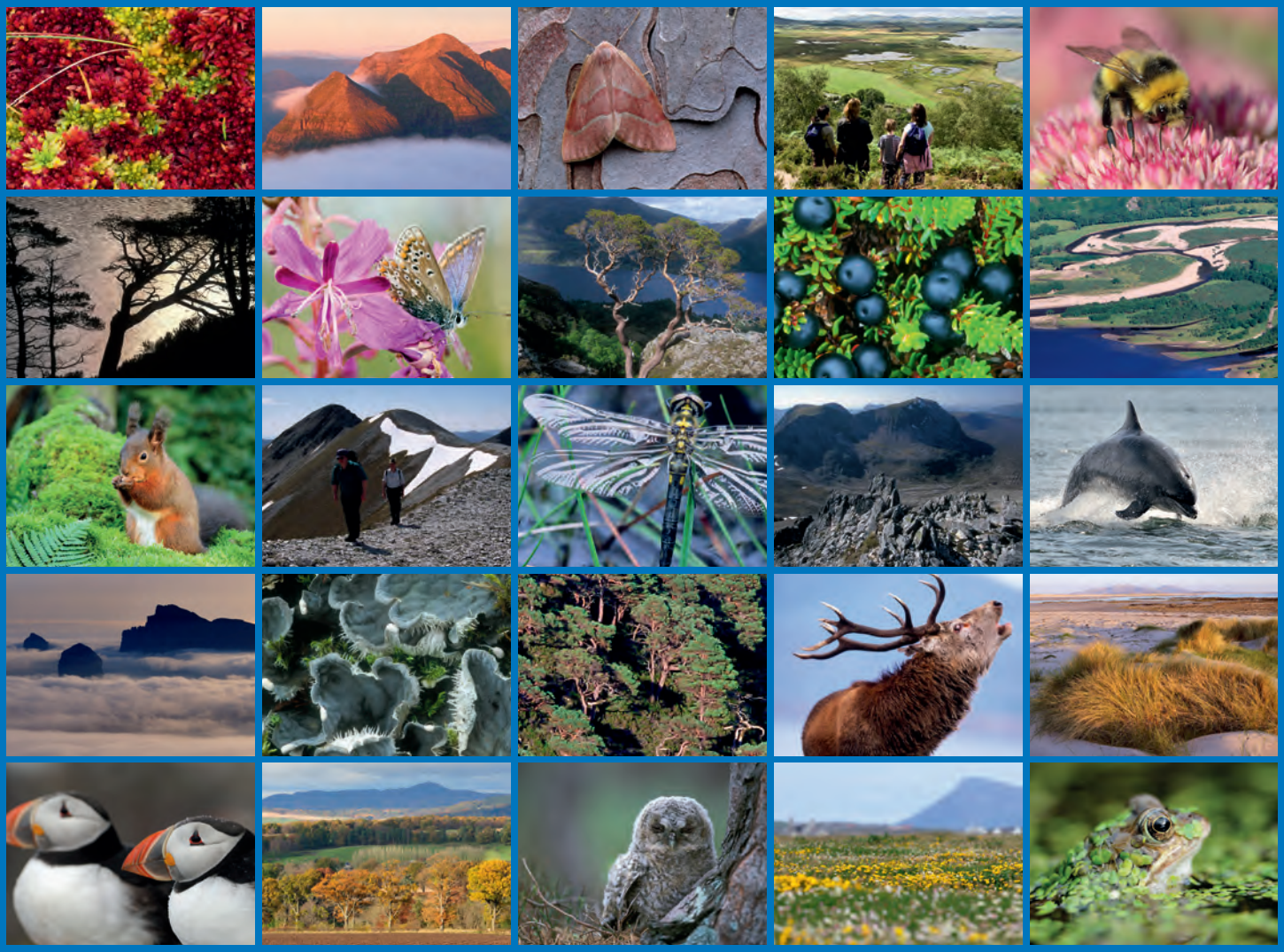
Scottish Natural Heritage
Research Report No. 1115

Site Condition Monitoring of beetle assemblage features at 11 designated sites in Scotland 2015



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RESEARCH REPORT

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Site Condition Monitoring of beetle assemblage features at 11 designated sites in Scotland 2015

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SCM Reports

This report was commissioned by SNH as part of the Site Condition Monitoring (SCM) programme to assess the condition of special features (habitats, species populations or earth science interests) on protected areas in Scotland (Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas and Ramsar). Site Condition Monitoring is SNH's rolling programme to monitor the condition of special features on protected areas, their management and wider environmental factors which contribute to their condition.

The views expressed in the report are those of the contractor concerned and have been used by SNH staff to inform the condition assessment for the individual special features. Where the report recommends a particular condition for an individual feature, this is taken into account in the assessment process, but may not be the final condition assessment of the feature. Wider factors, which would not necessarily be known to the contractor at the time of the monitoring, are taken into consideration by SNH staff in making final condition assessments.

RESEARCH REPORT

Summary

Site Condition Monitoring of beetle assemblage features at 11 designated sites in Scotland 2015

Research Report No. 1115
Project No: 113952
Contractor: Caledonian Conservation Ltd
Year of publication: 2020

Keywords

SCM; beetle assemblage; Coleoptera; aquatic; saproxylic; lochs; bogs; deciduous woodland; coniferous woodland

Background

This contract was set out to carry out site condition monitoring (SCM) of beetle assemblages at 11 Sites of Special Scientific Interest (SSSI) in Scotland, including the following outputs:

- To monitor the features specified.
- To produce datasets and reports for each site.
- To provide recommendations for future management of these features.

Main findings

We found the target notified features at one SSSI (Glen Tarff) and partly found features listed on the citation at four SSSIs (Merrick Kells, Ardgour Pinewoods, Fannich Hills and Maidens to Doonfoot). We did not find species listed on the citation of Rhidorroch Woods, Taynish Woods, Abbey Craig, Cragbank and Wolfehopelee, Minto Craigs and Tweedwood – Gateheugh.

The Nationally Scarce species *Saperda scalaris* and *Quedius xanthopus* were found at Cragbank and Wolfehopelee, *Nebria nivalis*, *Patrobus septentrionis*, *Cymindis vaporariorum* and *Geodromicus longipes* at Fannich Hills, *Oulimnius troglodytes* and *Pterostichus aethiops* at Merrick Kells, *Cis jacquemartii* at Tweedwood – Gateheugh, Ardgour Pinewoods and Glen Tarff, *Ropalondontus perforatus* at Glen Tarff and *Hydraena nigrita* at Maidens to Doonfoot.

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Acknowledgements

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1. INTRODUCTION

This report describes the site condition monitoring (SCM) undertaken in 2015 for selected beetle assemblage features at 11 Sites of Special Scientific Interest (SSSIs). Table 1.1 provides a summary of sites and features specified for survey as part of this project, and Figure 1.1 shows the geographic locations of the sites assessed in this report. Note that the features surveyed including their details were specified by SNH. However, it is evident that the approach to defining invertebrate features has not been consistent, and in some cases does not follow SSSI selection guidance (Bainbridge *et al*., 2013). A robust redefinition of invertebrate features was not within the remit of this work, however, a comprehensive review of all SSSIs is recommended. This will benefit site management and future SCM.

Table 1.1. Sites and features included in this project

Site	Feature	Details
Abbey Craig	Beetle assemblage	Saproxylic beetles
Ardgour Pinewoods	Beetle assemblage	Saproxylic beetles of pine and deciduous trees
Cragbank and Wolfehopelee	Beetle assemblage	Woodland and saproxylic habitat
Fannich Hills	Beetle assemblage	*Phratora polaris* (Chrysomelidae); *Eudectus whitei* (Staphylinidae: Omaliinae); *Bryophacis rugipennis* (Staphlyinidae: Tachyporinae); *Gonioctena pallida* (Chrysomelidae)
Glen Tarff	Beetle	*Bolitophagus reticulatus* (Tenebrionidae)
Maidens to Doonfoot	Beetle assemblage	*Tropiphorus elevatus* (Curculionidae: Entiminae); *Cercyon depressus* (Hydrophilidae); *Ochthebius lejolisii* (Hydraenidae)
Merrick Kells	Beetle assemblage	*Contacyphon kongsbergensis* (Scirtidae); *Hydroporus longicornis* (Dysticidae); *Enochrus ochropterus* (Hydrophilidae)
Minto Craigs	Beetle assemblage	Woodland habitat
Rhidorroch Woods	Beetle	*Microrhagus pygmaeus* (Eucnemidae)
Taynish Woods	Beetle assemblage	*Dendroxena quadricmaculata* (Silphidae); *Leptusa norvegica* (Staphylinidae); *Meloe violaceus* (Meloidae); *Ceutorhynchus parvulus* (Curculionidae: Ceutorhynchinae)
Tweedwood-Gateheugh	Beetle assemblage	Woodland habitat

Figure 1.1. Geographic locations of Sites of Special Scientific Interest assessed.

Caledonian Conservation Ltd assembled a team of surveyors experienced in carrying out fieldwork in challenging conditions (Table 1.2). We also had many contacts of people who are experts in their respective fields who provided essential information and advice during the project.

Table 1.2. Survey team

Surveyor	Groups
Chris Cathrine	Terrestrial Coleoptera
Glenn Norris	Terrestrial Coleoptera
Garth Foster	Aquatic Coleoptera
Niall Currie	Terrestrial Coleoptera

Names of the species mentioned in the text followed sources detailed in Table 1.3.

Table 1.3. Sources of species names used in text

Taxa	Source
Coleoptera	• Duff (2012a) • Foster & Friday (2011) • Foster, Bilton & Friday (2014)

Table 1.4 defines the rarity designations used in describing the conservation status of species recorded. Note that rarity designations do not indicate the reason for the inclusion of any given species as a SSSI feature – they are included here for context only.

Table 1.4. Invertebrate conservation status/rarity designations

Abbreviation	Designation	Definition
Annex II	Annex II	Species listed under Annex II of the Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, more commonly referred to as the EC Habitats Directive.
Schedule 5	Schedule 5	Species listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).
SBL	Scottish Biodiversity List	Included on the Scottish Biodiversity List. This list defines species and habitats which require special consideration under the Biodiversity Duty placed on public bodies by the Nature Conservation (Scotland) Act 2004 and Wildlife and Natural Environment (Scotland) Act 2011.
RDB1	Red Data Book 1	Endangered: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included are taxa which are known from a single location or only one 10 km square, taxa which occur in habitats known to be especially vulnerable, and taxa which have shown a continuous decline over the last 20 years and now exist in five or fewer 10 km squares (Shirt, 1987; Bratton, 1991).
RDB2	Red Data Book 2	Vulnerable: Taxa believed likely to move into the Endangered (RDB1) category in the near future. This includes taxa of which most or all populations are declining as a result of over-exploitation, extensive destruction of habitat or other environmental factors; taxa with populations that have been seriously depleted and whose ultimate security is not yet assured; and taxa with populations that may still be abundant but are under threat from serious adverse

Abbreviation	Designation	Definition
		factors throughout their range (Shirt, 1987; Bratton, 1991).
RDB3	Red Data Book 3	Rare: Taxa with small populations that are not at present Endangered (RDB1) or Vulnerable (RDB2), but are at risk. In the UK this is considered to be species which exist in 15 or fewer 10 km squares (Shirt, 1987; Bratton, 1991).
RDBK	Red Data Book K	Insufficiently Known: Taxa suspected to fall within categories RDB1, RDB2 or RDB3 but which are data deficient and so cannot be assigned to other Red Data Book categories with confidence (Shirt, 1987; Bratton, 1991).
NS	Nationally Scarce	Recorded in 16-100 10 km squares since January 1 1980. Nationally scarce replaces the Nationally Notable A (Na) (recorded in 16-30 10 km squares since 1 January 1980) and Nationally Notable B (Nb) (recorded in 31-100 10 km squares since 1 January 1980) designations.

All photos are provided in the Annex 1. Full details of records for each site are provided in the Annex 2.

2. METHODS

As the study involved the survey of a wide range of Coleoptera taxa, we employed a variety of sampling techniques. General descriptions of survey techniques are provided below, and details of our site specific survey designs are provided in the individual site accounts. Sample locations were recorded with handheld GPS units and then digitised with ArcGIS 10 for the production of accurate maps.

2.1 Desk study

Prior to fieldwork, we identified existing records wherever possible using a variety of sources, including the aquatic Coleoptera recording scheme for Britain and Ireland, the National Biodiversity Network (NBN), additional datasets managed by national Recording Schemes and Societies and professional contacts. In some cases it was necessary to go through paper files held by SNH area offices to try to find the origins of some records, and to determine if SCM had been carried out previously. In many cases reports or records of previous SCM work were unavailable, and may not have been completed before.

Unless otherwise specified, 'historic' records refer to those collated from the full range of available sources indicated above.

2.2 Aquatic Coleoptera

We selected sampling points to represent the range of habitats available. At each point we worked an area of 2 m^2 with a D-framed net, mesh size 1 mm, and netted debris which was then sorted in the field. We identified and counted the majority of beetles in the field and returned them to the water. Specimens unidentifiable in the field were kept for confirmation and to act as vouchers. Each site was worked until no more species could be found (an "inventory sample").

2.3 Terrestrial Coleoptera

Specimens collected were identified on site or preserved in a 70% isopropanol and 30% water mixture.

Active searches
Appropriate microhabitats for targeted notified features were searched by hand. This involved 'grubbing' in the ground layer, overturning stones, and a range of equipment such as 'pooters', amongst other specific techniques as appropriate.

Saproxylic species were sampled using the guidelines outlined in Drake *et al.* (2007). This involved surveying a variety of niches within the arboreal habitat such as dead trunks, aerial deadwood, rot holes fruiting fungi and loose bark.

Pitfall traps
Randomly located transects of five pitfall traps (spaced by 2 m) were used. Each pitfall trap consisted of a plastic cup dug into the ground so that the lip was flush with the substrate surface. Chicken-wire was used to cover traps to prevent small vertebrates from becoming trapped, and was attached so as to ensure that it could not be dislodged if kicked or if the trap was dug up (e.g. by a badger or dog). A mixture of 70% antifreeze and 30% water was added to a depth of 2.5 cm in each trap, and a drop of washing-up liquid was used to break surface tension (Photo 2.1 – all photos are provided in the Annex 1). Propylene glycol antifreeze was used as it is less attractive and harmful to vertebrates than the sweet-smelling ethylene glycol antifreeze. Traps were left *in situ* for two weeks, then removed or reset.

Bark traps
We used bark traps to sample invertebrate species that live under tree bark and are normally difficult to collect. A trap consisted of two layers of plastic bubble wrap (40 x 40 cm), with bubbles facing each other so as to provide artificial 'bark' habitat. Dark plastic was used to cover the traps to keep out light, and they were wrapped around a tree with wire at 1.5 m height. Bark traps constructed from bubble wrap have been shown to be more effective than those with a corrugated cardboard base, another popular design (Isaia *et al.,* 2006). Traps were then left *in situ* for a minimum of four weeks to allow invertebrates to colonise this new habitat (Photo 2.2). Afterwards invertebrates between the traps and tree bark and between the bubble wrap layers were collected and the traps removed.

Sweep net transects
An area of 10 m^2 was swept with a robust net through vegetation, sampling a variety of micro-habitats.

Beating and bark brush sampling
A large, soft paint brush was used to dislodge invertebrates (particularly spiders and beetles) from bark into a tray held underneath. Trees or bushes were then gently beaten so as to dislodge further invertebrates into a white sheet at the base of the tree. Beating was also used in isolation on some occasions to dislodge invertebrates from young trees or bushes.

Bugvac
A modified leaf blower (Husqvarna 125BVX) was used to vacuum sample invertebrates from ground level. This has proven the most effective method of establishing the presence of species that live in less accessible micro-habitats such as the base of vegetation, or for small invertebrates which are often under-recorded by more traditional sampling techniques (Wilson *et al.*, 1993). For example, this method was very effective for detecting *Heliophanus dampfi,* which prefers the bases of *Molinia* and *Eriophorum* tussocks in lowland raised bog habitats (Cathrine, 2012). Each sample involved pressing the bugvac nozzle to the ground for 10 seconds at five points (Photo 2.3). Specimens were then emptied from the net into a white plastic tray and collected with forceps. All specimens were stored in tubes with labels giving details of the date, habitat and locality of the captures.

2.4 Lab identification

Wherever possible, specimens were identified in the field. If not, specimens were pinned or preserved in isopropanol for later identification in the lab with stereo- or compound-microscopes as appropriate. Voucher specimens were retained where appropriate. Where necessary, we compared specimens with museum collections to confirm identification. We focussed identification effort on the target taxa for notified features. However, non-target specimens were identified to species level as time allowed, providing a more comprehensive species list for the sites. Appropriate references were used in the identification of specimens (Table 2.1).

Table 2.1. References used for identification of specimens

Taxa	Identification references
Coleoptera	• Bieńkowski (2004) • Brendell (1975) • Duff (2012b) • Duff (2016) • Fitton & Eversham (2006) • Foster & Friday (2011) • Foster, Bilton & Friday (2014) • Hackston (2013, 2014, 2016) • Halstead (1963) • Hubble (2012) • Johnson (1966) • Joy (1932) • Kirk-Spriggs (1996) • Morris (1990, 1997, 2002, 2008, 2012) • Laibner (2000) • Levey (2009) • Lott (2009) • Lott & Anderson (2011) • Luff (2007) • Telfer (2013) • Unwin (1984)

3. SITE REPORTS

3.1 Abbey Craig

3.1.1 Site description

Abbey Craig (8 ha) consists of mixed ash woodland, for which it is notified, situated on the steep slopes of the volcanic outcrop to the east of Stirling, beneath the foundations of the Wallace Monument. The woodland is present on the south-west facing basaltic cliffs with a combination of ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*). The ground layer consists of woodland species such as bluebells (*Hyacinthoides non-scripta*), dog's mercury (*Mercurialis perennis*) and wild garlic (*Allium ursinum*). Due to the steepness of the slopes however, earth slippages are common and so areas of bare soil and exposed rock are frequent. Oak (*Quercus* sp.) dominates in other areas of the wood and there is an extensive stand of ash on inaccessible cliffs and scree.

3.1.2 Summary of known Coleoptera interests

Abbey Craig is recognised for its saproxylic beetle assemblage including the following species that are listed on the citation:

Ptinella limbata RDBK
Ptinella limbata of the family Ptiliidae (featherwing beetles), is a minute beetle living under the bark of deciduous and coniferous trees in ancient woodlands, feeding on fungal hyphae (Duff, 2012b). The family is so named due to the fringe of hairs along the wings.

Phyllodrepoidea crenata NS
This staphylinid beetle is a member of the Omaliinae subfamily, and is found under the bark of sycamore and ash feeding on fungus. It has also been found on dung and is thought to occur on carcasses (Hyman & Parsons, 1994). It is widespread throughout northern England and Scotland but very local.

Oedemera femoralis NS
Abbey Craig holds the only Scottish record for *Oedemera femoralis* according to the citation. It is thought to be associated with woods and hedges where it visits the blossom of goat willow (*Salix caprea*) and ivy (*Hedera helix*).

3.1.3 Methods

We installed 10 bark traps on 4 May 2015 and collected these on 4 September. All bark traps were place on deadwood in beech-ash-oak woodland. To maximise the effectiveness of active searches by recording beetles with different emergence seasons, we visited the site twice: one visit was made in early summer (4 May 2015) and a second in late summer (4 September 2015). Sample locations are described in Table 3.1 and shown in Figure 3.1.

Table 3.1. Sample locations and descriptions for Abbey Craig SSSI

Sampling method	Grid reference	Date	Site description
Bark trap	NS8085895665	04/09/2015	Fallen deadwood
Bark trap	NS8085495666	04/09/2015	Fallen deadwood
Bark trap	NS8085495657	04/09/2015	Fallen deadwood
Bark trap	NS8084995656	04/09/2015	Standing deadwood
Bark trap	NS8083495648	04/09/2015	Standing deadwood
Bark trap	NS8085995548	04/09/2015	Standing deadwood
Bark trap	NS8086095538	04/09/2015	Fallen deadwood
Bark trap	NS8086395532	04/09/2015	Standing deadwood
Bark trap	NS8086895526	04/09/2015	Fallen deadwood
Bark trap	NS8088495538	04/09/2015	Fallen deadwood
Active search	NS8085895665	04/05/2015	Beech and ash woodland with some lying deadwood and earth slippages
Active search	NS8087595488	04/09/2015	Beech and ash woodland with some lying deadwood and earth slippages
Active search	NS80869553	04/09/2015	Oak and ash woodland with more open nature. More herbs on the ground layer

3.1.4 Results

None of the species listed on the citation were found during the survey in 2015, however suitable habitat for each species persists on site.

3.1.5 Site condition evaluation

We found that the site continues to offer a range of different saproxylic microhabitats which may support a variety Coleoptera. For the most part oak and ash dominate the canopy, however large stands of beech (*Fagus sylvatica*) and sycamore may shade out any oak regeneration in certain areas (Photo 3.1). There is a large supply of lying and standing deadwood throughout the site at varying stages of decay (Photo 3.2). There is a risk with urban woodland sites that some deadwood is taken off the site as firewood, but much of the Abbey Craig is largely inaccessible due to cliffs and steep unstable ground. We found fungal fruiting bodies, rotting heartwood, loose bark, wet and dry rot holes, and stumps during the site visit. Overall this site can be considered to remain in good condition.

3.1.6 Site management recommendations

The woodland is in good condition and few recommendations are needed to benefit the habitats for saproxylic species. Areas of thick beech regeneration should be felled to allow native trees of local provenance, such as oak and ash, to regenerate. However, older beech trees should be retained due to their importance for some saproxylic species. Some areas should be kept open to allow sunlight to fall on deadwood. Guidance for deadwood management for invertebrates should be followed (Cathrine & Amphlett, 2011; Buglife, 2011). Further survey work would also increase knowledge of the site and allow more targeted habitat management recommendations.

