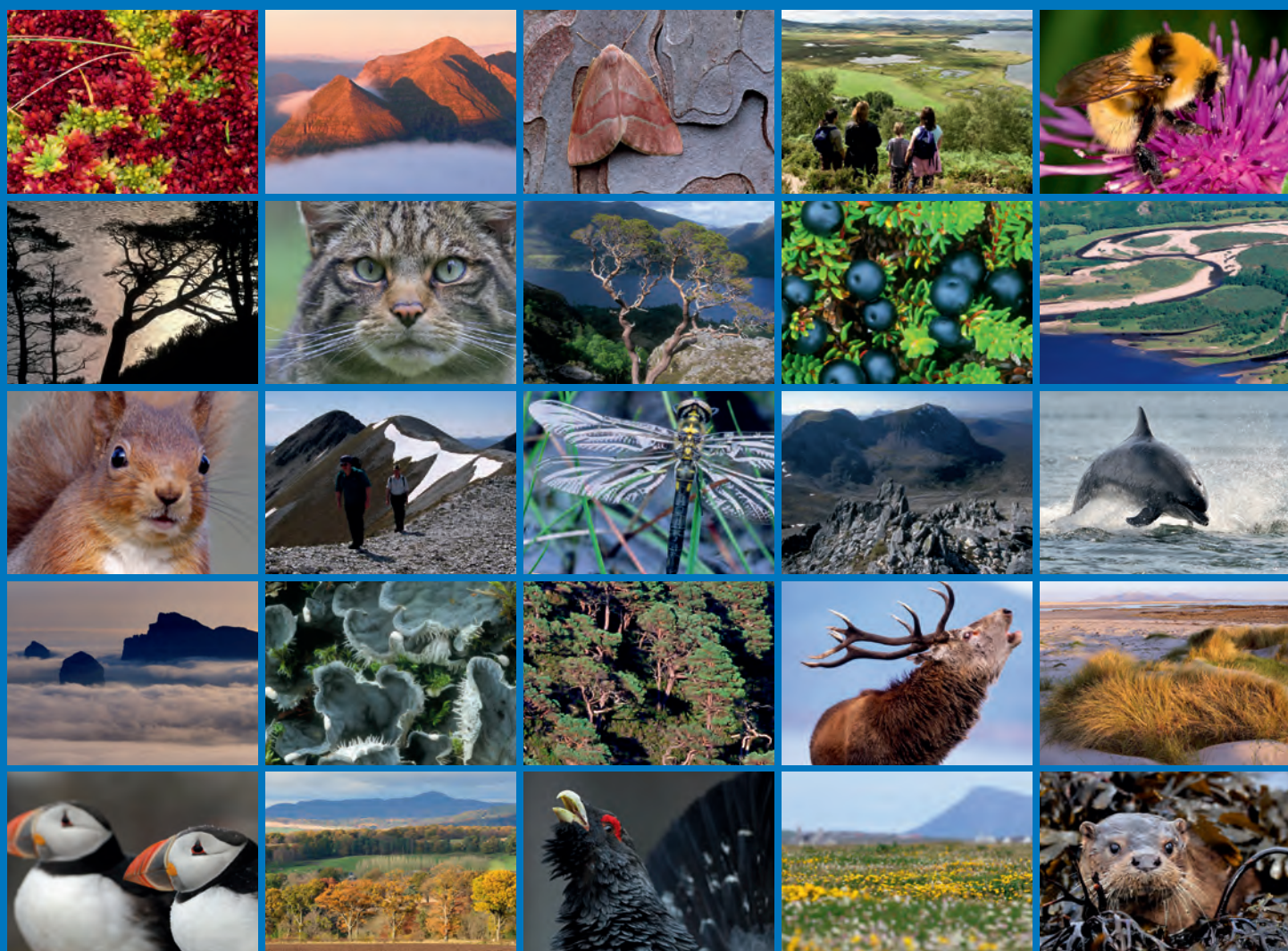


Site Condition Monitoring for Odonata features at Sunart SSSI





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COMMISSIONED REPORT

Commissioned Report No. 710

Site Condition Monitoring for Odonata features at Sunart SSSI

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COMMISSIONED REPORT

Summary

Site Condition Monitoring for Odonata features at Sunart SSSI

Commissioned Report No. 710

Contractor: P. Batty

Year of publication: 2014

Background

Site Condition Monitoring is a six year rolling programme of assessment of the state of notified features on Sites of Special Scientific Interest (SSSI). This report is concerned with the monitoring of the assemblage of dragonflies and damselflies (Odonata) on Sunart Woods SSSI, in particular the northern emerald dragonfly (*Somatochlora arctica*) in 2013. Surveys were carried out on 24-26 June and 5-6 August to the northern area of the site.

