Eshiels Long Wood

Baseline Habitat Survey

With Suggestions for Management

By

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with assistance from

Reuben Singleton

On behalf of

Eshiels Community Woodland Group

January 2018

Report Title: Eshiels Long Wood: Baseline Habitat Survey *with Suggestions for Management*

Author/s: Stuart Adair; Reuben Singleton authored the section on Protected Species.

Client: Eshiels Community Woodland Group (ECWG).

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Authors Statement of Experience

The author is a fully qualified biological surveyor and habitat and restoration ecologist with over twenty years' experience in botanical surveying, conservation management, habitat restoration/creation and compiling detailed reports for various statutory, commercial and charitable organisations. The author's main area of interest is in the study of semi-natural and near-natural vegetation (especially in the Southern Uplands) with particular reference to both plant and vegetation succession and the effects of certain treatments. The author has been involved in and worked on several ecological restoration schemes here in the Southern Uplands and occasionally in the Highlands.

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Front cover photograph: Semi-natural (NVC W9a) ash-elm woodland in Eshiels Long Wood.

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a) Typical sub-community

MG1 *Arrhenatherum elatius* grassland

M27 *Filipendula ulmaria-Angelica sylvestris* mire

S28 *Phalaris arundinacea* tall-herb fen

Introduction

Aims and Objectives

The aim of this work is to provide a baseline record of the habitat before any changes in management commence. The work also includes a section on management possibilities flowing from the findings of the baseline survey. This work will form part of a bid to purchase the woodland for the community, using publicly available funds, from Forestry Commission Scotland (FCS) by Eshiels Community Woodland Group (ECWG). The findings of this survey will be combined with a Forestry Management Plan currently being drawn up for the group by Donald McPhillimy of Donald McPhillimy Associates Ltd.

Physical

Climate

The nearest automatic Meteorological Office recording station to the site at Eskdalemuir (36 miles/59km from Eshiels Long Wood) records the following annual averages: Rainfall 1634.6mm, the wettest month being December with an average of 191.1mm and the driest, May with an average of 89.7mm. Days of rainfall >= 1mm 181.0, the heaviest rain falling in December with an average of 19.1 days. Daily maximum temperature as 10.8 degrees C. The annual average daily minimum is 3.3 degrees C. The hottest month is July with an average maximum temperature of 23.6 degrees C and the coldest January with an average minimum of -10.4 degrees C. There is an average of 30.4 days per annum of lying snow (recorded at 0900 hours). The longest periods of lying snow are in January with an average of 10.1 days and February with an average of 9.6 days. Wind speed at 10m averages 7.8 knots per annum, with the strongest winds recorded in January with an average speed of 9.2 knots.

Geology and Soils

The solid geology of the area consists of Silurian-age greywackes, sandstones, mudstones, siltstones and shales. The solid geology (on the level and gently sloping ground) is overlain by a thin layer of boulder clay (till) and glacial meltwater deposits. This in turn is overlain with alluvial soils on the floodplain of the Tweed which consists of silt, sand and gravels laid down in present and former river valleys. The soils on the site are, generally, neutral, moist but freely draining, loamy brown earths with occasional wetter gleyed profiles in small hollows.

Management

Historically, the site has been managed as exotic conifer plantation. This has been neglected for several decades (post 1960s). There is some evidence of light felling/thinning but the stand has not been managed for timber extraction for some time. There is some recreational use of the site by walkers, dog walkers and cyclists. There has been some more organised community (youth group) usage in the recent past with evidence of painted trees, brash piles, wood sculptures and informal cycle tracks. This occurred during the period that Borders Forest Trust (BFT) were managing the site as a community woodland in the early 2000's.

The site is shown on the 1st edition Ordnance Survey (OS) map of the area (*Peebles-shire, Sheet XIII*, surveyed 1856, published 1859) as mixed woodland with both broadleaves and conifers, with the broadleaves appearing dominant. Coupled with the ancient ash-elm woodland flora, this suggests that the area has been wooded for some time.