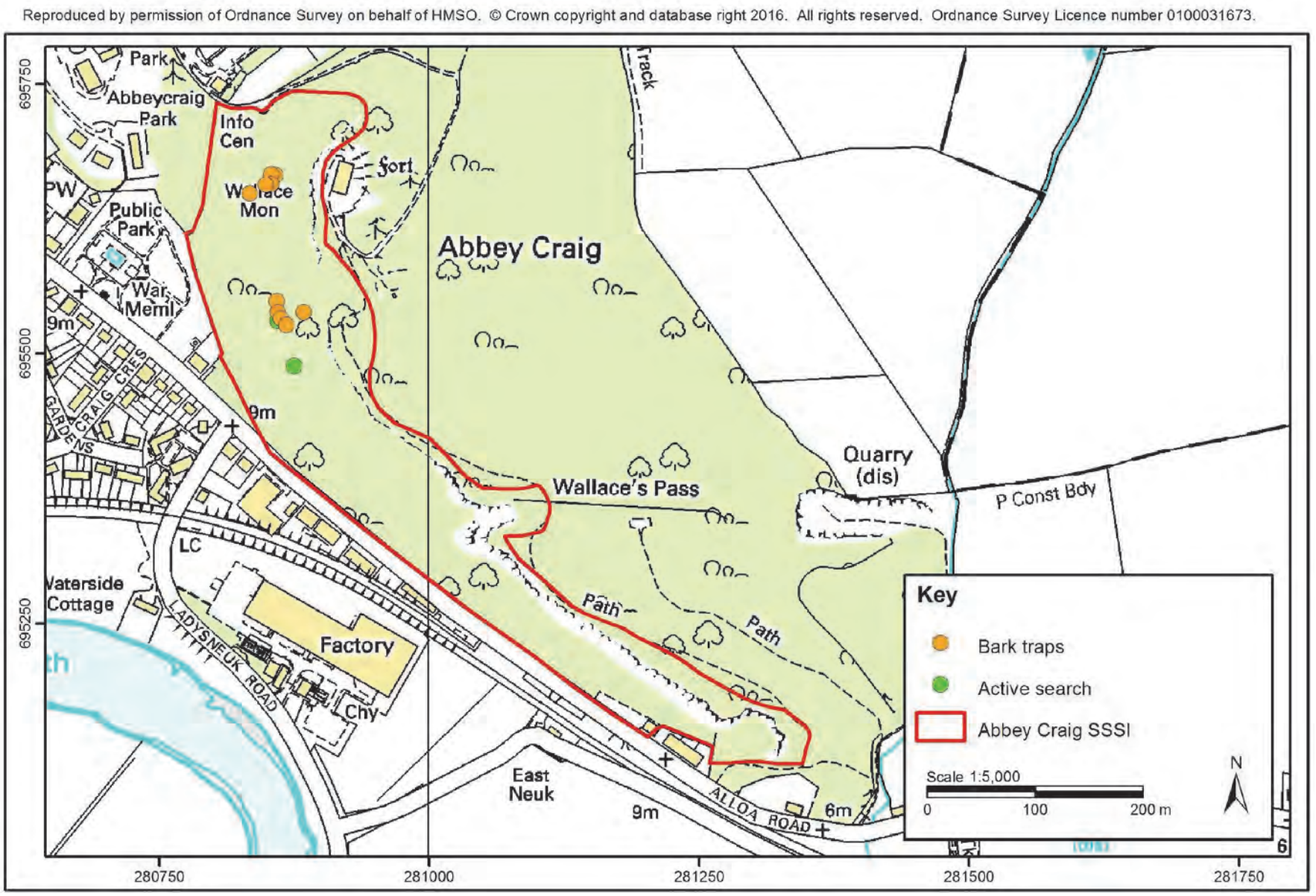

Figure 3.1. Sample locations at Abbey Craig SSSI

3.2 Ardgour Pinewoods

3.2.1 Site description

Ardgour Pinewoods (1,486 ha) consists of the largest and most important remnants of semi-natural Scots pine (*Pinus sylvestris*) in Lochaber. The SSSI is comprised of three sections; Cona Glen, An Slochd and Doire Mór. Scots pine dominates the majority of the SSSI, although birch (*Betula* spp.) becomes more prominent on wetter ground or at higher elevations. The ground flora is predominantly heather (*Calluna vulgaris*) and blaeberry (*Vaccinium myrtillus*), but is replaced by carpets of *Sphagnum* spp. and purple moor-grass (*Molinia caerulea*) in wetter areas. Ardgour Pinewoods is also notified for *Carterocephalus palaemon* (chequered skipper) and its reptile assemblage due to a particularly strong population of adders (*Vipera berus*) for the region.

3.2.2 Summary of known Coleoptera interests

The following species are listed on the citation:

Bolitophagus reticulatus NS
Bolitophagus reticulatus is a darkling beetle of the family Tenebrionidae. Adults can often be found on the outside of hoof fungus (*Fomes fomentarius*), in which the larvae develop. The larvae pupate in the fungus and fully developed adults bite their way out, leaving an emergence hole. Although classified as Rare by Shirt (1987), this species is now known to be more widespread in Caledonian pine forest and is therefore soon to be downgraded to Nationally Scarce (Alexander *et al.*, in press).

Protaetia metallica NS
Protaetia metallica (northern rose chafer) is a chafer (Scarabaeidae), a large metallic green beetle that feeds on umbellifer heads and tree blossoms in late spring and early summer. The larvae develop in the nests of wood ants (*Formica rufa*-group).

3.2.3 Methods

We made an initial site visit on 21 May 2015 to install 10 bark traps between the Cona Glen and Doire Mòr compartments. We made a second visit on 16 July 2015 to collect the traps and conduct deadwood searches in these compartments. Scots pine woodland with areas of birch were targeted for survey. Sample locations are described in Table 3.2 and shown in Figures 3.2 and 3.3.

Table 3.2. Sample locations and descriptions for Ardgour Pinewoods SSSI on 16 July 2015

Sampling method	Grid reference	Site description
Bark trap	NM9175276802	Scots pine
Bark trap	NM9174576797	Scots pine
Bark trap	NM9172776183	Birch
Bark trap	NM9171476778	Scots pine
Bark trap	NM9170276764	Birch
Bark trap	NM9554771519	Scots pine
Bark trap	NM9555071514	Scots pine
Bark trap	NM9556671505	Scots pine
Bark trap	NM9558471451	Scots pine
Bark trap	NM9557571434	Birch
Active search	NM9171676761	Caledonian pinewood
Active search	NM9558971434	Caledonian pinewood
Active search	NM9581271376	Caledonian pinewood
Active search	NM9652571316	Caledonian pinewood

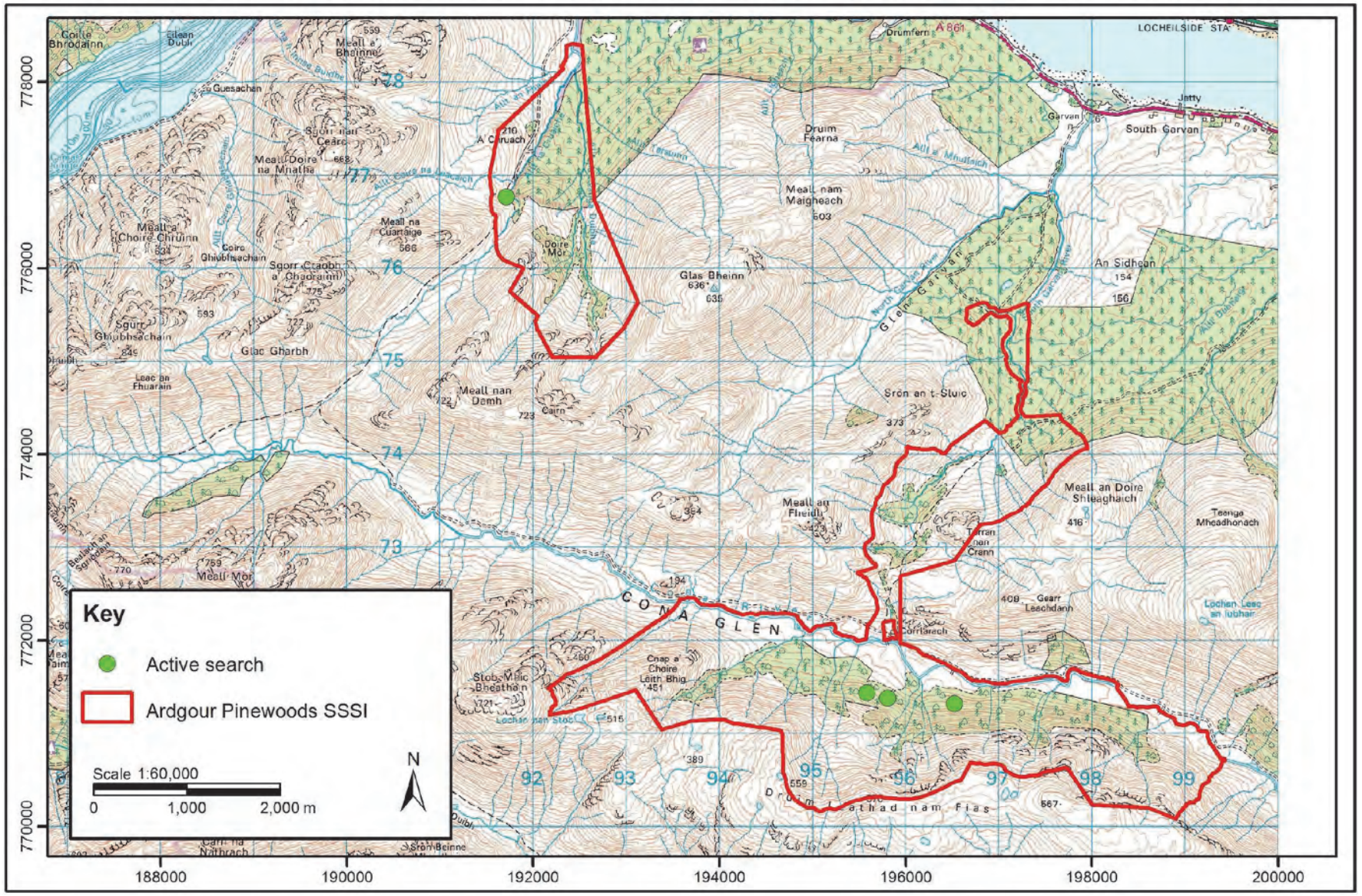

Figure 3.2. Active search locations at Ardgour Pinewoods SSSI

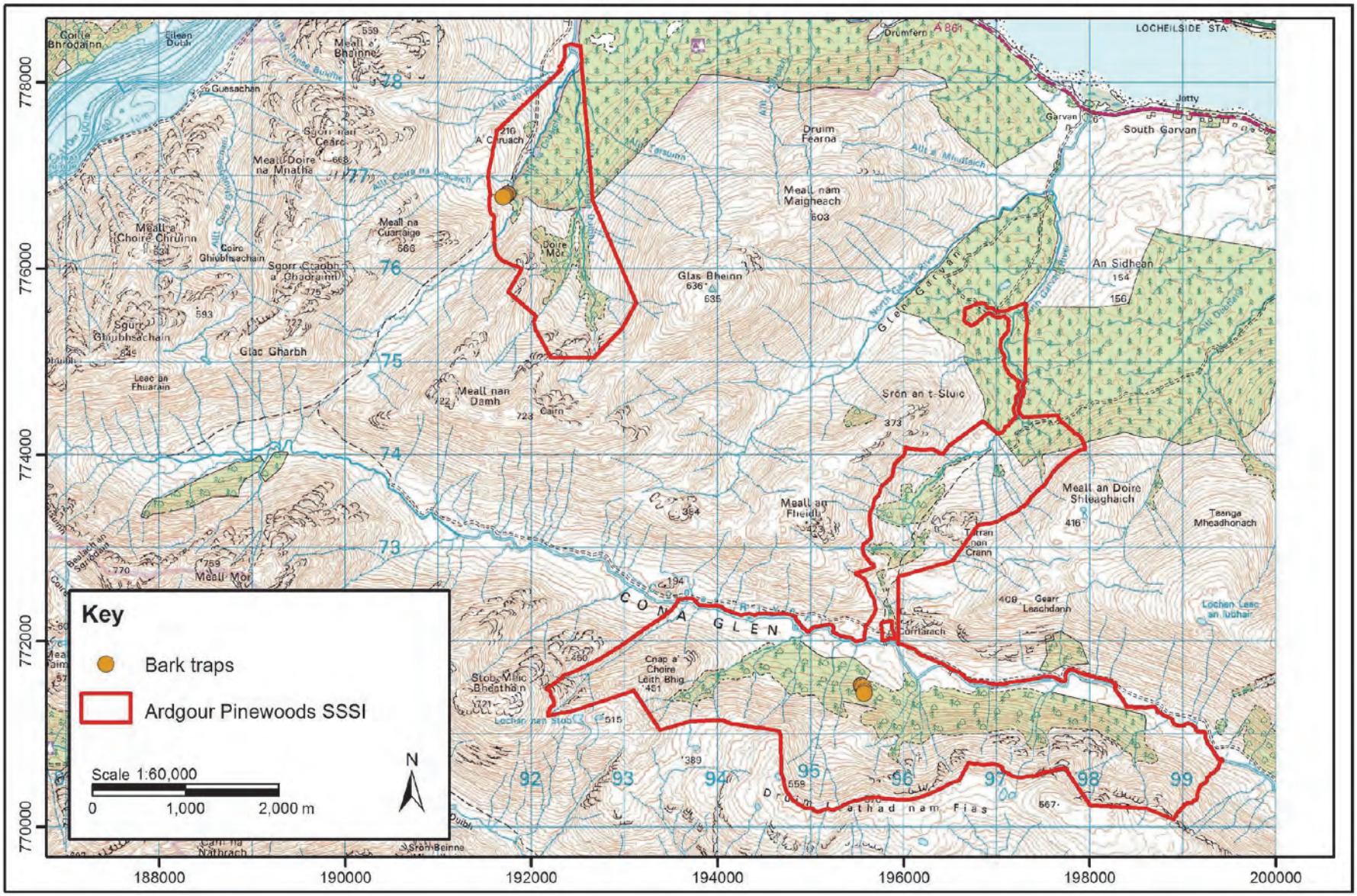

Figure 3.3. Bark trap locations at Ardgour Pinewoods SSSI

3.2.4 Results

We found one of the species listed on the citation (*B. reticulatus*) during surveys in 2015. *P. metallica* was not recorded and no wood ant nests were observed during the survey, and so no larvae were detected.

B. reticulatus (Nationally Scarce) was recorded during surveys on 16 July 2015 collected from the underside of *F. fomentarius* (NM9171676761). *Cis jacquemartii* (Nationally Scarce) was also found within *F. fomentarius* in two locations (NM9171676761 and NM9581271376).

We recorded five species of saproxylic beetle in total, two of which are considered to be Nationally Scarce species.

3.2.5 Site condition evaluation

The saproxylic habitat present on site appears to be in good condition. The three compartments exhibit deciduous, mixed and coniferous woods mostly open in nature (Photo 3.3 and 3.4). Saproxylic microhabitats are varied with standing and fallen deadwood, loose bark, fungal fruiting bodies and aerial deadwood. *F. fomentarius*, the fungus with which *B. reticulatus* is associated, was found regularly where dead birch was present and was the origin of the two Nationally Scarce species recorded on site. Although no wood ant nests were recorded during the surveys of mixed Scots pine and birch woodland, they may exist in the older parts of pure birch woodland, from which they are historically known in the west of Scotland (MacDonald, 2013).

Due to the size and range of woodland habitats Ardgour Pinewoods can be considered to be in good condition.

3.2.6 Site management recommendations

Fungus infected trees, as well as standing and fallen deadwood, are important for saproxylic species. Woodland of mixed age structure with open areas should be maintained through moderate grazing to provide continuity of suitable habitat and allow sunlight to fall on deadwood (Hyman & Parsons, 1992). *B. reticulatus* has a greater affinity for drier fungi in birch woodland, and winter survival rates are higher in this habitat (Midtgaard *et al*., 1998). Guidance for deadwood management for invertebrates should also be followed (Cathrine & Amphlett, 2011; Buglife, 2011).

Providing open areas in woodland will also help to retain a diverse field layer with flowering plants, which will benefit species such as *P. metallica* which is known to feed on umbellifers. However, as *P. metallica* requires wood ant nests for larval development which were not found during the survey, creating and restoring semi-natural habitats to connect the SSSI to other areas with known wood ant populations would increase the likelihood of colonisation of the ants (Hughes, 2006), and therefore, potentially the chafer. It is recommended that a thorough survey of wood ants should be completed within the SSSI, so as to determine whether suitable habitat remains for *P. metallica*.

3.3 Cragbank and Wolfehopelee

3.3.1 Site description

This SSSI is made up of two compartments, 11 km south-east of Hawick, and is approximately 20 ha in area. It is notified for its beetle assemblage and the upland mixed ash woodland. The Cragbank compartment is situated on a west-facing bank and consists of the largest stand of ash-elm-hazel woodland in the Borders. It was once coppiced but has been left to develop into a mature wood. The Wolfehopelee compartment borders the steep banks of the Wolfehopelee Burn where it is largely composed of wet alder (*Alnus glutinosa*) woodland. The invertebrates, lower plants and ground flora of this site are all indicative of ancient, undisturbed woodland.

3.3.2 Summary of known Coleoptera interests

The site is important for invertebrates, particularly beetles and saproxylic species. The list for the site names 37 species, including the following on the citation:

Phyllodrepa puberella NS
This staphylinid beetle is widely, but sparsely, spread throughout the UK between Devon and Shetland. It has also appeared in a wider range of habitats, including woodlands and the coast. Within woodland habitats it has been recorded in the litter of birds' nests and from badger setts, but also from tree blossoms as well.

Dropephylla ioptera, Quedius plagiatus (both Staphylinidae) and *Chrysomela aenea* (Chrysomelidae) are all locally rare species. *D. ioptera* is found on flowers, *Q. plagiatus* is found under bark on conifers, and *C. aenea* can be found feeding on the leaves of alder.

3.3.3 Methods

We completed mid-summer active searches and set pitfall traps in Wolfehopelee and Cragbank on 18 and 19 June 2015 respectively. We collected the pitfall traps on 30 June 2015, and also swept vegetation and installed bark traps. The bark traps were collected on 25 August 2015, in addition to two late-summer active searches.

Sample locations are described in Table 3.3 and shown in Figures 3.4 and 3.5.

Table 3.3. Sample locations and descriptions for Cragbank and Wolfehopelee SSSI

Sampling method	Grid reference	Date	Site description
Active search	NT5954207821	18/06/2015	Alder woodland close to Wolfehopelee Burn
Active search	NT5923707971	18/06/2015	Alder woodland close to Wolfehopelee Burn
Active search	NT5902807155	19/06/2015	Open oak and ash woodland with a hazel coppice understorey
Active search	NT5901707274	19/06/2015	Oak and ash woodland with a hazel coppice understorey
Active search	NT5923707956	25/08/2015	Alder woodland close to Wolfehopelee Burn
Active search	NT5903707200	25/08/2015	Oak and ash woodland with a hazel coppice understorey
Sweep net	NT5921407963	30/06/2015	Patch of bracken above the small valley of Wolfehopelee Burn
Pitfall trap	NT5923707971	30/06/2015	Steep slope above burn, under alder canopy
Pitfall trap	NT5922707961	30/06/2015	Amongst grassy ground flora at base of oak
Bark trap	NT5923607962	25/08/2015	Dead hazel branch
Bark trap	NT5921407963	25/08/2015	Part dead alder
Bark trap	NT5920407968	25/08/2015	Part dead alder
Bark trap	NT5903507156	25/08/2015	Dead ash
Bark trap	NT5903407199	25/08/2015	Part dead ash

