

# Report on findings of the 2003-2004 field survey for Rosser's Sac Spider *Clubiona rosserae*

## 1.0 INTRODUCTION

### 1.1 Background

Simon Colenutt of Ecological Survey & Assessment (ECOSA) was contracted to carry out a continuing survey work for *Clubiona rosserae* in 2003-2004. This work follows on from a review of the ecology of the species and field work carried out in 2002-2003 and presented in two reports.<sup>1,2,3</sup> This report should be read in conjunction with these three reports. The contract was carried out under the auspices of the *Clubiona rosserae* Partnership, a collaborative partnership between Buglife- The Invertebrate Conservation Trust, English Nature, the British Arachnological Society and Anglian Water. The aims and objectives of this partnership are;

Objectives;

- Continue a comprehensive survey of Chippenham Fen for *Clubiona rosserae*
- Undertake a comprehensive survey of Lakenheath Fen for *Clubiona rosserae*
- Undertake 2-4 days, including 2 nights, of detailed field observations of *Clubiona rosserae/stagnatilis*
- Complete the survey of 'all' other potential sites for the species within 25km of Chippenham and Tuddenham Fens
- Undertake a winter visit to four of the most likely potential sites for the species within 25km of Chippenham and Tuddenham fen
- To visit the Netherlands to meet active arachnologists and undertake a survey for the species on two sites, setting traps if possible

---

<sup>1</sup> ECOSA (Sept 2003), *Report on findings of the 2002-2003 field survey for Rosser's Sac Spider Clubiona rosserae*, Privately published report.

<sup>2</sup> ECOSA (June 2003), *Review of the current known biology and distribution of Rosser's Sac Spider Clubiona rosserae*, Privately published report.

<sup>3</sup> ECOSA (May 2003), *Clubiona rosserae Initial Surveys of potential sites*, Privately published report.

This report details the findings of the field surveys for the species that were carried out between July 2003 and October 2004.

## 2.0 METHODS

### 2.1 Introduction

Having carried out surveys in 2002/03 using a standardised approach and failing to find *C.rosserae* the 2003/04 survey adopted a non-standardised approach which was aimed at allowing a more targeted approach to those methods that were producing higher numbers of *C.rosserae*. As a result cell searches grubbing and sweep netting were adopted in the 2004 survey season. In addition limited, and non-standardised, use of pitfall and water traps was used. During all surveys only adult *Clubiona rosserae/stagnatilis* were collected, these were determined by examination with a 10x hand-lens in the field, all immature spiders were released.

### 2.2 Chippenham

In total 25 visits were made to Chippenham Fen between July 2003 and November 2004. During these visits much of the survey methodology was based on visual searching with sweep netting, grubbing and visual searches carried out. Most of these visits lasted between 2 and 6 hours, usually from 11:00. Habitats targeted included fen vegetation, reedbed, marginal habitat, cut sedge piles, saw sedge beds, wet grassland and rush-pasture.

Two surveys were carried out after dark until 01:00, these were carried out on 15<sup>th</sup> August and 24<sup>th</sup> August. The aim of the survey was to provide an assessment of the behaviour of *Clubiona stagnatilis/rosserae* after dark. On each evening five active cells were marked with high visibility tape. One of these was selected for initial observation commencing at sunset, the remaining four were to be used as 'back-up' should there have been no activity from the first cell within an hour of observation. However, on both evenings spiders from the first cell became active and there was no need to observe the remaining cells. Observations began by slow approach to the cell, the surveyor would then position himself within 1m of the cell so that the it was clearly visible but disturbance was minimised and observation commenced. The spider was observed until it was lost from view, on both occasions this occurred when the spider descended to ground level. After dark a 3-cell Maglite was used to observe the spiders, this was fitted with a red filter so as to minimise disturbance to the animals. A similar methodology was

used on eight occasions to observe daytime behaviour but after 1 hour of no activity from the cells the survey was abandoned.

### 2.3 Survey of Other sites

Of those sites surveyed last year Hopton Fen, Market Weston Fen, the River Little Ouse, the River Lark up to 2km west of the A1101, and West Stow Country Park were targeted for additional survey. These were selected for a number of reasons but mainly for ease of access, close proximity to other survey sites, and suitability of habitat. Each site was then visited on six occasions between July and October 2003 and March to October 2004. During each site visit a total of four hours was spent surveying. Surveying was targeted at *Clubiona* and only *C.rosserae/stagnatilis* were removed from the site for later identification. The sampling was based on visual searching techniques with grubbing and searching for nest cells the most commonly used methods, some sweep netting was also used.

In total 15 visits were made to Tuddenham Fen between July 2003 and November 2004. During these surveys collecting of *Clubiona* was carried out using sweep netting, grubbing and visual searches for *Clubiona* egg cells. On each visits 2 hours in each of the three areas as shown on Map 3 of the 2003 survey report was spent sampling. Only spiders that were identified as *Clubiona stagnatilis/rosserae* in the field were taken from the site.

