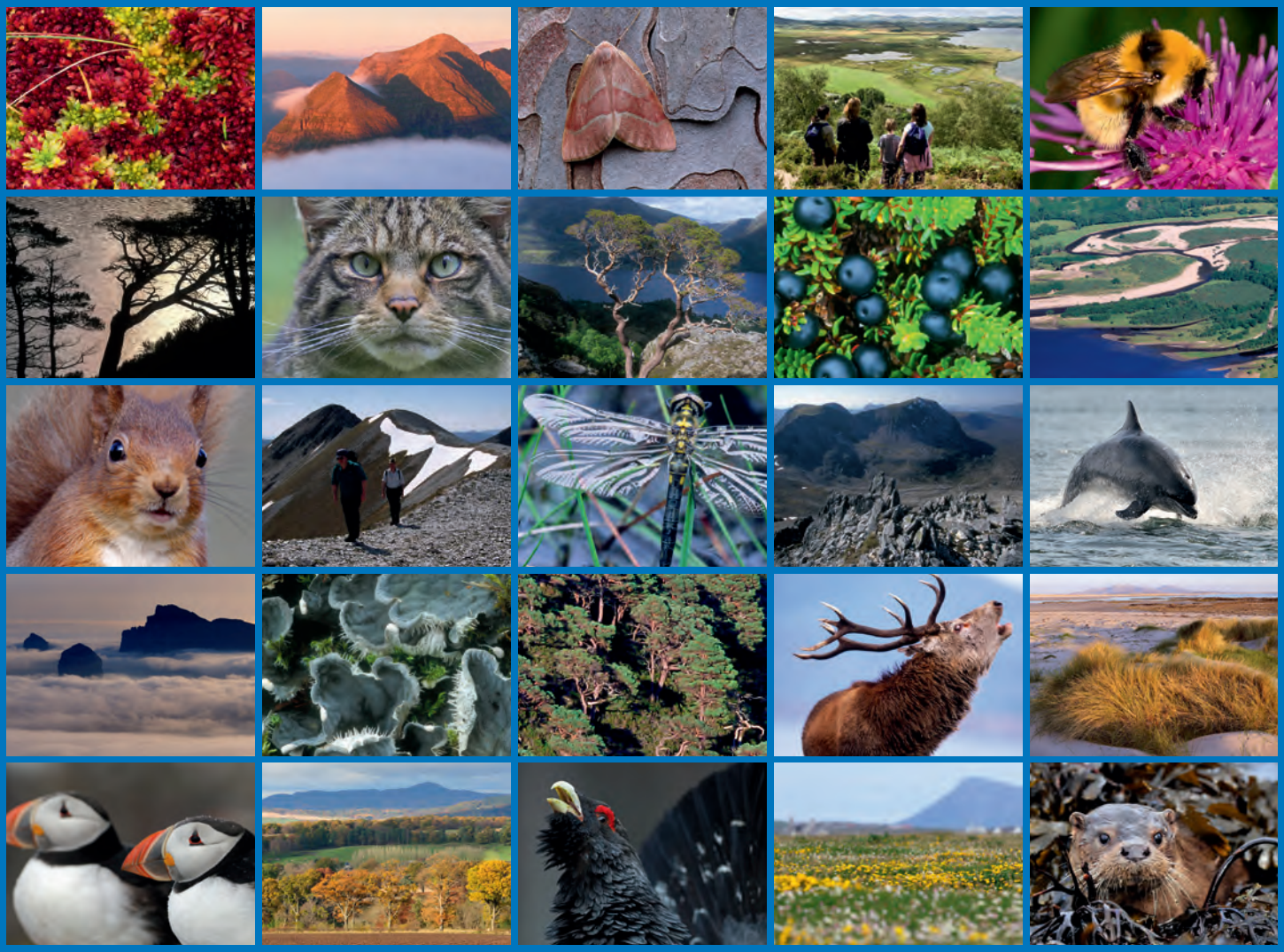
Scottish Natural Heritage
Commissioned Report No. 638

Site Condition Monitoring of invertebrates at Loch Moidart SSSI



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COMMISSIONED REPORT

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Site Condition Monitoring of invertebrates at Loch Moidart SSSI

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COMMISSIONED REPORT

Summary

Site Condition Monitoring of invertebrates at Loch Moidart SSSI

Commissioned Report No.: 638
Contractor: K.N.A. Alexander
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Background

Loch Moidart SSSI has been designated for its structural and metamorphic geology, coastal mudflat and saltmarsh, upland oak woodland, and for its population of the rare cardinal beetle *Schizotus pectinicornis*.