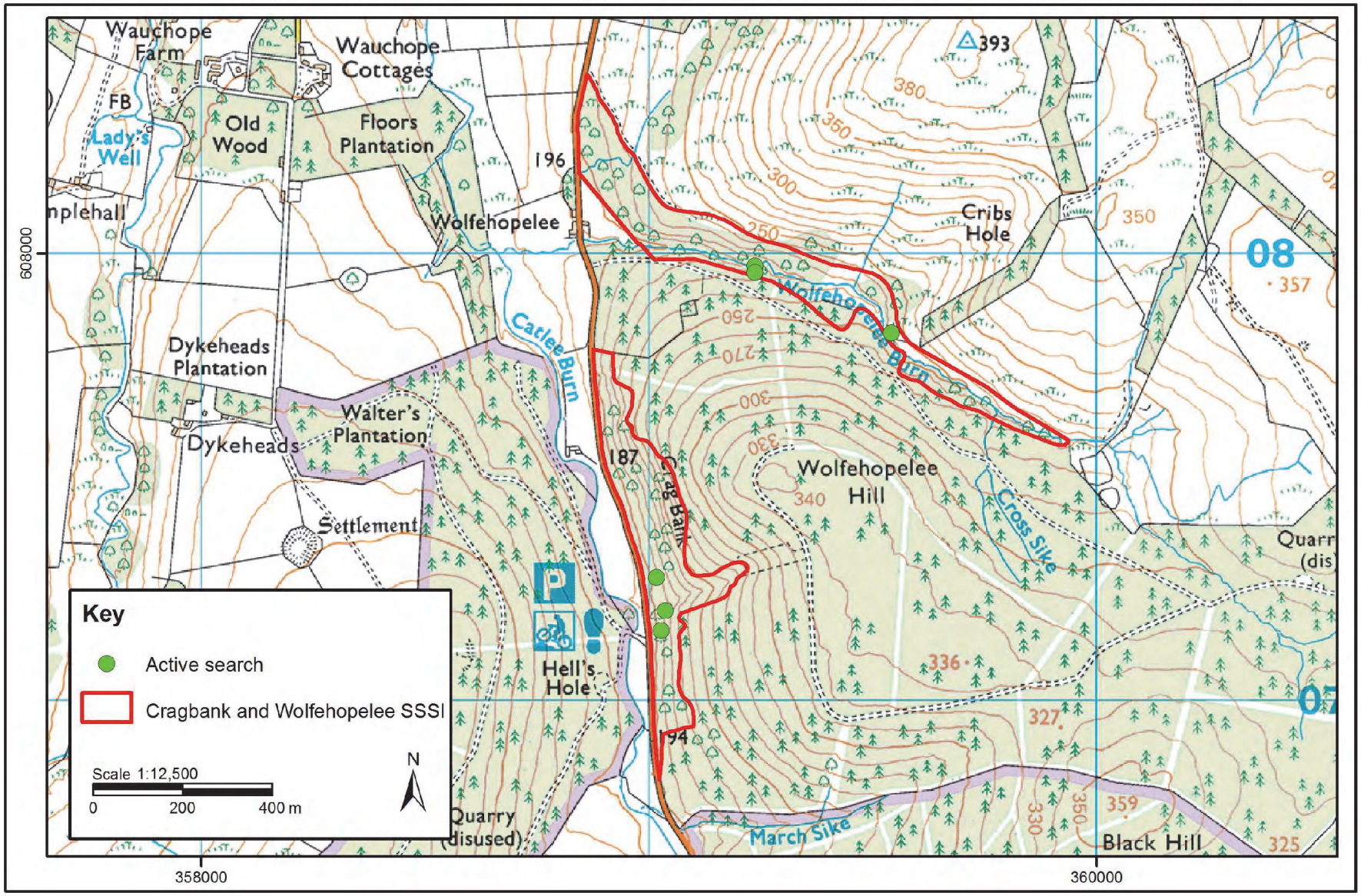

Figure 3.4. Active search locations at Cragbank and Wolfehopelee SSSI

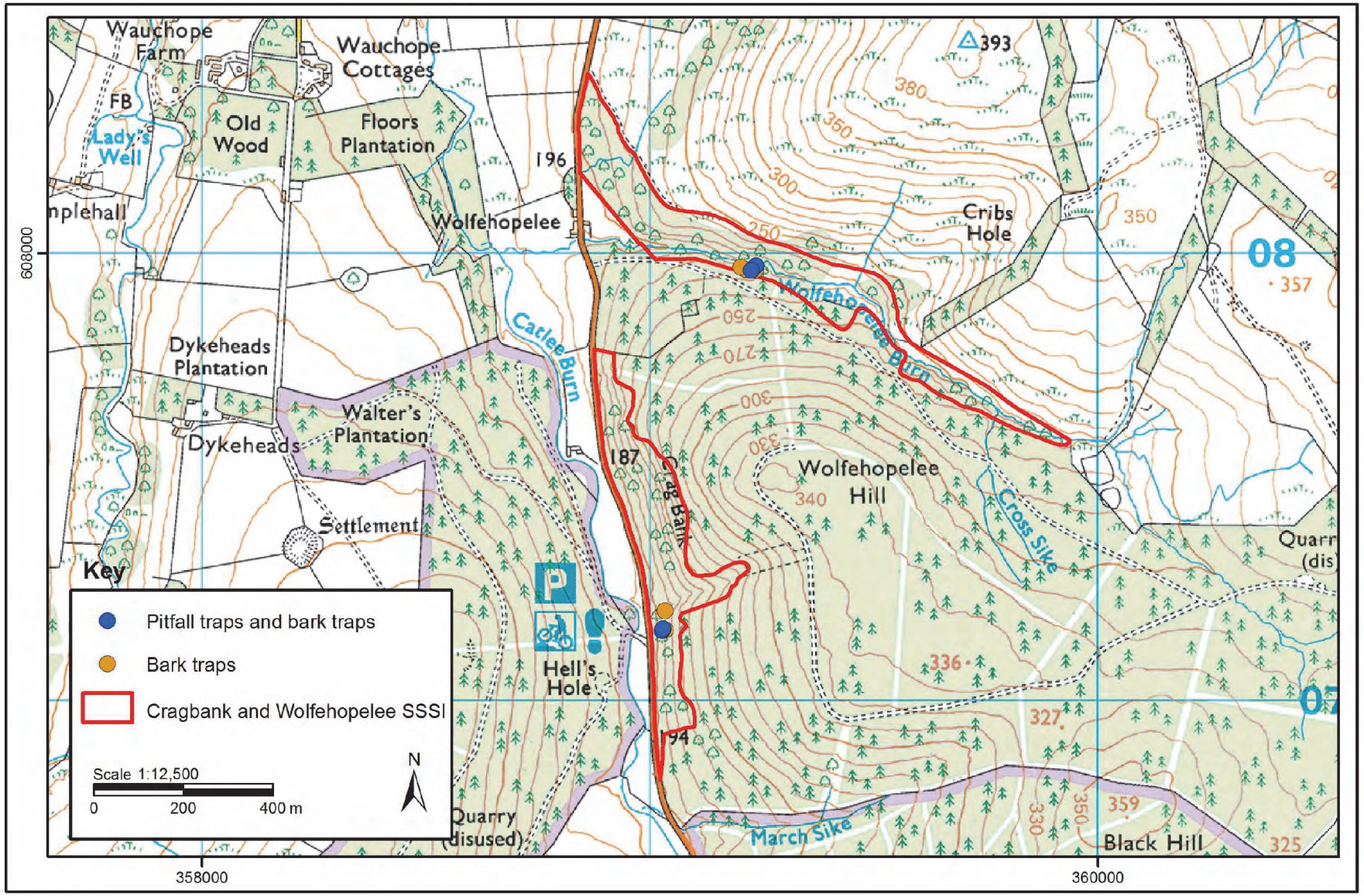

Figure 3.5. Bark trap and pitfall trap locations at Cragbank and Wolfehopelee SSSI

3.3.4 Results

None of the species mentioned in the citation were found during our surveys. However, we did find eight species of saproxylic beetles including two Nationally Scarce species; *Saperda scalaris* and *Quedius xanthopus*.

Saperda scalaris is a longhorn beetle (Cerambycidae) associated with a wide range of deciduous trees including birch, oak, beech, *Prunus* spp. and alder. This individual was swept from open vegetation consisting of bracken and umbellifers (NT5921407963) on 30 June 2015.

Quedius xanthopus is a rove beetle (Staphylinidae: Omaliinae) associated with ancient broad-leaved woodland. It is most often found under bark of various trees including oak and beech. This specimen was found in an area including oak, hazel and alder (NT5954207821) on 18 June 2015.

3.3.5 Site condition evaluation

Although none of the species mentioned in the citation were found, an additional two Nationally Scarce species associated with deciduous woods were recorded. There is no reason for other scarce saproxylic species not to be present on site.

The site has an excellent range of microhabitats for saproxylic beetles including hazel coppice, riparian alder and mature oak-ash woodland (Photos 3.5 and 3.6). Each habitat has good age structure which should produce a regular supply of deadwood. The oak woodland is open and conducive to sapling regeneration for this light-loving species.

There are however, some open areas where bracken is dominant and should be controlled to prevent saplings being over-shaded (Photo 3.7)

3.3.6 Site management recommendations

The retention of ancient trees and standing deadwood, particularly with the bark still attached is important. Removal of deadwood must be avoided and any gaps in continuity must be mitigated with appropriate planting. In addition, the availability of flowering plants should be ensured for some species such as *S. scalaris* (Hyman & Parsons, 1992). Guidance for deadwood management for invertebrates should be followed (Cathrine & Amphlett, 2011; Buglife, 2011).

The extent of bracken should be monitored and, if shown to be preventing regeneration, should be controlled.

3.4 Fannich Hills

3.4.1 Site description

The Fannich Hills are located in Wester Ross approximately 20 km south of Ullapool and include several Munros within a mountain ridge system. The SSSI is notified for its geological interests as well as biological features, and is 10,906 ha in area. The site is a complex mosaic of upland habitats including snowbeds, exposed moss heaths, and montane heaths, mires and grassland. There are also flushes and large areas of blanket bogs. Each habitat contains rare species such as the Nationally Scarce mossy cyphel (*Minuartia sedoides*). The site is also notified for its Diptera assemblage.

3.4.2 Summary of known Coleoptera interests

Only one beetle species, *Phratora polaris*, is mentioned in the citation. Three other species were included in the SNH Invitation to Tender (ITT) document for this project. These four species of beetle are described below:

Phratora polaris NS
P. polaris is a scarce leaf beetle (Chrysomelidae) found on and around montane willows (*Salix* spp.) and in clumps of *Racomitrium* moss. The adults feed on the leaves of dwarf willow (*Salix herbacea*), but the females have also been found feeding on alpine bistort (*Persicaria vivipara*).

Eudectus whitei NS
Eudectus whitei is a montane rove beetle (Staphylinidae: Omaliinae), typically found above 600 m. It appears to favour areas of bare ground on the summits of hills where it is found in moss, such as *Racomitrium* spp., and at the roots of vegetation.

Bryophacis rugipennis NS
This rove beetle is from the subfamily Tachyporinae and has previously been found from upland areas on mountains amongst moss.

Gonioctena pallida
Gonioctena pallida is a widespread leaf beetle in Britain. Its food-plant varies with habitat; it is mostly associated with dwarf willows in the Scottish uplands, whereas it is largely found on hazel (*Corylus avellana*) at lower elevations (Duff, 2012b).

3.4.3 Methods

We targeted the habitats preferred by the target species during our surveys, including areas abundant with montane willows and dwarf shrubs and upland heaths with *Racomitrium*. We carried out active searches and set pitfall traps on 30 June and 1 July 2015. We collected and reset the pitfall traps on 15 July, before collecting finally on 30 July 2015. Further active searches were undertaken on 15 July 2015. Sample locations are described in Table 3.4 and shown in Figure 3.6.

Table 3.4. Sample locations and descriptions for Fannich Hills SSSI

Sampling method	Grid reference	Date	Site description
Active search	NH2357771911	30/06/2015	Boulder-field with patches of *Racomitrium* and dwarf willow
Active search	NH2250471932	30/06/2015	Boulder-field at summit of Beinn Liath Mhòr Fannaich, with patches of *Racomitrium* and dwarf willow becoming more extensive on slopes
Active search	NH2195172399	30/06/2015	Sgùrr Mòr from Beinn Liath Mhòr Fannaich
Active search	NH2032071804	01/07/2015	Dwarf willow on west slope of Sgùrr Mòr summit
Active search	NH1829073432	15/07/2015	Sparse *Racomitrium* & exposed montane grassland with bare patches and scree near the summit of Meall a' Crasgaith
Active search	NH1839271501	15/07/2015	Exposed montane grassland near the summit of Sgùrr nan Clach Geala
Active search	NH1846369754	15/07/2015	Exposed montane grassland near the summit of Sgùrr nan Each
Pitfall traps	NH2199672429	15/07/2015	Dense *Racomitrium* with some montane sedges, close to boulder-field
Pitfall traps	NH2347171852	15/07/2015	Exposed montane grassland with high moss density
Pitfall traps	NH2199672429	30/07/2015	Dense *Racomitrium* with some montane sedges, close to boulder-field
Pitfall traps	NH2347171852	30/07/2015	Exposed montane grassland with high moss density

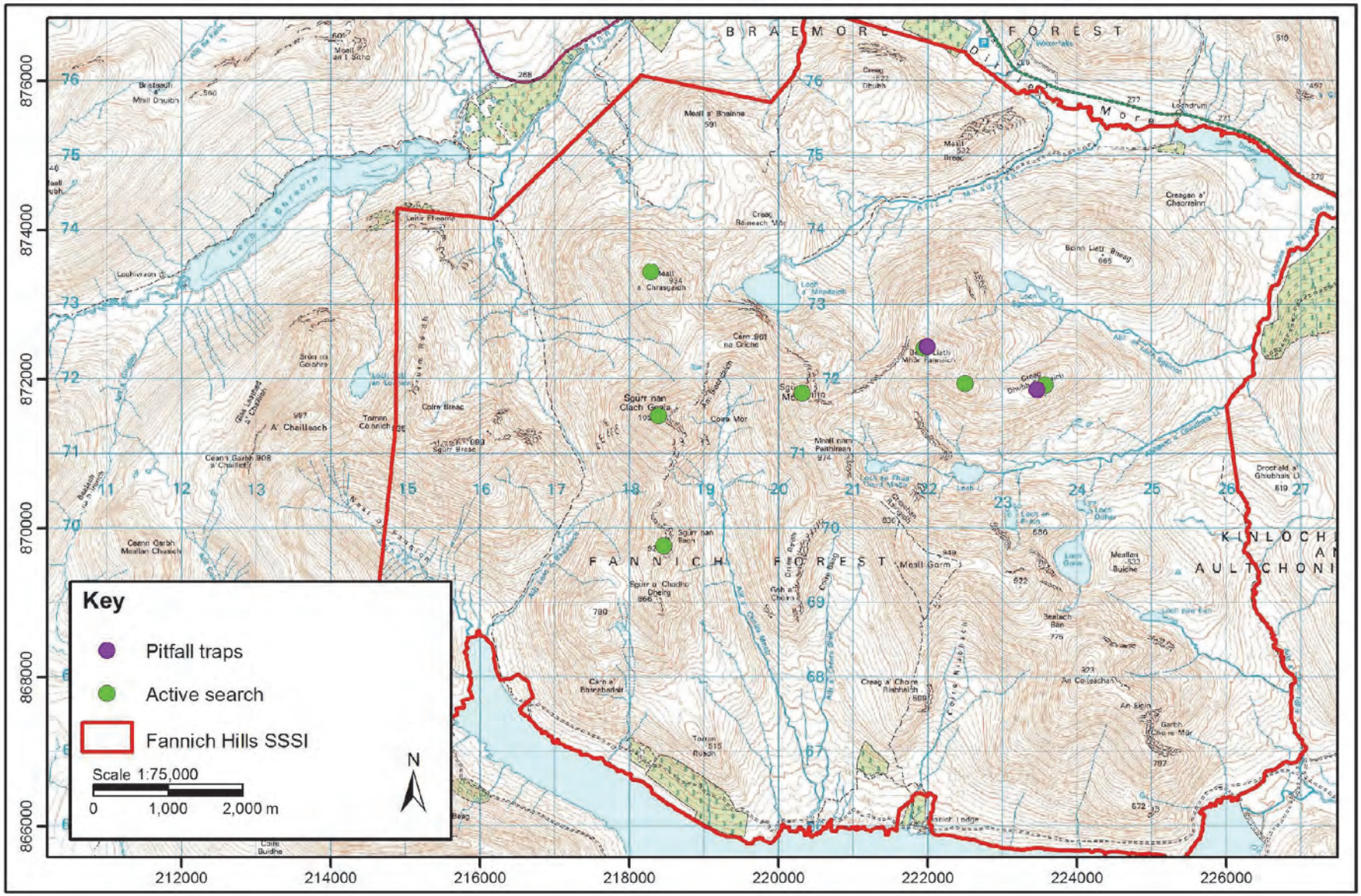

Figure 3.6. Sample locations at Fannich Hills SSSI

3.4.4 Results

We found the leaf beetles *P. polaris* (named on the citation) and *G. pallida* but not the rove beetles *E. whitei* and *B. rugipennis*. A total of 22 species were recorded including four more Nationally Scarce species; *Nebria nivalis*, *Patrobus septentrionis*, *Cymindis vaporariorum* and *Geodromicus longipes*.

G. pallida was found on 15 July 2015, near the summit of Sgùrr nan Clach Geala (1093 m elevation) (NH1839271501) (Photo 3.8). *P. polaris* was found on 1 July 2015 on the summit of Sgùrr Mòr at 1110 m (NH2032071804) (Photo 3.9). Both were found during active searches on the underside of foliage of creeping montane willows (*Salix* spp.).

N. nivalis is a ground beetle of high altitudes, found on mountain summits under frost shattered stones and among *Racomitrium* moss and lichens. The species' Scottish distribution is centred on the Cairngorms and North West Highlands but it also occurs in other upland habitat including on the islands of the Inner Hebrides. One specimen each was found in pitfalls and by active searching on the summit of Beinn Liath Mhòr Fannaich at 954 m (NH2199672429 and NH2195172399) on 30 June 2015 (Photo 3.10) and two were recorded during active searching on the summit of Sgùrr nan Clach Geala on 15 July 2015.

P. septentrionis is a small ground beetle found under stones and in moss in damp gullies and beside streams at high altitude (usually over 750m). It is widespread but local throughout the highland regions of Scotland. Specimens were found during active searches on Beinn Liath Mhòr Fannaich (NH2195172399) and Sgùrr Mòr (NH2032071804) on 30 June 2015 and 1 July 2015 respectively, and at Sgùrr nan Each at 866 m (NH1846369754) on 15 July 2015 (Photo 3.11).

C. vaporariorum is another small ground beetle found in montane regions. It is frequently found on sandy soils, such as those heavily weathered in the Scottish Highlands. Three specimens were found in pitfall traps collected from Creag Dhubh Fannaich at an elevation of 757 m (NH2347171852) on 17 July 2015 (Photo 3.12).

G. longipes is a rove beetle found in montane habitats on craggy ledges, under stones and among moss, particularly *Racomitrium*. It is a widespread but local species in Scotland, found throughout the central highlands. Eight individuals were collected in pitfall traps on the summit of Beinn Liath Mhòr Fannaich at 954 m (NH3199672429) on 30 July 2015 (Photo 3.10).

3.4.5 Site condition evaluation

We found two of four target species, including *P. polaris* which is named on the citation. Five of the 22 beetle species recorded are Nationally Scarce. The scarcity of these species is likely due to under-recording and the relatively inaccessible nature of their preferred habitats. There is a threat of habitat destruction from walkers and high densities of livestock. In addition, warming due to climate change is likely to limit areas of suitable habitat for montane species at Fannich Hills in the future.

Regardless, the number of species found and the amount of suitable habitat present outwith the access of the average hillwalker means that this site remains in excellent condition.

3.4.6 Site management recommendations

Montane habitat communities are vulnerable to trampling therefore it is important that walkers remain on the paths and livestock numbers are maintained at a low level.

3.5 Glen Tarff

3.5.1 Site description

Glen Tarff is a wooded valley (272 ha in area) that follows the River Tarff, which ultimately flows into the southern terminus of Loch Ness, located 2 km south of Fort Augustus. The glen is also notified for upland mixed ash woodland. The variety of topography has resulted in a mosaic of different woodland stands, with some areas dominated by oak and birch, others by ash, wych elm (*Ulmus glabra*) and alder. It is particularly distinguished for its well-developed understorey of hazel, bird cherry (*Prunus padus*) and goat willow. The site is also important for bryophytes and ferns.

3.5.2 Summary of known Coleoptera interests

The beetle feature for this site is for an individual species, *Bolitophagus reticulatus* (described in Ardgour Pinewoods site report).

3.5.3 Methods

The hoof fungus, *F. fomentarius*, was targeted during the survey of *B. reticulatus*. We made a single visit to Glen Tarff on 15 July 2015 and completed active searches in four areas along the glen. Sample locations are described in Table 3.5 and shown in Figure 3.7.

Table 3.5. Sample locations and descriptions for Glen Tarff SSSI on 15 July 2015

Sampling method	Grid reference	Site description
Active search	NH3783406096	Open birch woodland with some regeneration. Bracken dominates the understorey
Active search	NH3863604841	Birch woodland with some hazel. Fern understorey
Active search	NH3896703280	Open birch woodland with little regeneration. Some large lying deadwood
Active search	NH3988601807	Isolated birch trees in heavily livestock-grazed valley

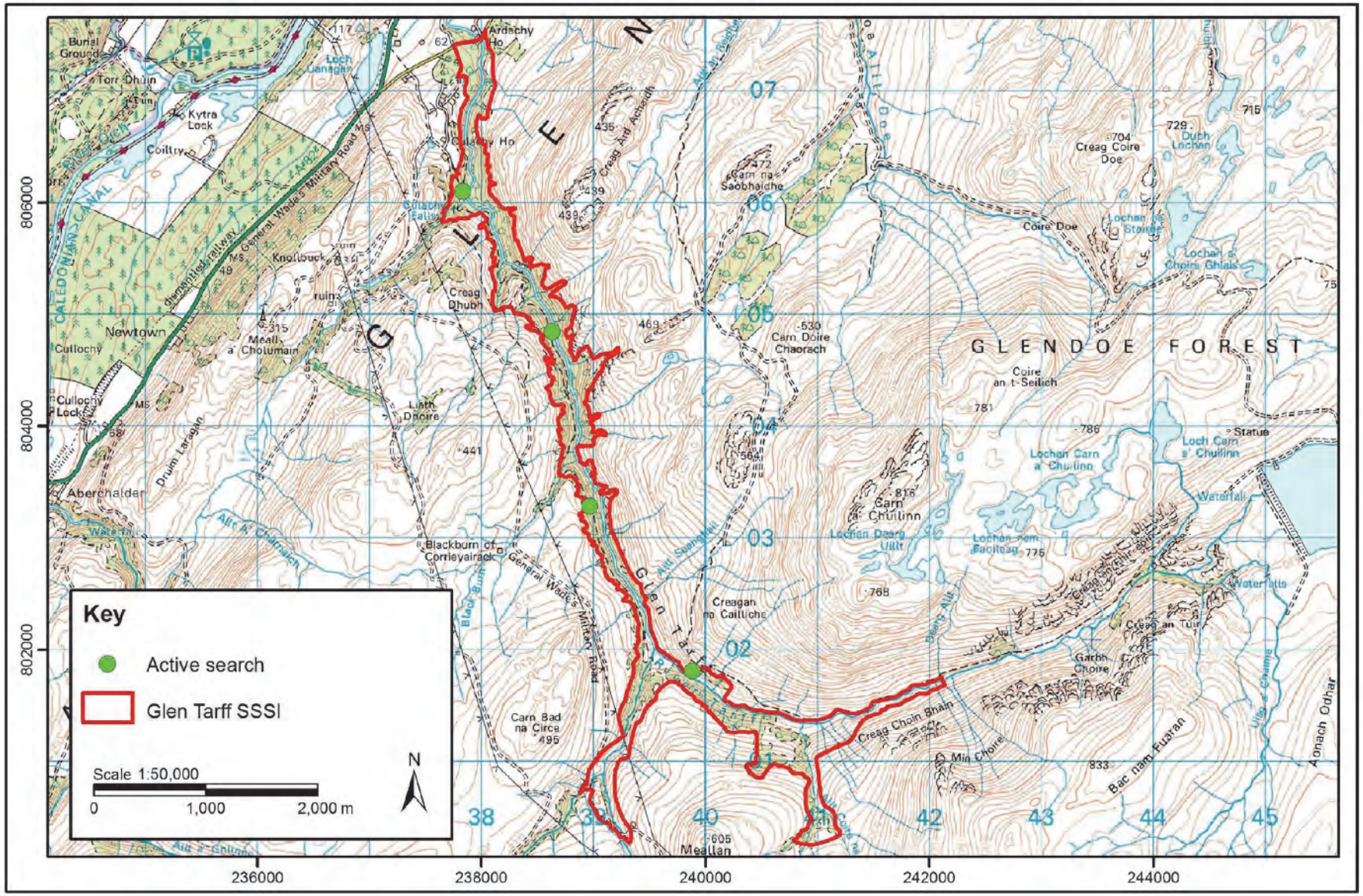

Figure 3.7. Sample locations at Glen Tarff SSSI

3.5.4 Results

The target feature, *B. reticulatus*, was found and, in addition, we also collected the Red Data Book species *Ropalodontus perforatus* and Nationally Scarce species *Cis jacquemartii*.