### 2.4 Netherlands

During the field survey carried out in the Netherlands Simon Colenutt was accompanied by Peter Van Helsdingen of the European Invertebrate Survey, National Museum of Natural History. Three sites were visited during this survey, these were Naardemeer, Meinweg and De Weiden, these sites are discussed in the 2002/03 survey reports.<sup>2</sup> Within these sites the previous known location for *C.rosserae* was surveyed as well as suitable areas within these large reserves. On each of the sites visited a combination of grubbing and sweep netting was employed.

The methodology adopted at these sites was essentially the same as for the UK surveys with an emphasis on searching for egg cells, sweep netting and grubbing. Each site was surveyed for between 3 and 6 hours. With between 7 and 9 hours spent surveying in each of the reserves. Since many of these sites had not been surveyed for many years other

species were collected during the field survey although the emphasis was on collecting *Clubiona*.

For each of the sites visited vegetation data was recorded. This involved taking five 1m<sup>2</sup> quadrats in each of the sites sampled, however, where there was no visual difference between sites in terms of vegetation community then no additional samples were taken. Each species present was identified and assigned an abundance score based on the DOMIN scale, Table 1.

* Domin scale:	% cover
10	91-100
9	75-90
8	51-74
7	34-50
6	26-33
5	11-25
4	4-10
3	<4 and many individuals
2	<4 and several individuals
1	<4 and few individuals

**Table 1** DOMIN scale used in vegetation survey.

The height of vegetation was also assessment via a simple measurement using a tape measure and an assessment of the mean height of the sward within the quadrat.

## 2.5 Need to include methodology used during survey/observation of *Marpissa radiata*

### 3.0 RESULTS

#### 3.1 Chippenham Fen

No *Clubiona rosserae* were recorded from Chippenham Fen during the course of the survey. Table 2 follows on from table 1 in the 2002/03 survey report<sup>1</sup> it shows the numbers of *Clubiona stagnatilis* collected at the site from July 2003. This targeted approach has allowed a greater number of *C.rosserae* to be found than in 2002/03.

	J	A	S	O	M	A	M	J	J	A	S	Total
Adult male	7	10	20	40	26	20	16	15	4	13	25	196
Adult female	55	72	65	45	5	11	25	45	45	35	22	425
Total	62	82	85	85	31	31	41	60	49	48	47	621

Table 2 shows the number of *C.stagnatilis* collected using all search methods.

#### 3.2 Other sites surveyed

No records of *C.rosserae* were forthcoming from any of the additional sites surveyed. *C.stagnatilis* was generally scarce at many of these sites with the exception of Tuddenham Fen, Hopton Fen, and Market Weston Fen and a large proportion of the Clubionids found were *C.phragmitis*. Table 3 presents totals of *C.stagnatilis* taken from these sites.

Site	No. <i>C.stagnatilis</i> sampled
Hopton Fen	34
Market Weston Fen	41
River Little Ouse	12
River Lark	16
West Stow Country Park	8
Tuddenham Fen	47

Table 3 Numbers of *C.stagnatilis* collected from other sites surveyed.

#### 3.3 Netherlands

The results of the field survey in the Netherlands are shown in table 3, this is a compilation of both recorders samples. One male *Clubiona rosserae* was found at Meinweg

(Elfenmeer) and a female *Clubiona rosserae/stagnatilis* (the specimen requires determination) was found at the same site.

The vegetation data collected is shown in table 4. Meinweg (Rolvennen) was very similar to Meinweg (Elfenmeer) in terms of vegetation characteristics and as a result no vegetation data was collected here, similarly only the first site at De Weiden was sampled, the former *C.rosserae* site, since the other two sites were very similar in vegetation characteristics. Figures 2-8 illustrate the sites surveyed.

#### **3.4 Nighttime observations of *Clubiona stagnatilis***

Both of the *C.stagnatilis* observed displayed remarkably similar behaviour. Both emerged from their silk cells at dusk, approximately 15minutes before sunset. Initially the spiders spent up to 30 minutes on the cell, walking over it and re-entering the cell for short periods at a time. The reason for this behaviour is not known but it is thought that it may have involved cell maintenance. In addition, during this time much time was spent cleaning with particular attention being paid to the legs. Following this there was a general movement into the surrounding vegetation, the movement of these animals at this time was generally slow and cautious and much time was spent investigating folds in leaves, grass heads etc, it is thought that the spiders at this time were hunting and that this slow approach was adopted due to relative high visibility of the spiders to potential prey. This behaviour was exhibited for 1.5 hours after sunset in both animals observed. The spiders would wander over the grass stems from approximately 20cm to the top of the sward at around 60cm covering a relatively wide vertical range but in both cases not venturing beyond 1.5m from the cell. Following these observations in both cases the spiders were lost from sight as they descended to the ground. It is then not known whether the spiders continued hunting at ground level or whether they ascended the grass steps shortly after and continued to hunt within the grass.