The site was also home to the North British Railway (Peebles, Innerleithen and Galashiels branch, opened 1864). The railway closed in 1962 and the former track was used informally as a footpath by locals for many years. The footpath was finally upgraded by Sustrans to a (hard standing) multi-purpose walking/cycle track (known locally as the Tweed Valley Railway Path) in 2013.

Designated Status

The River Tweed is designated for its biodiversity interest both at international level: *Special Area of Conservation* (SAC) and national level: *Site of Special Scientific Interest* (SSSI). The Qualifying Interests and Notified Features for these designations include:

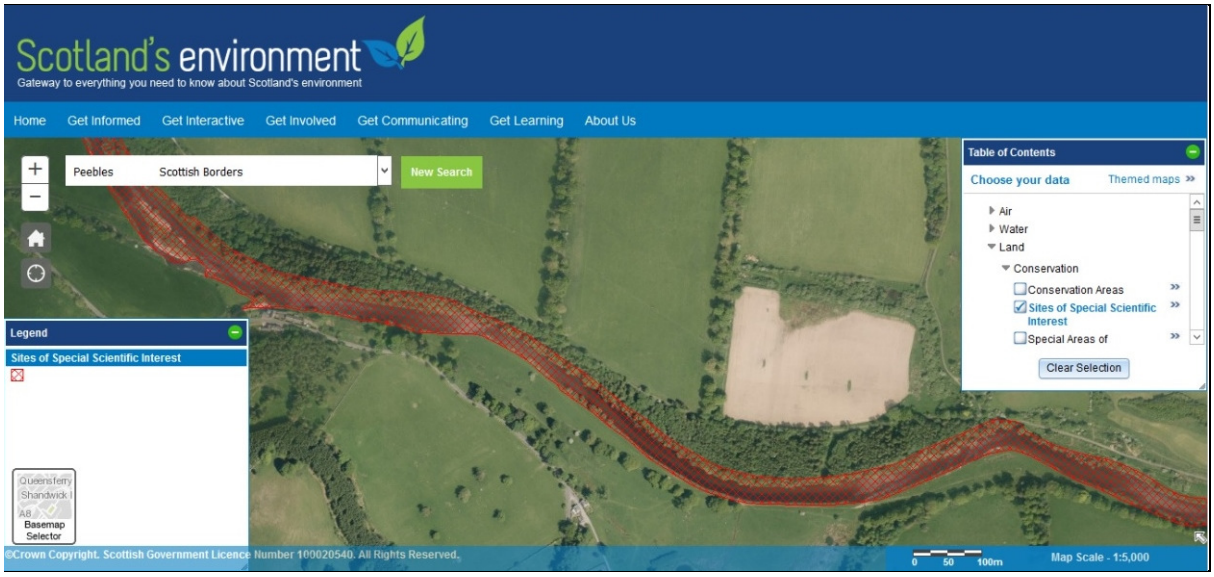
> Atlantic salmon *Salmo salar*; Otter *Lutra lutra*; Rivers with floating vegetation often dominated by water-crowfoot. Brook lamprey *Lampetra planeri*; River lamprey *L. fluviatilis*; Sea lamprey *Petromyzon marinus*; Trophic range river/stream; Vascular plant assemblage; Beetle assemblage; Fly assemblage.