Two individuals of *B. reticulatus* were found on the underside of *F. fomentarius* growing on standing dead birch in an open environment (NH3783406096). This was the only location in which *B. reticulatus* was found.

R. perforatus and *C. jacquemartii* were both taken from inside *F. fomentarius* fruiting bodies in the same vicinity (NH3783406096). *R. perforatus* was found during the previous round of SCM surveys (Alexander, 2011) and appears to be more widespread than its status suggests (Alexander, 2009; Lyszkowski, pers. comm.).

We found a total of seven saproxylic beetle species, including *Sinodendron cylindricum*, a local species in Scotland.

3.5.5 Site condition evaluation

B. reticulatus was only found in one location during the survey in an open area with standing dead birch with *F. fomentarius* (Photo 3.13). *R. perforatus*, *C. jacquemartii* and *S. cylindricum* were all collected from this location suggesting that the saproxylic habitat is of high quality. The area of this habitat is limited in extent however, and bracken is the dominant species within the field layer, shading out lying and lower parts of standing deadwood. Further south along the access track the woodland begins to thicken, with few open areas and less obvious presence of *F. fomentarius*. At the very south of the site before the Allt Corie Uchdachan joins the River Tarff there are several old birch trees, all of which lacked *F. fomentarius* and there was no regeneration due to the presence of excessive bracken coverage and livestock grazing (Photo 3.14). Much of the site is inaccessible and the habitat within the gorge is likely to have a range of deadwood habitats suitable for saproxylic beetles.

3.5.6 Site management recommendations

Based on our surveys, it appears that suitable habitat for *B. reticulatus* (and other mycophagous and saproxylic species) is becoming limited at Glen Tarff, primarily due to bracken encroachment. Further survey is therefore required to ascertain the extent of *B. reticulatus*, and other scarce and threatened saproxylics, on the site. The number of scarce species found on site suggests that the saproxylic habitat is in good condition, particularly for species associated with *F. fomentarius*. It is therefore important to maintain fungus infected trees, as well as standing and fallen deadwood, which are important for saproxylic species. Woodland of mixed age structure with open areas should be maintained through moderate grazing to provide continuity of suitable habitat and allow sunlight to fall on deadwood (Hyman & Parsons, 1992). *B. reticulatus* has a greater affinity for drier fungi in birch woodland, and winter survival rates are higher in this habitat (Midtgaard *et al*., 1998). Guidance for deadwood management for invertebrates should also be followed (Cathrine & Amphlett, 2011; Buglife, 2011).

It is important to maintain a diverse field layer, particularly with flowering plants that act as a food source for some saproxylic species. Therefore bracken control is also recommended, which will also prevent the excessive shading of fallen deadwood and increase availability of habitat suitable for *B. reticulatus*.

3.6 Maidens to Doonfoot

3.6.1 Site description

This SSSI consists of three compartments stretching along the coastline from Maidens to Doonfoot, and totalling 216 ha in area. The site has been notified for its geological interests as well as its habitats and species assemblages. The habitats include a range of maritime cliff communities, vegetated shingle and upland mixed ash woodland. The site is also notified for its invertebrate assemblage, which includes *Orimarga virgo*, a cranefly associated with sea cliffs.

3.6.2 Summary of known Coleoptera interests

The citation includes the following three Coleoptera species:

Tropiphorus elevatus NS
Tropiphorus elevatus is a broad-nosed weevil (Curculionidae: Entiminae). It is found in woods amongst low or ground vegetation and is thought to be associated with dog's mercury.

Cercyon depressus NS SBL
Cercyon depressus is a hydrophilid beetle, characteristic of the western coast. It is found in heaps of decaying wrack near the high water mark of the beach.

Ochthebius lejolisii NS
Ochthebius lejolisii is of the family Hydraenidae. It is confined to stagnant rock pools, often when they are hypersaline, which can be recognised by a salt crust appearing around the edge of the rock pool.

3.6.3 Methods

3.6.3.1 *Aquatic Coleoptera*

We investigated 20 sites throughout the entire SSSI complex. Ten of them produced beetles and are numbered 1-10. Inventory samples were taken at sites 1 and 4-6. Heaps of wrack were investigated by sifting material over a tray and watching carefully for beetles, which play dead when disturbed. Rock pools were investigated by stirring up the bottom and edges to cause the beetles to float, allowing them to be collected using a tea strainer. Sample locations are described in Table 3.6 and shown in Figure 3.8 (sample sites where no beetles were found are labelled 'negative' on this figure).

Table 3.6. Aquatic Coleoptera sample locations and descriptions for Maidens to Doonfoot SSSI

Site number	Grid reference	Date	Site description
1	NS25161575	14 May 2015	Seepage below Dunure Castle
2	NS31291935	20 May 2015	Wrack near Greenan Castle
3	NS31161932	20 May 2015	Rock pool near Greenan Castle
4	NS30151883	20 May 2015	Stream near Craig Tara
5	NS30511910	20 May 2015	Field drain near Craig Tara
6	NS23881051	10 June 2015	Stream (Glenside Burn)
7	NS24001071	10 June 2015	Wrack near Beggars Knowe
8	NS21970943	17 August 2015	Rock pool near Barwhin Point
9	NS22160971	17 August 2015	Rock pools below Barwhin Hill
10	NS22170972	17 August 2015	Seepage below Barwhin Hill
Negative	NS25151572	14 May 2015	Rock pools
Negative	NS25131576	14 May 2015	Rock pools
Negative	NS25111576	14 May 2015	Rock pools
Negative	NS25071570	14 May 2015	Rock pools
Negative	NS25141572	14 May 2015	Wrack
Negative	NS24751521	14 May 2015	Wrack
Negative	NS24741522	14 May 2015	Rock pools
Negative	NS23661055	10 June 2015	Rock pools
Negative	NS23691055	10 June 2015	Wrack
Negative	NS21960942	17 August 2015	Wrack

3.6.3.2 *Terrestrial Coleoptera*

We concentrated on bugvac sampling and sweeping areas of woodland with a ground flora of dog's mercury in order to find *T. elevatus*. Areas that were swept or disturbed were subsequently vacuum sampled to collect anything that dropped during sweeping. We completed 11 vacuum samples and 2 sweep samples on 27 and 28 August 2015. Sample locations are described in Table 3.7 and shown in Figure 3.9.

Table 3.7. Terrestrial Coleoptera sample locations and descriptions for Maidens to Doonfoot SSSI

Sampling method	Grid reference	Date	Site description
Bugvac	NS2228109589	27/08/2015	Broad-leaved woods near Culzean Castle. Heavy leaf litter with some dog's mercury
Bugvac	NS2227409623	27/08/2015	Broad-leaved woodland with dog's mercury dominant
Bugvac	NS2224109625	27/08/2015	Broad-leaved woodland with dog's mercury dominant
Bugvac	NS2384110518	27/08/2015	A ravine with dog's mercury as part of a herbaceous field layer
Bugvac	NS2397710703	28/08/2015	Broad-leaved woodland with dog's mercury dominant
Bugvac	NS2392910634	28/08/2015	Sycamore woodland with meadowsweet (*Filipendula ulmaria*), greater woodrush (*Luzula sylvatica*) and grasses
Bugvac	NS2405410720	28/08/2015	Sycamore woodland with dog's mercury field layer
Bugvac	NS2421410804	28/08/2015	Sycamore woodland with dog's mercury field layer
Bugvac	NS2658317601	28/08/2015	Sycamore woodland with dog's mercury field layer
Bugvac	NS2956018410	28/08/2015	Enriched woodland with grassy field layer
Bugvac	NS2958618384	28/08/2015	Enriched woodland with grassy field layer
Sweep net	NS2421410804	27/08/2015	Broad-leaved woodland with dog's mercury dominant
Sweep net	NS2658317601	28/08/2015	Sycamore woodland with dog's mercury field layer

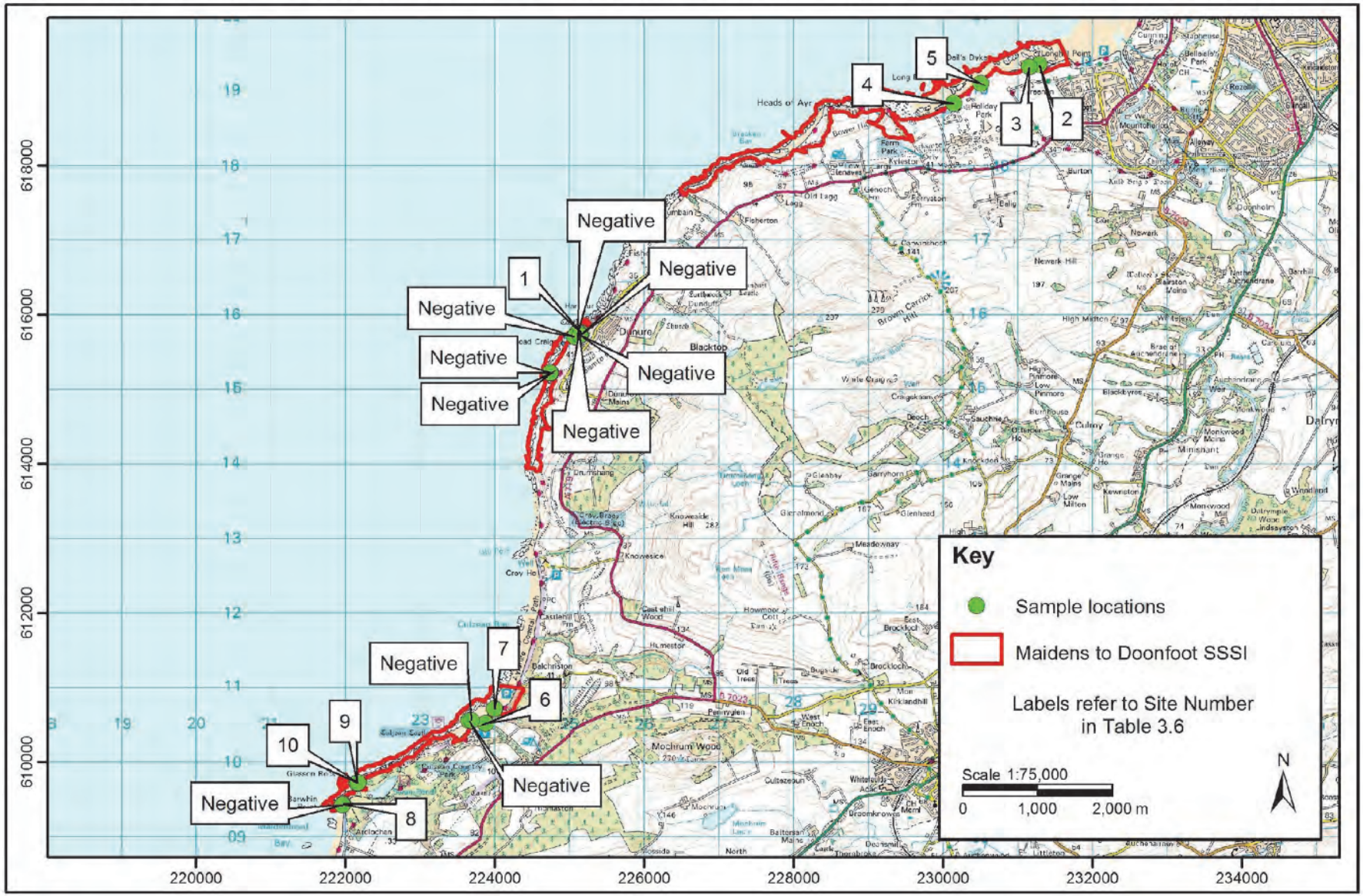

Figure 3.8. Aquatic Coleoptera sample locations at Maidens to Doonfoot SSSI (sample sites where no beetles were found are labelled 'negative')

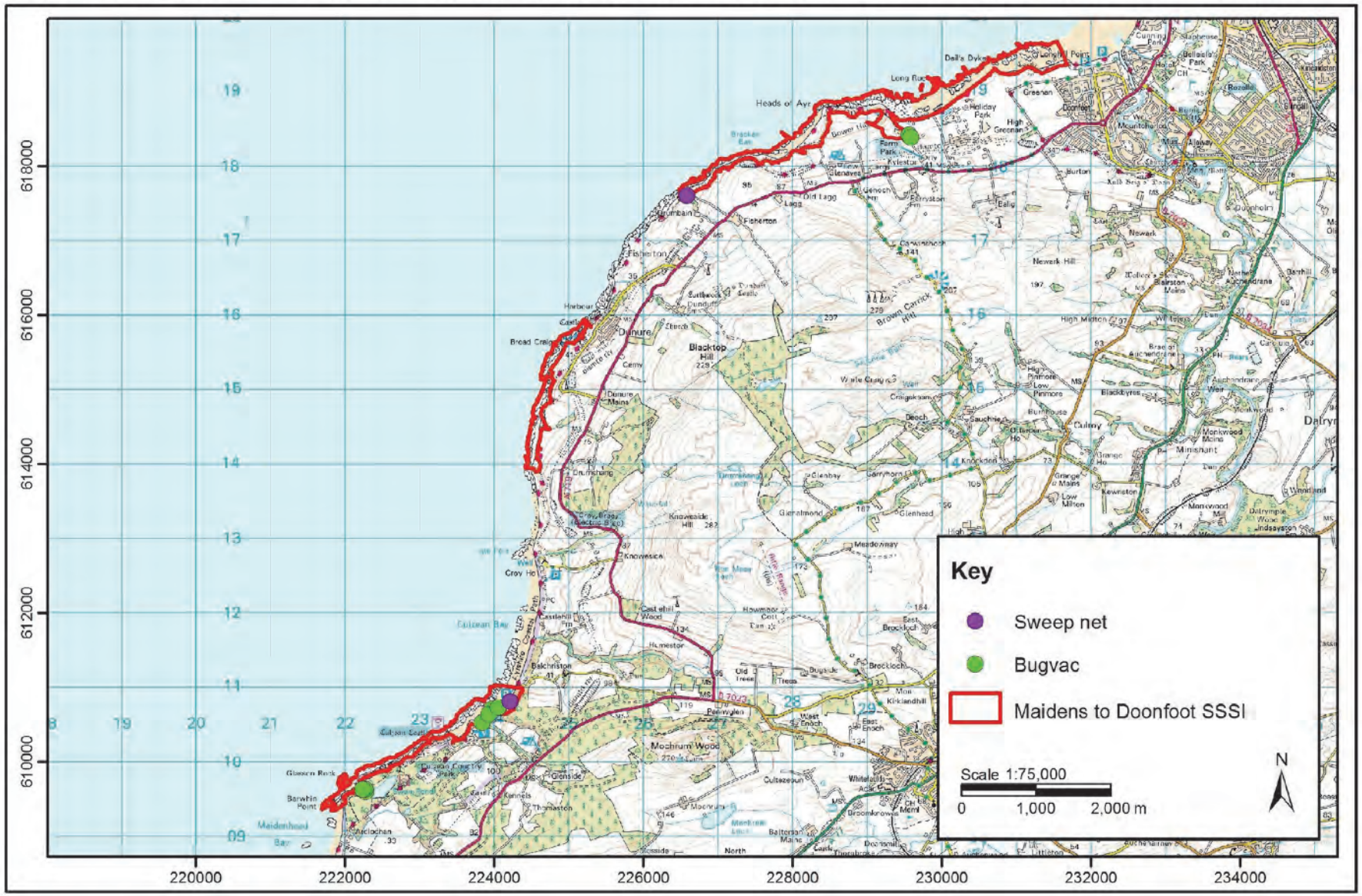

Figure 3.9. Terrestrial Coleoptera sample locations at Maidens to Doonfoot SSSI

3.6.4 Results

3.6.4.1 *Aquatic Coleoptera*

Twelve species of water beetle and related taxa were recorded in 2015. The target species *C. depressus* was found at sites 2, 7 and 8 (Photo 3.15); the first two samples from heaps of wrack and the third from a rock pool. *O. lejolisii* proved to be scarce at the site, found in only one of nine rock pool complexes investigated, being site 9 below Barwhin Hill (Photo 3.16), the site with the most extensive range of pools.

Some other sites proved to be of interest. The sample at site 6 (Photo 3.17), Glenside Burn, included the Nationally Scarce *Hydraena nigrita*. *Cercyon littoralis* (Nationally Scarce) was also recorded from wrack samples alongside *C. depressus*. *Hydroporus longulus* (SBL) was found in the seepage below Dunure Castle (Photo 3.18). Although no longer rated Nationally Scarce*, H. l*ongulus is still of interest in Scotland.

Megasternum concinnum (SBL) was recorded from a field drain (site 5) near Craig Tara. Despite being on the Scottish Biodiversity List this species is abundant and ubiquitous throughout Britain, found in decaying grass, dung and overwintering under stones and logs.

3.6.4.2 *Terrestrial Coleoptera*

T. elevatus was not recorded during surveys in 2015, although suitable habitat was present in the form of woodlands with dog's mercury providing the majority of the field layer (Photo 3.19). A total of 17 Coleoptera species were recorded during the survey, including *Kalcapion pallipes* which is another weevil associated with dog's mercury in woodland.

3.6.5 Site condition evaluation

3.6.5.1 *Aquatic Coleoptera*

The target species of aquatic beetles were found and, on that basis, the site can be considered to be in good condition.

3.6.5.2 *Terrestrial Coleoptera*

Although the target species was not found during our surveys, the habitat with which *T. elevatus* is associated, namely, deciduous woodland with a field layer of dog's mercury, was found in the two southern compartments of the SSSI. Therefore, since the presence of suitable habitat exists, particularly around Culzean Castle, the site is considered to be in good condition.

3.6.6 Site management recommendations

3.6.6.1 *Aquatic Coleoptera*

Neither of the species cited as indicators is particularly rare, though both still fit the criteria to be categorised as Nationally Scarce and are undoubtedly of interest when found. Their presence – or absence – is not informative in the context of the overall value of the site.

Invasive plants are present on site and may have negative impacts on the beetle diversity of the SSSI. Japanese knotweed (*Fallopia japonica*) was seen at NS24751521, and patches of giant hogweed (*Heracleum mantegazzianum*) were seen at NS23771053 and NS22160963. These should be removed at the earliest opportunity, using appropriate methods.

Additionally, the stream discharging to the beach near Craig Tara, coming out of the north of the caravan park (NS30251894), was full of "sewage fungus" (a mass of filamentous

bacteria which grows in water with high organic nutrient content), and would appear to be intensely polluted. It contained no insect life and the issues causing this organic pollution should be identified and rectified immediately.

3.6.6.2 *Terrestrial Coleoptera*

There are no specific management recommendations for terrestrial Coleoptera at this site.

3.7 Merrick Kells

3.7.1 Site description

Merrick Kells is a large SSSI (8,768 ha) located approximately 18 km north of Newton Stewart. The site is the largest area of unafforested upland habitat in Galloway and contains a complex of bogs and upland habitats. The site includes Silver Flowe, the southernmost example of oceanic blanket bog with *Racomitrium* hummock characteristics, and covers a large area in the south-east of the site. The variety of upland habitats and high humidity has resulted in several plant and bryophyte species, not normally found south of the Highland Boundary Fault, to colonise the area. Species include purple saxifrage (*Saxifraga oppositifolia*) and the moss *Campylopus setifolius*. *Aeshna caerulea* (azure hawker) is also found at its lowest latitude on the Merrick Kells SSSI.

3.7.2 Summary of known Coleoptera interests

Contacyphon kongsbergensis NS SBL
Contacyphon kongsbergensis is a marsh beetle (Scirtidae) found in *Sphagnum* bogs. Large numbers of Scirtidae species can be detected by vacuum sampling in these habitats (pers. obs.).

Hydroporus longicornis
Hydroporus longicornis is associated with slow-flowing seepages amongst dense mossy vegetation, primarily on a peat substrate and base-poor water. In the north of England and Scotland, this species is found in open habitats, whereas in the south of its range it can be found in shady situations. *H. longicornis* has never been found in modified or recreated habitats and so can be considered an indicator of excellent habitat.

Enochrus ochropterus
Enochrus ochropterus is a hydrophilid beetle typical of mesotrophic mossy fens where it can be found in ditches, ponds and heavily vegetated fens.

3.7.3 Methods

3.7.3.1 *Aquatic Coleoptera*

We completed 16 inventory samples, taking 10 from the Silver Flowe in May 2015 and six in Loch Macaterick in June. Sample locations are described in Table 3.8 and shown in Figures 3.10 and 3.11.

Table 3.8. Aquatic Coleoptera sample locations and descriptions for Merrick Kells SSSI

Sample number	Grid reference	Date	Site description
			Silver Flowe NNR
1	NX48048401	22/05/2015	Shallow pool
2	NX48038314	22/05/2015	Gravelly stream
3	NX47678368	22/05/2015	Pool
4	NX47538370	22/05/2015	Small excavated pool
5	NX47428365	22/05/2015	Excavated pool on knowe
6	NX47198354	22/05/2015	Gully beneath tussocks near rowan
7	NX46848391	22/05/2015	Edge of Loch Long of the Dungeon
8	NX46908394	22/05/2015	Flother
9	NX47018336	22/05/2015	Runnel
10	NX47428404	22/05/2015	Small stream
			Loch Macaterick
11	NS43849188	15/06/2015	Loch shore with *Lobelia*
12	NX43839186	15/06/2015	Loch with *Lobelia* and *Carex rostrata*
13	NX43819185	15/06/2015	Bed of *Carex rostrata*
14	NX43749181	15/06/2015	Sandy bay of loch
15	NX43729180	15/06/2015	Thin reedbed
16	NX43729174	15/06/2015	*Sphagnum* bed in loch edge

3.7.3.2 *Terrestrial Coleoptera*

We completed bugvac samples and set pitfall traps on the Silver Flowe and glen up to Loch Valley on 8 June 2015. We collected the pitfall traps on 22 June 2015 and reset them on 20 August 2015. We collected these pitfall traps on 3 September 2015 and also conducted vacuum sampling. Sample locations are described in Table 3.9 and shown in Figure 3.12.

