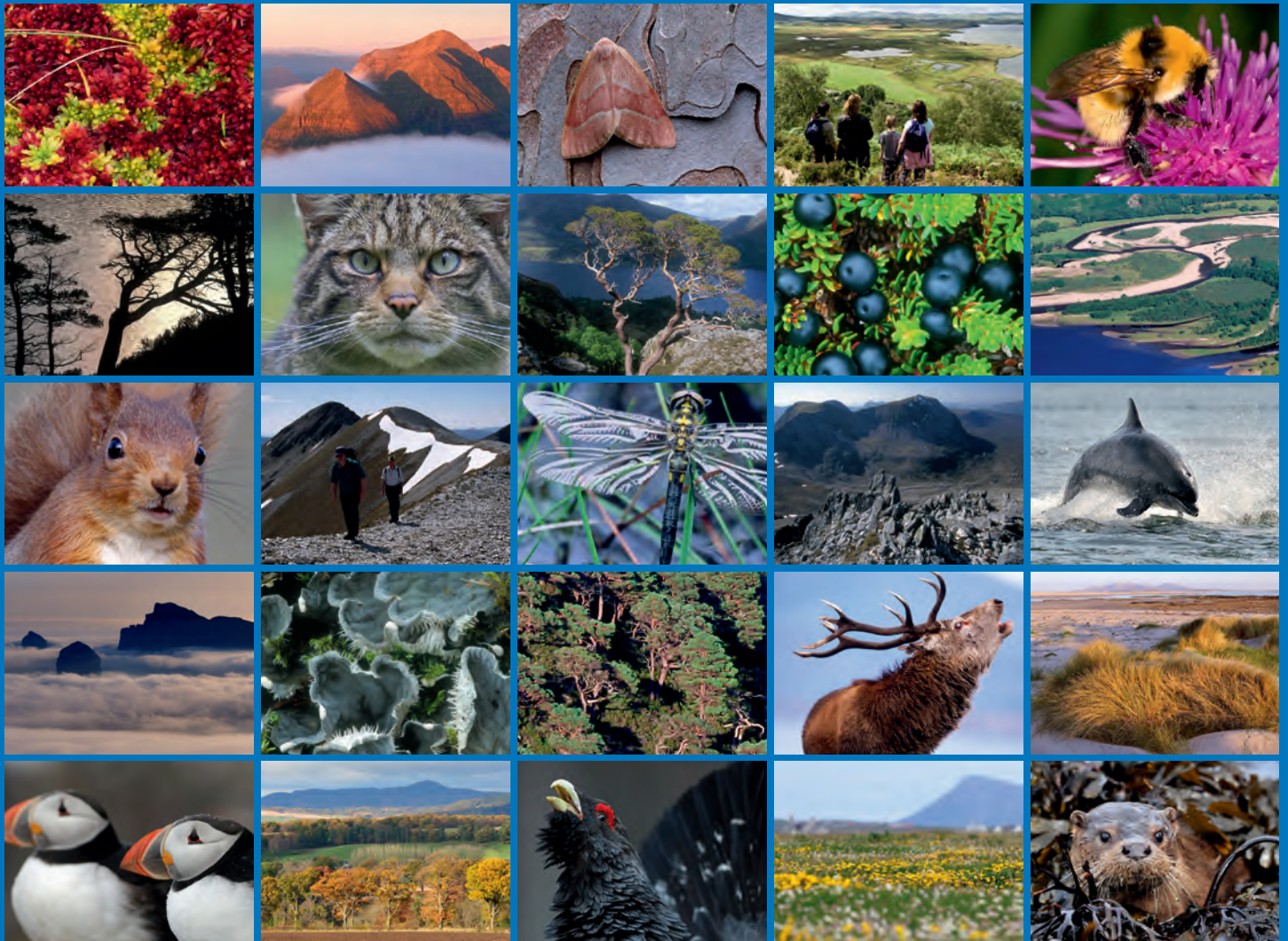


# Site Condition Monitoring of invertebrates at Jedwater Woodlands SSSI





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# COMMISSIONED REPORT

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**Commissioned Report No. 706**

## **Site Condition Monitoring of invertebrates at Jedwater Woodlands SSSI**

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# COMMISSIONED REPORT

# Summary

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## Site Condition Monitoring of invertebrates at Jedwater Woodlands SSSI

**Commissioned Report No.: 706**

**Contractor: K.N.A. Alexander**

**Year of publication: 2014**

### Background

Site Condition Monitoring (SCM) is a six year rolling programme of assessment, against quality standards, of the state of the notified features. This document reports on a contract established to carry out SCM at Jedwater Woodlands SSSI during 2013.