Site Condition Monitoring (SCM) is a six year rolling programme of assessment of the state of the notified features. This document reports on a contract established to carry out invertebrate SCM on this site during 2013.

Main findings

- Larvae of the cardinal beetle were found beneath bark on a fallen oak stem in the An Dun area of the woodlands on the north side of the loch.
- An interesting range of other invertebrates characteristic of ancient woodland and wood pasture were also found, including the Scottish rarity *Brachypalpus laphriformis.*
- Condition assessment should be: Favourable - maintained.

Management issues identified are the need to:

- Maintain areas with open structure within the woodlands through controlled grazing or cutting, as the adults of the wood-decay insects are sun-loving.
- Continue to retain standing and fallen deadwood across the woodlands.
- Consider the value of beech and sycamore in providing deadwood habitats rather than automatically eliminating them for debatable reasons of native status.

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Table of Contents **Page**

Acknowledgements

Athayde Tonhasca set up the contract and provided a summary compilation of invertebrate data for the site. Dominic Sargent and Corrina Mertens arranged access permission with the land-owners. Thanks also to Mrs Nino Stewart for permission to explore the Kinlochmoidart woodlands and for her interest in the survey work.

1. SITE DESCRIPTION

The Loch Moidart SSSI is dominated by Loch Moidart itself which is one of only two shallow sea lochs with tidal mudflats in Lochaber. Around the loch and on Shona Beag, an island in the loch's mouth, there are extensive coastal acid oakwoods which support nationally scarce invertebrates including the cardinal beetle (*Schizotus pectinicornis*).This develops beneath the bark on fallen stems of broad-leaved trees and shrubs within the first year or two following death. It was discovered in these oak woods in 1973 and was again noted in 1983. The size of the fallen stems required for larval development has not been documented.

2. SUMMARY OF KNOWN INVERTEBRATE INTERESTS

Schizotus pectinicornis larvae were discovered in numbers under the bark of dead oak branches in the wood “above Kinlochmoidart Post Office” in June 1973 (Skidmore, 1979). It was found here again by I.M. White in June 1983. Although the site was assessed as ‘favourable maintained’ in 1999, this was based solely on the presence of deadwood, without any understanding of whether that deadwood was in suitable condition for the beetle. Another nationally scarce saproxylic beetle was also found here by I.M. White in 1982, the weevil *Rhopalomesites tardii*. These records all derive from the northern shore oak woods westwards from Kinlochmoidart.

This cardinal beetle is known in Britain from two distinct populations in sub-montane districts: the Scottish Highlands, from Skye to Dee-side; and the Breconshire-Radnorshire area of south Wales, extending into neighbouring areas of Herefordshire and Carmarthenshire. They also occur in montane and sub-montane environments on continental Europe. The larvae develop under bark in trunks and large branches of recently dead birch (*Betula*), oak (*Quercus*), willow (*Salix*) and alder (*Alnus*) stems, and probably any broad-leaved tree or shrub may be suitable. They are opportunistic foragers, taking plant and fungal matter. Sites include woodlands and wooded stream-sides, even spreading up into sparsely wooded areas. Its GB status has recently been revised to ‘nationally rare’. The adults are active in June but larvae may be found all year round.

The site's fauna includes two mollusc species characteristic of ancient woodlands, *Leiostyla anglica* and *Spermodea lamellata.*

The woodlands are also known to be of significant interest for butterflies, notably the rare chequered skipper (*Carterocephalus palaemon*). The Invertebrate Site Register notes this butterfly from a number of locations through the northern oakwoods in 1990 and a single record from the Ardmolich area - at the inland end of the SSSI - in 1982. It was seen in numbers by the author in the woods on the southern side of the loch, along The Silver Walk, in 2011, along with pearl-bordered fritillary (*Boloria euphrosyne*) and green hairstreak (*Callophrys rubi*).