Table 3.9. Terrestrial Coleoptera sample locations and descriptions for Merrick Kells SSSI

Sampling method	Grid reference	Date	Site description
Bugvac	NX4772783228	08/06/2015	Wet blanket bog with several *Sphagnum* spp. pools and bog myrtle
Bugvac	NX4767083387	08/06/2015	Wet blanket bog
Bugvac	NX4758983466	08/06/2015	Wet blanket bog
Bugvac	NX4727983809	08/06/2015	Purple moor-grass wet grassland
Bugvac	NX4722583902	08/06/2015	Purple moor-grass wet grassland
Bugvac	NX4365881842	08/06/2015	Small patch of blanket bog with cross-leaved heath (*Erica tetralix*) and cottongrasses (*Eriophorum* spp.)
Bugvac	NX4403982362	08/06/2015	Cross-leaved heath and purple moor-grass wet heath
Bugvac	NX4415382570	08/06/2015	Cross-leaved heath and purple moor-grass wet heath
Pitfall trap	NX4766983387	22/06/2015	Blanket bog on the Silver Flowe
Pitfall trap	NX4722483902	22/06/2015	Purple moor-grass north-west of the Silver Flowe
Pitfall trap	NX4415182572	22/06/2015	Purple moor-grass near two upland lochans
Bugvac	NX4772883221	03/09/2015	Blanket bog with bog myrtle (*Myrica gale*)
Bugvac	NX4738383118	03/09/2015	Purple moor-grass wet grassland
Bugvac	NX4730483009	03/09/2015	Wet blanket bog with several *Sphagnum* spp. pools and bog myrtle
Bugvac	NX4717082600	03/09/2015	Purple moor-grass wet grassland
Bugvac	NX4735782423	03/09/2015	Wet blanket bog with several *Sphagnum* spp. pools
Bugvac	NX4749982160	03/09/2015	Purple moor-grass wet grassland
Bugvac	NX4752781973	03/09/2015	Cross-leaved heath and purple moor-grass wet heath
Pitfall trap	NX4766983387	03/09/2015	Blanket bog on the Silver Flowe
Pitfall trap	NX4722483902	03/09/2015	Purple moor-grass north-west of the Silver Flowe

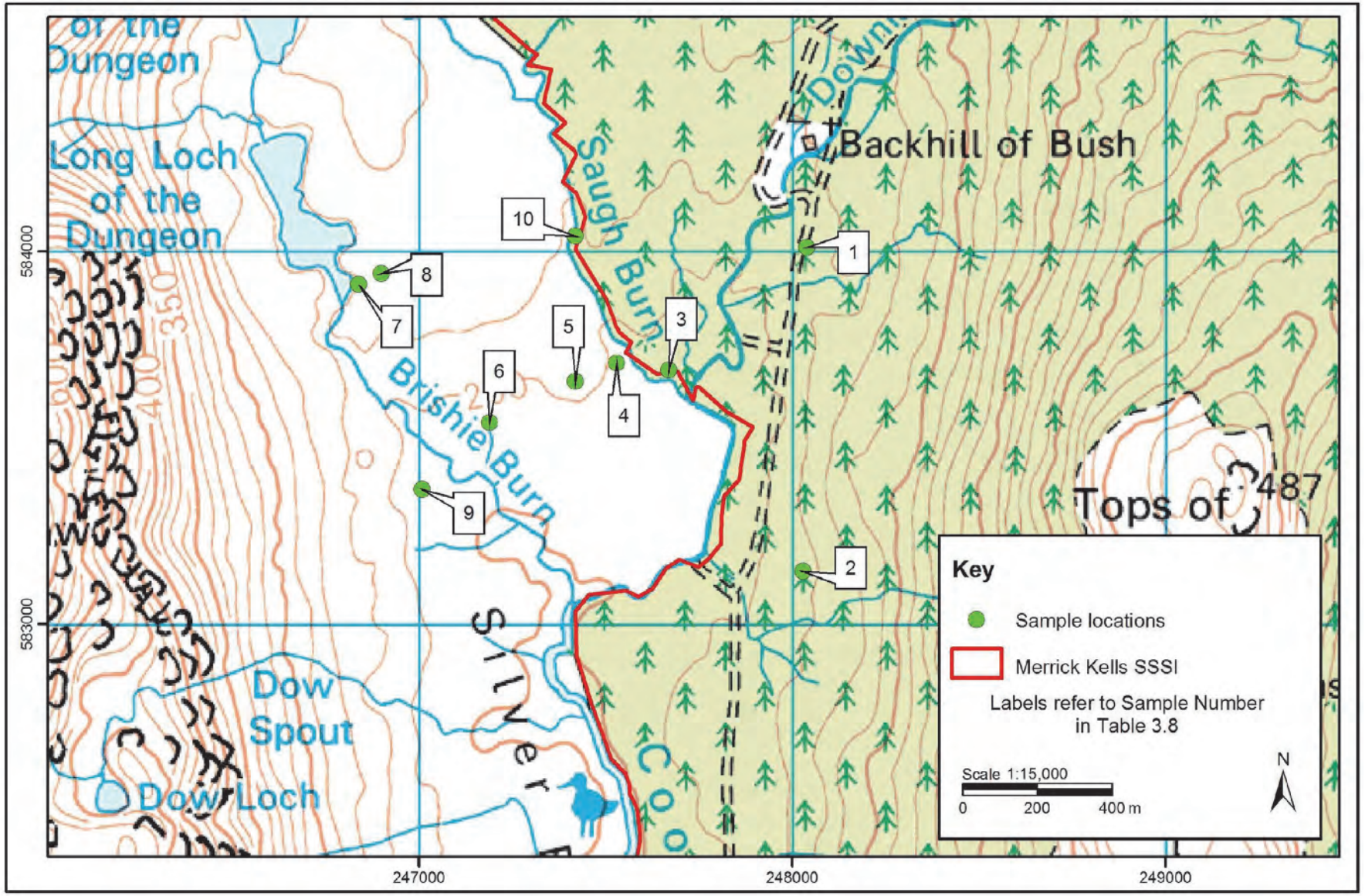

Figure 3.10. Aquatic Coleoptera sample locations on the Silver Flowe at Merrick Kells SSSI

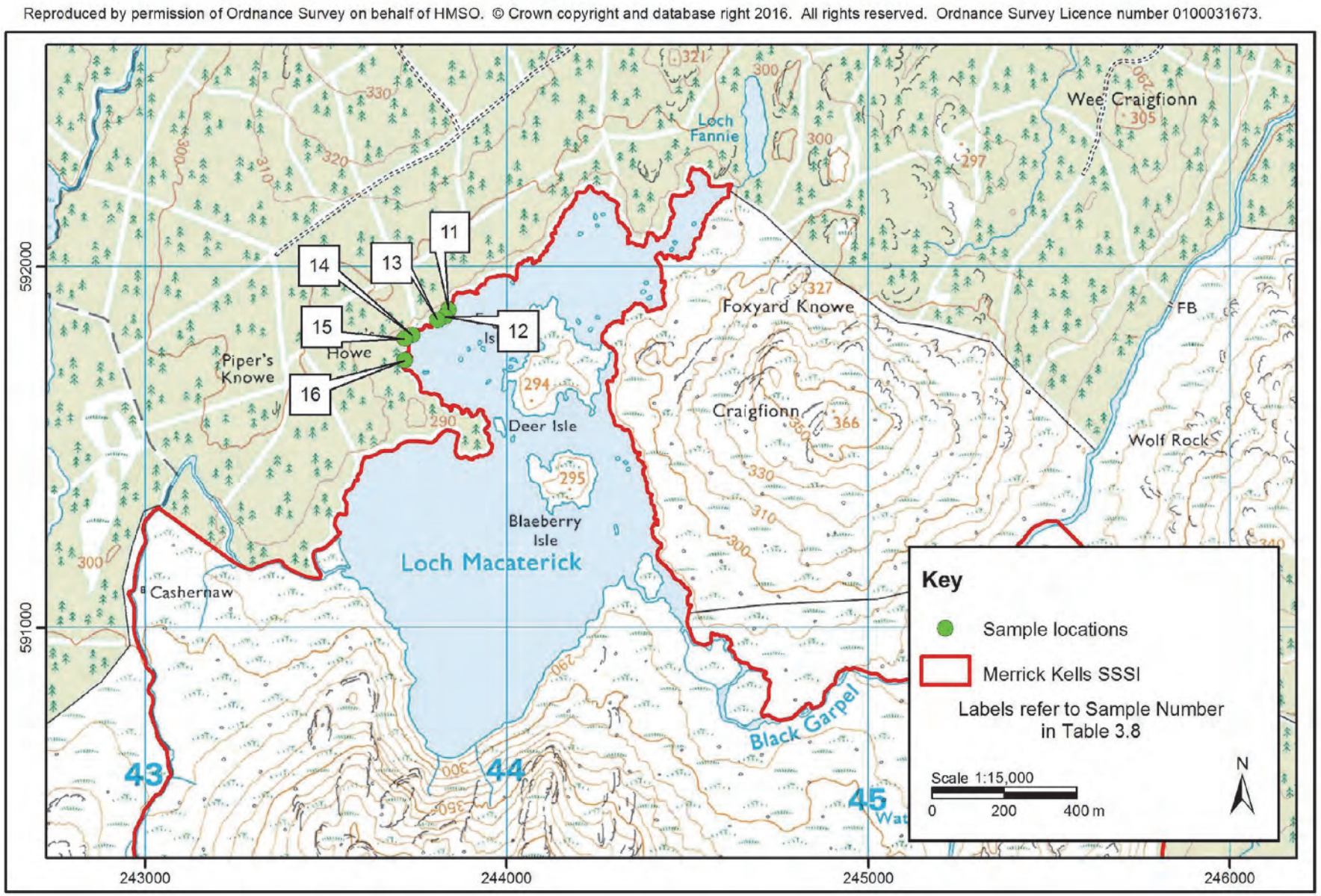

Figure 3.11. Aquatic Coleoptera sample locations around Loch Macaterick at Merrick Kells SSSI

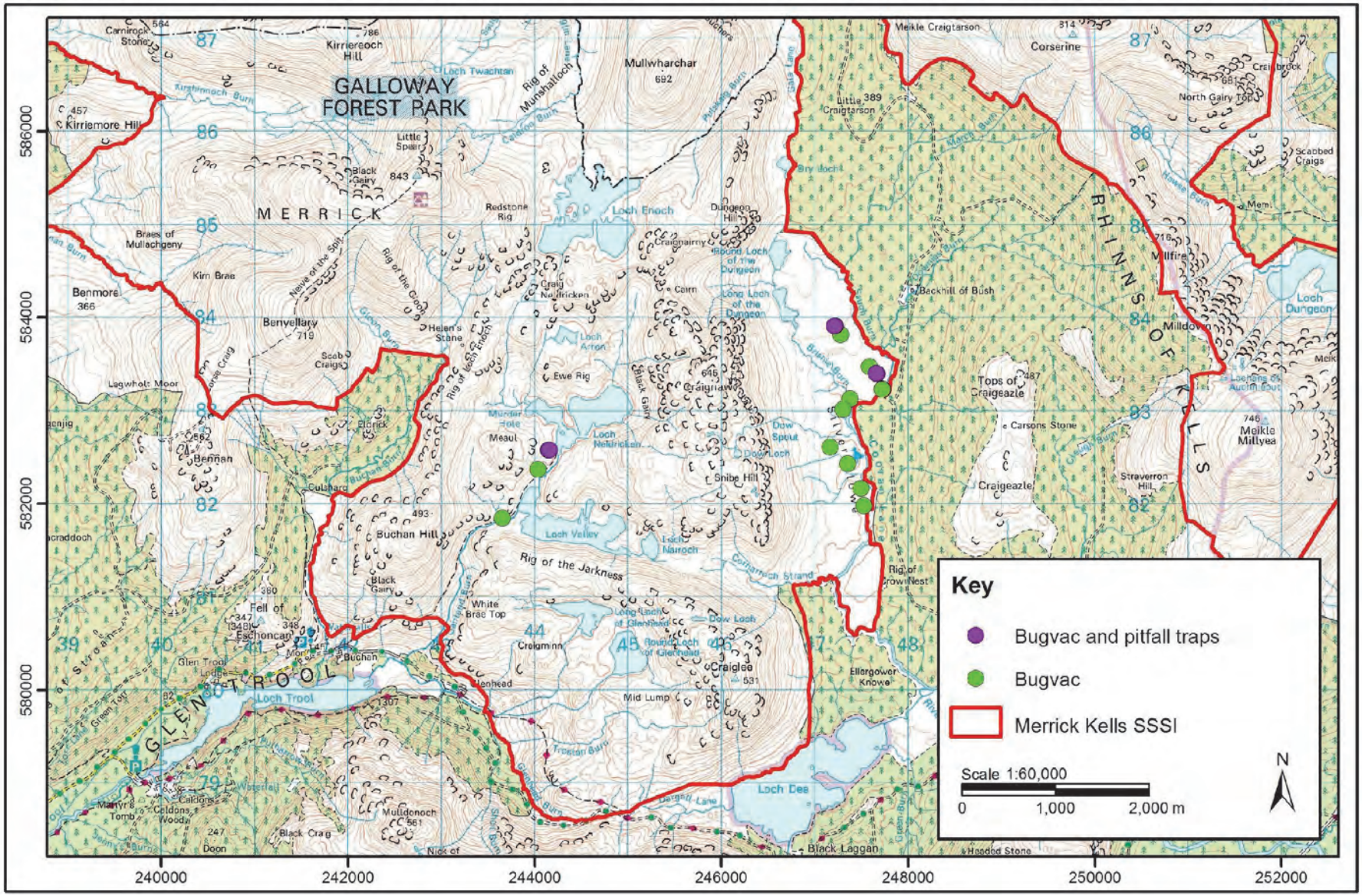

Figure 3.12. Terrestrial Coleoptera sample locations around Silver Flowe at Merrick Kells SSSI

3.7.4 Results

3.7.4.1 *Aquatic Coleoptera*

We recorded 20 species of aquatic Coleoptera on the Silver Flowe in 2015. These included *H. longicornis*, one of the species in the citation, found at sites 1 and 4 (Photo 3.20). Site 4 is one of the small (about 0.5 m^2) pools that appear to have been dug in the process of 'gripping' parts of the bog surface. A more typical habitat for *H. longicornis* would be any lagg surrounding a raised bog or other sites on peat receiving slow-moving water. Site 1 is more like the latter: it lies just on the edge of the SSSI. Only three species could be found in the Long Loch of the Dungeon (Photo 3.21) including *Ilybius aenescens*. The tension pool complex on the bog surface just south of Long Loch of the Dungeon (Photo 3.22) was also found to support *I. aenescens*, plus *Enochrus affinis* and *E. fuscipennis*; three species associated with *Sphagnum* in highly acid bogs.

Thirteen species were recorded in Loch Macaterick, five of them in common with the Silver Flowe. The most interesting species was *Donacia obscura* (Nationally Scarce, SBL), a reed beetle feeding on *Carex*, found to be abundant at site 13 (Photo 3.23). In addition, a riffle beetle associated more with lakes than with running water, *Oulimnius troglodytes* (Nationally Scarce), was found at site 15.

3.7.4.2 *Terrestrial Coleoptera*

None of the species listed in the citation were found, however 23 species of beetle were recorded including the Nationally Scarce ground beetle *Pterostichus aethiops*.

P. aethiops is a predatory ground beetle found in a variety of habitats including moorland and bogs, grassland and woodland usually in upland habitat, but also sometimes at lower altitudes. This species' distribution is widespread, but local, predominantly in south and west Scotland. A single individual was collected in a pitfall trap on Silver Flowe (NX4722483902 – Photo 3.24) on 3 September 2015.

3.7.5 Site condition evaluation

3.7.5.1 *Aquatic Coleoptera*

The water beetle fauna of the Silver Flowe has changed considerably since previous surveys. Some species - *Agabus arcticus, Hydroporus morio* and *Boreonectes multilineatus* have almost certainly disappeared as a result of climate change, in southern Scotland becoming restricted to higher ground or to deep lochs. Others would appear to have been affected by acid rain deposition, resulting in species such as *Agabus nebulosus* and *E. ochropterus* occupying sites vacated by others, e.g. *Agabus sturmii*, *Enochrus affinis* and *E. fuscipennis*. *H. longicornis* is an excellent indicator of structurally undisturbed bogs, but another of the cited species, *E. ochropterus*, was associated with the bog when it was recovering from deposition. Another species, *Contacyphon kongsbergensis*, appears to have been particularly frequent in 2002 when it was found at four SSSIs during SCM, but it was not found on any bog site that we surveyed in 2015.

On the basis of an improved species count on the Silver Flowe (20 species in 2015 as opposed to 19 in 2010 and 16 in 2002), plus the occurrence of the indicator species *H. longicornis*, the site can be regarded as in good condition. The loch in the northern part of the SSSI also continues to have water beetle interest, with 13 species in 2015 as opposed to 10 species in 1983, the last time it was surveyed.

3.7.5.2 *Terrestrial Coleoptera*

The Coleoptera fauna collected from the Silver Flowe represents a diverse range of species associated with bogs, moorland and wetlands, including the Nationally Scarce species *P. aethiops*. The overall extent of the bog and range of microhabitats (dominant vegetation, wetness, etc.) indicate that a wide variety of invertebrates may be present on site, including peatland specialists.

3.7.6 Site management recommendations

Water beetles are not the best indicators of intact bog surfaces, but, with the continuity of recording that they now offer, it is worth persisting with them in future SCM in the Merrick Kells SSSI as a whole. Also, there are water beetle species particularly associated with tension pool complexes.

No recommendations for site management are needed for Coleoptera.

As the 2015 SCM survey results suggest several species of aquatic beetle may be suffering negative impacts as a result of climate change, a detailed nationwide study is recommended to better understand these effects.

3.8 Minto Craigs

3.8.1 Site description

Minto Craigs is a small SSSI (11 ha) located approximately 2 km north-east of Denholm. The site consists of upland mixed ash woodland, for which it is notified, located on a steep crag of igneous rock. The woodland has been present on site for over 200 years, however, it has often been affected by humans felling and replanting stands. Despite this, the site is still notified for its vascular plant and lichen assemblage.

3.8.2 Summary of known Coleoptera interests

The woodland habitat supports several nationally important species, particularly saproxylics with *Sepedophilis immaculatus* named on the citation. Although not nationally scarce, this species is local in Scotland and feeds on fungal hyphae.

3.8.3 Methods

We made three visits to Minto Craigs, during mid- and late-summer, to maximise the temporally variable emergence of saproxylic beetles. We installed two pitfall trap transects on 17 June 2015 and collected them on 29 June 2015. We completed active searches on 17 June and 26 August 2015. We installed bark traps on 29 June 2015 and collected them on 26 August 2015. Sample locations are described in Table 3.10 and shown in Figure 3.13.

Table 3.10. Sample locations and descriptions for Minto Craigs SSSI

Sampling method	Grid reference	Date	Site description
Pitfall trap	NT5808420718	29/06/2015	Ash and sycamore canopy with fern field layer
Pitfall trap	NT5822620844	29/06/2015	Wych elm and ash canopy with herb field layer
Active search	NT5808420718	17/06/2015	Ash and sycamore canopy with fern field layer
Active search	NT5822620844	17/06/2015	Wych elm and ash canopy with herb field layer
Active search	NT5814720766	26/08/2015	Sycamore and ash canopy with herb field layer
Bark trap	NT5822720833	26/08/2015	Dead ash
Bark trap	NT5814920748	26/08/2015	Dead sycamore
Bark trap	NT5809120710	26/08/2015	Dead sycamore
Bark trap	NT5815120769	26/08/2015	Dead ash limb
Bark trap	NT5800720631	26/08/2015	Partially dead oak

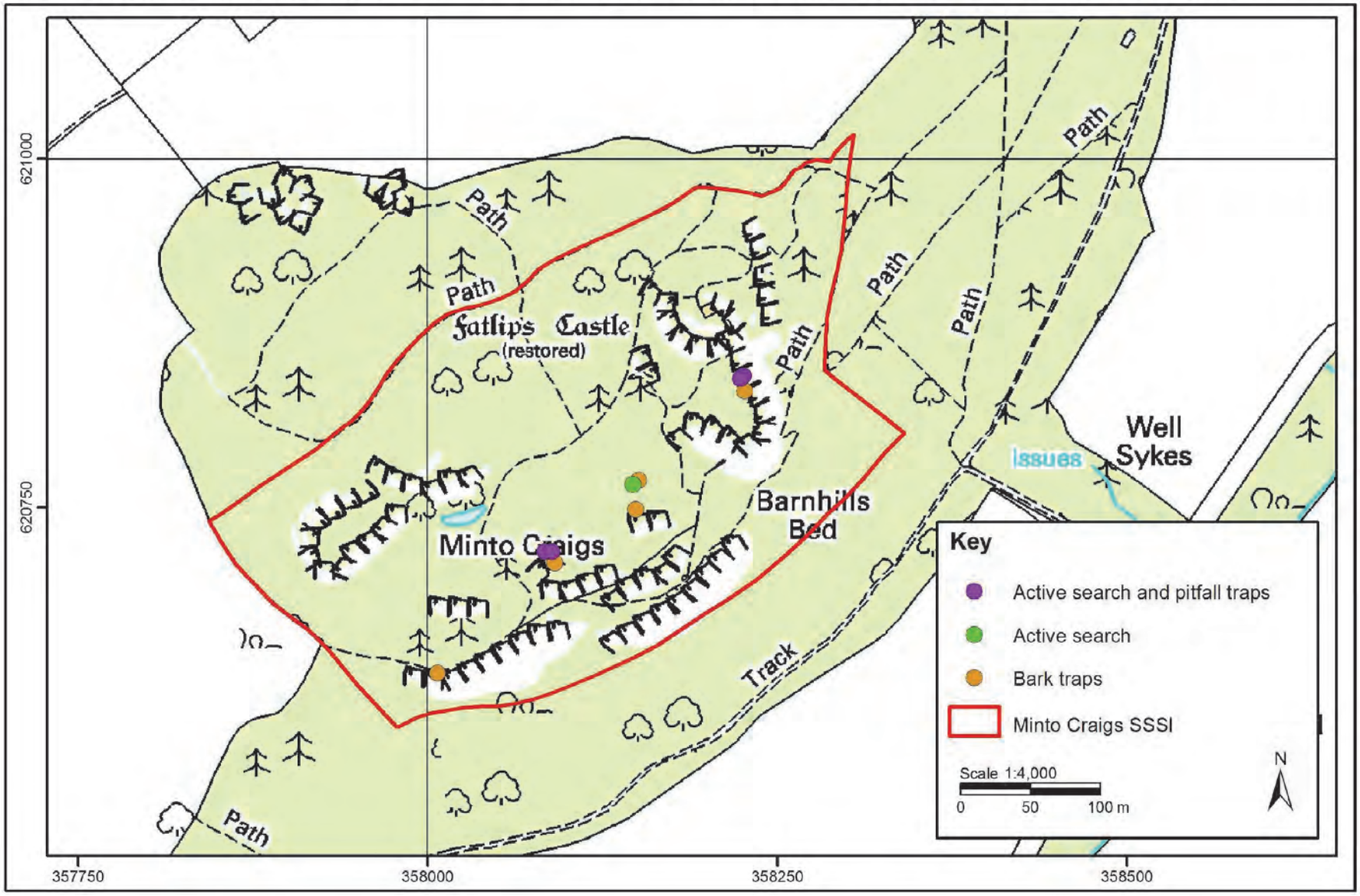

Figure 3.13. Sample locations at Minto Craigs SSSI

3.8.4 Results

We did not find the species named on the citation, *S. immaculatus*, although we did find four saproxylic species including *Megasternum concinnum* (SBL) and *Sinodendron cylindricum* (a local species in Scotland).

