

Dingy Skipper *Erynnis tages*: Investigation to ascertain the preferred sites for ova deposition on its larval foodplant *Lotus sp.* in Warwickshire on a range of colony sites.

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SUMMARY

During the Spring of 2008 members of the Warwickshire Branch of Butterfly Conservation embarked on a study to ascertain the preferred sites for ova deposition by the Dingy Skipper *Erynnis tages*. In Warwickshire the Dingy Skipper has only two known larval foodplants; Birdsfoot Trefoil *Lotus corniculatus* and Greater Birdsfoot Trefoil *Lotus pedunculatus*.

PROJECT AIM

Once the range of ideal ova deposition sites has been determined this information will be used to replicate similar conditions on the circa 40 extant colony sites and other potential sites in Warwickshire. It is believed that if breeding conditions can be enhanced or established on new sites the colony sizes will increase and new colonies will become established.

METHODOLOGY

To ensure consistency of data recording a set form was devised to record the location of each ovum (see Appendix 1). In addition, detailed and individual training was given to the volunteers taking part in the project.

The training involved showing the volunteers: -

- Dingy Skipper ova (in all states) and then demonstrating how to take the 15 measurements as outlined on the survey form.
- the accepted and most common nectar sources.
- how to identify roosting sites.
- how to take ground cover measurements (bare ground, dead vegetation, green grass) to the nearest 5% and how, when these three measurements are added up, the remaining cover should be assumed to be the larval foodplant and/or other herb species.
- how to identify the only two known larval foodplants used in Warwickshire.
- how to visually scan the larval foodplants to locate Dingy Skipper ova.

Surveys were undertaken between 20th May and 20th June 2008 and ova were located on 21 occasions between these dates.

The 11 Dingy Skipper colony sites surveyed were on two soil types; calcareous (Blue Lias clays) and non-calcareous (more acidic post industrial and landfill sites).

The 6 calcareous sites are Bishops Bowl, Bishops Hill, Ettington Cutting, Harbury Spoilbank North, Harbury Spoilbank South and Southam Quarry (shown in italics in tables.).

The 5 non-calcareous sites are Baddesley Colliery Spoilheap, Kingsbury Colliery Spoilheap, Pooley Country Park East, Pooley Country Park West and Ryton Wood Meadows.

Availability of surveyors varied and as a result two sites, Ryton Wood Meadows and Harbury Spoilbank South, were surveyed more intensively than others.

RESULTS

Table 1. Date of sightings (adults and ova) by site from north to south.

Sites North to South	Grid Ref	First Adult	First Yellow Ova	First Orange Ova	First Hatched Ova
Pooley Country Park East	SK260 036	23/05/08		23/05/08	
Pooley Country Park West	SK257 035	20/05/08	23/05/08	23/05/08	
Kingsbury Colliery Spoilheap	SP236 985	23/05/08	23/05/08	23/05/08	
Baddesley Colliery Spoilbank	SP274 976	10/05/08	08/06/08	08/06/08	20/06/08
Ryton Wood Meadows	SP376 726	20/05/08	24/05/08	30/05/08	04/06/08
<i>Southam Quarry</i>	SP421 635				11/06/08
<i>Harbury Spoilbank North</i>	SP385 602	10/05/08		30/05/08	
<i>Harbury Spoilbank South</i>	SP386 598	05/05/08	04/06/08	30/05/08	01/06/08
<i>Bishops Bowl Sports</i>	SP384 589				11/06/08
<i>Bishops Hill</i>	SP392 584			04/06/08	04/06/08
<i>Ettington Cutting</i>	SP265 485		28/05/08	28/05/08	

Not all of the above sites were recorded intensively. Only sites intensively recorded have full data entries.

The first adult was seen in the south of the county, latitude SP59, on 5th May, in the north of the county on 10th May, latitude SP97, and central Warwickshire on 20th May, latitude SP72. All three of these sites are intensively surveyed and therefore it is likely that adults were observed soon after the date of emergence. Therefore emergence of Dingy Skippers does not appear related to latitude and must be related to individual site factors.

The first ovum was located on 23rd May in the north of the county. This ovum was orange in colour and therefore must have been laid 5 days before (Thomas 1991).

Ryton Wood Meadows was the most intensively surveyed site. The first ovum was located 4 days after the first adult. The first hatched ovum was located 11 days after the first ovum was located, on 4th June. Thomas quotes 14 days as the average development. Interestingly the first hatched ovum at Ryton Wood Meadows was located over an especially created habitat wall. This habitat wall had been created in 2006/07 to increase the available habitat for ova deposition for the Grizzled Skipper *Pygus malvae*. The wall has created conditions for the Grizzled Skipper foodplant, especially Creeping Cinquefoil *Potentilla reptans*, to grow over the rubble and as such create a warmer micro-climate than the surrounding vegetation.



Habitat Wall, Ryton Wood Meadows

K. Warmington

This habitat had been searched on 30th May when no ova were located. Only 7 ova were located on this wall during the survey. This limited amount of data may indicate that ova development may be faster when ova are laid over stone or rubble. This limited data indicates that the of ova found on the habitat wall hatched in less than 14 days though the exact length is unknown as the ova were not systematically tracked on a daily basis.

Table 2. Average height of surrounding vegetation by date.

Date	Site	No of Ova located	Turf Height Average (cm)
23/5	Pooley Country Park West	6	6.16
23/5	Pooley Country Park East	1	8
23/5	Kingsbury Colliery Spoilheap	8	19.87
24/5	Ryton Wood Meadows (track)	1	10
28/5	<i>Ettington Cutting (east facing bank)</i>	7	12
30/5	<i>Harbury Spoilbank North</i>	8	5.625
30/5	Ryton Wood Meadows (meadow 2)	9	11.44
30/5	<i>Harbury Spoilbank South</i>	11	6.818
1/6	Ryton Wood Meadows (meadow 2)	7	13.857
1/6	<i>Harbury Spoilbank South</i>	1	5
4/6	<i>Harbury Spoilbank South</i>	6	4.58
4/6	<i>Bishops Hill</i>	3	5
4/6	Ryton Wood Meadows (meadow 1 & 2 & habitat wall)	17	14.59
5/6	<i>Harbury Spoilbank South</i>	19	6.789
5/6	<i>Ettington Cutting (east facing bank)</i>	1	4
6/6	<i>Harbury Spoilbank North</i>	1	4
7/6	Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)	11	22.54
8/6	Baddesley Colliery Spoilheap	1	18
11/6	<i>Bishops Bowl</i>	1	11
11/6	<i>Southam Quarry</i>	1	13
20/6	Baddesley Colliery Spoilheap	4	21.75
	Average across all 21 Surveys		10.67

Table 3. Number of ova by height of vegetation.

Height (cm)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
No of Ova	3	9	9	11	9	5	8	5	11	5	6	9	1	3	1	0
Height (cm)	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
No of Ova	6	1	3	3	2	2	3	0	3	1	0	0	0	0	4	1

Data Summary – All Sites

Shortest vegetation height = 2 cm

Tallest vegetation height = 33 cm

Average of most commonly chosen height (5 & 10) = 7.5 cm

Average vegetation height across 21 surveys = 10.67 cm

Average vegetation height of all 124 ova = 11.51 cm

Average derived from vegetation height across 21 surveys, from all 124 ova and the most commonly chosen height = 9.89 cm

Span of optimum heights = 7.5 to 11.51 cm

Data Summary – Calcareous Sites

Table 4. Number of ova by height of vegetation on calcareous sites.

Height (cm)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
No of Ova	3	8	9	9	6	1	3	2	6	3	4	2		1			2

Shortest vegetation height = 2 cm

Tallest vegetation height = 18 cm

Average of most commonly chosen height (4 & 5) = 4.5 cm

Average vegetation height across 11 surveys = 7.074 cm

Average vegetation height of all 59 ova = 6.99 cm

Average derived from vegetation height across 11 surveys, from all 59 ova and the most commonly chosen height = 6.40 cm

Span of optimum heights = 4.5 to 7.074 cm

Data Summary – Non-calcareous Sites

Table 5. Number of ova by height of vegetation on non-calcareous sites.