Main findings

Thirteen species of dragonfly were found, including the northern emerald. The keeled skimmer (*Orthetrum coerulescens*), the beautiful demoiselle (*Calopteryx virgo*) and the southern hawkler (*Aeshna cyanea*), also present in the site, are species of restricted distribution in Scotland.

The site was found to be in favourable condition. It should continue to be monitored, in particular for the northern emerald, to ensure that the breeding habitat is maintained.

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1. INTRODUCTION

Sunart SSSI is a complex and diverse site covering one of the most extensive areas of semi-natural woodlands in Britain. It extends for over 32 km along the northern and southern shores of Loch Sunart and includes the islands of Risga, Carna and Oronsay. Many of the woodlands are on the slopes above the loch, with areas of wet moorland. There are a number of lochs and areas of bog, runnels and burns within the site, making it a diverse habitat for dragonflies and damselflies.

The SSSI has a notable dragonfly and damselfly assemblage (nine species previously recorded) which includes the nationally rare northern emerald dragonfly, *Somatochlora arctica*. This species breeds in sphagnum-filled runnels and ditches and hunts in woodland along rides and clearings.

The survey was concentrated on the area north of Loch Sunart from Ariundle Oak Woods in the east (NM826633) to the burn Allt Torr na Moine, Ardsignish, in the west (NM556626).

The following sites were investigated:

- The burn at Allt Torr na Moine from the bridge south to the woodland fence.
- The main water bodies, Loch Ruighe a Phollain, Lochan na Dunaich and Lochan na Bracha, and nearby upland mires near Salen.
- Sites in the Glenborrodale area including Rubird Aird Beithe pools (NM6161560634), three artificial ponds identified in a 2011 survey, the RSPB Reserve bog pools and various roadside runnels.
- Forestry Commission woods west of Salen and at Ardery which are part of the woodland management area. Conifers have been removed and there is now extensive birch and willow regeneration.
- Runnels and bog near the Ardery wildlife hide car park.

Descriptions and grid references for the sites are given in Annex 1.

2. METHODS

The main dragonfly habitat was surveyed, the emergent and surrounding vegetation was searched for exuviae, and flying adults were recorded. Larval sampling also took place at each site.

Suitable sampling points were identified at the edge of the water body usually where emergent and floating vegetation was present. Sites were also chosen as potential basking or perching sites for adults. Five to ten-minute watches were taken at the various points.

For adult sampling, the minimum weather conditions required were temperatures over 13°C with up to 40% cloud cover or temperatures above 17°C (northern conditions for the Pollard Walk butterfly transects).

Larval sampling was undertaken by “guddling”, which involves using a colander as a net and sweeping it through emergent vegetation along the pool edge or along the bottom. This is a tried and trusted larval sampling technique and the most useful when dealing with pools with a great deal of sphagnum, which tends to choke pond nets. In deeper, more open water a pond net was used in a similar manner.

At a sampling point the following methodology was used:

1. Observe for any adult activity.
2. Search the edges of the pool and any marginal vegetation for signs of emerging adults or exuviae, taking care to avoid damage.
3. Sample for larvae with at least twenty dips.
4. Record all Odonata species seen.

I surveyed the area on two sets of dates: the first was from 24 to 26 June. Weather conditions were reasonable, with temperatures above 13°C and up to 18°C. Sunshine was intermittent but conditions improved later during each day. Conditions were not ideal for flying insects; however, the water temperature was 20°C, which enabled a good coverage of the Odonata interest across the sites. The first visit coincided with the flight time for the main “spring” species.

The second visit was on 5 and 6 August to cover the distribution of later flying species. There was intermittent sunshine with air temperature 19°C and water temperature 18-20°C.