M. concinnum was recorded from pitfall traps amongst a mossy ground layer with no field layer on 29 June 2015 (NT5822620844). One male *S. cylindricum* was found under the bark of a fallen sycamore on 17 June 2015 (NT5822620844) and a second male was collected under the bark of a fallen ash limb on 26 August 2015 (NT5814720766). Pairs of adult *S. cylindricum* lay their eggs in sawdust-filled tunnels to allow the larvae to develop safely, and exhibit parental care, with the male guarding the tunnel entrance.

3.8.5 Site condition evaluation

Only four species of saproxylic beetle were recorded on site, of which one, *S. cylindricum*, is sparsely distributed in Scotland. Despite the apparent lack of scarce saproxylic species, the woodland is considered to be in good condition. Sycamore is the most numerous tree species on site, with ash and oak present in lower numbers and dominant in some areas. Minto Craigs provides several microhabitat features that can be exploited by saproxylic beetles, including rotting heartwood, loose bark, fungal fruiting bodies and rot holes (Photos 3.25 and 3.26). There is a good combination of fallen and standing deadwood and an excellent age structure that appears to maintain the annual supply of deadwood. Grazing by deer is managed by the landowners and is allowing a rich ground flora and light-demanding trees to grow and regenerate.

Minto Craigs was once an ornamental wood surrounding the then lodge and private museum of Fatlips Castle. Invasive non-native plants were cultivated in the ornamental wood historically, most notably *Rhododendron ponticum* (Photo 3.27). The spread of this plant through the woodland will inhibit growth of native trees and wildflowers.

3.8.6 Site management recommendations

The woodland has an excellent age structure and a plentiful supply of saproxylic habitats but guidance for deadwood management for invertebrates should be followed to maintain this (Cathrine & Amphlett, 2011; Buglife, 2011). However, the encroachment of *R. ponticum* through the SSSI is cause for concern. It is recommended in the first instance that *R. ponticum* is mapped and gradually removed from site using appropriate methods.

3.9 Rhidorroch Woods

3.9.1 Site description

Rhidorroch Woods is approximately 4 km east of Ullapool and covers an area of 740 ha. The site is notified for native pinewood, upland birch woodland and subalpine dry heath. The pinewood is a nationally important example of ancient pine forest only found in the Highland and Grampian regions. This pinewood is typical of Scotland, but also contains some specialties such as creeping lady's tresses orchid (*Goodyera repens*). The birch woodland throughout the site also includes a range of native tree species such as rowan (*Sorbus aucuparia*), wych elm, hazel and aspen (*Populus tremula*). Amongst the woodlands are patches of dry heath which are well-developed on the steep, well-drained south-west facing slopes of Glen Achall.

3.9.2 Summary of known Coleoptera interests

Microrhagus pygmaeus RDB3
Microrhagus pygmaeus is a false click beetle (Eucnemidae). It is associated with broad-leaved woodland where the larvae likely develop in deadwood. The adults have been recorded from beech, oak and birch, but also from sweeping bracken underneath these trees. The majority of broad-leaved trees on site are birch.

3.9.3 Methods

We concentrated our survey efforts on the habitats with which *M. pygmaeus* is associated. This included sweeping bracken in close proximity to deciduous deadwood. Birch is the only species offered by Rhidorroch Woods for which *M. pygmaeus* is known to use for larval development, and so this was targeted (Hyman & Parsons, 1992). We installed one transect of five pitfall traps on 29 June 2015 and collected these on 16 July. We also used a combination of beating, sweeping and bugvac sampling. Sample locations are described in Table 3.11 and shown in Figure 3.14.

Table 3.11. Sample locations and descriptions for Rhidorroch Woods SSSI

Sampling method	Grid reference	Date	Site description
Beating	NH2371893797	29/06/2015	Mature birch woods with several deadwood features and the field layer dominated by bracken
Beating	NH2394193033	16/07/2015	Open mixed woodland with mature birch and Scots pine. Ground flora dominated by dwarf shrubs
Bugvac	NH2371493738	16/07/2015	Open mixed woodland with mature birch and Scots pine. Ground flora dominated by dwarf shrubs
Bugvac	NH2373393750	16/07/2015	Open mixed woodland with mature birch and Scots pine. Ground flora dominated by dwarf shrubs
Bugvac	NH2394193033	16/07/2015	Open mixed woodland with mature birch and Scots pine. Ground flora dominated by dwarf shrubs
Pitfall traps	NH2371293728	16/07/2015	Mature birch woods with several deadwood features and the field layer dominated by bracken
Sweep	NH2371893797	29/06/2015	Mature birch woods with several deadwood features and the field layer dominated by bracken
Sweep	NH2373193762	29/06/2015	Mature birch woods with several deadwood features and the field layer dominated by bracken
Sweep	NH2373193785	29/06/2015	Mature birch woods with several deadwood features and the field layer dominated by bracken

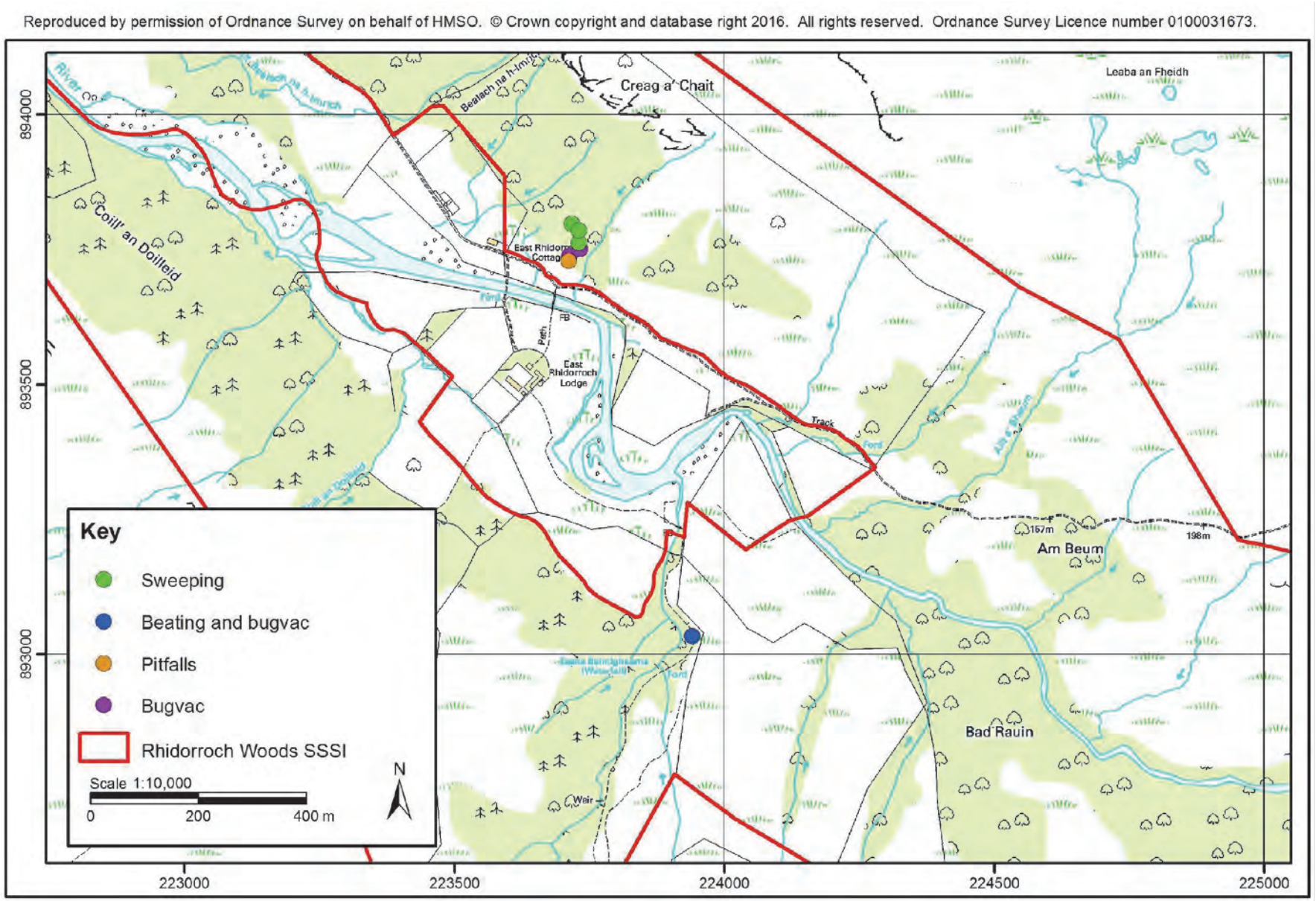

Figure 3.14. Sample locations at Rhidorroch Woods SSSI

3.9.4 Results

We collected a total of 17 terrestrial beetle species, however the target species *M. pygmaeus* was not found. Two of the beetle species found are saproxylic, although common (*Cis boleti* and *Anaspis rufilabris*).

3.9.5 Site condition evaluation

M. pygmaeus is described as being found in broad-leaved or pasture woodland, particularly old shaded oak woods (Hyman & Parsons, 1992; Alexander, 2002). The larvae develop in decayed deadwood with adults largely found by sweeping bracken beneath oak and beech trees. Oak and beech are not present at Rhidorroch, however adults have also been found within rotting birch (Hyman & Parsons, 1992), which is the dominant source of deciduous deadwood on the site. There is a large amount of deadwood available, both standing and fallen, including several mature trees (Photos 3.28 and 3.29). The open structure of the woodland has allowed the mature trees to grow wider and all have high levels of insolation, which is particularly favourable to saproxylic species. Additionally, birch regeneration is prominent in areas not clothed in bracken, although the development of younger birch should be monitored to ensure that a balance is maintained; i.e. that there is enough mature tree recruitment and that regrowth does not become too dense.

Due to the large amount of suitable habitat present, Rhidorroch Woods can be considered to be in good condition.

3.9.6 Site management recommendations

Continuity of broad-leaved deadwood must be maintained by ensuring the development of younger birch. Birch is a pioneer species, therefore will colonise areas kept clear of bracken. However a balance is needed to prevent birch from developing into stands of tall thin trees, therefore low levels of grazing are recommended to keep the woodland in a state of pasture. Guidance for deadwood management for invertebrates should also be followed (Cathrine & Amphlett, 2011; Buglife, 2011).

3.10 Taynish Woods

3.10.1 Site description

Taynish Woods is located just south of Tayvallich, in Argyll, and is approximately 392 ha in area. The site is notified for several biological features associated with the variety of habitats and topography present. Much of the woodland is composed of oak, and is one of the largest western oak woods in Britain. The site supports a nationally important bryophyte and lichen assemblage with over 250 and 475 moss and lichen species recorded, respectively. The SSSI is also home to three nationally important coastal habitats. The tidal rapids at the southern edge of the site have particularly clear waters and are inhabited by an outstanding sponge population. The rocky shore and saltmarsh features are also excellent examples of Scottish coastal habitats. To the south of the site lies a nationally important fen meadow with large numbers of devil's-bit-scabious (*Succisa pratensis*), which is the food plant for *Euphydryas aurinia* (marsh fritillary) for which the site is also notified. Lochan Taynish is an internationally important oligo-mesotrophic loch, characterised by its low to moderately rich nutrient content. This diverse range of habitats supports a wide range of associated invertebrate fauna and is therefore notified for beetle, fly, moth and dragonfly assemblages. The micro-moth assemblage is of particular importance, including over 450 species. The dragonfly assemblage consists of 13 species, including *Aeshna cyanea* (southern hawker) and *Brachytron pratense* (hairy dragonfly).

3.10.2 Summary of known Coleoptera interests

Only one beetle species, *Ceutorhynchus parvulus*, is mentioned in the citation. Three other species were included in the SNH ITT document for this project. These four species of beetle are described below:

Ceutorhynchus parvulus RDB3
This weevil is strongly associated with Smith's pepperwort (*Lepidium heterophyllum*) and is therefore restricted to disturbed, sandy or gravelly soils, as these substrates are preferred by the plant. The majority of records have come from near the coast. At Taynish Woods, likely habitat is along the verges of tracks and paths throughout the site.

Dendroxena quadrimaculata NS
Dendroxena quadrimaculata is a carrion beetle (Silphidae), although the adult predates lepidopteran larvae. The adult can be found in the canopy of broad-leaved trees, with a preference for oak, in search of prey. They overwinter in the ground layer amongst moss and litter.

Leptusa norvegica NS
Leptusa norvegica is an aleocharine staphlyinid. It exists beneath the bark of both deciduous and coniferous trees, with records from birch and Scots pine. It is described as widespread but local in Scotland by Hyman & Parsons (1994).

Meloe violaceus NS
Meloe violaceus (violet oil beetle) is a nest parasite of solitary mining bees. The larvae feed on the bee's eggs and pollen store before developing in to an adult. The adults lay their eggs in burrows dug in to the soil from which the larvae, called triungulins, hatch and climb on to the nearest flowers. The triungulins wait for a host bee to feed on the flower before climbing aboard the bee who returns to its nest. The triungulins then disembark and begin feeding. Triungulins are likely to be found on early flowering plants such as lesser celandine (*Ficaria verna*) and dandelion (*Taraxacum* spp.).

3.10.3 Methods

We made an initial visit on 30 April 2015 in sunny weather to search for the early emergence of *M. violaceus*, using active search techniques. We also took bugvac samples on 30 April and 10 June 2015. Two transects of five pitfall traps each were set on 10 June 2015 and collected on 24 June. We completed sweep netting in herbaceous vegetation on disturbed soils on 10 and 24 June 2015 and beating on 24 June 2015. We set bark traps on 10 June 2015 and collected these on 22 August. Sample locations are described in Table 3.12 and shown in Figure 3.15.

Table 3.12. Sample locations and descriptions for Taynish Woods SSSI

Sampling method	Grid reference	Date	Site description
Bugvac	NR7245682978	30/04/2015	Wet meadow with lesser celandine and light grazing
Bugvac	NR7239482916	30/04/2015	Wet meadow with lesser celandine and light grazing
Bugvac	NR7235082751	30/04/2015	Wet meadow with lesser celandine and light grazing
Bugvac	NR7219982812	30/04/2015	Wet meadow with lesser celandine and light grazing
Bugvac	NR7227983101	30/04/2015	Wet meadow with lesser celandine and light grazing
Bugvac	NR7253083424	30/04/2015	Grazed grassland adjacent to path with lesser celandine
Bugvac	NR7327484738	30/04/2015	Wet heath adjacent to path
Bugvac	NR7320684797	30/04/2015	Oak woodland with bracken and blaeberry ground flora
Bugvac	NR7352385211	30/04/2015	Neutral grassland on summit of Barr Mòr
Bugvac	NR7388985747	30/04/2015	Birch woodland with grassy ground flora
Bugvac	NR7382084968	10/06/2015	Birch woodland on damp ground with patches of *Sphagnum* spp.
Bugvac	NR7384684879	10/06/2015	Alder woodland with neutral field layer and coastal influence
Bugvac	NR7368584779	10/06/2015	Near a seepage in oak woodland
Bugvac	NR7352984561	10/06/2015	Oak woodland with blaeberry ground flora
Bugvac	NR7296583581	10/06/2015	Birch woodland with purple moor-grass ground flora
Pitfall trap	NR7382084966	24/06/2015	Birch woodland on damp ground with patches of *Sphagnum* spp
Pitfall trap	NR7357084606	24/06/2015	Open patch in oak woodland with ferns in the field layer
Sweep net	NR7379785316	10/06/2015	Road verge with herbs of disturbed soils
Sweep net	NR7263583691	10/06/2015	Road verge with herbs of disturbed soils
Sweep net	NR7260783620	24/06/2015	Herbs along the side of the path
Sweep net	NR7247783232	24/06/2015	Herbs along the side of the path
Bark trap	NR7380984969	24/06/2015	Birch
Bark trap	NR7380484966	24/06/2015	Birch
Bark trap	NR7381084960	24/06/2015	Birch
Bark trap	NR7381084950	24/06/2015	Birch
Bark trap	NR7381284952	24/06/2015	Birch
Active search	NR7241982940	30/04/2015	Wet meadow with lesser celandine and light grazing

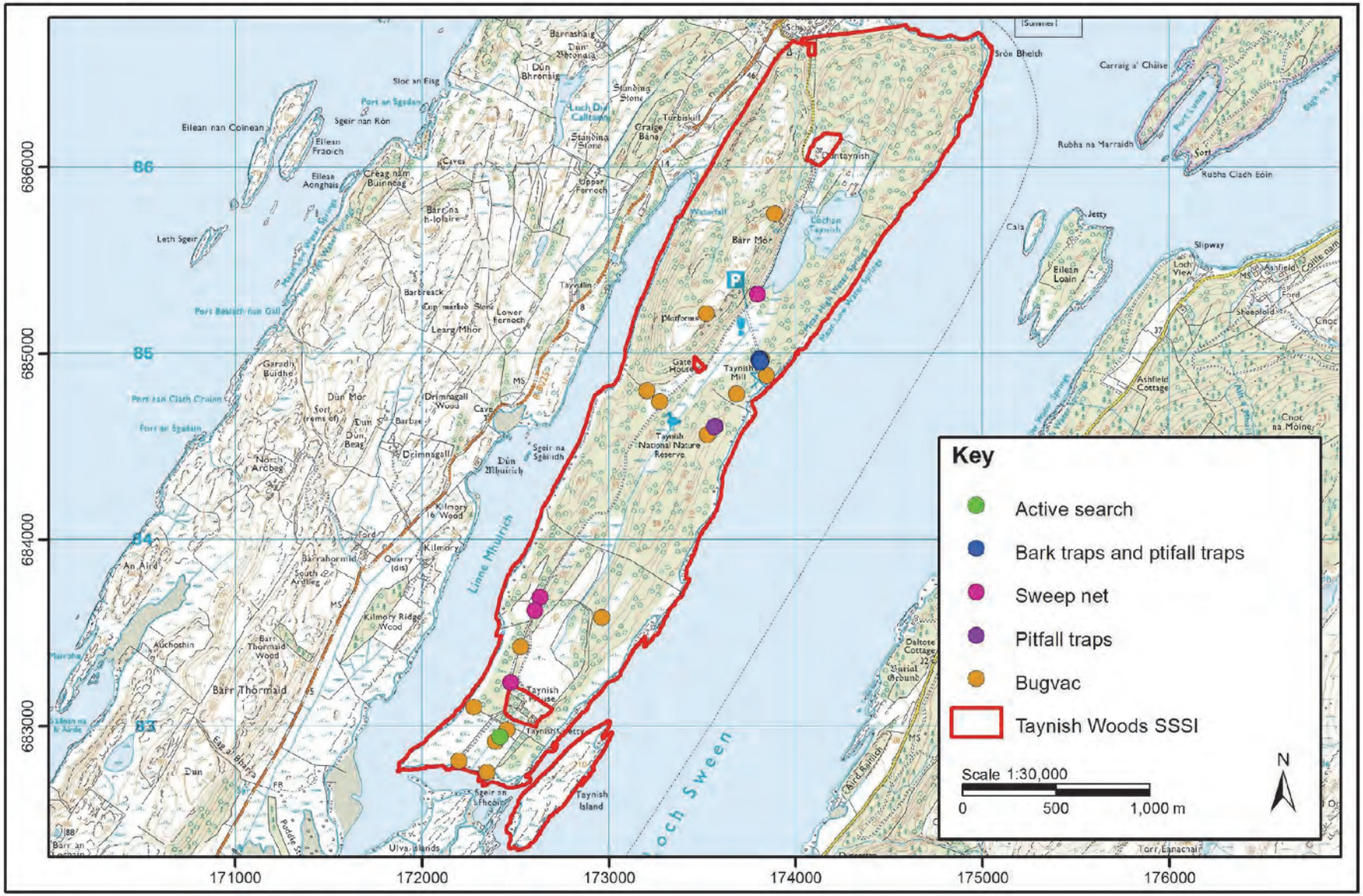

Figure 3.15. Sample locations at Taynish Woods SSSI

3.10.4 Results

We did not find any of the target species during our surveys. We recorded seven non-target species of Coleoptera, none of which are of conservation concern.