Height (cm)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
No of Ova	1		2	3	4	5	3	5	2	2	7	1	2	1		4
Height (cm)	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
No of Ova	1	3	3	2	2	3		3	1					4	1	

Shortest vegetation height = 3 cm

Tallest vegetation height = 33 cm

Average of most commonly chosen height = 13.0 cm

Average vegetation height across 10 surveys = 18.98 cm

Average vegetation height of all 65 ova = 13.03 cm

Average derived from vegetation height across 10 surveys, from all 65 ova and the most commonly chosen height = 15.0 cm

Span of optimum heights = 13 to 18.98 cm

Comment

The number of ova located (124) is sufficient statistically to enable conclusions to be drawn.

The number of ova located on calcareous sites (59) is too similar to the number located at non calcareous sites (65) to allow comparisons to be made.

The Dingy Skipper appears to select areas for ova deposition in slightly lower turf heights on calcareous soils than non calcareous soils.

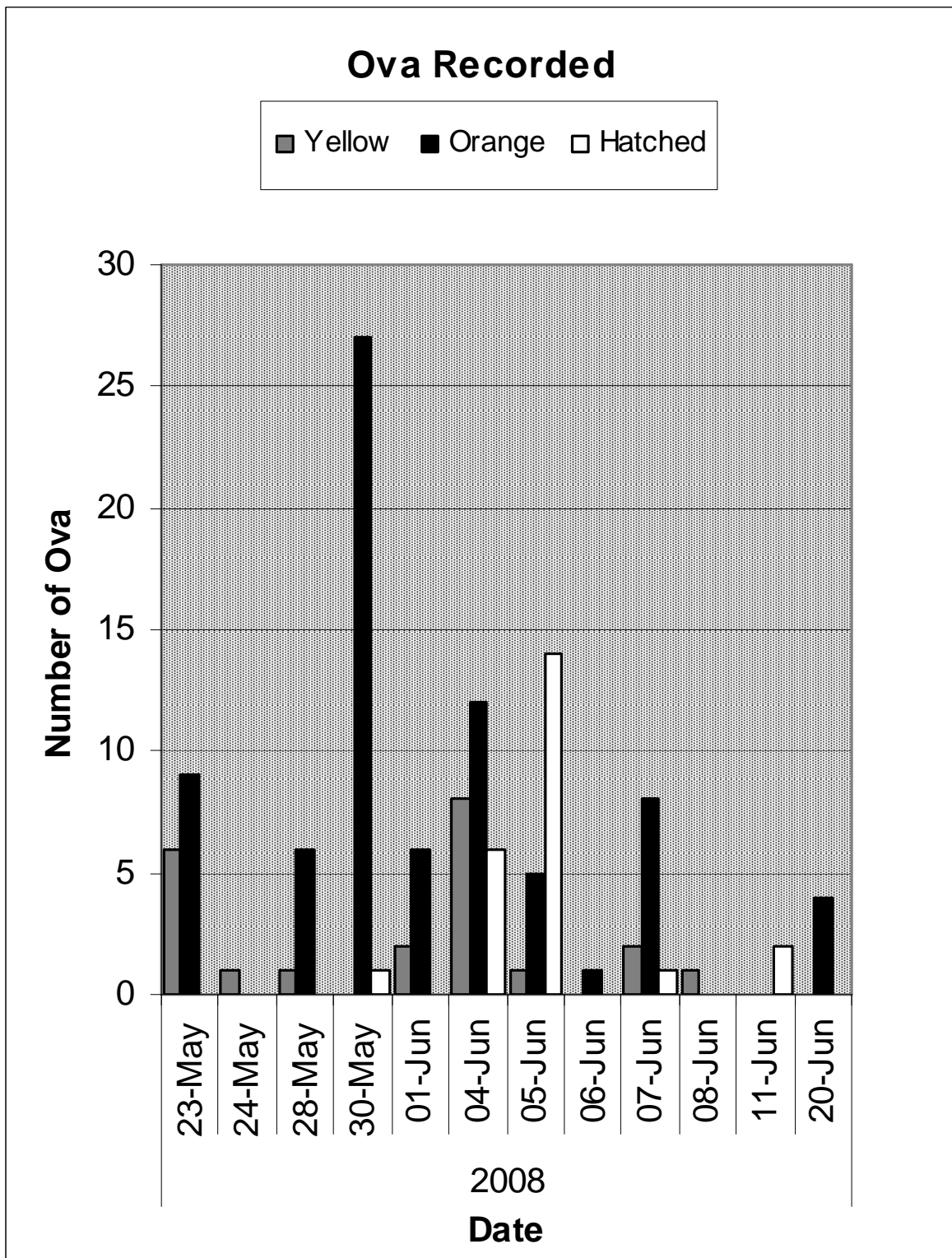
The span of turf heights where ova were located was wide, ranging from 2 cm to 33 cm. The majority of ova were located in turf heights between 7.5 and 18.98 cm which is also a broad span. From this investigation it would appear that average turf heights will only give an indication of where ova will be located and does not appear to be the main factor in ova site preference.

Comment - Multiple ova deposition

There were 5 incidents whereby more than one ova was located on the same plant. On several occasions ova of the Common Blue *Polyommatus icarus* were also found but no detailed records were kept.

With only 5 incidents of multiple ova deposition recorded, no meaningful conclusions can be drawn from the data. Initial butterfly transect analysis is indicating that this was a poorer season for the Dingy Skipper. Anecdotal information from the ova density at Ryton Wood Meadows also supports the conclusion that this was a poorer season for the Dingy Skipper.

Chart 1. Dates number of ova recorded and state.



Results:-

First yellow ova located on 23rd May

First orange ova located on 23rd May

First hatched ova located on 1st June

Peak ova laying period appeared to be between 30th May and 5th June

Table 6. Average height of shoot ova laid on.

Date	Site	No of Ova located	Average Shoot Height (cm)
23/5	Pooley Country Park West	6	3.3
23/5	Pooley Country Park East	1	2
23/5	Kingsbury Colliery Spoilheap	8	9
24/5	Ryton Wood Meadows (track)	1	5
28/5	<i>Ettington Cutting (east facing bank)</i>	7	6.71
30/5	<i>Harbury Spoilbank North</i>	8	3.062
30/5	Ryton Wood Meadows (meadow 2)	9	6.88
30/5	<i>Harbury Spoilbank South</i>	11	4.5
1/6	Ryton Wood Meadows (meadow 2)	7	8.071
1/6	<i>Harbury Spoilbank South</i>	1	5
4/6	<i>Harbury Spoilbank South</i>	6	2.3
4/6	<i>Bishops Hill</i>	3	1.66
4/6	Ryton Wood Meadows (meadow 1 & 2 & habitat wall)	17	9
5/6	<i>Harbury Spoilbank South</i>	19	2.342
5/6	<i>Ettington Cutting (east facing bank)</i>	1	2
6/6	<i>Harbury Spoilbank North</i>	1	3
7/6	Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)	11	14.45
8/6	Baddesley Colliery Spoilheap	1	9
11/6	<i>Bishops Bowl</i>	1	5
11/6	<i>Southam Quarry</i>	1	5
20/6	Baddesley Colliery Spoilheap	4	13.75
	Average across all 21 Surveys		5.781

Table 7. Number of ova by height of shoot laid on.