3. DESCRIPTION OF METHODOLOGY

The date selected for the visit was 1 July 2013, when larvae could be found although possibly too late in the season for adults. Conditions were bright and sunny, although there had been heavy rainfall earlier; the car thermometer was reading 11°C – a remarkably cool day for the time of year.

With the target species having been reported from the Kinlochmoidart end of the northern oakwoods, the survey strategy was to firstly walk from the public car park by St Finan's Church (NM710727) eastwards along the lower edge of the woodlands, towards KInlochmoidart House. Sampling took place along this path and with a series of forays upslope, searching standing and fallen deadwood for larvae and adults by hand and using a sweep-net to sample fauna from ground vegetation where adults might also be present.

Following this exploration much of the rest of the survey time was spent along the public path through the woods from near the disused KInlochmoidart Jetty (NM694729) westwards up across An Dun (NM681737) – this appears to be an old pack-horse route, with cobbled sections and stone-reinforced banks along steeper ascents.

Finally the track down through Kylesmore to the ford across to Shona Beag was visited but the weather deteriorated dramatically and fieldwork had to be abandoned.

4. EVALUATION OF SITE CONDITION

The lower boundary of the SSSI between the Church and Kinlochmoidart House was found to be deer-fenced, with no obvious crossing points. Survey had necessarily to be confined to the area immediately below the designated site. Fortunately freshly dead oak stems and sawn logs were found to be frequent along these slopes, including oaks which had originated within the SSSI, following a recent severe windstorm. The associated saproxylic (wood decay) invertebrate fauna was found to be of moderate quality, including the uncommon or local species *Quedius plagiatus*, *Agathidium nigripenne* and *Cerylon ferrugineum*. The old growth slug *Limax cinereoniger* was also noted.

An avenue of veteran oaks is an especially interesting feature at the base of the slopes, and a single male example of the nationally scarce old growth hoverfly *Brachypalpus laphriformis* was seen on an oak stump here. This species develops in rot-holes in veteran broad-leaved trees, and it is especially noted from the more heavily wooded districts of central southern and south-eastern England. There has only ever been one previous sighting in Scotland, Methven Wood near Perth in 2010 (Ball *et al.*, 2011). Sweep-netting beneath these trees additionally found the ancient woodland associated brown snail *Zenobiella subrufescens* and the nationally scarce soldier beetle *Malthodes pumilus*. There are notably few records of the latter from Scotland, although its small size means that it has probably been overlooked. It is most associated with sites with concentrations of veteran trees.

The old packhorse path which cuts up through the woods to An Dun also gave access to some valuable habitat for saproxylic invertebrates. The oaks are mostly of relatively small size, with standards achieving little more than 2 m girth at breast height, but fallen trunks and branches at various stages of decomposition were found scattered throughout. No recent signs of chainsaw activity were noted. The associated saproxylic fauna was found to be relatively species-poor but two larvae of the scarce cardinal beetle *Schizotus pectinicornis* were finally located beneath bark on a large wind-blown oak branch towards the western end of the path – the branch was 38 cm in diameter. Other saproxylic species found in this section of the woodlands included the nationally scarce false darkling beetle *Orchesia minor* (Melandryidae) and the uncommon or local beetle *Cerylon ferrugineum* and the hoverfly *Sphegina clunipes*. A single specimen of the click beetle *Paraphotistus impressus* was also found close to the spot with the cardinal larvae – this nationally scarce species has a northern distribution in Britain and is thought to develop in woodland soils.

It is very clear that these woodlands are of significant interest for saproxylic invertebrates in general, not just for the scarce cardinal beetle, and that ancient woodland molluscs are also a particular interest. The re-discovery of the scarce cardinal beetle, after a 30 year gap in the records, indicates that the SSSI should be considered to be in 'favourable maintained' condition.

5. SITE MANAGEMENT RECOMMENDATIONS

No management issues appeared obvious to the surveyor during the exploration of the wooded northern slopes other than the need to continue to leave standing and fallen dead wood *in situ*. The recent chain-saw activity noted below the eastern end of the woods, above Kinlochmoidart House, presumably reflects the need to restore the deer-fenced section after the wind-blow event.