3. RESULTS

Thirteen species were recorded, an expected result from one of the best sites for Odonata in Scotland (Annex 2). Besides the rare northern emerald (*Somatochlora arctica*), three other species of restricted distribution were found: the keeled skimmer (*Orthetrum coerulescens*), the beautiful demoiselle (*Calopteryx virgo*) and the southern hawkler (*Aeshna cyanea*). Only nine species had been recorded previously from the SSSI (Willet & Corcoran, 2011). Flight conditions were not ideal on either visit and it is likely that the sites have other species.

The distribution of the less common species is discussed below; the other species I recorded are generally fairly widespread in the area.

3.1 Northern emerald

The northern emerald is a nationally scarce species in the UK and only breeds in Scotland. It is a difficult species to find as it breeds in sphagnum-filled bog pools, runnels and ditches and often feeds in the tree canopy. There had been little rain for several weeks and many bog pools were dry, so it was difficult to sample for larvae.

I found two breeding sites. The best was an 8 x 5 m area of bog and runnels northwest of Lochan na Bracha at NM6944465485. On 24 June I found three larvae of sizes 0.8, 1.1 and 1.5 cm, and 11 exuviae. I also found four larvae sized 1.3 to 1.7 cm on 6 August. This indicates a well-established breeding area. An adult was also seen here on 24 June. An exuvia was found in a bog pool near the Ardery hide car park at NM7431162362 on 26 June.

During periods of sunshine on 26 June, 10 adults, including a pair in copulation, were seen in the woodland west of Salen. They were flying in clearings near the track from NM6892264930 behind the village to the old bobbin mill pool at NM6892264930. The adults were feeding amongst the foliage of birch saplings and investigating the sphagnum-filled ditches which were frequent in the area. This is the most adults I have seen at a site.

The northern emerald has been recorded from Ariundle Oak Woods at NM829634 by Pete Madden in 2008 and Glenborrodale RSPB reserve at NM599616 by Liz Mac Donald in 2009. I did not see the species at these sites in 2013. However, from my experience the habitat looked suitable. The ditch by the track at Ariundle had large areas of sphagnum and so did pools at NM83316355. Similarly the bog above the woodland near the track at Glenborrodale reserve contained suitable habitat though it was particularly dry. Both sites have good feeding areas.

3.2 Keeled skimmer

The keeled skimmer breeds in slow-flowing runnels and larvae hide amongst the silt. It has a restricted distribution in Scotland, mainly from Dumfries and Galloway to Wester Ross. The Ardnamurchan peninsular holds a good population. I visited the sites just before the main emergence of the species. Larvae or exuviae were found at the five sites sampled in the Glenborrodale area (Annex 2). This species has been recorded from Ardslynish to Ardery and was seen at Lochan na Dunaich in a 2010 SCM survey.

3.3 Beautiful demoiselle

The beautiful demoiselle has a western distribution and breeds in fast-flowing, well-oxygenated burns. Scattered trees at the edges provide preferred areas of sunshine and shade. On 24 June, I saw a male and female on a stretch of burn at the Allt Torr na Moine (NM5563962628). It was later in the day, and conditions were marginal for flight. This is the only species without proof of breeding. However, as a male and a female were present and adults are regularly seen here during the flight period, this is likely to be a breeding site. The

species has also been recorded from Glenborrodale and Glenmore by Liz MacDonald (BDS records).

3.4 Southern hawker

The southern hawker is gradually spreading through Scotland, particularly in the west coastal areas. This species is often found in small ponds and splash zone of pools. I found larvae in the Rubha Aird Beithe pools on 24 June and 6 August. This is the first record for the area.

4. DISCUSSION

4.1 Evaluation of the site

The SSSI citation provides no details of the northern emerald, thus it was particularly important to find this species. The northern emerald was recorded from three areas with breeding evidence for two of these, and a number of individual adults were seen at the third.