Height (cm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No of Ova	16	16	18	11	9	8	6	5	9	6	4	3	2	1	1
Height (cm)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
No of Ova	0	1	2	1	0	1	0	1	0	1	1	0	0	0	1

Data Summary – All Sites

Shortest shoot height = 1 cm

Tallest shoot height = 30 cm

Average of most commonly chosen shoot height = 3 cm

Average shoot height across 21 surveys = 5.781 cm

Average shoot height of all 124 ova = 6.4 cm

Average derived from shoot height across 21 surveys, from all 124 ova and the most commonly chosen height = 5.06 cm

Span of optimum shoot heights = 3 to 6.4 cm

84% of shoot heights were 10 cm or below

Data Summary – Calcareous Sites

Table 8. Number of ova by height of shoot laid on for calcareous sites.

Height (cm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
No of Ova	16	15	8	5	5	4	0	1	3	0	1	1						

Shortest shoot height = 1 cm

Tallest shoot height = 12cm

Average of most commonly chosen shoot height = 1 cm

Average shoot height across 11 surveys = 3.65 cm

Average shoot height of all 59 ova = 3.45 cm

Average derived from shoot height across 11 surveys, from all 59 ova and the most commonly chosen height = 2.7 cm

Span of optimum shoot heights = 1 to 3.65 cm

95% of shoot heights were 6 cm or below

Data Summary – Non-Calcareous Sites

Table 9. Number of ova by height of shoot laid on for non-calcareous sites.

Height (cm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No of Ova	0	1	10	6	4	4	6	4	6	6	3	2	2	1	1
Height (cm)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
No Ova	0	1	2	1	0	1	0	1	0	1	1	0	0	0	1

Shortest shoot height = 2 cm

Tallest shoot height = 30cm

Average of most commonly chosen shoot height = 3 cm

Average shoot height across 10 surveys = 7.99 cm

Average shoot height of all 65 ova = 9.1 cm

Average derived from shoot height across 10 surveys, from all 65 ova and the most commonly chosen height = 6.7 cm

Span of optimum shoot heights = 3 to 9.1 cm

72% of shoot heights were 10 cm or below

Data Summary – Habitat wall at Ryton

7 ova were located on the specially created habitat wall at Ryton Wood Meadows.

Table 10. Number of ova by height of shoot laid on for habitat wall.

Height (cm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No of Ova	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
Height (cm)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
No of Ova	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1

Average shoot height of ova found on the habitat wall = 19.2 cm

Average shoot height on non calcareous sites, discounting those located on the habitat wall = 7.87 cm

Comment

84% of the shoots chosen for ova deposition overall were 10 cm or below. The shoot size chosen on calcareous sites were generally shorter with 95% of the shoots chosen being 6 cm or shorter. However, if the data from the ova located on the specially created habitat wall at Ryton Wood Meadows is discounted then the average for non calcareous sites is 7.87 cm. This data appears to indicate that shoot size is an important component of ova deposition choice. This limited data also indicates that when shoots grow over rock or other aggregate then chosen shoot size can be longer. The only Trefoil species growing over the habitat wall so far identified is Birdsfoot Trefoil *Lotus corniculatus*.

Table 11. Distance of ova from shoot tip

Date	Site	No of Ova located	Distance of Ova from shoot tip (cm)
23/5	Pooley Country Park West	6	2.33
23/5	Pooley Country Park East	1	0.5
23/5	Kingsbury Colliery Spoilheap	8	2.125
24/5	Ryton Wood Meadows (track)	1	0.5
28/5	<i>Ettington Cutting (east facing bank)</i>	7	2.71
30/5	<i>Harbury Spoilbank North</i>	8	1.06
30/5	Ryton Wood Meadows (meadow 2)	9	1.27
30/5	<i>Harbury Spoilbank South</i>	11	1.09
1/6	Ryton Wood Meadows (meadow 2)	7	1.0
1/6	<i>Harbury Spoilbank South</i>	1	0
4/6	<i>Harbury Spoilbank South</i>	6	1.0
4/6	<i>Bishops Hill</i>	3	0.33
4/6	Ryton Wood Meadows (meadow 1 & 2 & habitat wall)	17	1.529
5/6	<i>Harbury Spoilbank South</i>	19	1.352
5/6	<i>Ettington Cutting (east facing bank)</i>	1	0.5
6/6	<i>Harbury Spoilbank North</i>	1	1
7/6	Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)	11	1.364
8/6	Baddesley Colliery Spoilheap	1	0.5
11/6	<i>Bishops Bowl</i>	1	7.0
11/6	<i>Southam Quarry</i>	1	0.5
20/6	Baddesley Colliery Spoilheap	4	1.375
	Average across all 21 Surveys		1.318

Table 12. Distance of ova from shoot tip

Height (cm)	0.5 or less	1	1.5	2	2.5	3	3.5	4	4.5	5
No of Ova	51	26	13	12	5	7	1	2	2	1
Height (cm)	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
No of Ova	0	0	0	1	1	1	0	0	0	1

Shortest distance between ova and shoot tip = < 0.5 cm

Longest distance between ova and shoot tip = 10 cm

Average of most commonly chosen distance between ova and shoot tip = 0.5 cm

Average distance between ova and shoot tip across 21 surveys = 1.318 cm

Average distance between ova and shoot tip of all 124 ova = 1.439 cm

Average derived from distance between ova and shoot tip across 21 surveys, from all 124 ova and the most commonly chosen height = 6.7 cm

Span of optimum distance between ova and shoot tip = < 0.5 to 1.439 cm

Comment

There was no statistical difference between calcareous and non calcareous sites. At all sites 92% of ova were laid at a distance of 3 cm or less below the tip of the shoot (91% none calcareous, 95% calcareous sites).

Comment - Distance of the shoot which ova laid on from centre of plant

All recorders reported that the taking of this measurement was problematic. The measurement was always taken from the centre of the plant, often different plants grew that close together that identifying the centre of the plant was very difficult. In hindsight a more useful measurement would have been the distance from the chosen shoot for ova deposition to the main plant. Anecdotally, all shoots chosen for ova deposition were growing away from the main plant.

Table 13. Average percentage of bare ground found within 30cm diameter circle centred on the ova.

Site	0	5	10	15	20	25	30	35	40	45
Pooley Country Park West		1	1	3		1				
Pooley Country Park East	1									
Kingsbury Colliery Spoilheap	2	1	1	1	1		2			
Ryton Wood Meadows (track)				1						
<i>Ettington Cutting (east facing bank)</i>				1	2	1			1	
<i>Harbury Spoilbank North</i>					2	1			1	
Ryton Wood Meadows (meadow 2)	2	3					1		1	
<i>Harbury Spoilbank South</i>	1				1	1	1		1	
Ryton Wood Meadows (meadow 2)			4							
<i>Harbury Spoilbank South</i>										
<i>Harbury Spoilbank South</i>			1				1		2	1
<i>Bishops Hill</i>			2				1			
Ryton Wood Meadows (meadow 1 & 2 & wall)			1	1	4	2	2	1	2	
<i>Harbury Spoilbank South</i>			2			3	2	1	6	
<i>Ettington Cutting (east facing bank)</i>									1	
<i>Harbury Spoilbank North</i>									1	
Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)	7	1					1			
Baddesley Colliery Spoilheap										
<i>Bishops Bowl</i>			1							
<i>Southam Quarry</i>										
Baddesley Colliery Spoilheap	3		1							
Total	16	5	14	5	13	8	12	3	17	1
Percentage	12.9	4.03	11.3	4.03	10.5	6.45	9.68	2.42	13.7	0.81

Site	50	55	60	65	70	75	80	85	90	95
Pooley Country Park West										
Pooley Country Park East										
Kingsbury Colliery Spoilheap										
Ryton Wood Meadows (track)										
<i>Ettington Cutting (east facing bank)</i>	1						1			
<i>Harbury Spoilbank North</i>	2		2							
Ryton Wood Meadows (meadow 2)							2			
<i>Harbury Spoilbank South</i>	4		2							
Ryton Wood Meadows (meadow 2)									1	
<i>Harbury Spoilbank South</i>	1									
<i>Harbury Spoilbank South</i>									1	
<i>Bishops Hill</i>										
Ryton Wood Meadows (meadow 1 & 2 & wall)	1		1		1		1			
<i>Harbury Spoilbank South</i>	5									
<i>Ettington Cutting (east facing bank)</i>										
<i>Harbury Spoilbank North</i>										
Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)		1							1	
Baddesley Colliery Spoilheap	1									
<i>Bishops Bowl</i>										
<i>Southam Quarry</i>			1							
Baddesley Colliery Spoilheap										
Total	15	1	6		1		4		3	
Percentage	12.1	0.81	4.84		0.81		3.2		2.42	

Comment

Almost 72% of ova were laid in a situation where there was more than 10% of bare ground present. This appears to be an important aspect for ova deposition.