Links to the Scottish Natural Heritage (SNH) *Site Details for River Tweed* are posted below. These links include the following: *SSSI Citation*; *Operations Requiring Consent*; *Site Management Statement*; *SSSI Map*; *SAC Qualifying Interest List*; *Conservation Objectives*; *SAC Map*. These documents can be downloaded from the site.

http://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa_code=1366

http://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa_code=8369

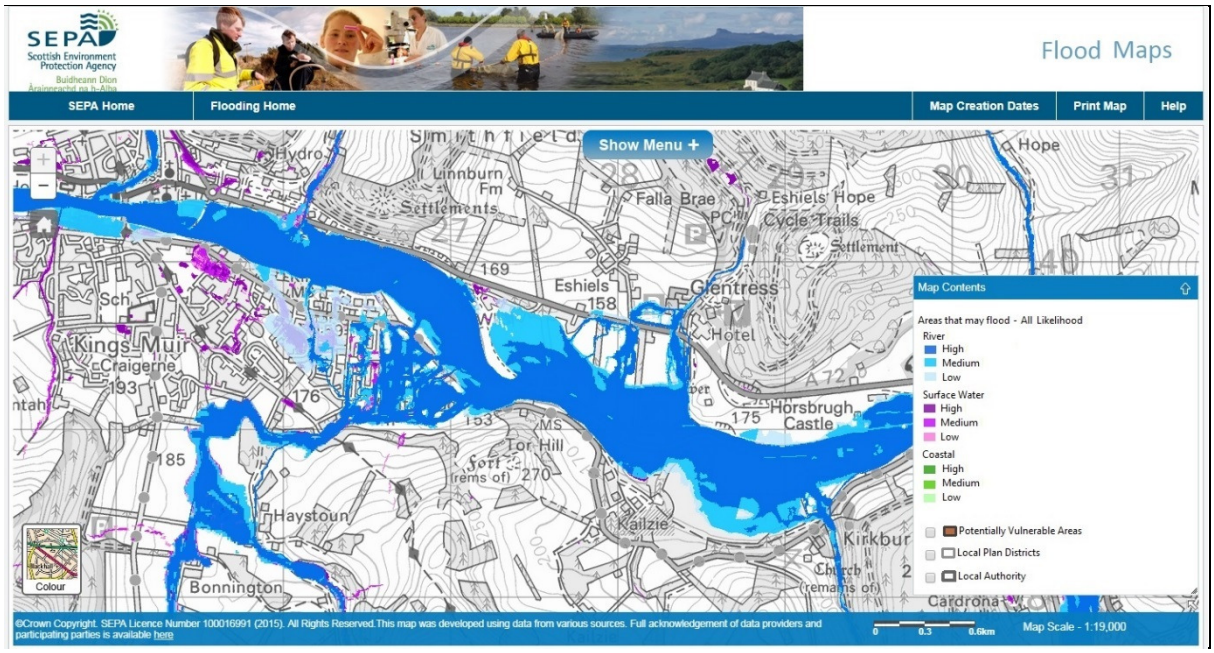
The corridor for these designated areas takes in both the stream itself and five meters on either bank (see photo below). It is the responsibility of the landowner/manager to maintain this key habitat in favourable condition and any proposed management prescriptions will have to take this into account. Any activities proposed within five metres of the river may require an SSSI consent from SNH. Operations requiring permission from SNH are listed in the notification package (see links, above) and are tailored to the conservation of the natural features for which the site is notified.



River Tweed SSSI/SAC. Marked in red cross-hatching.

Constraints

Constraints include flooding (see SEPA flood map, below); the designated status of the River Tweed (SSSI/SAC); protected species using the site; invasive non-native species occurring on the site; wayleaves (overhead power lines; gas pipeline) on the site; fishing rights (held by a private individual); and the adjacent Sustrans public cycle/foot path.



SEPA Flood Risk Map. Showing flood risk likelihood. As one can see from the map, the entire site of Eshiels Long Wood floods completely in high water, catastrophic flood events. These extreme flood events are relatively infrequent and most regular spates will only inundate the lower lying riparian fringes.

Summary Description

Eshiels Long Wood[1] consists of neglected spruce plantation with regenerating semi-natural broadleaved woodland and marginal neutral grassland, mire and tall-herb poor-fen on the immediate north bank of the River Tweed at Eshiels opposite Scotsmill and Kailzie. Some of the spruces are mature specimens of considerable stature. There is some evidence of past coppicing with several mature multi-stemmed oak, ash and sycamore. The field/ground layer corresponds to native ash-elm (or mixed broadleaved) woodland and is somewhat ancient in character. There are some invasive non-native species present but these do not currently pose a threat to the ecological value of the site.