### Main findings

- Twenty-two species of saproxylic beetle were identified, including one nationally scarce, a false darkling beetle *Orchesia minor*, and nine uncommon or local species.
- The first report from Roxburghshire vice county for the hairy fungus beetle *Pseudotriphyllus suturalis* (Mycetophagidae), which is scarce in Scotland.
- The uncommon southern beetle named in the SSSI citation, the oak bark beetle *Dryocoetes villosus*, was also found.
- While only one of the previously reported key species was found, the visit did add eight uncommon or local species to the list, demonstrating that this site remains under-recorded for its rich fauna.
- The Bidden Cleugh and the southern part of the Mossburnford compartments were assessed as 'favourable-maintained' for the beetle assemblage feature, but the northern part and the Sunnybrae compartments were assessed as 'unfavourable-declining', due to poor habitat availability in the mature beech areas and tree planting on the oak wood pasture area on Pykit Hill, Sunnybrae.

Management actions identified are:

Sunnybrae compartment: consider thinning out new oak plantings in southern area to promote lateral branch development in young trees and protect existing lateral branches of older trees from crown competition; consider restoring controlled grazing in the southern oak area once young oaks are established as this will help to maintain structural variety (closed canopy is undesirable for the beetle assemblage); leave beech wood to decay in situ.

Mossburnford compartment: leave beech wood to decay in situ.

Bidden Cleugh: Retain present approach, effectively minimal intervention.

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## **Acknowledgements**

Athayde Tonhasca set up the contract and provided a summary compilation of invertebrate data for the site. Denise Exton arranged access permission with the landowners.

## 1. SITE DESCRIPTION

Jedwater Woodlands SSSI has been designated for its upland oak woodland habitat and its beetle assemblage. The site is located on steep slopes of the Jed Water valley; the site location suggests that it has been little modified or disturbed in the past. The woodland is ancient, with known historical continuity from the old Jed Forest, and this is reflected in the presence of various saproxylic beetles that are scarce in Britain as a whole, as well as species close to their northern limits and hence scarce in Scotland, including *Dryocoetes villosus*. However the citation mistakenly names some common and widespread beetle species as indicator species. The designated site comprises three well-separated compartments of woodland along the steep river-cliffs of the Jed Water valley: Sunnybrae (northern), Mossburnford (central) and Bidden Cleugh (southern).

According to the Site Management Statement (16 June 2010), the land is managed for game rearing and shooting. Due to the steep nature of the slopes, the site remains relatively undisturbed, although areas are used for recreation. The old Forest of Jed passed into private ownership in the 18th century and most was felled. The remaining areas on steep slopes are protected from exploitation. Some of the more accessible areas were replanted with beech. New planting of oak in the open areas of the southern part of Sunnybrae compartment took place approximately 5 years ago.

## 2. SUMMARY OF KNOWN INVERTEBRATE INTERESTS

The beetle fauna of the old Jed Forest area was first investigated by Roy Crowson of Glasgow University on the recommendation of the Nature Conservancy Council which was in the process of designating some of the local woodlands as the Jedwater Woodlands SSSI. He spent the best part of two days in the woodlands at Mossburnford – the central of the three subsequently notified compartments - on 6 June and 30 July 1980 (Crowson, 1983). He discovered six saproxylic beetle species which have subsequently been assessed as nationally scarce in Britain as well as six uncommon or local species, mostly saproxylic (Table 1). He regarded this fauna as one of 'primary' woodland.