Table 14. Average percentage dead vegetation in relation to ova deposition.

Site	0	5	10	15	20	25	30	35	40	45	50	55	60	66	70
Pooley Country Park West	1	1	2		2										
Pooley Country Park East		1													
Kingsbury Colliery Spoilheap	1	2	2		1				1		1				
Ryton Wood Meadows (track)	1														
<i>Ettington Cutting (east facing bank)</i>	7														
<i>Harbury Spoilbank North</i>	4	4													
Ryton Wood Meadows (meadow 2)	3	1	1	1	1				2						
<i>Harbury Spoilbank South</i>	7	3	1												
Ryton Wood Meadows (meadow 2)	2	1	1	1			2								
<i>Harbury Spoilbank South</i>		1													
<i>Harbury Spoilbank South</i>	6														
<i>Bishops Hill</i>	2	1													
Ryton Wood Meadows (meadow 1 & 2 & habitat wall)	12	4	1												
<i>Harbury Spoilbank South</i>	12	6					1								
<i>Ettington Cutting (east facing bank)</i>	1														
<i>Harbury Spoilbank North</i>		1													
Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)	3	1	1		2				2	1					1
Baddesley Colliery Spoilheap					1										
<i>Bishops Bowl</i>	1														
<i>Southam Quarry</i>	1														
Baddesley Colliery Spoilheap					3						1				
Total	64	27	9	2	10		3		5	1	2				1
Percentage	51.6	21.8	7.26	1.61	8.06		2.42		4.03	0.81	1.61				0.81

Comment

Less than 20% of ova were laid in situations where dry, dead vegetation was more than 10% of the area. This aspect alone does not appear to be an important component of ova deposition.

Table 15. Average green grass in relation to ova deposition.

Site	0	5	10	15	20	25	30	35	40	45	50	55	60	>60
Pooley Country Park West		3	1			2								
Pooley Country Park East	1													
Kingsbury Colliery Spoilheap	1	5	2											
Ryton Wood Meadows (track)		1												
<i>Ettington Cutting (east facing bank)</i>	2	5												
<i>Harbury Spoilbank North</i>	1	4	3											
Ryton Wood Meadows (meadow 2)		5	4											
<i>Harbury Spoilbank South</i>	2	2	3	2	1		1							
Ryton Wood Meadows (meadow 2)		4	3											
<i>Harbury Spoilbank South</i>		1												
<i>Harbury Spoilbank South</i>	1	1	3	1										
<i>Bishops Hill</i>	1	2												
Ryton Wood Meadows (meadow 1 & 2 & habitat wall)	1	11	5											
<i>Harbury Spoilbank South</i>	2	10	4		1	1	1							
<i>Ettington Cutting (east facing bank)</i>	1													
<i>Harbury Spoilbank North</i>		1												
Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)	2	6	2		1									
Baddesley Colliery Spoilheap			1											
<i>Bishops Bowl</i>		1												
<i>Southam Quarry</i>	1													
Baddesley Colliery Spoilheap					4									
Total	16	62	31	3	7	3	2							
Percentage	12.9	50.0	25.0	2.42	5.64	2.42	1.61							

Comment

Lack of grass appears to be an important component of ova deposition selection. 87.9% of sites had less than 10% of grass present and no site had more than 30% of grass present.

Table 16. Other measures results.

Site	Stock Grazing		Nectar Present		Seed Heads Present		Visible Rabbit droppings		Bramble etc Present		Flat	Hollow	Slope	Stone etc
	Y	N	Y	N	Y	N	Y	N	Y	N				
Pooley Country Park West	0	6	3	3	1	5	4	2	5	1	1	5	0	0
Pooley Country Park East	0	1	0	1	0	1	1	0	0	1	0	1	0	0
Kingsbury Colliery Spoilheap	0	8	7	1	0	8	2	6	0	8	1	5	0	2
Ryton Wood Meadows (track)	0	1	0	1	0	1	0	1	0	1	1	0	0	0
<i>Ettington Cutting (east facing bank)</i>	0	7	7	0	0	7	0	7	0	7	0	0	6	Ant Hill
<i>Harbury Spoilbank North</i>	0	8	8	0	0	8	5	3	5	3	3	0	5	0
Ryton Wood Meadows (meadow 2)	0	9	3	6	0	9	0	9	0	9	1	8	0	0
<i>Harbury Spoilbank South</i>	0	11	2	9	0	11	8	3	6	5	3	0	8	0
Ryton Wood Meadows (meadow 2)	0	7	5	2	0	7	0	7	0	7	2	2	0	3
<i>Harbury Spoilbank South</i>	0	1	1	0	0	1	1	0	0	1	0	0	1	0
<i>Harbury Spoilbank South</i>	0	6	3	3	0	6	6	0	4	2	3	1	1	Ant Hill
<i>Bishops Hill</i>	0	3	2	1	1	2	1	2	0	3	3	0	0	0
Ryton Wood Meadows (meadow 1 & 2 & habitat wall)	0	17	14	3	0	17	0	17	0	17	6	7	0	4
<i>Harbury Spoilbank South</i>	0	19	15	4	2	17	13	6	15	4	7	0	12	0
<i>Ettington Cutting (east facing bank)</i>	0	1	1	0	0	1	0	1	0	1	0	0	1	0
<i>Harbury Spoilbank North</i>	0	1	1	0	0	1	1	0	1	0	1	0	0	0
Ryton Wood Meadows (meadow 1 & 3 & habitat wall & track)	0	11	0	11	0	11	0	11	0	11	4	4	0	3
Baddesley Colliery Spoilheap	0	1	1	0	0	1	0	1	0	1	0	1	0	0
<i>Bishops Bowl</i>	0	1	1	0	0	1	1	0	0	1	1	0	0	0
<i>Southam Quarry</i>	0	1	1	0	0	1	0	1	0	1	0	0	0	Ant Hill
Baddesley Colliery Spoilheap	0	4	4	0	0	4	0	4	0	4	0	0	0	4
Total	0	124	79	45	4	120	43	81	36	88	37	34	34	19
Percentage	0	100	63.7	36.3	3.2	96.8	34.7	65.3	29.0	71.0	29.9	27.4	27.4	15.3

Comment - Stock Grazing

There was no evidence of stock grazing recorded during this survey.

Comment - Nectar Source Present

In 63.7% of cases a known nectar source in flower was recorded within the recording area. The importance of this was not explored in more detail.

Comment - Presence of Roosting Places

Only in 3.2% of the ova deposition locations was a roosting location recorded. Anecdotally, sufficient roosting sites were found at almost all sites. At 6 sites out of the 11 sites, adult Dingy Skippers were found at roost. The proximity of roosting sites to suitable breeding habitat is worthy of a more detailed survey. Roosting sites were distinguished by having either last years seed heads > 30cms present e.g. Black Knapweed *Centaurea nigra* or black plantain heads e.g. Ribwort Plantain *Plantago lanceolata* growing in clumps of longer vegetation.

Comment - Visible Rabbit Droppings

On 34.7% of occasions visible rabbit droppings were located near to where the Dingy Skipper ova were found. The importance of this aspect on its own is not known nor how this information is related to the importance of average turf height present.

Comment - Presence of Bramble or Small Shrubs

On 29% of occasions bramble or small scrubs were found to be present. The importance of this information is not known.