Woodland and scrub

(Neglected Spruce Plantation-Mixed Broadleaved Woodland)

NVC W9 *Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* woodland

a) Typical sub-community

Syn. ash-elm woodland

This community accounts for the bulk of the flora on the site. It may seem somewhat odd at first to describe this woodland as ash-elm or mixed broadleaved woodland as the stand appears to be dominated by spruce *Picea* spp. (mainly Norway spruce *P. abies* but with some Sitka spruce *P. sitchensis*) but when looking at the community as a whole, the flora clearly fits within this community despite the abundance of the exotic interlopers.

The stand is fairly open for the most part with only occasional purer stands of mature Norway spruce and, to a lesser extent, Sitka spruce (e.g. NT 27488 39219 – NT 27594 39208; NT 27516 39236; NT 28039 38985; NT 28301 38940; NT 28340 38969) The latter is consistent throughout at differing levels of abundance ranging from over-mature specimens to smaller pole-stage stems. Silver birch *Betula pendula* is probably the most consistent associate throughout, generally tall and leggy stems reaching for the light. Sycamore *Acer pseudoplatanus* is also common with some quite mature trees found. The latter are often multi-stemmed regrowth from previous cutting. Other taller more mature species include the occasional ash *Fraxinus excelsior,* downy birch *B. pubescens,* common oak *Quercus robur* (generally along the edges and also multi-stemmed) and Japanese/hybrid larch *Larix kaempferi/*
L. x *eurolepis*.

Where the ash-elm community is most obvious among the tree and shrub flora is in the under-tier and shrub layer where young poles of ash and wych elm *Ulmus glabra* are especially common. The latter are joined frequently by hawthorn *Crataegus monogyna* and common elder *Sambucus nigra.* Rowan *Sorbus aucuparia,* goat willow *Salix caprea* (some of which are quite veteran), wild cherry/gean *Prunus avium* and bird cherry *P. padus* are less common. Blackthorn *P. spinosa* and red currant (*Ribes rubrum*) are scarce along the edge of the cycle track.

Where the native ash-elm community is most obviously revealed is within the field and ground layers. Dog's mercury *Mercurialis perennis,* wood avens *Geum urbanum,* male-fern *Dryopteris filix-mas,* broad buckler-fern *D. dilatata,* stinging nettle *Urtica dioica,* red campion *Silene dioica,* hedge woundwort *Stachys sylvatica,* herb robert *Geranium robertianum,* wood sorrel *Oxalis acetosella,* great wood-rush *Luzula sylvatica,* hart's-tongue thyme-moss *Plagiomnium undulatum* and common feather-moss *Eurhychium praelongum* dominate throughout, except in the purest most mature and shady spruce stands. The ash-elm community is confirmed by the occasional records for barren strawberry *Potentilla sterilis* and wild strawberry *Fragaria vesca.* Patches of wild garlic *Allium ursinum* can become quite prominent on lower lying shelves at the western end of the site opposite Scotsmill.

NVC W7 *Alnus-Fraxinus-Lysimachia* (alder-ash) woodland is marked by the occasional alder *Alnus glutinosa,* crack willow *Salix fragilis,* grey willow *S. cinerea* and bird cherry scattered along the

[1] Note: The area is also known simply as Eshiels Wood and, indeed, this is the name used by Forestry Commission Scotland (FCS).

margins of the Tweed and at the very eastern end of the site along the margins of the Eshiels Burn where it enters the Tweed above Castle Pool.

Prone but living trees (generally grey willow), brought down by winter flooding, are fairly common along the margins of the river or wherever lower lying ground allows the flood water further inland.[2] Dead wood is also quite common, either in the form of toppled larger trees or smaller (generally birch) logs, presumably cut at some point or also perhaps as a result of flood events.