Table 1 - Saproxylic beetles at Jedwater Woodlands SSSI

Species	British status	Main habitat associations
<i>Aplocnemus nigricornis</i>	NS	Aerial dead branches
<i>Tetratoma ancora</i>	NS	Aerial dead branches
<i>Microscydmus nanus</i>	NS	Decaying wood debris
<i>Ptinus subpilosus</i>	NS	Tree cavities
<i>Acalles roboris</i>	NS	Dead twigs
<i>Acalles ptinoides</i>	NS	Dead twigs
<i>Nargus anisotomoides</i>	Local	Decaying wood and leaf litter
<i>Sphaerosoma piliferum</i>	Local	Fungi fruiting on decaying wood
<i>Acalles misellus</i>	Local	Dead twigs
<i>Orthocis alni</i>	Local	Aerial dead branches
<i>Cerylon ferrugineum</i>	Local	Under bark on deadwood
<i>Sinodendron cylindricum</i>	Local	Dead trunks and large branches

I gained further knowledge of the invertebrate fauna of the SSSI through a rather superficial exploration of part of the northern compartment, Sunnybrae, on 23 May 1999. Uncommon or local saproxylic species then were the crane fly *Dicthenidia bimaculata*, the oak bark beetle *Dryocoetinus villosus*, the beetle *Rhizophagus ferrugineus* and the bark bug *Xylocoris cursitans*. The crane fly and the oak bark beetle are known from very few sites in Scotland. These discoveries are very much consistent with Crowson's findings.

There appears to be no information available on the fauna of the southern compartment, Bidden Cleugh.

According to the Site Management Statement (June 2010), the beetle assemblage was assessed as 'favourable-maintained' in June 2003.

### 3. DESCRIPTION OF METHODOLOGY

#### 3.1 General considerations

Drake *et al.* (2007) provided a detailed review of the survey requirements for condition assessment of saproxylic invertebrate assemblages. The recommended standard approach is to make a series of visits across the field season. During each visit a variety of niches as wide as possible should be investigated by standard techniques of beating, sweeping and panning, supplemented by direct observation, to disclose an adequate range of species in the assemblage. Repeat visits will allow the operation of specialist trapping devices that may be needed for the more elusive species.

Many invertebrates are highly seasonal because of largely annual life cycles. Identification generally requires the adult stage, which can be available for periods as short as weeks. Ideally, therefore, invertebrates should be sampled across the season to enable detection of a wide variety of the resident species and to generate a reliable assessment of site conservation value. The standard for site assessment is a minimum of three visits, covering the late spring, high summer and autumn activity peaks (Drake *et al.*, 2007).

The basic features that need to be investigated are:

1. Large old trunks of living trees, especially those in well-lit sunny areas, to be investigated for the following: active insects that may be captured by netting, panning or sieving of wood mould accumulations in the base of cavities; sap-runs or other wet fluxes for visible insects and collecting larvae for rearing; exit holes that may provide clues to the identity of the inhabitants, such as shape and size; rot-holes, searching for adult insects and larvae in the wet debris; white-rotten or red-rotten wood in the trunk.
2. Aerial dead branches on living trees sampled by tapping them over a net. High summer and autumn are important times of the year for the specialist beetles. Sections of decayed branch can be taken away for rearing purposes.
3. Aerial live branches sampled by beating them over a net to capture resting/sheltering adult stages.
4. Standing dead trunks sampled as for live trunks, but generally with better access to decay and cavities. Dead trunks will attract more warmth-loving species than live trunks.
5. Fallen trunks and boughs sampled by general investigation, breaking them into loose and soft material and turning them over - where feasible - to inspect the more moist undersides.
6. Fruiting fungi inspected directly, tapping them over a net, inspecting insect exit holes, breaking open a representative sample to check for larvae that may be taken and reared to adult stages.
7. Blossoms, by beating a representative sample of flowering trees and shrubs in late spring and early summer in search for nectaring adult insects.
8. Surrounding habitat by sweep-netting low over the field layer and beneath the foliage.

Ideally the site to be assessed should be divided into four units and an hour and a half spent surveying each.

The surveyor must have expertise in the saproxylic insects known from the site. An inexperienced surveyor may well find very little in a rich site.

### **3.2 The 2013 SCM survey**

The funding available for Site Condition Monitoring for invertebrate features in 2013 was insufficient to enable more than one visit, which was carried out on 27 July 2013 – the day proved to be notably warm and dry; the car thermometer was reading 24°C. The date was selected as being suitable for a wide range of the known species of interest, although too late for the spring species *Aplocnemus nigricornis* and too early for any autumnal species.