Comment - Aspect

On 70.1% of occasions the Dingy Skipper ova were located in a warm hollow on a south facing slope, growing over a stone or aggregate or on an ant hill. Previous research (Thomas 1991) has shown these aspects to be several degrees warmer than that generally found in flat terrain. It is known the warm environments speed ova and young larvae development. This appears to support previous research that the Dingy Skipper actively seeks out these warmer micro habitats for ova deposition.

The data collected on the 37 ova that were located on flat ground or on northern slopes were examined in more detail.

Table 17. Ova located on flat or northern aspects

Site Ova Details	Aspect	Bare Ground Percentage	Dead Vegetation Percentage	Total Percentage
Pooley Country Park West	Flat	10	10	20
Kingsbury Colliery Spoilheap	Flat	0	40	40
Ryton Wood Meadows	Flat	15	0	15
<i>Harbury Spoilbank North</i>	Flat	50	0	50
<i>Harbury Spoilbank North</i>	Flat	40	5	45
<i>Harbury Spoilbank North</i>	Northern Slope	50	5	55
<i>Harbury Spoilbank North</i>	Flat	20	0	20
Ryton Wood Meadows (meadow 2)	Flat	30	0	30
<i>Harbury Spoilbank South</i>	Flat	0	5	5
<i>Harbury Spoilbank South</i>	Flat	50	0	50
<i>Harbury Spoilbank South</i>	Flat	50	0	50
Ryton Wood Meadows (meadow 2)	Flat	10	10	20
Ryton Wood Meadows (meadow 2)	Flat	10	15	25
<i>Harbury Spoilbank South</i>	Flat	40	0	40
<i>Harbury Spoilbank South</i>	Flat	30	0	30
<i>Harbury Spoilbank South</i>	Northern Slope	45	0	45
<i>Harbury Spoilbank South</i>	Flat	90	0	90
<i>Bishops Hill</i>	Flat	10	5	15
<i>Bishops Hil</i>	Flat	10	0	10
<i>Bishops Hil</i>	Flat	30	5	35
Ryton Wood Meadows	Flat	30	0	30
Ryton Wood Meadows	Flat	35	5	40
Ryton Wood Meadows	Flat	20	0	20
Ryton Wood Meadows	Flat	25	0	25
Ryton Wood Meadows	Flat	20	0	20
Ryton Wood Meadows	Flat	10	5	15
<i>Harbury Spoilbank South</i>	Flat	40	0	40
<i>Harbury Spoilbank South</i>	Flat	35	5	40
<i>Harbury Spoilbank South</i>	Flat	50	0	50
<i>Harbury Spoilbank South</i>	Flat	50	0	50
<i>Harbury Spoilbank South</i>	Flat	25	0	25
<i>Harbury Spoilbank South</i>	Flat	40	0	40
<i>Harbury Spoilbank South</i>	Flat	40	5	45
Ryton Wood Meadows	Flat	0	40	40
Ryton Wood Meadows	Flat	0	45	45
Ryton Wood Meadows	Flat	0	20	20
<i>Bishops Bowl</i>	Flat	10	0	10

Comment

Of the 37 ova located on flat ground or northern aspects, only 3 were found in a location where the combined bare ground and dead vegetation measurement was 10% or less. Therefore it appears that the Dinky Skipper seeks warm microclimates for ova deposition. These warmer micro-climates are created by being on south facing slopes, by the activity of ants or by reflective surfaces such as stone.

EXECUTIVE SUMMARY

In total, 124 ova were located across 11 colony sites in Warwickshire. The sites surveyed were all post industrial brownfield habitats. The soil types ranged from acidic to calcareous. The only known foodplants in Warwickshire are Birdsfoot Trefoil *Lotus corniculatus*, and Greater Birdsfoot Trefoil *Lotus pendunculatus*. All ova were located on these plants though no differentiation between *Lotus* species was made during this survey.

Average Turf height only appears to give an indication of habitat suitability.

The majority of shoots (84%) chosen for ova deposition were 10 cm or less in height. Measurements on calcareous sites indicate that slightly smaller shoots are chosen (95% 6 cm or shorter).

Ova were found to be laid near the shoot tip. There was no statistical difference between calcareous and non calcareous sites. At all sites 92% of ova were laid at a distance of 3 cm or less below the tip of the shoot (91% non-calcareous, 95% calcareous sites).

Lack of grass appears to be an important component of ova deposition selection. 87.9% of sites had less than 10% of grass present.

Almost 72% of ova were laid in a situation where there was more than 10% of bare ground present.

On 70.1% of occasions the Dingy Skipper ova were located in a warm hollow on a south facing slope, growing over a stone or aggregate or on an ant hill. Of the remaining 37 ova located on flat ground or northern aspects, only 3 were found in a location where the combined bare ground and dead vegetation measurement was 10% or less.

This research strongly supports previous research that the Dingy Skipper is very selective in its ova deposition. It appears to only select locations with a very warm micro climate. The micro climate chosen is small shoots which are growing away from the main plant, in warm hollows, on south facing slopes or on ant hills. Flat ground is only used for ova deposition when the shoot is growing over a substantial amount bare ground and dead vegetation or a combination of both. In addition when stone naturally outcrops or when aggregate is at the surface on post industrial sites then very warm, microclimates can be created. These micro climates appear ideal for Dingy Skipper ova deposition.

FINAL DISCUSSION

The Dingy Skipper *Erynnis tages* is a fast declining species and has been declared a UK Biodiversity Priority Species. Estimates of decline nationally are 49%¹ and in Warwickshire 63%². Many of the remaining colonies, especially in the Midlands and northern England are found on brown field post industrial habitats. Many of these habitats are threatened by development. Many colonies are also of a small population size².

Experimental habitat creation³ at the Butterfly Conservation nature reserve of Ryton Wood Meadow has shown that near ideal ova preference conditions can be created by laying a low rubble wall through areas of the Dingy Skippers' foodplant *Lotus* species. The laying of a low-lying wall allows Birdsfoot Trefoil *Lotus corniculatus* to grow through and around the rubble. It would be worthy to experiment further by placing rubble strategically into the grasslands to increase the amount of Birdsfoot Trefoil *Lotus corniculatus* shoots growing over stone or aggregate to increase the abundance of suitable warm microclimates.

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All the recorders that took place in this survey; Glyn Clarke, Jenny Joy, Keith Warmington, Jaye and Peter Whalley and John Liggins.

Proof reading: Keith & Heather Warmington

Critical feedback: Jenny Joy

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APPENDICES

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Pooley Country Park West	GRID REF:	SK257037	SPECIES:	DINGY SKIPPER
DATE:	23/05/08	RECORDER:	Keith Warmington		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	9	6	6	6	3	7				
2. Number of eggs on foodplant	1	1	1	1	1	1				
3. Colour of egg (yellow/Orange)	Orange	Orange	Yellow	Orange	Yellow	Orange				
4. Height of shoot containing egg	4	3	3	4	3	3				
5. Distance of egg from shoot tip	5	4	3	1	0.5	0.5				
6. Distance of shoot from centre of main plant	7	1	1	6	12	4				
7. Percentage bare ground within disc area	10	20	20	20	15	30				
8. Percentage of dead dry vegetation within disc area	10	20	20	10	5	0				
9. Percentage of green grass within disc area	5	25	25	5	10	5				
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0				
11. Known nectar plants in flower within disc area ²	0	2	2	0	0	1				
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	Yes				
13. Visible clumps of Rabbit dropping within disc area	0	Yes	Yes	0	Yes	Yes				
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	Yes	Yes	Yes	Yes	0	Yes				
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	Flat	Hollow	Hollow	Hollow	Hollow	Hollow				

