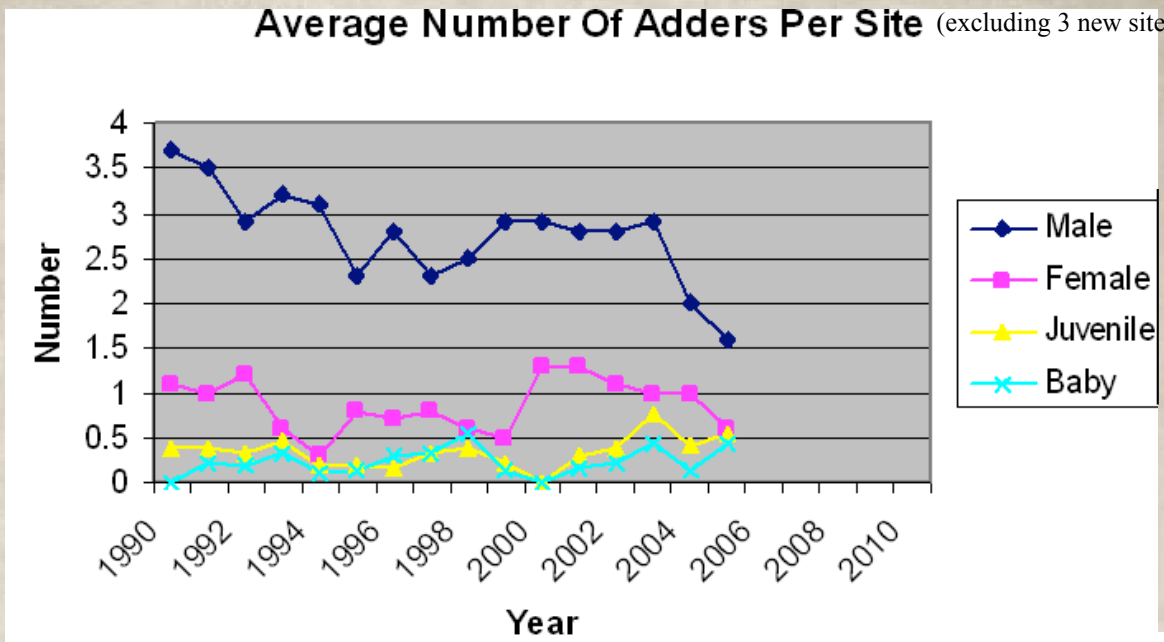
Year	Grass Snakes		Slow-Worms		Lizards	
	Mature	Juvenile	Mature	Juvenile	Mature	Juvenile
1990	30	6	23	3	22	2
1991	16	4	24	11	20	0
1992	22	8	27	8	10	3
1993	45	4	57	5	35	3
1994	18	2	36	10	22	1
1995	19	4	23	13	11	0
1996	18	4	32	16	15	0
1997	25	3	42	11	42	0
1998	20	1	34	8	37	0
1999	26	8	32	9	18	1
2000	11	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
	Grass Snakes		Slow-worms		Lizards	
2004	7		18		19	
2005	12* 16**		53* 71**		58* 144**	

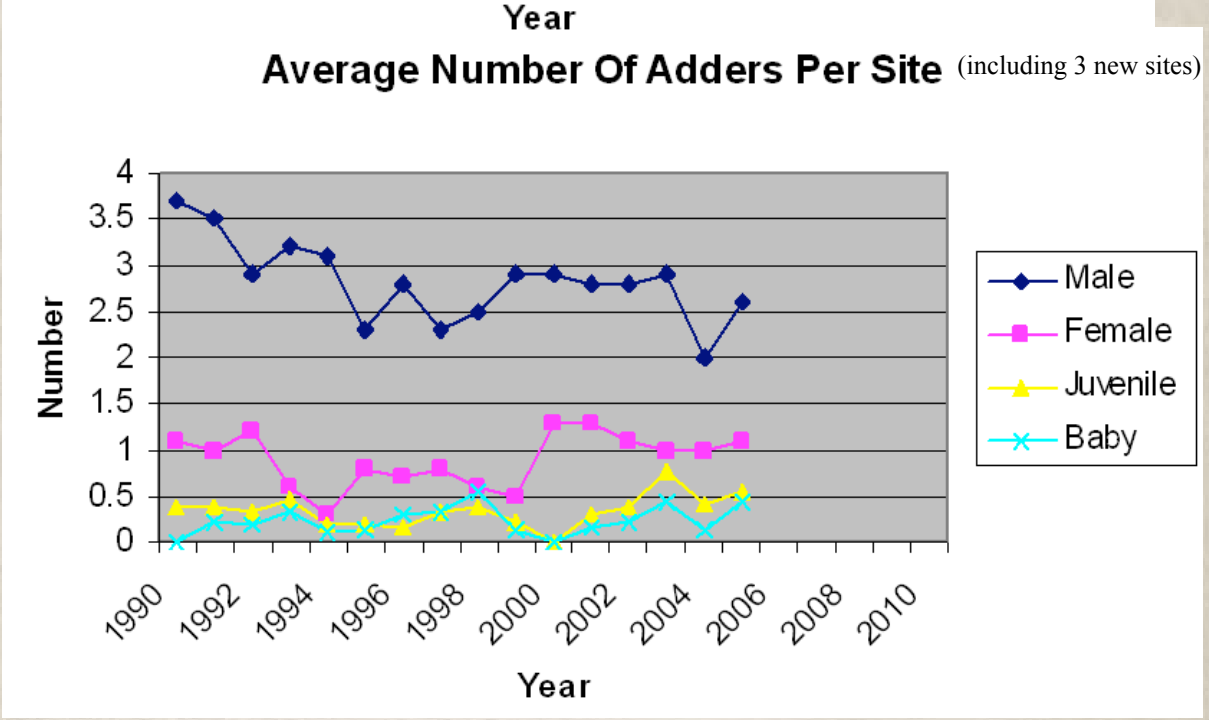
Table 6: Other Reptiles Recorded in Wyre During Adder Census