Daytime observations of cells failed to produce any sightings of active spiders.

#### **3.5 Need to include results of *M.radiata* survey**

Site	Naardemeer	Naardemeer	Naardemeer	Meinweg (Elfenmeer)	Meinweg (Rolvennen)	De Weiden (grassland along Schutsloot)	De Weiden (grassland along Schutsloot)	De Weiden
<b>Notes</b>	Former Cr site NG 135903 478959	Former Cr site NG 136328 478990	Former Cr site NG 206907 354851	Former Cr site NG 205 353	Former Cr site NG 204278 521571	Former Cr site NG 203 521	NG 2044341 521951	
<b>Date</b>	15-Jun-04	15-Jun-04	16-Jun-04	16-Jun-04	17-Jun-04	17-Jun-04	17-Jun-04	
<b>Species</b>								
<i>Araneus sturmi</i>								
<i>Bathypantes approximatus</i>								
<i>Clubiona brevipes</i>	1m	1m			1m	1m		
<i>Clubiona juvenis</i>	1m, 2f	2f			1m	2f		
<i>Clubiona lutescens</i>	3f	2f, 1m		2f	2m, 2f			
<i>Clubiona norvegica</i>				1f	1f			
<i>Clubiona phragmitis</i>	1m, 4f	3f		1f	4f		5f, 1m	
<i>Clubiona reclusa</i>	4f				1f	1f		
<i>Clubiona rosserae</i>				1m				
<i>Clubiona rosserae/stagnatilis</i>				1f				
<i>Clubiona stagnatilis</i>	7f	5f, 1m		1f	3f		1f	
<i>Clubiona subsultans</i>					1f			
<i>Donacochara speciosa</i>	1f	1f						
<i>Enolognatha ovata</i>								
<i>Evarcha arcuata</i>				1imm/f		1m		
<i>Hygrolycosa rubrofasciata</i>				1m, 1f				
<i>Hypomma bituberculatum</i>	1f							
<i>Marpissa radiata</i>								
<i>Myrmarachne formicaria</i>				1f				
<i>Neon valentulus</i>				1m				
<i>Oxyopes heterophthalmus</i>				1f				
<i>Pachygnatha clercki</i>						1f		

Site	Naardemeer	Naardemeer	Meinweg (Elfenmeer)	Meinweg (Rolvennen)	De Weiden (grassland along Schutsloot)	De Weiden (grassland along Schutsloot)	De Weiden
<i>Pardosa amentata</i>					1f		
<i>Pardosa pullata</i>		1f				1f	1f
<i>Philodromus cespitum</i>			1f	1f			
<i>Philodromus longipalpis</i>			1f				
<i>Phrurolithus fetivus</i>			1f			1f	
<i>Pirata hygophilus</i>	2f						
<i>Pirata latitans</i>	5m, 1f				1m, 3f		1m
<i>Pirata piraticus</i>							
<i>Pirata piscatorius</i>							1f
<i>Pirata uliginosus</i>			1f	1f			
<i>Pocadicnemis juncea</i>							1f
<i>Rugathodes instabilis</i>						1f	
<i>Sitticus florica</i>				2f			
<i>Taranucnus setosus</i>				1f			
<i>Theridion impressum</i>			1f				
<i>Theridion pictum</i>				3f			
<i>Theridion pinastri</i>					1m		
<i>Tibellus oblongus</i>							
<i>Trochosa terricola</i>			2f	1f			
<i>Xysticus cristatus</i>					3f		1f
<i>Xysticus ulmi</i>	6f	2f	1f	1f	1f		
<i>Zelotes</i> sp. (latreillei type)							1imm/m
<i>Zora spinimana</i>		1f	1f	1f	1m	1f	2f

**Table 3** Spiders recorded during surveys in Netherlands.



Site	Naardemeer										Naardemeer						Meinweg					De Weiden					
Lesser Spearwort	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marsh Fern	4	1	0	0	1	0	0	0	2	0	0	1	0	0	0	0	1	0	0	1	0	4	1	0	0	0	1
Marsh Louisewort	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marsh Marigold	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marsh Pennywort	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marsh Thistle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Meadow Buttercup	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	1	1
Purple moor-grass	0	0	0	0	0	0	0	0	0	0	0	10	9	10	10	0	10	0	0	0	0	0	0	0	0	0	0
Ragged Robin	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	2	0	0	1
Red Fescue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Ribwort plantain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	4	1	4	4
Sedge Spp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	5	4	3	6	6
Skullcap	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Smooth Meadow-grass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	3
Soft Rush	0	0	0	0	0	0	0	0	5	5	4	1	4	2	3	4	1	4	2	3	4	0	0	0	3	0	0
Sphagnum spp	9	5	5	6	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0
Sweet Vernal Grass	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	4	4	7	7
Water Forget-me-not	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
White Clover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Yellow Iris	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Loosestrife	0	0	1	1	0	0	1	4	0	0	1	1	2	1	2	1	0	2	2	1	0	0	0	0	0	1	1
Yorkshire-fog	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	5	6	5	3	3