- 1 Bird's-foot-trefoil
2 Forget-me-not

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Pooley Country Park East	GRID REF:	SK257037	SPECIES:	DINGY SKIPPER
DATE:	23/05/08	RECORDER:	Keith Warmington		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	8									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange)	Orange									
4. Height of shoot containing egg	2									
5. Distance of egg from shoot tip	0.5									
6. Distance of shoot from centre of main plant	40									
7. Percentage bare ground within disc area	0									
8. Percentage of dead dry vegetation within disc area	5									
9. Percentage of green grass within disc area	0									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	0									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	Yes									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	Hollow									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Kingsbury Colliery Spoilheap	GRID REF:	SP236985	SPECIES:	DINGY SKIPPER
DATE:	23/05/08	RECORDER:	Keith Warmington		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	26	32	32	13	13	13	21	9		
2. Number of eggs on foodplant	1	1	1	1	1	1	1	1		
3. Colour of egg (yellow/Orange)	Orange	Yellow	Yellow	Yellow	Orange	Orange	Yellow	Orange		
4. Height of shoot containing egg	23	8	8	9	5	9	10	3		
5. Distance of egg from shoot tip	2.5	2	1	1	7.5	1.5	0.5	1		
6. Distance of shoot from centre of main plant	27	33	35	33	21	20	24	6		
7. Percentage bare ground within disc area	0	30	30	0	15	20	5	10		
8. Percentage of dead dry vegetation within disc area	40	5	0	50	10	10	20	5		
9. Percentage of green grass within disc area	10	0	5	5	5	5	10	5		
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0	0		
11. Known nectar plants in flower within disc area ²	0	1	1	1	1	1	1	1		
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0	0		
13. Visible clumps of Rabbit dropping within disc area	Yes	0	0	0	0	Yes	0	0		
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0	0	0	0	0		
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	Flat grass tussock	Hollow over stone	Hollow over stone	Hollow	Hollow	Hollow	Hollow	Hollow		

1 Bird's-foot-trefoil

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	RYTON WOOD MEADOWS	GRID REF:	SP376726	SPECIES:	DINGY SKIPPER
DATE:	24/5/08	RECORDER:	Jaye Whalley		

OVA DEPOSITION DETAILS

OUTSIDE TEMPERATURE: 17°

5 Metre Square Reference Code	FA									
1. Vegetation Height (measured in cm)	10									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange)	Y									
4. Height of shoot containing egg (cm)	5									
5. Distance of egg from shoot tip (cm)	0.5									
6. Distance of shoot from centre of main plant (cm)	10									
7. Percentage of unidentified green plants within disc area	5									
8. Percentage bare ground within disc area	15									
9. Percentage of dead dry vegetation within disc area	0									
10. Percentage of green grass within disc area	5									
11. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	N									
12. Known nectar plants in flower within disc area ²	0									
13. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	N									
14. Visible clumps of Rabbit dropping within disc area	N									
15. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	N									
16. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F									
17. Adults counted (in flight over survey area)	2 (Female) Dingy Skipper; 2 Green Hairstreak; 1 Grizzled Skipper									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Ettington Cutting	GRID REF:	SP265 485	SPECIES:	DINGY SKIPPER
DATE:	28/5/08	RECORDER:	Mike Slater		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7			
1. Vegetation Height (measured in cm)	10	13	18	18	11	10	4			
2. Number of eggs on foodplant	1	1	1	1	1	1	1			
3. Colour of egg (yellow/Orange)	O	O	O	O	Y	O	O			
4. Height of shoot containing egg	3	6	11	10	4	8	5			
5. Distance of egg from shoot tip	1	2	1	3	10	1	1			
6. Distance of shoot from centre of main plant	4	3	5	5	4	5	0			
7. Percentage bare ground within disc area	50	40	20	20	25	15	80			
8. Percentage of dead dry vegetation within disc area	0	0	0	0	0	0	0			
9. Percentage of green grass within disc area	5	5	5	5	0	5	0			
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0			
11. Known nectar plants in flower within disc area ²	BFT	BFT	BFT	BFT	BFT	BFT	BFT			
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0			
13. Visible clumps of Rabbit dropping within disc area	0	0	0	0	0	0	0			
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0	0	0	0			
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	S	S	S	S	S	S	ANT HILL			

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Harbury Spoilbank North	GRID REF:	SP386598	SPECIES:	DINGY SKIPPER
DATE:	30.5.08	RECORDER:	Glyn Clarke		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8		
1. Vegetation Height (measured in cm)	5	5	12	4	3	4	6	6		
2. Number of eggs on foodplant	1	1	1	1	1	1	1	1		
3. Colour of egg (yellow/Orange)	0	0	0	0	0	0	0	0		
4. Height of shoot containing egg	4	4	6	3.5	1.5	2	3	0.5		
5. Distance of egg from shoot tip	0	1.5	0	1.5	2	0	3	0.5		
6. Distance of shoot from centre of main plant	5	3	5	5	5	2	2	3		
7. Percentage bare ground within disc area	25	60	50	40	50	20	20	60		
8. Percentage of dead dry vegetation within disc area	0	5	0	5	5	0	5	0		
9. Percentage of green grass within disc area	5	5	0	10	5	5	10	10		
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0	0		
11. Known nectar plants in flower within disc area ²	1	1	1	1	1	1	1	1		
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0	0		
13. Visible clumps of Rabbit dropping within disc area	1	0	1	1	1	0	0	1		
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	1	1	1	1	1		
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	1S	1S	F	F	1N	F	1S	2S		

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Ryton Wood Meadows	GRID REF:	SP376 726	SPECIES:	DINGY SKIPPER
DATE:	30/5/08	RECORDER:	Mike Slater		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	
1. Vegetation Height (measured in cm)	20	5	15	8	8	11	15	7	14	
2. Number of eggs on foodplant	1	1	1	2	2	1	1	1	1	
3. Colour of egg (yellow/Orange)	0	0	0	0	0	0	0	0	0	
4. Height of shoot containing egg	3	3	12	8	8	11	5	3	9	
5. Distance of egg from shoot tip	1	<0.5	2	3.5	<0.5	2.5	<0.5	<0.5	<0.5	
6. Distance of shoot from centre of main plant	3	9	6	5	3.5	6	7	7	18	
7. Percentage bare ground within disc area	35	40	5	5	5	0	0	40	30	
8. Percentage of dead dry vegetation within disc area	5	0	10	40	40	15	20	0	0	
9. Percentage of green grass within disc area	5	5	10	10	10	5	5	5	10	
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0	0	0	
11. Known nectar plants in flower within disc area ²	BFT	BFT	BFT	0	0	0	0	0	0	
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0	0	0	
13. Visible clumps of Rabbit dropping within disc area	0	0	0	0	0	0	0	0	0	
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0	0	0	0	0	0	
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	H	H	H	H	H	H	H	H	F	

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Harbury Spoilbank South	GRID REF:	SP386598	SPECIES:	DINGY SKIPPER
DATE:	30.5.08	RECORDER:	Glyn Clarke		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	2	2	3	12	10	15	10	10	3	3
2. Number of eggs on foodplant	1	1	1	1	1	1	1	1	2	2
3. Colour of egg (yellow/Orange)	0	0	0	0	0	0	0	0	0	0
4. Height of shoot containing egg	6	9	2.5	4	2.5	12	2.5	3	2.5	2.5
5. Distance of egg from shoot tip	1	2.5	0	0	0	3	0	0	2	2
6. Distance of shoot from centre of main plant	7	4	6	9	12	10	15	4	7	7
7. Percentage bare ground within disc area	50	50	25	30	40	0	20	50	60	60
8. Percentage of dead dry vegetation within disc area	0	0	10	5	5	5	0	0	0	0
9. Percentage of green grass within disc area	30	20	10	5	15	15	0	0	10	10
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0	0	0	0
11. Known nectar plants in flower within disc area ²	1	1	1	0	1	1	1	1	1	1
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0	0	0	0
13. Visible clumps of Rabbit dropping within disc area	1	1	1	0	1	0	0	1	1	1
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	1	1	1	1	0	1	0	0
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	1S	1S	1S	1S	1S	F	1S	F	1S	1S