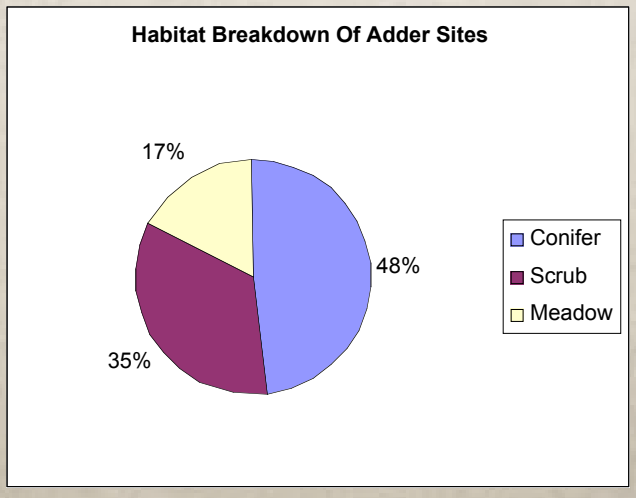
* the total minus three new sites

** the total with the three new sites added

The three new sites located in plantations proved to be very beneficial to all our native reptiles, the lizards have doubled with the influence of these new sites


Average Number Of Adders Per Site (excluding 3 new sites)
Number
Year
Male
Female
Juvenile
Baby


Average Number Of Adders Per Site (including 3 new sites)
Number
Year
Male
Female
Juvenile
Baby


Habitat Breakdown Of Adder Sites
17%
48%
35%
Conifer
Scrub
Meadow

Discussion

The 2005 Census was slightly more encouraging than of late, with 103 mature adders being recorded, the highest number for some years. This was entirely due to the discovery of 3 good populations in young plantations of Japanese Larch and Corsican Pine planted in 1999 and a mixture of Japanese Larch and Douglas Fir, planted a few years earlier. In each case these plantations were close to existing sites which had previously experienced clear felling, shading out or heath restoration, and as a consequence, a major reduction in adder numbers. There is no doubt that in some circumstances, young conifer plantations are providing necessary havens for reptiles, mainly because the general public and their dogs, mountain bikers and joggers tend to avoid these areas, leaving reptiles relatively undisturbed, apart from the occasional visit by herpetologists.

New plantings now avoid stream valleys and some trees will inevitably fail, leaving open spaces where heather, bramble and bracken growth provide a suitable, if tenuous, habitat for reptiles. In Wyre Forest, the Forestry Commission is managing these sites taking out individual trees and encroaching scrub from around hibernaculum's and basking spots, to prevent future shading out. Also they have now ceased scarifying on re-stock sites.

English Nature manages the main study area. During the winter of 2005/2006, scrub control was undertaken using chainsaws and the resulting birch stems and brash were stacked neatly. This sensitive approach should prove beneficial to many creatures including adders.

Of much more concern is the fact that so many traditional sites have been lost in recent years. Of 54 sites surveyed in 2005, all of which previously supported adders, only 23 now hold adders and the majority only small island populations. Looking at the habitat breakdown of the 23 sites' supporting adders, 11 (48%) are conifer plantations, proving how important they are to adders but also to other native reptiles, 8 (35%) are scrub and, finally, 4 (17%) are meadows with scrubby hedgerows (see graph opposite).

ACKNOWLEDGEMENTS

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The Blood-red Robber Ant Formica sanguinea (Nationally Scarce) in Wyre

Mike Bloxham

Wyre is currently the only place in the midlands to host colonies of this fine insect, the main strongholds being in the South of England and Scotland. This article is written to help people recognize the ant so we can find out more about its current distribution and see if its colonies have increased in number, maybe influenced by the current pattern of warmer years.

Formica sanguinea worker *Mike Bloxham*

This is a large ant - probably the largest British species and it is generally more strongly suffused with red than the wood ant *(Formica rufa)*, the only ant with which it is likely to be confused in Wyre.

It is a slave maker and workers will invade colonies of black ants *(Formica fusca & lemani),* putting the workers to flight and stealing larvae & pupae. Some of these are eaten, but many are allowed to develop and become part of the robber ant colony. They will join in with the robber ants on foraging expeditions to gather nectar from aphids etc so if you see a column of large red ants moving about peacefully in the company of black ones, you will almost certainly have found the target ant. In the same way, a disturbed colony with this mixture will be characteristic.

The nests are nearly always situated in open warm sandy areas. South facing slopes are ideal and the fringes of scot's pine plantation (preferably where regular felling takes place) are a good place to look. Old stumps and fallen trunks will sometimes host colonies – those of the common wood ant will usually be covered