I considered the site to be in favourable condition. The lochans and mires were in good condition and had the range of breeding species expected given the weather conditions and timing of the visits. The conservation work to restore natural woodland in the area has also increased the habitat for dragonflies, particularly in the woods west of Salen. Here a number of adult northern emerald dragonflies were feeding amongst the birch, as the conifers have been clear-felled. If, however, regeneration and growth continue at their present rates, this area will eventually become dominated by birch thickets and sheltered sunlit glades will be lost. This may become a problem for the northern emerald if the sphagnum pools and ditches dry out.

4.2 Factors influencing the site

4.2.1 Woodland management

The Forestry Commission has been replacing conifer with broadleaves through natural regeneration and managed deer to enable regeneration. These measures appear to have been beneficial for Odonata, but as the woodland matures, there will be fewer open glades and less drying of the wetland areas.

4.2.2 In-filling of sites by natural succession

This is a major problem for the northern emerald. Much of its habitat consists of small shallow sphagnum-filled runnels or ditches. It is important that at least some areas of open water are available to maintain the breeding habitat.

4.2.3 Grazing

There is light deer grazing on upland areas around the sites. The main vegetation, *Mollinia caerulea* and bracken, is becoming rank and in the future may affect the wetland mires.

4.3 Recommendations for management

- Ensure that some open glades are maintained as the natural woodland regeneration increases, particularly in the woods west of Salen; relaxing the deer culling regime may help. To protect northern emerald habitat, periodic clearance of short sections of forest ditches (5-10 m long) will maintain open water with sphagnum nearby. The cleared material should be left at the edge so larvae can go back into the water.
- Consider water quality and flow when carrying out any forestry operations. Recent road works for the removal of timber near the Ardrey hide bog pool, a newly found northern emerald site, has affected the water flow, although the culvet has been partly blocked to maintain a bog pool. I have discussed this site with the Forestry Commission's conservation manager, who informed me that the site will be restored when forestry operations are complete.
- Continue regular monitoring, in particular at sites for northern emerald including Lochan na Bracha area mire (NM6944465485) which was recorded as a lochan in 2002 but has in-filled in 2013. The runnel here is an excellent breeding site, with

northern emerald larvae found on both visits. For future survey, one visit in late June would increase the possibility of finding larvae, exuviae and adults on wing.

5. REFERENCES

Willet, J. & Corcoran, S. 2011. *Site Condition Monitoring of dragonflies on selected Site of Special Scientific Interest (SSSIs) – 2010 and 2011*. SNH unpublished report.

ANNEX 1: SUNART SITES FOR DRAGONFLY ASSEMBLAGES

Allt Torr na Moine

The burn was sampled from just below the road bridge at NM5563962628 south to the fenced woodland enclosure and ravine at NM55636250. This is a shallow stony burn running through grazed hill pasture with scattered birch and willow by the burn. The section is sheltered. Below the site the river enters a deep ravine and is thickly wooded.

Loch Ruighe a Phollain

NM69236535, area 100 x 200 m at 90 m asl. The loch is in private land and set in partly managed garden ground. It has rich emergent vegetation consisting of *Carex rostrata*, *C. lasiocarpa* and *C. nigra*. *Nymphaea alba* forms a ring of floating vegetation. The north and east edge and a boggy runnel at NM6930865235 were sampled. The loch is sheltered, surrounded by areas of birch and willow scrub.

Lochan na Dunaich

NM69206465, area 60 x 150 m at 46 m asl. Lochan na Dunaich is a peaty lochan, sheltered, with mature forestry to the west and a clear fell area with natural regeneration to the east. It is also part of the forest walk network. It is well vegetated, plants include *C. lasiocarpa*, *C. nigra*, *C. rostrata*, *C. curta*, *Equisetum fluviatile*, *Nuphar lutea* and *Nymphaea alba*. There are also areas of tottery bog and floating sphagnum.

Lochan na Bracha

NM69886519, area 200 x 100 m at 100 m asl. A sheltered hill lochan set in a hollow amongst *Myrica gale* and *Molinia caerulea*. Water vegetation includes *C. lasiocarpa*, *C. nigra*, *C. rostrata*, *C. curta* and *N. alba*. The south and west banks and the outflowing burn were sampled.