#### 4. EVALUATION OF SITE CONDITION

Twenty-two species of saproxylic beetle were identified from the sampling, including one of nationally scarce status and nine uncommon or local species. The GB nationally scarce species is a false darkling beetle *Orchesia minor*, found in the southern half of the Mossburnford compartment. The hairy fungus beetle *Pseudotriphyllus suturalis* (Mycetophagidae), recently re-assessed as nationally scarce (Alexander *et al.*, in press), was found in the Bidden Cleugh compartment. This species is scarce and at the northern edge of its range in southern Scotland; this appears to be the first report from Roxburghshire vice county. The uncommon southern beetle named in the SSSI citation, the oak bark beetle *Dryocoetes villosus*, was also found in this compartment. While only one of the previously reported key species was found, the visit did add a further eight uncommon or local species to the list, demonstrating that this site remains under-recorded for this rich fauna.

Bidden Cleugh was the most notable compartment. It has a substantial number of mature, veteran oak and ash trees. The largest oak encountered has a girth of 4.5 m, while the largest ash noted had a 2.5 m girth. The presence of so many wide girth trees - and the deadwood they generate - makes this an especially valuable area for saproxylic invertebrates. The range of heartwood-decay fungi is also an important factor; the brown or red-rot species *Laetiporus sulphureus* and *Fistulina hepatica*, as well as the white-rot species *Inonotus dryadeus* and *Ganoderma australe* were all present in the oaks.

The most notable beetle species was the hairy fungus beetle *Pseudotriphyllus suturalis*, which was found in large numbers at the fresh fruiting body of chicken-of-the-woods *Laetiporus sulphureus* on a split oak trunk towards the northern end of the compartment. Recently fallen oak branches and stems had been colonised by oak bark beetles *Dryocoetes villosus* in thicker stem bark and *Scolytus intricatus* in thinner barked branches. The uncommon or local saproxylic beetles *Cerylon histeroides* and *Anisotoma humeralis* were also found. This compartment is very clearly in 'favourable-maintained' condition for beetles and especially saproxylics. Mature oaks continue northwards - outside the SSSI - along the steep banks towards the Mossburnford compartment.

The Mossburnfoot compartment comprises two very different areas; the central and northern park which is partly crossed by a public path to Jacob's Ladder and the less accessible southern end. The southern section is more low-lying and is crossed by streams and seepages. It has some notably large old oak standards and hazel stools. The largest oak noted has a girth of 3.3 m. The nationally scarce beetle *Orchesia minor* was found here on aerial dead stems of hazel, and the uncommon beetle *Pocadius ferrugineus* on old decayed bracket fungus *Polyporus squamosus* from a lying rotting tree trunk. This beetle is not saproxylic but develops in puffballs and related fungi. The ancient woodland mollusc brown snail *Zenobiella subrufescens* was also present in this area.

The central section is dominated by mature beeches on a high plateau above the river, with a few mature oak and ash. The steep slopes below have some veteran oaks of open-grown form. Very little dead and decaying wood could be found, and it seems possible that deadwood is being removed from this area. Sweep-netting demonstrated that the uncommon soldier beetle *Malthodes mysticus* occurs here in large numbers. *Zenobiella subrufescens* is also present. The southern area is clearly 'favourable-maintained' but the main extent of this compartment was assessed as 'unfavourable-declining' as deadwood appears to have been cleared away.

The Sunnybrae compartment also comprises two different areas. The southern Pykit Hill section is notable as a concentration of mature and veteran oaks of open-grown and semi-open-grown forms. Very little deadwood could be found here, and again removal is

suspected. The few recently fallen oak branches contained the uncommon beetles *Scolytus intricatus* and *Cerylon ferrugineum*. Sweep-netting revealed the presence of the localised barkfly *Caecilius fuscopterus*, a characteristic species of ancient oak woods. This area of old wood pasture has recently been fenced out from the adjoining pastures and planted with young oak at about 2 m spacing. This will be damaging to the saproxylic beetle interests in the long term, as structural variety will be lost, especially the important lateral branch development. The central section of this compartment is dominated by mature beeches which are currently producing very little deadwood. This whole compartment was assessed as 'unfavourable-declining', partly due to the loss of wood pasture structure on Pykit Hill and partly due to the lack of habitat in the beech stand.