3.10.5 Site condition evaluation

Despite not finding the target species, the site remains in excellent condition. The woodlands throughout the site have a very diverse age structure with open and closed canopy patches. During beating, although *D. quadrimaculata* was not recorded, several lepidopteran larvae were dislodged, particularly from the oak woodland (Photo 3.30). The wet meadow is managed excellently for the marsh fritillary by regular grazing, maintaining the successional state of the habitat (Photo 3.31). The conservation grazing regime on the meadow provides a high density of wildflowers and some suitable nesting habitat for solitary bees maintaining the likelihood of *M. violaceus* persisting on the site. *L. norvegica* has been found living under the bark of birch which is plentiful on site, with several dead trees exhibiting peeling bark suitable for this species (Photo 3.32). Although Smith's pepperwort was not found on site, it is possible that it was present in areas not surveyed. Disturbed habitats along the tracks and paths were swept without success but it is still possible this plant and *C. parvulus* persists along the coasts at Taynish Woods.

3.10.6 Site management recommendations

Taynish Woods are considered to be in excellent condition, therefore no specific management recommendations are required for beetles.

3.11 Tweedwood - Gateheugh

3.11.1 Site description

Tweedwood – Gateheugh (29 ha) is a long strip of woodland along the northern bank of the River Tweed and is approximately 4 km east of Melrose. The site is known to have been wooded for over 300 years and exhibits several plants rare in Scotland including lesser meadow-rue (*Thalictrum minus*) and spindle (*Euonymus europaeus*).

3.11.2 Summary of known Coleoptera interests

Microscydmus nanus NS
Microscydmus nanus (Scydmaenidae) is a woodland species that inhabits the litter layer, but has also been found in rotten wood and moss on fern roots (Hyman & Parsons, 1994).

Ptinus subpilosus NS
Ptinus subpilosus is a spider beetle (Ptinidae), so named because the adults resemble small spiders in shape. It is restricted to ancient broad-leaved woodland and pasture woodland where it inhabits old hollow trees and is also found under bark. *P. subpilosus* has largely been found from oak and sycamore, but in Scotland has also been taken from Scots pine.

3.11.3 Methods

We made two visits during mid- and late-summer to record beetles whose emergence coincide with these seasons. We installed and collected bark traps on 15 June and 24 August 2015 respectively. We beat vegetation on 15 June 2015 and carried out active searches on 15 and 16 June, and 24 August 2015 on both the Gledswood and Bemersyde estates. Sample locations are described in Table 3.13 and shown in Figure 3.16.

Table 3.13. Sample locations and descriptions for Tweedwood - Gateheugh SSSI

Sampling method	Grid reference	Date	Site description
Beating	NT5736934770	15/06/2015	Oak, ash and beech woodland with ground flora dominated by ivy (*Hedera helix*)
Beating	NT5733034802	15/06/2015	Oak, ash and beech woodland with ground flora dominated by ivy
Beating	NT5717634839	15/06/2015	Oak, ash and beech woodland with ground flora dominated by ivy
Beating	NT5729534829	15/06/2015	Oak, ash and beech woodland with ground flora dominated by ivy
Active search	NT5740234792	15/06/2015	Oak, ash and beech woodland with ground flora dominated by ivy
Active search	NT5759434388	15/06/2015	Ash and beech with holly (*Ilex aquifolium*) and small wood pile
Active search	NT5797634426	16/06/2015	Steep slope with wych elm, yew, sycamore and oak. Dog's mercury dominant where soil is stable
Active search	NT5861134156	16/06/2015	Oak and ash canopy with fern and herb field layer
Active search	NT5845833120	24/08/2015	Oak and ash canopy with fern and herb field layer
Active search	NT5902533835	24/08/2015	Oak and ash canopy with fern and herb field layer
Bark trap	NT5740234792	24/08/2015	Wych elm
Bark trap	NT5741734794	24/08/2015	Wych elm
Bark trap	NT5741934792	24/08/2015	Wych elm
Bark trap	NT5742534781	24/08/2015	Horse chestnut (*Aesculus hippocastanum*)
Bark trap	NT5744334773	24/08/2015	Dead horse chestnut
Bark trap	NT5891634427	24/08/2015	Wych elm
Bark trap	NT5892534439	24/08/2015	Dead wych elm
Bark trap	NT5891634448	24/08/2015	Yew
Bark trap	NT5892634447	24/08/2015	Sycamore
Bark trap	NT5894034436	24/08/2015	Oak

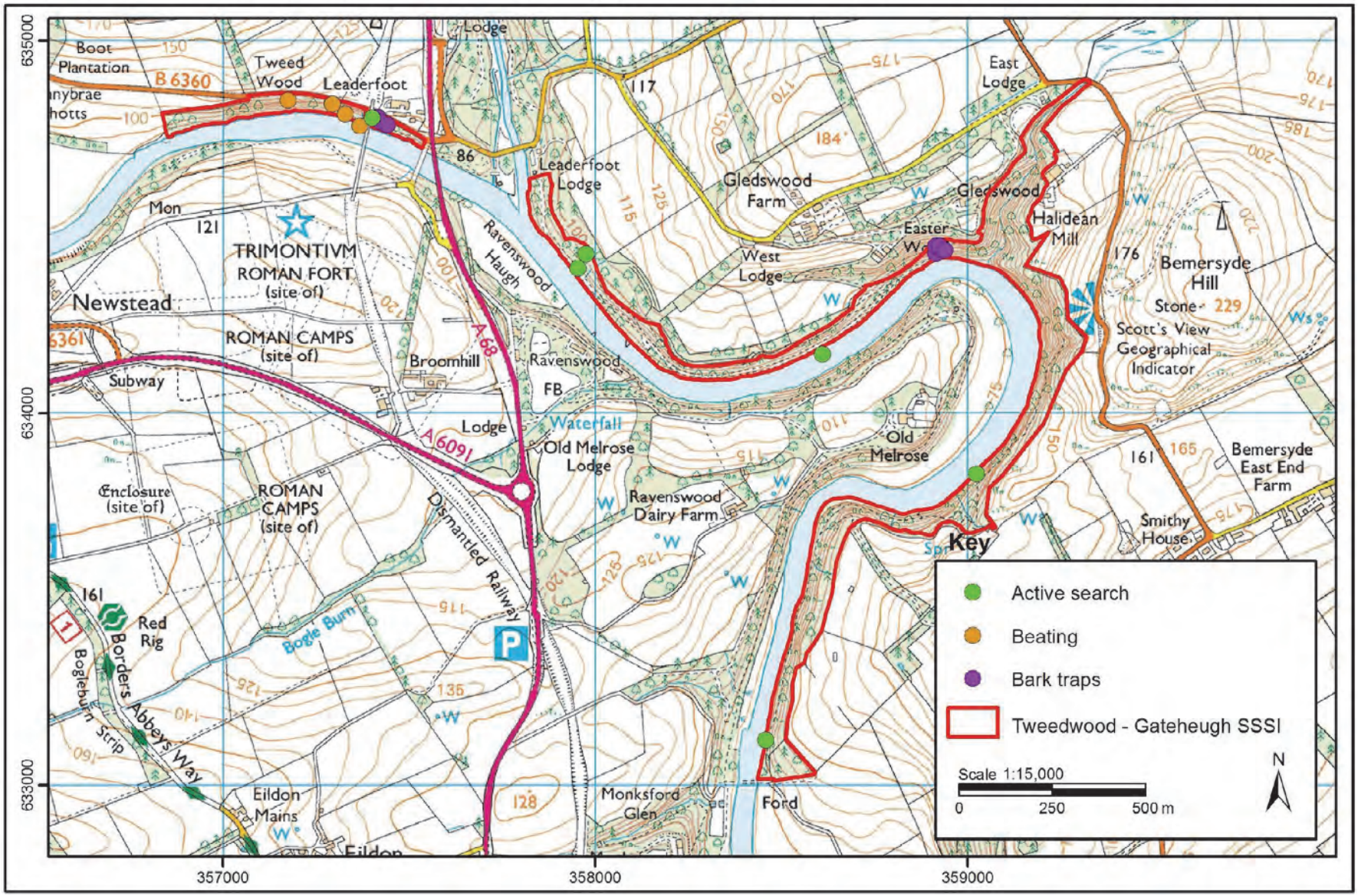

Figure 3.16. Sample locations at Tweedwood - Gateheugh SSSI

3.11.4 Results

Neither species listed on the citation were found during our 2015 surveys, however another Nationally Scarce beetle, *Cis jacquemartii*, was recorded. A total of 30 beetles were recorded, of which eight are saproxylic, and several of which are very local in Scotland, at or near the northerly limit of their UK distribution.

C. jacquemartii is a species of minute fungus beetle found in birch woodland on the hoof fungus *F. fomentarius*. Its UK distribution is restricted to Scotland where it is very local, with records from South East, North East and North West Scotland. One individual was collected during active searching (NT5797634426) on 16 June 2015.

Other notable species recorded include *Sinodendron cylindricum, Anaspis garneysi, Ernobius mollis* and *Rhizophagus parallelocollis. S. cylindricum* is a local species for Scotland and *A. garneysi*, a false flower beetle (Scraptiidae) is near the northerly limit of its UK distribution at this site. *E. mollis*, a wood-borer beetle, has a very local distribution in Scotland and one record of *R. parallelocollis* is known from Scotland (Mugdog Wood, recorded by R.A. Crowson between 1954 and 1983).

3.11.5 Site condition evaluation

The woodland within the Bemersyde Estate bordering the Tweed has an excellent age structure with several mature trees and a healthy amount of regrowth in the understorey (Photo 3.33). The canopy is comprised of oak and ash, both providing excellent saproxylic habitats in older examples such as aerial deadwood, loose bark, fallen limbs and fungal fruiting bodies. The woodland lying within the Gledswood Estate, and some in the Bemersyde Estate, has a more even age structure in places and larger stands of beech which shade out the regeneration of shade-intolerant trees such as oak (Photo 3.34). Although beech is not native to Scotland, it is associated with several saproxylic species, so it is important to retain older beeches so as to not lose this resource.

Overall the site supports a wide range of saproxylic habitats and has several records of species close to the northernmost extent of their range. This woodland is a limited resource in Scotland and is therefore of significant importance. Considering the range of habitats present, the site is considered to be in good condition.

3.11.6 Site management recommendations

A varied age structure within woodland is important for the continuous supply of standing and fallen deadwood, which is an essential requirement for *C. jacquemartii, S. cylindricum* and other saproxylic species. It is therefore recommended that the woodland within the Gledswood Estate be split into compartments and managed accordingly to thin beech, encourage a diverse age structure and create more open glades. In existing or newly created glades, low intensity grazing will aid in slowing the growth of fast-growing trees such as ash, which may shade out sun-loving species.

It is also important that in areas where wood is removed from site (e.g. firewood), as much deadwood as possible is left *in situ* so that the saproxylic resource is not lost. Guidance for deadwood management for invertebrates should be followed (Cathrine & Amphlett, 2011; Buglife, 2011).

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ANNEX 1: PHOTOGRAPHS

Photo 2.1. An example of a pitfall trap used during 2015 surveys (NH2371293728 facing south-east). Photo: Chris Cathrine.

Photo 2.2. An example of a bark trap used during 2015 surveys (NT5921407963 facing north-east). Photo: Glenn Norris.

Photo 2.3. Using bugvac amongst woodland vegetation (NR7388985747 facing north-west). Photo: Glenn Norris.

Photo 3.1. An example of over-shading by beech and sycamore in Abbey Craig SSSI (NT8077695630 facing north). Photo: Glenn Norris.

Photo 3.2. An example of the deadwood resource available in Abbey Craig SSSI (NT8086395532 facing south-east). Photo: Glenn Norris

Photo 3.3. Open pine and birch woodland near Doire Mòr in Ardgour Pinewoods SSSI (NM9171676761 facing north-east). Photo: Glenn Norris

Photo 3.4. Open pine and birch woodland along the Cona Glen in Ardgour Pinewoods SSSI (NM9681971552 facing south-west). Photo: Glenn Norris

Photo 3.5. Riparian alder woodland along Wolfehopelee Burn in Cragbank and Wolfehopelee SSSI (NT5920407968 facing north-east). Photo: Glenn Norris

Photo 3.6. Hazel coppice and mature oaks in the Cragbank compartment of Cragbank and Wolfehopelee SSSI (NT5902807155 facing north-west). Photo: Glenn Norris

Photo 3.7. Encroaching bracken along Wolfehopelee Burn (NT5919207970 facing south-east). Photo: Glenn Norris

Photo 3.8. An example of montane habitat near the summit of Sgùrr nan Clach Gaela where Gonioctena pallida was found in the Fannich Hills SSSI (NH1839271501 facing south-west). Photo: Chris Cathrine

Photo 3.9. Racomitrium and dwarf shrubs near the summit of Sgùrr Mòr where Phratora polaris (Nationally Scarce) was recorded (NH2032071804). Photo: Chris Cathrine

Photo 3.10. Example of the habitat near the summit of Beinn Liath Mòr Fannaich where Nebria nivalis (Nationally Scarce) was recorded (NH219987243 facing north-west). Photo: Chris Cathrine

Photo 3.11. Example of the habitat along Sgùrr nan Each where Patrobus septentrionis (Nationally Scarce) was recorded (NH1846369754 facing south). Photo: Chris Cathrine

Photo 3.12. Example of the habitat near the summit of Creag Dhubh Fannaich where Cymindis vaporariorum (Nationally Scarce) was recorded (NH2347171852 facing west). Photo: Chris Cathrine

Photo 3.13. Dead standing birch with Fomes fomentarius where Bolitophagus reticulatus (Nationally Scarce) was recorded (NH3781806058 facing west). Photo: Glenn Norris

Photo 3.14. Several mature trees but no regeneration due to excessive bracken and grazing livestock (NH3988601807 facing south). Photo: Glenn Norris

Photo 3.15. Wrack on the beach north of Culzean Castle in the Maidens to Doonfoot SSSI. These small heaps of wrack had both Cercyon depressus and C. littoralis (both Nationally Scarce) (NS24001071 facing south). Photo: Garth Foster

Photo 3.16. A rock pool below Barwhin Hill in the Maidens to Doonfoot SSSI. Note the encrustation of salt typifying a hypersaline pool occupied by Ochthebius lejolisii (Nationally Scarce) (NS22160971 facing south). Photo: Garth Foster

Photo 3.17. The Glenside Burn in the Maidens to Doonfoot SSSI, a site for Hydraena nigrita (Nationally Scarce) (NS23881051 facing east). Photo: Garth Foster

Photo 3.18. Seepage below Dunure Castle in the Maidens to Doonfoot SSSI, a site for Hydroporus longulus (SBL) (NS30271894 facing east). Photo: Garth Foster

Photo 3.19. Broad-leaved woodland within the Maidens to Doonfoot SSSI with a field layer of dog's mercury (Mercurialis perennis) (NH3988601807 facing east). Photo: Glenn Norris

Photo 3.20. Site 4, a shallow pool on the surface of the Silver Flowe NNR within the Merrick Kells SSSI, a site for Hydroporus longicornis (NX47538370 facing west). Photo: Garth Foster

Photo 3.21. Long Loch of the Dungeon within the Merrick Kells SSSI (NX46848391 facing north-west). Photo: Garth Foster

Photo 3.22. Site 8, a flother on the bog surface above Long Loch of the Dungeon within the Merrick Kells SSSI (NX46908394 facing north-west). Photo: Garth Foster

Photo 3.23. Site 13 within the Merrick Kells SSSI, a bed of Carex rostrata at Loch Macaterick supporting the reed beetle Donacia obscura (Nationally Scarce, SBL) (NX43819185 facing south-east). Photo: Garth Foster

Photo 3.24. Purple moor-grass (Molinia caerulea) dominated wet heath on the Silver Flowe where Pterostichus aethiops (Nationally Scarce) was found (NH3988601807 facing north-west). Photo: Chris Cathrine

Photo 3.25. Good age structure and plentiful deadwood supply available in Minto Craigs SSSI (NT5808420718 facing south-west). Photo: Glenn Norris

Photo 3.26. Standing and fallen deadwood present in Minto Craigs SSSI (NT5814720766 facing north-east). Photo: Glenn Norris

Photo 3.27. Rhododendron ponticum is becoming prevalent in some areas of the SSSI and must be controlled to ensure regeneration of native trees (NT5805720715 facing south). Photo: Glenn Norris

Photo 3.28. Mixed woodland in Rhidorroch Woods SSSI with mature birches (NH2394193033 facing north). Photo: Chris Cathrine

Photo 3.29. Mixed woodland at Rhidorroch Woods SSSI with mature birches and bracken understory (NH2371293728 facing north). Photo: Chris Cathrine

Photo 3.30. Excellent oak wood habitat with several mature oaks (NR7368584779 facing south-west). Photo: Glenn Norris

Photo 3.31. Wet meadow with several early wildflowers such as lesser celandine (Ficaria verna) providing foraging habitat for solitary bees (NR7239482916 facing south-west). Photo: Glenn Norris

Photo 3.32. Mature birch woodland with several specimens exhibiting peeling bark (NR7382084968 facing south). Photo: Glenn Norris

Photo 3.33. Bemersyde Estate with mature oaks and some regeneration (NT5845833120 facing north). Photo: Glenn Norris

Photo 3.34. An example of an even-aged stand on the Bemersyde Estate that would benefit from thinning (NT5859033608 facing south). Photo: Glenn Norris

ANNEX 2: SITE SPECIES LISTS

The following tables provide full lists of species recorded during 2015 site condition monitoring surveys.

The conservation status is abbreviated as detailed in Table 1.4.

Table A1.1. Abbey Craig SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Carabidae	*Nebria brevicollis*	NS8084995656	1	04/09/2015		Bark trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NS8087595488	2	04/09/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus madidus*	NS80869553	1	04/09/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus melanarius*	NS8087595488	1	04/09/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Dalopius marginatus*	NS80869553	1	04/09/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Atrecus affinis*	NS80869553	1	04/05/2015		Active search	Glenn Norris	NMS
Coleoptera	Staphylinidae	*Ocypus olens*	NS8087595488	1	04/09/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Xantholinus linearis*	NS8087595488	6	04/09/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NS8084995656	1	04/09/2015		Bark trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NS8087595488	2	04/09/2015		Active search	Glenn Norris	Chris Cathrine

Table A1.2. Ardgour Pinewoods SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Cerambycidae	*Rhagium bifasciatum*	NM9558971434	1	16/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Cerambycidae	*Rhagium bifasciatum*	NM9581271376	1	16/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Lochmaea suteralis*	NM9171676761	1	16/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Cis boleti*	NM9171676761	1	16/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Cis jacquemartii*	NM9171676761	1	16/07/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Cis jacquemartii*	NM9581271376	3	16/07/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Monotomidae	*Rhizophagus dispar*	NM9171676761	1	16/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Tenebrionidae	*Bolitophagus reticulatus*	NM9171676761	1	16/07/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine

Table A1.3. Cragbank and Wolfehopelee SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Byturidae	*Byturus tomentosus*	NT5954207821	1	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Byturidae	*Byturus tomentosus*	NT5921407963	2	30/06/2015		Sweep net	Glenn Norris	Chris Cathrine
Coleoptera	Cantharidae	*Rhagonycha limbata*	NT5954207821	2	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Cantharidae	*Rhagonycha testacea*	NT5954207821	1	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Abax parallelipepidus*	NT5903007159	1	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Abax parallelipepidus*	NT5923707971	8	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Abax parallelipepidus*	NT5902807155	20	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Bradycellus harpalinus*	NT5923707956	1	25/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Cychrus caraboides*	NT5905707200	1	15/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Leistus terminatus*	NT5902807155	2	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Loricera pilicornis*	NT5923707971	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NT5903007159	1	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NT5902807155	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus madidus*	NT5923707971	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus melanarius*	NT5954207821	2	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus rhaeticus/nigrita*	NT5923707971	2	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Cerambycidae	*Saperda scalaris*	NT5921407963	1	30/06/2015	Nationally Scarce	Sweep net	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Chrysomela varians*	NT5921407963	2	30/06/2015		Sweep net	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Derocrepis rufipes*	NT5902807155	2	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Derocrepis rufipes*	NT5902807155	2	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Phyllotreta tetrastigma*	NT5923707971	5	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Cis festivus*	NT5923707971	1	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Coccinellidae	*Aphidecta obliterata*	NT5923707956	1	25/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Archarius salicivorus*	NT5902807155	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Barynotus moerans*	NT5923707971	2	30/06/2015		Pitfall trap	Glenn Norris	NMS
Coleoptera	Curculionidae	*Ceutorhynchus obstrictus*	NT5923707971	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Deporaus betulae*	NT5954207821	1	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5903007159	1	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5923707971	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5902807155	18	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5921407963	1	30/06/2015		Sweep net	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Phyllobius pyri*	NT5921407963	1	30/06/2015		Sweep net	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Agriotes obscurus*	NT5921407963	1	30/06/2015		Sweep net	Glenn Norris	Chris Cathrine

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Elateridae	*Agriotes pallidulus*	NT5903007159	1	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Agriotes pallidulus*	NT5902807155	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Denticollis linearis*	NT5902807155	1	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Geotrupidae	*Anoplotrupes stercorosus*	NT5902807155	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Hydrophilidae	*Cercyon analis*	NT5923707971	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*	NT5923707971	6	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*	NT5902807155	2	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Melandryidae	*Orchesia undulata*	NT5902807155	1	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Monotomidae	*Rhizophagus dispar*	NT5902807155	4	19/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Nitidulidae	*Cychramus luteus*	NT5954207821	1	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Nitidulidae	*Meligethes aeneus*	NT5954207821	1	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ptiniidae	*Grynobius planus*	NT5903407199	1	30/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Scarabaeidae	*Aphodius rufipes*	NT5923707971	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Scraptiidae	*Anaspis frontalis*	NT5921407963	1	30/06/2015		Sweep net	Glenn Norris	NMS
Coleoptera	Scraptiidae	*Anaspis thoracica*	NT5954207821	1	18/06/2015		Active search	Glenn Norris	NMS
Coleoptera	Staphylinidae	*Philonthus decorus*	NT5923707971	31	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Philonthus decorus*	NT5902807155	14	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius fuliginosus*	NT5902807155	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius umbrinus*	NT5923707971	2	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius xanthopus*	NT5954207821	1	18/06/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus pallipes*	NT5902807155	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Xantholinus linearis*	NT5954207821	1	18/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Xantholinus linearis*	NT5903007159	1	19/06/2015		Active search	Glenn Norris	Chris Cathrine