Lochan na Bracha area mire

NM6944465485, at 80 m asl. The mire is northwest of the lochan near the burn and consists of a series of shallow runnels near a pool that has been in-filled with *C. rostrata*. The runnels are less than 20 cm deep with sphagnum lawns and open areas with *Drosera rotundifolia*, *Potamogeton polygonifolius* and *Eriophorum vaginatum*. The area is sheltered in a hollow with natural woodland above and a forestry plantation nearby.

Glenborrodale area (Five sites)

Rubha Aird Beithe pools

NM6161560634 at 12 m asl. Three artificial ponds have been created on the burn. All had mainly open water. The middle pool was peaty and half dry. The small burn below the pools was also sampled.

Glen Borrodale RSPB reserve

NM598616 at 102 m asl. The woodland track was followed up to the open *Myrica* heath above the wood. There are a series of small pools and runnels with sphagnum but the area was very dry at the time of the visit. The burn in the woodland was also investigated.

Glen Borrodale track

West runnel and small burn at NM5922561973.

Glen Borrodale Shoreline Cottage area

Runnels and bog NM6153160634 at 12 m asl.

Dun Ghallain burn area

A number of small runnels near the burn just below the road at NM6424460765, 60m asl.

Salen Woods Forestry Commission FC Sites

Salen Woods West

NM6892264930 to NM6892264930. The woodland is part of the FC conservation area where conifers have been removed and natural regeneration encouraged. This is now an extensive area of birch and willow of various ages with clearings. There are old forestry drainage ditches throughout the site which have become in-filled with sphagnum. The old bobbin mill pool (NM6892264930) is a shallow peaty pool. The mill dam on the burn is damaged and the former loch is now a peat bog with *C. rostrata* and sphagnum lawns.

Arderly Wildlife Hide Car park bog pool

NM7431162362 at 27 m asl. It is a small boggy area with sphagnum runnels and rushes by a small burn on the north side of the road before the car park and the forestry track.

ANNEX 2: ODONATA RECORDS

Site Name	Grid Reference	Species	Date	Ad	Co	La	Ex
Alt Torr na Moine	NM5563962628	beautiful demoiselle	24/06/2013	B			
	NM5563962628	golden-ringed dragonfly	24/06/2013	A		A	
Ardrey FC Car park coast	NM746617	four-spotted chaser	26/06/2013	B			
	NM746617	golden-ringed dragonfly	26/06/2013	A		B	A
	NM746617	large red damselfly	26/06/2013	B		A	
Ariundle Reserve	NM826633	four-spotted chaser	26/06/2013	C			B
	NM826633	golden-ringed dragonfly	26/06/2013	B		B	B
	NM826633	large red damselfly	26/06/2013	C	B		
Ariundle Reserve bog pools	NM83316355	blue-tailed damselfly	26/06/2013				B
	NM83316355	four-spotted chaser	26/06/2013	C			
	NM83316355	large red damselfly	26/06/2013				
Dun Ghallain area runnels	NM6424460765	golden-ringed dragonfly	24/06/2013			C	A
	NM6424460765	keeled skimmer	24/06/2013			B	
Glenborrodale RSPB Reserve Hill bog	NM592619	golden-ringed dragonfly	25/06/2013			D	
	NM592619	keeled skimmer	25/06/2013				A
	NM59836163	large red damselfly	24/06/2013	B		A	
	NM592619	large red damselfly	25/06/2013			B	
Glenborrodale Rubird Aird Beithe pools	NM6161560634	black darter	24/06/2013			B	
	NM6161560634	black darter	06/08/2013			B	A
	NM6161560634	blue-tailed damselfly	24/06/2013	C		C	
	NM6161560634	common darter	24/06/2013			B	
	NM6161560634	emerald damselfly	24/06/2013	B		C	
	NM6161560634	emerald damselfly	06/08/2013	C	A		
	NM6161560634	four-spotted chaser	24/06/2013			C	
	NM6161560634	four-spotted chaser	06/08/2013	A		B	
	NM6161560634	golden-ringed dragonfly	24/06/2013			B	
	NM6161560634	keeled skimmer	24/06/2013			B	
	NM6161560634	large red damselfly	24/06/2013	B		B	
	NM6161560634	large red damselfly	06/08/2013			C	
	NM6161560634	southern hawker	24/06/2013			A	
	NM6161560634	southern hawker	06/08/2013			B	
	Glenborrodale runnels Loch Ruighe a Phollain	NM6153160643	keeled skimmer	24/06/2013			B
NM69316525		black darter	06/08/2013	B		A	
NM69236535		blue-tailed damselfly	24/06/2013	C		B	
NM69236535		common blue damselfly	24/06/2013	C		A	
NM69236535		common blue damselfly	06/08/2013	A			
NM69316525		common darter	24/06/2013	A			
NM69316525		common darter	06/08/2013	A			
NM69236535		emerald damselfly	24/06/2013			D	
NM69236535		emerald damselfly	06/08/2013	C	C		
NM69316525		four-spotted chaser	24/06/2013	A		A	A
NM69316525		four-spotted chaser	06/08/2013			C	
NM69316525		golden-ringed dragonfly	24/06/2013	B		B	