The 2010 Site Management Statement mentions a number of points about woodland structure that merit comment. The 'largely unbroken canopy' is not necessarily an important feature for invertebrates as the saproxylics in particular tend to have sun-loving adult stages and the regular collapse of trees and large branches is essential to their long-term survival here. Given that the woodlands are relatively dense, the lack of natural regeneration is not all surprising as oak and hazel are light-demanding species and will only regenerate if large areas of open ground are available close by. Beech and sycamore will provide as good quality wood-decay habitats for the invertebrates as oak and birch, and so their presence is not 'unfavourable' to fauna and does not imply 'declining condition assessment' for invertebrates.

The history of human activity in the area is also discussed, including 19th century use of the oakwoods for firewood and for charcoal production. This management appears to have been consistent with the conservation needs of the invertebrate fauna as the site remains of significant interest today. It is also worth noting that the landscaping associated with Kinlochmoidart House has also produced valuable habitat in the form of the avenue of veteran oak below the SSSI.

The SMS recommends that 'a reduction in grazing/browsing pressure would be beneficial' but the current levels appear to maintain good quality habitat for the special invertebrates. A reduction would be expected to increase canopy closure, which would be detrimental to those invertebrate interests. Overwintering of sheep and cattle has the potential for maintaining a diverse structure, including open-canopied areas, which would favour the special saproxylic invertebrate interest.

In conclusion, it is human use of these woodlands which has maintained the present invertebrate interest and it would be advisable to resist initiating any major changes. Much of the management discussion in the SMS actually reflects the prevailing hypothetical conservation management issues developed in the 20th century, and ecologists are now increasingly realising that controlled livestock grazing and other human activity is now required to maintain the special conservation interests of many woodlands. The key management issues are the continued retention of native broadleaves as the main canopy cover and the need to maintain structural variety, especially open areas. Livestock grazing and/or limited exploitation for timber can - and should - be part of this conservation plan.

6. REFERENCES

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Skidmore, P. 1979. Notes on some insects of the Glenfinnan area, Inverness-shire. *Entomologist's Monthly Magazine*, **114**, 118.

ANNEX A: LIST OF INVERTEBRATES

Group	Family	Species
Coleoptera	Cantharidae	*Cantharis cryptica*
		Malthinus flaveolus
		Malthodes fuscus
		Malthodes pumilus
		Rhagonycha lignosa
	Carabidae	*Ocys harpaloides*
	Cerylonidae	*Cerylon ferrugineum*
	Chrysomelidae	*Lochmaea suturalis*
		Luperus longicornis
	Ciidae	*Cis boleti*
	Curculionidae	*Ramphus pulicarius*
		Sciaphilus asperatus
	Elateridae	*Aplotarsus incanus*
		Athous haemorrhoidalis
		Dalopius marginatus
		Paraphotistus impressus
	Latridiidae	*Aridius nodifer*
	Leiodidae	*Agathidium nigripenne*
	Monotomidae	*Rhizophagus dispar*
	Pyrochroidae	*Schizotus pectinicornis*
	Scraptiidae	*Anaspis rufilabris*
	Staphylinidae	*Phloeonomus punctipennis*
		Quedius plagiatus
Diptera	Pipunculidae	*Cephalosphaera furcata*
	Rhagionidae	*Chrysopilus asiliformis*
		Chrysopilus cristatus
		Rhagio lineola
	Sciomyzidae	*Pelidnoptera fuscipennis*
	Syrphidae	*Brachypalpus laphriformis*
		Sphegina clunipes
Hemiptera	Delphacidae	*Ulopa reticulata*
	Miridae	*Pithanus maerkeli*
Psocoptera		*Graphopsocus cruciatus*
Oniscidea		*Oniscus asellus*
		Trichoniscus pusillus sensu lato
Diplopoda		*Cylindroiulus punctatus*
		Proteroiulus fuscus
Chilopoda		*Lithobius variegatus*
Mollusca		*Balea heydeni*
		Clausilia bidentata
		Lehmannia marginata
		Limax cinereoniger
		Zenobiella subrufescens

ANNEX B: IMAGES

Wind damage towards Kinlochmoidart House

Larva of scarce cardinal beetle photographed at Loch Moidart SSSI

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