Table A1.4. Fannich Hills SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Byrrhidae	*Byrrhus fasciatus*	NH2199672429	1	14/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Byrrhidae	*Byrrhus pilula*	NH2032071804	3	01/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Byrrhidae	*Byrrhus pilula*	NH1839271501	1F	15/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Bradycellus harpalinus*	NH2357771911	1	30/06/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Bradycellus harpalinus*	NH1829073432	1	15/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Carabus problematicus*	NH2199672429	3	14/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Carabus problematicus*	NH1839271501	1	15/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Carabus problematicus*	NH2347171852	3	17/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Carabus problematicus*	NH2347171852	7	30/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Cymindis vaporariorum*	NH2347171852	3	17/07/2015	Nationally Scarce	Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria nivalis*	NH2195172399	1	30/06/2015	Nationally Scarce	Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria nivalis*	NH2199672429	1	14/07/2015	Nationally Scarce	Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria nivalis*	NH1839271501	2	15/07/2015	Nationally Scarce	Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH2195172399	2	30/06/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH2250471932	5	30/06/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH2032071804	7	01/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH2199672429	15	14/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH1829073432	1	15/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH1846369754	1	17/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH2347171852	3	17/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH2199672429	6	30/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria rufescens*	NH2347171852	1	30/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Nebria salina*	NH2199672429	5	14/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Notiophilus germinyi*	NH2250471932	1	30/06/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Notiophilus germinyi*	NH2357771911	1	30/06/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Notiophilus germinyi*	NH2347171852	1	17/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Patrobus assimilis*	NH2199672429	2	14/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Patrobus septentrionis*	NH2195172399	3	30/06/2015	Nationally Scarce	Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Patrobus septentrionis*	NH2032071804	2	01/07/2015	Nationally Scarce	Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Patrobus septentrionis*	NH1846369754	2	17/07/2015	Nationally Scarce	Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Xylodromus depressus*	NH2199672429	2	14/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Gonioctena pallida*	NH1839271501	1	15/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Phratora polaris*	NH2032071804	1	01/07/2015	Nationally Scarce	Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Curculionidae	*Otiorhynchus arcticus*	NH2032071804	1	01/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Curculionidae	*Otiorhynchus arcticus*	NH1829073432	1	15/07/2015		Active search	Chris Cathrine	Chris Cathrine

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Elateridae	*Ctenicera cuprea*	NH2250471932	1	30/06/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Ctenicera cuprea*	NH2347171852	1	17/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Hypnoidus riparius*	NH1846369754	1	17/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Anthophagus alpinus*	NH1846369754	1	17/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Anthophagus caraboides*	NH1846369754	1	17/07/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Anthophagus caraboides*	NH2199672429	4	30/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Geodromicus longipes*	NH2199672429	8	30/07/2015	Nationally Scarce	Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius molochinus*	NH2250471932	1	30/06/2015		Active search	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius molochinus*	NH2347171852	1	17/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus guynemeri*	NH2250471932	1	30/06/2015		Active search	Chris Cathrine	Chris Cathrine

Table A1.5. Glen Tarff SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Ciidae	*Cis bidentatus*	NH3783406096	1	15/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Cis jacquemartii*	NH3783406096	1	15/07/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Cis jacquemartii*	NH3865604841	4	15/07/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Ropalodontus perforatus*	NH3783406096	5	15/07/2015	RDB3	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Ropalodontus perforatus*	NH3896703280	2	15/07/2015	RDB3	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Agriotes obscurus*	NH3896703280	1	15/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Leiodidae	*Anistoma humeralis*	NH3896703280	1F	15/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Lucanidae	*Sinodendron cylindricum*	NH3783406096	1F	15/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Monotomidae	*Rhizophagus dispar*	NH3783406096	1	15/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Scotylidae	*Xyloterus domesticus*	NH3896703280	1	15/07/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Tenebrionidae	*Bolitophagus reticulatus*	NH3783406096	1	15/07/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine

Table A1.6. Maidens to Doonfoot SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Apionidae	*Kalcapion pallipes*	NS2958618384	2	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Phaedon cochleariae*	NS22170972	6	17/08/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Chrysomellidae	*Crepidodera aurea*	NS2958618384	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Coccinellidae	*Calvia 14-guttata*	NS2421410804	1	27/08/2015		Sweep	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Orthochaetes setiger*	NS2956018410	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Barypeithes araneiformis*	NS2658317601	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Otiorhynchus sulcatus*	NS2421410804	1	27/08/2015		Sweep	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Otiorhynchus sulcatus*	NS2397710703	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Sitona hispidulus*	NS2421410804	1	27/08/2015		Sweep	Glenn Norris	Chris Cathrine
Coleoptera	Dytiscidae	*Agabus paludosus*	NS30151883	very common	20/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus longulus*	NS25161575	1	14/05/2015	SBL	Pond net	Garth Foster	Garth Foster
Coleoptera	Helophoridae	*Helophorus brevipalpis*	NS25161575	1	14/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Helophoridae	*Helophorus brevipalpis*	NS22170972	1	17/08/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Helophoridae	*Helophorus obscurus*	NS30511910	2	20/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydraenidae	*Hydraena nigrita*	NS23881051	1	10/06/2015	Nationally Scarce	Pond net	Garth Foster	Garth Foster
Coleoptera	Hydraenidae	*Ochthebius lejolisii*	NS22160971	2	17/08/2015	Nationally Scarce	Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NS25161575	3	14/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NS30151883	1	20/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NS22170972	4	17/08/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Cercyon depressus*	NS31291935	4	20/05/2015	Nationally Scarce SBL	Wrack-sieving	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Cercyon depressus*	NS24001071	3	10/06/2015	Nationally Scarce SBL	Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Cercyon depressus*	NS21970943	1	17/08/2015	Nationally Scarce SBL	Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Cercyon haemorrhoidalis*	NS30511910	1	20/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Cercyon littoralis*	NS31161932	1	20/05/2015	Nationally Scarce	Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Cercyon littoralis*	NS24001071	2	10/06/2015	Nationally Scarce	Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Cercyon littoralis*	NS22160971	1	17/08/2015	Nationally Scarce	Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*	NS2228109589	1	27/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*	NS2956018410	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Hydrophilidae	*Megasternum concinnum* s.s.	NS30511910	1	20/05/2015	SBL	Pond net	Garth Foster	Garth Foster
Coleoptera	Staphylinidae	*Anotylus sculpturatus*	NS2384110518	1	27/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Anthophagus caraboides*	NS2397710703	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius umbrinus*	NS2228109589	2	27/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius umbrinus*	NS22241809625	1	27/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius umbrinus*	NS2397710703	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius umbrinus*	NS2392910634	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius umbrinus*	NS2405410720	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius umbrinus*	NS2421410804	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus brunnipes*	NS2958618384	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus flavipes*	NS2392910634	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus geniculatus*	NS2405410720	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS2727409623	1	27/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS22241809625	1	27/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS2384110518	1	27/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS2392910634	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS2421410804	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS2658317601	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS2956018410	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NS2958618384	2	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus lustrator*	NS2956018410	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus lustrator*	NS2958618384	2	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus picipes*	NS2958618384	1	28/08/2015		Bugvac	Glenn Norris	Chris Cathrine

Table A1.7. Merrick Kells SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Cantharidae	*Cantharis decipiens*	NX4772783228	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Cantharidae	*Cantharis decipiens*	NX4722483902	2	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Cantharidae	*Cantharis decipiens*	NX4365881842	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Cantharidae	*Cantharis decipiens*	NX4415182572	2	22/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Cantharidae	*Cantharis decipiens*	NX4722483902	1	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Cantharidae	*Cantharis paludosa*	NX4772783228	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Agonum fuliginosum*	NX4415182572	1	22/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Agonum fuliginosum*	NX4766983387	1	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Agonum fuliginosum*	NX4722483902	2	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Bradycellus ruficollis*	NX4772783228	3	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Bradycellus ruficollis*	NX4758983466	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Bradycellus ruficollis*	NX4722483902	2	03/09/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Cychrus caraboides*	NX4722483902	1	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Leistus terminatus*	NX4722483902	1	03/09/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Notiophilus palustris*	NX4752781973	1	03/09/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Ochthephilum fracticorne*	NX4758983466	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus aethiops*	NX4722483902	1	03/09/2015	Nationally Scarce	Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Carabidae	*Pterostichus diligens*	NX4772783228	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4758983466	3	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4727983809	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4722483902	3	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4403982362	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4415182572	3	22/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4766983387	32	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4722483902	11	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus diligens*	NX4766983387	1	03/09/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus niger*	NX4766983387	1	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus niger*	NX4722483902	7	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus niger*	NX4766983387	1	03/09/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus niger*	NX4722483902	3	03/09/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Donacia obscura*	NX43729174	5	15/06/2015	SBL	Pond net	Garth Foster	Garth Foster
Coleoptera	Chrysomelidae	*Lochmaea suturalis*	NX4772783228	3	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Lochmaea suturalis*	NX4758983466	2	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Lochmaea suturalis*	NX4766983387	1	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Plateumaris discolor*	NX4766983387	4	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Dytiscidae	*Agabus affinis*	NX43729174	1	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Agabus bipustulatus*	NX48048401		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Agabus bipustulatus*	NX47198354	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Agabus bipustulatus*	NX47428365	common	22/05/2015		Pond net	Garth Foster	Garth Foster

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Dytiscidae	*Agabus bipustulatus*	NX47678368		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Agabus guttatus*	NX47428404	2	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Agabus sturmii*	NX47678368		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Agabus sturmii*	NX47428365	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus erythrocephalus*	NX48048401		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus gyllenhalii*	NX47428365		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus gyllenhalii*	NX47678368		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus gyllenhalii*	NX47538370	abundant	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus incognitus*	NX47678368		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus incognitus*	NX48048401	common	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus incognitus*	NX43729174	1	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus longicornis*	NX47538370	1	22/05/2015	Near Threatened	Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus longicornis*	NX48048401	1	22/05/2015	Near Threatened	Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus melanarius*	NX46908394	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus memnonius* shining form	NX48048401	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus nigrita*	NX46908394	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus obscurus*	NX47018336		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus obscurus*	NX46908394	common	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus obscurus*	NX43729174	3	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus obscurus*	NX43729174	6	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus obscurus*	NX43729174	5	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus obscurus*	NX43729174	5	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus obscurus*	NX43729174	5	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus palustris*	NX43729174	7	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus palustris*	NX43729174	7	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus palustris*	NX43729174	3	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus palustris*	NX43729174	1	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus palustris*	NX43729174	1	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus pubescens*	NX47428365		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus pubescens*	NX47538370		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus pubescens*	NX47678368		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus tristis*	NX47018336		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus tristis*	NX46908394	common	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Hydroporus tristis*	NX47538370	2	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Ilybius aenescens*	NX46908394		22/05/2015		Pond net	Garth Foster	Garth Foster

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Dytiscidae	*Ilybius aenescens*	NX43729174	8	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Ilybius aenescens*	NX46848391	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Oreodytes sanmarkii*	NX48038314	abundant	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Dytiscidae	*Rhantus exsoletus*	NX43729174	1	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Elmidae	*Oulimnius troglodytes*	NX43729174	1F	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Gyrinidae	*Gyrinus substriatus*	NX43729174	6	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Haliplidae	*Haliplus lineatocollis*	NX43729174	1	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Helophoridae	*Helophorus flavipes*	NX48048401	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NX46908394		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NX47198354	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NX47428404	common	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NX47538370	common	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NX48048401	2	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NX46848391	2	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Anacaena globulus*	NX43729174	1	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Ceolostoma orbiculare*	NX4415182572	10	22/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*	NX4752781973	1	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Hydrophilidae	*Enochrus affinis*	NX46908394	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Enochrus fuscipennis*	NX46908394	common	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Hydrobius subrotundus*	NX47678368		22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Hydrobius subrotundus*	NX48048401	1	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Hydrobius subrotundus*	NX46848391	common	22/05/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Hydrobius subrotundus*	NX43729174	2	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Hydrophilidae	*Hydrobius subrotundus*	NX43729174	2	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Scirtidae	*Contacyphon coarctatus*	NX43729174	3M	15/06/2015		Pond net	Garth Foster	Garth Foster
Coleoptera	Scirtidae	*Cyphon hilaris*	NX4772883221	3	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Scirtidae	*Cyphon hilaris*	NX4730483009	1	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Scirtidae	*Cyphon hilaris*	NX4717082600	3	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Scirtidae	*Cyphon hilaris*	NX4735782423	3	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Scirtidae	*Cyphon padi*	NX4772883221	2	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Scirtidae	*Cyphon padi*	NX4738383118	3	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Philonthus laminatus*	NX4415182572	1	22/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Staphylinus erythropterus*	NX4415182572	16	22/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Staphylinidae	*Staphylinus erythropterus*	NX4766983387	1	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Staphylinus erythropterus*	NX4722483902	19	23/08/2015		Pitfall trap	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus clavicornis*	NX4752781973	2	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NX4727983809	1	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NX4403982362	5	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NX4415382570	4	08/06/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NX4772883221	3	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NX4738383118	1	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NX4749982160	10	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus impressus*	NX4752781973	3	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus lustrator*	NX4772883221	1	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus nitens*	NX4749982160	1	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus nitidiusculus*	NX4772883221	2	03/09/2015		Bugvac	Glenn Norris	Chris Cathrine

Table A1.8. Minto Craigs SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Cantharidae	*Cantharis pellucida*	NT5808420718	1	17/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Abax parallelipepidus*	NT5822620844	18	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Abax parallelipepidus*	NT5808420718	10	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Cychrus caraboides*	NT5808420718	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Leistus fulvibarbis*	NT5814720766	1	26/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Leistus terminatus*	NT5808420718	6	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NT5822620844	3	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NT5808420718	7	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NT5814720766	2	26/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Notiophilus biguttatus*	NT5808420718	1	17/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus madidus*	NT5822620844	10	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus madidus*	NT5808420718	10	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus madidus*	NT5814720766	2	26/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Cerylonidae	*Cerylon ferrugineum*	NT5808420718	1	17/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Cerylonidae	*Cerylon histeroides*	NT5808420718	1	17/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Coccinellidae	*Aphidecta obliterata*	NT5814720766	1	26/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Coccinellidae	*Propylea 14-punctata*	NT5814720766	1	26/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5822620844	2	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5808420718	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Otiorhynchus singularis*	NT5822620844	1	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Phyllobius pyri*	NT5822620844	1	17/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Agriotes pallidulus*	NT5822620844	12	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Agriotes pallidulus*	NT5808420718	17	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Hydrophilidae	*Megasternum concinnum*	NT5822620844	4	29/06/2015	SBL	Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Leiodidae	*Nargus velox*	NT5822620844	1	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Lucanidae	*Sinodendron cylindricum*	NT5822620844	1	17/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Lucanidae	*Sinodendron cylindricum*	NT5814720766	2	26/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Monotomidae	*Rhizophagus dispar*	NT5808420718	1	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Silphidae	*Silpha atrata*	NT5808420718	2	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Philonthus decorus*	NT5822620844	20	29/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Philonthus decorus*	NT5808420718	5	30/06/2015		Pitfall trap	Glenn Norris	Chris Cathrine

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Staphylinidae	*Quedius cinctus*	NT5814720766	1	26/08/2015		Active search	Glenn Norris	NMS
Coleoptera	Staphylinidae	*Xantholinus linearis*	NT5814720766	3	26/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Tenebrionidae	*Isomira murina*	NT5822620844	1	17/06/2015		Active search	Glenn Norris	Chris Cathrine

Table A1.9. Rhidorroch Woods SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Cantharidae	*Cantharis nigra*	NH2373193785	1	29/06/2015		Sweep	Chris Cathrine	Chris Cathrine
Coleoptera	Cantharidae	*Cantharis nigra*	NH2394193033	2	16/07/2015		Beating	Chris Cathrine	Chris Cathrine
Coleoptera	Cantharidae	*Rhagonycha lignosa*	NH2373193762	1	29/06/2015		Sweep	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Bradycellus harpalinus*	NH2371493738	1	16/07/2015		Bugvac	Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Cychrus caraboides*	NH2371293728	1	16/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Cryptocephalus labiatus*	NH2394193033	1	16/07/2015		Bugvac	Chris Cathrine	Chris Cathrine
Coleoptera	Ciidae	*Cis boleti*	NH2394193033	1	16/07/2015		Beating	Chris Cathrine	Chris Cathrine
Coleoptera	Curculionidae	*Exomias araneiformis*	NH2373393750	1	16/07/2015		Bugvac	Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Dalopius marginatus*	NH2371893797	1	29/06/2015		Beating	Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Dalopius marginatus*	NH2371893797	1	29/06/2015		Sweep	Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Dalopius marginatus*	NH2371893797	1	29/06/2015		Sweep	Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Dalopius marginatus*	NH2373193762	6	29/06/2015		Sweep	Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Denticollis linearis*	NH2394193033	1	16/07/2015		Beating	Chris Cathrine	NMS
Coleoptera	Elateridae	*Hypnoidus riparius*	NH2371293728	1	16/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Geotrupidae	*Anoplotrupes stercorosus*	NH2371493738	1	16/07/2015		Bugvac	Chris Cathrine	Chris Cathrine
Coleoptera	Hydrophilidae	*Anacaena globulus*	NH2371293728	4	16/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Scraptiidae	*Anaspis rufilabris*	NH2373393750	1	16/07/2015		Bugvac	Chris Cathrine	Chris Cathrine
Coleoptera	Silphidae	*Nicrophorus vespilloides*	NH2371293728	12	16/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Silphidae	*Oiceoptoma thoracicum*	NH2371293728	1	16/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Silphidae	*Silpha atrata*	NH2371293728	1	16/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Philonthus decorus*	NH2371293728	1	16/07/2015		Pitfall trap	Chris Cathrine	Chris Cathrine
Coleoptera	Staphylinidae	*Pselaphus heisei*	NH2394193033	1	16/07/2015		Bugvac	Chris Cathrine	Chris Cathrine

Table A1.10. Taynish Woods SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Carabidae	*Agonum fuliginosum*	NR7227983101	2	30/04/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Carabidae	*Agonum fuliginosum*	NR7227983101	2	30/04/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Aphthona nonstriata*	NR7241982940	1	30/04/2015		Active search	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Chrysomelidae	*Aphthona nonstriata*	NR7227983101	4	30/04/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Elateridae	*Dalopius marginatus*	NR7388685746	1	01/05/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Hydrophilidae	*Anacaena globulus*	NR7227983101	1	30/04/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Hydrophilidae	*Anacaena globulus*	NR7388685746	1	01/05/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine
Coleoptera	Kateretidae	*Brachyopterus urticae*	NR7260783620	3	24/06/2015		Sweep net	Glenn Norris	NMS
Coleoptera	Scolytidae	*Hylastinus obscurus*	NR7247783232	1	24/06/2015		Sweep net	Glenn Norris	NMS
Coleoptera	Staphylinidae	*Stenus impressus*	NR7388685746	3	01/05/2015		Bugvac	Glenn Norris / Chris Cathrine	Chris Cathrine

Table A1.11. Tweedwood - Gateheugh SSSI species records

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Cantharidae	*Cantharis nigra*	NT5797634426	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NT5759434388	1	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Nebria brevicollis*	NT5861134156	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Ocys harpaloides*	NT5759434388	1	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Ocys harpaloides*	NT5736934779	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Ocys harpaloides*	NT5740234792	2	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus madidus*	NT5892534439	1	24/08/2015		Bark trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus madidus*	NT5845833120	1	24/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus melanarius*	NT5736934779	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus melanarius*	NT5740234792	2	24/08/2015		Bark trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus melanarius*	NT5892534439	1	24/08/2015		Bark trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus niger*	NT5845833120	1	24/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus rhaeticus/nigrita*	NT5892634447	2	24/08/2015		Bark trap	Glenn Norris	Chris Cathrine
Coleoptera	Carabidae	*Pterostichus rhaeticus/nigrita*	NT5845833120	1	24/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Cerambycidae	*Grammoptera ruficornis*	NT5740234792	1	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Cerambycidae	*Rhagium bifasciatum*	NT5861134156	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Derocrepis rufipes*	NT5736934779	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Chrysomelidae	*Oulema melanopus*	NT5845833120	1	24/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ciidae	*Cis jacquemartii*	NT5797634426	1	16/06/2015	Nationally Scarce	Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5759434388	1	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5717634839	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5861134156	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Exomias pellucidus*	NT5888233725	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Otiorhynchus singularis*	NT5736934779	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Otiorhynchus singularis*	NT5733034802	2	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Phyllobius glaucus*	NT5888233725	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Tychius picirostris*	NT5733034802	2	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Curculionidae	*Tychius picirostris*	NT5797634426	2	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Agriotes pallidulus*	NT5736934779	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Athous haemorrhoidalis*	NT5861134156	2	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Athous haemorrhoidalis*	NT5797634426	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Elateridae	*Athous haemorrhoidalis*	NT5740234792	4	15/0602015		Active search	Glenn Norris	NMS

Group	Family	Species	Grid reference	Number	Date	Conservation Status	Sampling Method	Recorder	Determiner
Coleoptera	Lucanidae	*Sinodendron cylindricum*	NT5797634426	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Lucanidae	*Sinodendron cylindricum*	NT5888233725	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Monotomidae	*Rhizophagus parallelocollis*	NT5759434388	1	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Nitidulidae	*Meligethes aeneus*	NT5888233725	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Nitidulidae	*Meligethes aeneus*	NT5797634426	2	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ptinidae	*Ernobius mollis*	NT5733034802	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Ptinidae	*Ernobius mollis*	NT5740234792	1	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ptinidae	*Ernobius mollis*	NT5888233725	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Ptinidae	*Ptilinus pectinicornis*	NT5736934779	2	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Salpingidae	*Salpingus planirostris*	NT5740234792	1	15/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Salpingidae	*Salpingus planirostris*	NT5888233725	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Scraptiidae	*Anaspis garneysi*	NT5729534829	1	15/06/2015		Beating	Glenn Norris	Chris Cathrine
Coleoptera	Silphidae	*Silpha atrata*	NT5845833120	2	24/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Lathrobium brunnipes*	NT5861134156	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Quedius picipes*	NT5845833120	1	24/08/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Stenus pallipes*	NT5888233725	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Tasgius melanarius*	NT5861134156	1	16/06/2015		Active search	Glenn Norris	Chris Cathrine
Coleoptera	Staphylinidae	*Tasgius melanarius*	NT5892634447	1	24/08/2015		Bark trap	Glenn Norris	Chris Cathrine

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