5 Metre Square Reference Code	11									
1. Vegetation Height (measured in cm)	5									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange)	Pale (pre-hatch)									
4. Height of shoot containing egg	3									
5. Distance of egg from shoot tip	1.5									
6. Distance of shoot from centre of main plant	4									
7. Percentage bare ground within disc area	50									
8. Percentage of dead dry vegetation within disc area	0									
9. Percentage of green grass within disc area	5									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	1									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	1									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	1									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Ryton Wood Meadows	GRID REF:	SP376 726	SPECIES:	DINGY SKIPPER
DATE:	1 st June 2008	RECORDER:	Mike Slater		

OVA DEPOSITION DETAILS

	1	2/3	2/3	4	5	6	7			
1. Vegetation Height (measured in cm)	12	18	18	8	13	10	18			
2. Number of eggs on foodplant	1	2	2	1	1	1	1			
3. Colour of egg (yellow/Orange)	0	0	0	0	0	Y	0			
4. Height of shoot containing egg	7	4	2.5	6	10	9	18			
5. Distance of egg from shoot tip	<.5	1	<.5	<.5	3	1	<.5			
6. Distance of shoot from centre of main plant	7	3.5	2	8	9	16	33			
7. Percentage bare ground within disc area	10	10	10	10	80	90	80			
8. Percentage of dead dry vegetation within disc area	10	30	30	15	0	5	0			
9. Percentage of green grass within disc area	5	10	10	10	5	5	5			
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0			
11. Known nectar plants in flower within disc area ²	0	BFT	BFT	BFT	0	BFT	BFT			
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0			
13. Visible clumps of Rabbit dropping within disc area	0	0	0	0	0	0	0			
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0	0	0	0			
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F	H	H	F	STONE	STONE	STONE			

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Harbury Spoilbank South	GRID REF:	SP386598	SPECIES:	DINGY SKIPPER
DATE:	1.6.08	RECORDER:	Glyn Clarke		

OVA DEPOSITION DETAILS

	1									
1. Vegetation Height (measured in cm)	5									
2. Number of eggs on foodplant	2 - close to no.2 ova, 30.5.08									
3. Colour of egg (yellow/Orange)	Y									
4. Height of shoot containing egg	5									
5. Distance of egg from shoot tip	0									
6. Distance of shoot from centre of main plant	3									
7. Percentage bare ground within disc area	50									
8. Percentage of dead dry vegetation within disc area	5									
9. Percentage of green grass within disc area	5									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	1									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	1									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	1S									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Harbury Spoilbank South	GRID REF:	SP386598	SPECIES:	DINGY SKIPPER
DATE:	4.6.08	RECORDER:	Glyn Clarke & Mike Slater		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6		
1. Vegetation Height (measured in cm)	2.5	4	6	6	5	4		
2. Number of eggs on foodplant	1	1	1	1	1	1		
3. Colour of egg (yellow/Orange)	O	Y	H	H	O	H		
4. Height of shoot containing egg	2.5	2.5	6	1.5	0.5	1		
5. Distance of egg from shoot tip	0.5	0	2	2.5	0.5	<0.5		
6. Distance of shoot from centre of main plant	7	5	5	2.5	3	5		
7. Percentage bare ground within disc area	40	30	40	45	90	10		
8. Percentage of dead dry vegetation within disc area	0	0	0	0	0	0		
9. Percentage of green grass within disc area	10	5	10	10	0	15		
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0		
11. Known nectar plants in flower within disc area ²	1	1	0	0	0	1		
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0		
13. Visible clumps of Rabbit dropping within disc area	1	1	1	1	1	Y		
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	1	1	1	1	0		
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F	F	H	1N	F	ANT HILL		

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Bishops Hill	GRID REF:	SP392584	SPECIES:	DINGY SKIPPER
DATE:	4.6.08	RECORDER:	Mike Slater & Glyn Clarke		

OVA DEPOSITION DETAILS

	1	2	3						
1. Vegetation Height (measured in cm)	7	5	3						
2. Number of eggs on foodplant	1	1	1						
3. Colour of egg (yellow/Orange)	0	0	Y						
4. Height of shoot containing egg	1.5	2	1.5						
5. Distance of egg from shoot tip	0	<0.5	<0.5						
6. Distance of shoot from centre of main plant	3	7	6						
7. Percentage bare ground within disc area	10	10	30						
8. Percentage of dead dry vegetation within disc area	5	0	0						
9. Percentage of green grass within disc area	5	5	0						
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0						
11. Known nectar plants in flower within disc area ²	0	BFT	BFT						
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	1	0	0						
13. Visible clumps of Rabbit dropping within disc area	1	0	0						
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0						
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F	F	F						

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Ryton Wood Meadows	GRID REF:	SP376726	SPECIES:	DINGY SKIPPER
DATE:	4/6/08	RECORDER:	Jenny Joy/ Mike Slater		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
16. Vegetation Height (measured in cm)	7	10	9	11	8	7	12	13	5	19
17. Number of eggs on foodplant	1	1	1	1	1	1	1	1	1	1
18. Colour of egg (yellow/Orange) or hatched	Y	O	Y	O	O	O	Y	Y	O	H
19. Height of shoot containing egg	7	4	6	4	4	7	7	5	3	13
20. Distance of egg from shoot tip	1	<0.5	<0.5	<0.5	8	1	1	<0.5	1	2
21. Distance of shoot from centre of main plant	39	8	7	9	5	7	10	15	4	12
22. Percentage bare ground within disc area	50	30	30	25	40	35	20	25	20	70
23. Percentage of dead dry vegetation within disc area	10	0	0	0	0	5	0	0	0	5
24. Percentage of green grass within disc area	5	0	10	5	5	5	5	5	10	5
25. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0	0	0	0
26. Known nectar plants in flower within disc area ²	BFT	BFT	BFT	BFT	BFT	BFT	BFT	BFT	BFT	0
27. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0	0	0	0
28. Visible clumps of Rabbit dropping within disc area	0	0	0	0	0	0	0	0	0	0
29. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0	0	0	0	0	0	0
30. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	H	H	F	H	H	F	F	F	F	STONE

5 Metre Square Reference Code	11	12	13	14	15	16	17			
1. Vegetation Height (measured in cm)	10	13	22	10	32	27	33			
2. Number of eggs on foodplant	1	1	1	1	1	1	1			
3. Colour of egg (yellow/Orange) Hatched	Y	0	0	0	H	H	Y			
4. Height of shoot containing egg	6	7	9	6	30	25	10			
5. Distance of egg from shoot tip	<0.5	1	<0.5	1	4	2	1			
6. Distance of shoot from centre of main plant	11	2	5	4	34	17	6			
7. Percentage bare ground within disc area	20	20	10	15	60	80	40			
8. Percentage of dead dry vegetation within disc area	0	5	5	0	0	0	0			
9. Percentage of green grass within disc area	10	5	5	10	5	5	10			
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0			
11. Known nectar plants in flower within disc area ²	BFT	BFT	BFT	BFT	BFT	0	0			
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0			
13. Visible clumps of Rabbit dropping within disc area	0	0	0	0	0	0	0			
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0	0	0	0			
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	H	H	F	H	STONE	STONE	STONE			