First series- A narrow managed strip between river and alder/willow swamp. Generally an open reed and rush dominated sward with abundant common bent. Ground largely

**Naardemeer**

dominated by a carpet of bryophytes, mainly dicranum and sphagnum. Clear and rapid zonation from jointed rush dominated water margin with marsh stitchwort, marsh bedstraw and marsh fern through grass/reed sward to birch swamp within approximately 30m.

Second series- Sharply zoned vegetation with c.40cm of marsh fern dominated margin then sparsely vegetated 2m strip (quadrats 4 and 5) then longer 3m Agrostis dominated

strip (quadrats 1-3), then a short 4m strip similar to quadrats 4 and 5 and finally a reed dominated stand. This zonation is suggestive of intensive and regular management.

**Meinweg**

A damp valley mire located alongside an acidic pond. The sward is overwhelmingly dominated by purple moor-grass with a variable density of bog myrtle and sphagnum. A damp 'quaking' meadow with adjacent willow/alder swamp, marginal reedbed with some encroachment into meadow. Also present but not represented in quadrats were common reed, greater yellow-rattle, marsh orchid spp, and a central strip of reed canary-grass and greater pond sedge.

**Table 4** Vegetation data collected from sites surveyed for *Cladonia rossetrae* in the Netherlands.

## 4.0 DISCUSSION

### 4.1 Surveys of UK sites

The lack of any records of *C.rosserae* during these field surveys and, indeed since the last record from Botany Bay in 2002 is concerning. The species is clearly present at very low densities at its known UK sites, perhaps raising the question as to whether we are actually searching within the correct habitat type. The reason for this scarcity is impossible to determine at present and it may never be possible to be certain of the reasons for this. Similarly, due to the scarcity of the species it is difficult to know how we can ever monitor the status of the species especially since the species is so difficult to identify and perhaps impossible to identify in the field.

### 4.2 Netherlands

The male *Clubiona rosserae* was found in a tussock of purple moorgrass and the spider was collected at ground level at Meinweg (Elfenmeer). This tussock of moorgrass was amongst a sward dominated (95%) by the species. In addition a small amount of sphagnum (5%) was present in the sward and bog myrtle (5%) occurred as scattered individuals through the sward. The grassland sward had a mean height of 45cm. The site is located on sand deposits and as such is acidic in nature. Much of the site is dry and dominated by dry heathland and Scot's pine woodland and as such is reminiscent of parts of the Brecks. The site where the *C.rosserae* was found is inundated ground located alongside a large acidic pond. This habitat was not extensive in the area surveyed but the habitat was not surveyed in detail and it is possible that the habitat is extensive along the valley linking Meinweg (Elfenmeer) to Meinweg (Rolvennen).

The possible *C.rosserae* is a female specimen, it shows characters intermediate between this species and *C.stagnatilis*. The specimen was found within 10m of the male in the same habitat. This individual was found within an egg cell formed in a dead, curled downy birch leaf. The leaf was found by grubbing and was found alongside a tree stump within the purple moor-grass sward.



**Figure 1** Curled downy birch leaf in which cell of possible *C.rosserae* was found.

The habitat in which these specimens were found differed from the habitat in which most survey work has been carried out in the UK. Much of the work in the UK has been carried out in species rich fen vegetation and this is the habitat from which all UK records have come from. However, *C.rosserae* was found in species poor purple moor-grass dominated grassland within mires on generally dry heathland. This is a habitat that maybe present widely within the Brecks and that to date has not been targeted during field survey work.

**Need to include discussion on *M.radiata* survey**

**Figures 2-8** Sites surveyed in Netherlands



**Figure 2** Naardemeer site 1 former *Clubiona rosserae* site.



**Figure 3** Same site as above showing sward structure.



**Figure 4** Naardemeer site 2



**Figure 5** Meinweg (Elfenmeer) this is a former *C.rosserae* site and the site at which the species was found in 2004. The both specimens came from the purple moor-grass dominated sward in the foreground.



**Figure 6** Meinweg (Rolvennen)



**Figure 7** De Weiden site 1, this is a former *C.rosserae* site.



**Figure 8** Same site as above showing sward structure.