	NM69236535	large red damselfly	24/06/2013	B	A		
	NM69236535	large red damselfly	06/08/2013		C		
Lochan na Bracha	NM69886519	black darter	06/08/2013	C	B		
	NM69886519	blue-tailed damselfly	24/06/2013	B	A		
	NM69886519	blue-tailed damselfly	06/08/2013	A	B		
	NM69886519	common blue damselfly	24/06/2013	B	A	A	
	NM69886519	common darter	24/06/2013		B		
	NM69886519	emerald damselfly	24/06/2013		C		
	NM69886519	emerald damselfly	06/08/2013	C		A	
	NM69886519	four-spotted chaser	24/06/2013		C	C	
	NM69886519	four-spotted chaser	06/08/2013		B		
	NM69886519	golden-ringed dragonfly	06/08/2013	A			
	NM69886519	large red damselfly	24/06/2013	B	A		
	NM69886519	large red damselfly	06/08/2013		C		
Lochan na Bracha NW bog	NM6944465485	four-spotted chaser	24/06/2013	B			
	NM6944465485	golden-ringed dragonfly	24/06/2013	B			
	NM6944465485	northern emerald	24/06/2013	1		3	11
	NM6944465485	northern emerald	06/08/2013			4	
Lochan na Bracha ridge pool	NM6973965104	common hawk	06/08/2013		B		
	NM6973965104	four-spotted chaser	06/08/2013		B		
Lochan na Dunaich	NM69206465	black darter	05/08/2013		C		
	NM69206465	blue-tailed damselfly	25/06/2013	B			
	NM69206465	common darter	25/06/2013	B	A		
	NM69206465	common darter	05/08/2013		B		
	NM69206465	emerald damselfly	25/06/2013		C		
	NM69206465	emerald damselfly	05/08/2013	C			
	NM69206465	four-spotted chaser	25/06/2013		B	A	
	NM69206465	four-spotted chaser	05/08/2013		B		
	NM69206465	golden-ringed dragonfly	25/06/2013		B		
	NM69206465	large red damselfly	25/06/2013	C	B	D	
	NM69206465	large red damselfly	05/08/2013	E			
Salen Woods West	NM6864464953	common hawk	26/06/2013	A			
	NM6856064967	four-spotted chaser	26/06/2013	B			
	NM6892264930	golden-ringed dragonfly	26/06/2013	B			
	NM6856064967	northern emerald	26/06/2013	2			
	NM6841164966	northern emerald	26/06/2013	1			
	NM6843365007	northern emerald	26/06/2013	1			
	NM6864464953	northern emerald	26/06/2013	2			
	NM6892264930	northern emerald	26/06/2013	1			
Salen Woods West old bobbin Mill pool	NM6892264930	emerald damselfly	26/06/2013		A		
	NM68536483	four-spotted chaser	26/06/2013	C			
	NM68536483	golden-ringed dragonfly	26/06/2013	B	A		
	NM68536483	large red damselfly	26/06/2013	B			
	NM68536483	northern emerald	26/06/2013	3	1		
Sunart bog pool near Wildlife Hide Car Park	NM7431162362	northern emerald	26/06/2013			1	

Key for numbers seen: A = 1, B = 2-5, C = 6-20, D = 21-100 (British Dragonfly Society recording format)

Ad: adult, co: pair in tandem, cop: pair in copula, la: larva, ex: exuvia.

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