## **5. SITE MANAGEMENT RECOMMENDATIONS**

Sunnybrae compartment:

- Consider thinning out new oak in southern area in order to promote lateral branch development and to protect existing lateral branches of older trees from crown competition as the young trees mature.
- Consider restoring controlled grazing in southern oak area once the young oaks are established; this will help to maintain structural variety – closed canopy is undesirable for the beetle assemblage.
- Leave beech stands to develop and decay in situ.

Mossburnford compartment:

- Leave beech stands to develop and decay in situ.

Bidden Cleugh:

- Retain present approach, effectively minimal intervention.

## 6. REFERENCES

Alexander, K.N.A., Dodd, S. & Denton, J.S. In press. A review of the scarce and threatened beetles of Great Britain. Aderidae, Anthicidae, Colydiidae, Melandryidae, Meloidae, Mordellidae, Mycetophagidae, Mycteridae, Oedemeridae, Pyrochroidae, Pythidae, Rhiphoridae, Salpingidae, Scraptiidae, Tenebrionidae & Tetratomidae (Tenebrionoidea less Ciidae). *Natural England Research Reports*.

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## ANNEX A: INVERTEBRATES AT THE SITE'S THREE COMPARTMENTS

Group	Family	Species	Bidden	Mossburnford	Sunnybrae	
Coleoptera	Anobiidae	<i>Anobium punctatum</i>		+		
		<i>Ptilinus pectinicornis</i>	+	+	+	
	Cantharidae	<i>Malthodes mysticus</i>			+	
		<i>Rhagonycha fulva</i>	+		+	
	Cerambycidae	<i>Rhagium mordax</i>	+		+	
	Cerylonidae	<i>Cerylon ferrugineum</i>	+		+	
		<i>Cerylon histeroides</i>	+			
	Cryptophagidae	<i>Cryptophagus dentatus</i>	+			
	Curculionidae	<i>Coeliodes rana</i>	+			
		<i>Otiorhynchus singularis</i>		+	+	
		<i>Rhynchaenus fagi</i>			+	
		<i>Agriotes pallidulus</i>		+	+	
	Latridiidae	<i>Aridius nodifer</i>	+			
	Leiodidae	<i>Anisotoma humeralis</i>	+			
	Melandryidae	<i>Orchesia minor</i>		+		
	Mycetophagidae	<i>Pseudotriphyllus suturalis</i>	+			
	Nitidulidae	<i>Pocadius ferrugineus</i>		+		
	Salpingidae	<i>Rhinosimus planirostris</i>			+	
	Scolytinae	<i>Dryocoetes villosus</i>	+			
		<i>Scolytus intricatus</i>	+		+	
Staphylinidae		<i>Gabrius splendidulus</i>		+		
		<i>Megarthritis sinuatocollis</i>		+		
Diptera	Psilidae	<i>Loxocera sylvatica</i>			+	
	Rhagionidae	<i>Rhagio lineola</i>			+	
Heteroptera	Miridae	<i>Bryocoris pteridis</i>		+	+	
		<i>Monalocoris filicis</i>		+	+	
		<i>Plagiognathus arbustorum</i>			+	
Psocoptera	Caeciliusidae	<i>Caecilius fuscopterus</i>			+	
	Ectopsocidae	<i>Ectopsocus petersi</i>			+	
	Elipsocidae	<i>Elipsocus hyalinus</i>		+	+	
	Peripsocidae	<i>Peripsocus milleri</i>			+	
	Stenopsocidae	<i>Stenopsocus immaculatus</i>		+	+	
Diplopoda	Blaniulidae	<i>Proteroiulus fuscus</i>	+			
	Julidae	<i>Cylindroiulus punctatus</i>	+			
Oniscidea		<i>Oniscus asellus</i>	+	+	+	
		<i>Philoscia muscorum</i>			+	
		<i>Porcellio scaber</i>	+		+	
Mollusca		<i>Clausilia bidentata</i>	+		+	
		<i>Discus rotundatus</i>	+			
		<i>Lehmannia marginata</i>	+			
		<i>Oxychilus alliarius</i>	+	+		
		<i>Zenobiella subrufescens</i>		+		

## ANNEX B: IMAGES

Tree-planting amongst open-grown oaks on Pykit Hill, Sunnybrae, a threat to the older trees in the long term



Uncommon oak bark beetle *Dryocoetes villosus*



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