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Harbury Spoilbank South	GRID REF:	SP386598	SPECIES:	DINGY SKIPPER
DATE:	5.6.08	RECORDER:	Glyn Clarke		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	6	5	6	8	2.5	9	8	8	5	4
2. Number of eggs on foodplant	1	1	1	1	1	1	2	2	1	1
3. Colour of egg (yellow/Orange)	H	H	O	H	Pale Pre-hatch	H	Pale Pre-hatch	Pale Pre-hatch	O	H
4. Height of shoot containing egg	2.5	1.5	2	2.5	1.5	1	3	0.5	5	0.5
5. Distance of egg from shoot tip	0	3	2.5	4.5	0	1.5	0	1.5	0.5	2
6. Distance of shoot from centre of main plant	3.5	3	2	5	5	3	4	6	4	2
7. Percentage bare ground within disc area	40	35	50	10 Stone	50	10	40	40	30	50
8. Percentage of dead dry vegetation within disc area	0	5	0	30	0	5	0	0	5	0
9. Percentage of green grass within disc area	5	5	0	30	5	20	5	5	10	25
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0	0	0	0
11. Known nectar plants in flower within disc area ²	1	1	1	1	0	1	0	0	1	1
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0	0	0	0
13. Visible clumps of Rabbit dropping within disc area	1	1	1	0	1	0	0	0	1	1
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	1	1	1	1	0	1	1	1	1	1
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F	F	F	F	F	1S	1S	1S	1S	1S

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Ettington Cutting	GRID REF:	SP265 485	SPECIES:	DINGY SKIPPER
DATE:	5/6/08	RECORDER:	Mike Slater		

OVA DEPOSITION DETAILS

	1										
1. Vegetation Height (measured in cm)	4										
2. Number of eggs on foodplant	1										
3. Colour of egg (yellow/Orange)	Y										
4. Height of shoot containing egg	2										
5. Distance of egg from shoot tip	<0.5										
6. Distance of shoot from centre of main plant	7										
7. Percentage bare ground within disc area	40										
8. Percentage of dead dry vegetation within disc area	0										
9. Percentage of green grass within disc area	0										
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0										
11. Known nectar plants in flower within disc area ²	BFT										
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0										
13. Visible clumps of Rabbit dropping within disc area	0										
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0										
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	S										

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Harbury Spoilbank North	GRID REF:	SP386598	SPECIES:	DINGY SKIPPER
DATE:	6.6.08	RECORDER:	Glyn Clarke		

OVA DEPOSITION DETAILS

	1									
1. Vegetation Height (measured in cm)	4									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange)	0									
4. Height of shoot containing egg	3									
5. Distance of egg from shoot tip	1									
6. Distance of shoot from centre of main plant	4									
7. Percentage bare ground within disc area	40									
8. Percentage of dead dry vegetation within disc area	5									
9. Percentage of green grass within disc area	5									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	1									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	1									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	1									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Ryton Wood Meadows	GRID REF:	SP376 726	SPECIES:	DINGY SKIPPER
DATE:	7th June 2008	RECORDER:	Mike Slater		

OVA DEPOSITION DETAILS

	F3	wall	wall	wall	F1	F1	F1	F1	F1	track
1. Vegetation Height (measured in cm)	16	32	26	24	21	23	22	13	26	24
2. Number of eggs on foodplant	1	1	1	1	1	1	1	1	1	1
3. Colour of egg (yellow/Orange)	O	O	Y	Y	O	O	O	O	O	O
4. Height of shoot containing egg	13	26	21	10	11	18	17	7	10	14
5. Distance of egg from shoot tip	1.5	1.5	4.5	1.5	1.5	1	1	<0.5	1	<0.5
6. Distance of shoot from centre of main plant	4	45	11	10	16	9	9	5	4	15
7. Percentage bare ground within disc area	5	30	55	90	0	0	0	0	0	0
8. Percentage of dead dry vegetation within disc area	5	0	0	0	40	40	45	20	70	10
9. Percentage of green grass within disc area	20	5	0	0	5	10	5	10	5	5
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0	0	0	0	0	0	0
11. Known nectar plants in flower within disc area ²	0	0	0	0	0	0	0	0	0	0
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0	0	0	0	0	0	0
13. Visible clumps of Rabbit dropping within disc area	0	0	0	0	0	0	0	0	0	0
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0	0	0	0	0	0	0
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	H	STONE	STONE	STONE	F	F	F	H	H	H

5 Metre Square Reference Code	TRACK									
1. Vegetation Height (measured in cm)	21									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange)	H									
4. Height of shoot containing egg	12									
5. Distance of egg from shoot tip	<0.5									
6. Distance of shoot from centre of main plant	22									
7. Percentage bare ground within disc area	0									
8. Percentage of dead dry vegetation within disc area	20									
9. Percentage of green grass within disc area	5									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	0									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	0									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Baddesley Colliery Spoilheap	GRID REF:	SP273976	SPECIES:	DINGY SKIPPER
DATE:	08/06/08 &	RECORDER:	Keith Warrington		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	18									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange)	Yellow									
4. Height of shoot containing egg	9									
5. Distance of egg from shoot tip	0.5									
6. Distance of shoot from centre of main plant	15									
7. Percentage bare ground within disc area	50									
8. Percentage of dead dry vegetation within disc area	20									
9. Percentage of green grass within disc area	10									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	1,2									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	0									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	Hollow on S slope									

- 1 Bird's-foot-trefoil
2 Creeping Cinquefoil

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Bishops Bowl Sports	GRID REF:	SP384589	SPECIES:	DINGY SKIPPER
DATE:	11.6.08	RECORDER:	Mike Slater/Glyn Clarke		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	11									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange) Hatched	H									
4. Height of shoot containing egg	5									
5. Distance of egg from shoot tip	7									
6. Distance of shoot from centre of main plant	18									
7. Percentage bare ground within disc area	10									
8. Percentage of dead dry vegetation within disc area	0									
9. Percentage of green grass within disc area	5									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	BFT									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	Y									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	F									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Southam Quarry	GRID REF:	SP421635	SPECIES:	DINGY SKIPPER
DATE:	11.6.08	RECORDER:	Mike Slater /Glyn Clarke		

OVA DEPOSITION DETAILS

	1									
1. Vegetation Height (measured in cm)	13									
2. Number of eggs on foodplant	1									
3. Colour of egg (yellow/Orange) Hatched	H									
4. Height of shoot containing egg	5									
5. Distance of egg from shoot tip	<0.5									
6. Distance of shoot from centre of main plant	33									
7. Percentage bare ground within disc area	55									
8. Percentage of dead dry vegetation within disc area	0									
9. Percentage of green grass within disc area	0									
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0									
11. Known nectar plants in flower within disc area ²	BFT									
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0									
13. Visible clumps of Rabbit dropping within disc area	0									
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0									
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	Ant Hill									

OVA DEPOSITION PREFERENCE SURVEY FORM

SITE NAME:	Baddesley Colliery Spoilheap	GRID REF:	SP273976	SPECIES:	DINGY SKIPPER
DATE:	20/06/08	RECORDER:	Keith Warrington		

OVA DEPOSITION DETAILS

	1	2	3	4	5	6	7	8	9	10
1. Vegetation Height (measured in cm)	23	24	20	20						
2. Number of eggs on foodplant	1	1	1	1						
3. Colour of egg (yellow/Orange)	Orange	Orange	Orange	Orange						
4. Height of shoot containing egg	19	15	11	10						
5. Distance of egg from shoot tip	1	0.5	1	3						
6. Distance of shoot from centre of main plant	12	4	10	11						
7. Percentage bare ground within disc area	0	0	0	10						
8. Percentage of dead dry vegetation within disc area	20	50	20	20						
9. Percentage of green grass within disc area	20	20	20	20						
10. Evidence of stock grazing (trampling, cattle paths, dung, poaching) within disc area	0	0	0	0						
11. Known nectar plants in flower within disc area ²	1	1	1,2	1,2						
12. Seeds heads from the previous year or black plantain heads ³ (roosting perches) within disc area	0	0	0	0						
13. Visible clumps of Rabbit dropping within disc area	0	0	0	0						
14. Bramble and/or other low invading scrub (e.g. Hawthorn seedlings) within disc area	0	0	0	0						
15. Aspect, flat ground or on slope orientation to sun (e.g. F=flat, 1SW=shallow slope south west, 2NE=medium slope north east, 3E=steep slope east etc.)	S Slope	S Slope	S Slope	S Slope						

- 1 Bird's-foot-trefoil
2 Creeping Cinquefoil