Natural regeneration is reasonably common, generally in the form of seedlings and young saplings. Ash is the most common species followed by wych elm, these two species again confirming the natural woodland type for this area. One single holly *Ilex aquifolium* seedling was found. The viability of these seedlings is uncertain due to two main factors, namely, rabbits and, more worryingly, Chalara ash dieback fungus (*Hymenoscyphus fraxineus*). The latter can be seen in young ash poles along the cycle track towards the council yard but no signs of it were noted within the site itself.

Riparian Fringe

There are several smaller patches of open marginal vegetation along the course of the Tweed (e.g. NT 27424 39223; NT 27366 39266; NT 27501 39203; NT 27621 39198; NT 28342 38936) which contain several neutral grassland-mire communities and tall-herb poor fen. Some of this vegetation is somewhat mixed and has often been invaded by species such as common bindweed *Convolvulus arvensis* sprawling through and over false oat-grass *Arrhenatherum elatius,* wild angelica *Angelica sylvestris,* stinging nettle *Urtica dioica,* meadow crane's-bill *Geranium pratense,* creeping thistle *Cirsium arvense,* meadowsweet *Filipendula ulmaria,* marsh woundwort *Stachys palustris,* common valerian *Valeriana officinalis,* soft-rush *Juncus effusus,* colt's-foot *Tussilago farfara,* reed canary-grass *Phalaris arundinacea* and rosebay willow-herb *Chamerion angustifolium* in tangled jumbles of vegetation that corresponds with **NVC MG1** *Arrhenatherum* grassland-**M27** *Filipendula-Angelica* mire complexes or mosaics along the periodically inundated margins of the Tweed.

Emergent reed canary-grass is common along the very margin of the Tweed, occasionally thickening up over mud flats to form **NVC S28** *Phalaris arundinacea* tall-herb fen.

Naturally regenerating willows *Salix* spp. occasionally pepper the small haughs along the river bank. Red currant *Ribes rubrum* can also be found in these situations and provides a host to a rare micro-moth, the currant shoot-borer (*Lampronia capitella*) (Reuben Singleton, *pers comm*). There is also a stand of garlic (*Allium sativum*) which has naturalized along the river bank, a very rare occurrence in the British Isles (Reuben Singleton, *pers comm*).

Invasive Non-Native Species

Himalayan balsam *Impatiens glandulifera* is scattered along the riverbank but not yet overwhelming so. Giant butterbur *Petasites japonicus* dominates two small areas. Strictly speaking European rabbit *Oryctolagus cuniculus* and grey squirrel *Sciurus carolinensis* could also be included in this category. There are several other non-native species (excluding the non-native trees) including comfrey *Symphytum officinale,* variegated ground ivy *Glechoma hederacea 'Variegata'* and pink purslane *Claytonia sibirica* among others. These species, although non-native, are largely benign and will not detrimentally affect the native flora.

Protected Species[3]

Eshiels Woodland Protected and Notable Species

Introduction

[2] Note: The effects of more catastrophic flood events can also be noted much further inland but such floods are much rarer events.

[3] Note: This section was authored by Reuben Singleton, a licensed protected species ecologist.

A number of species receiving statutory protection are likely to be present on or immediately adjacent to the site. These include badger *Meles meles*, bats *Chiroptera* spp., otter *Lutra lutra*, red squirrel *Sciurus vulgaris* and potentially pine marten *Martes martes* and common lizard *Zootoca vivipara*.

The River Tweed, which forms the southern boundary of the site is designated a Special Area of Conservation (SAC), with the qualifying interests including Atlantic salmon *Salmo salar* and lamprey *Lampetra* species.

All breeding birds, their nests and eggs receive protection under the Wildlife and Countryside Act, 1981. In addition, bird species which are listed on Schedule 1 of the Wildlife and Countryside Act 1981 receive special protection, making it an offence to disturb them while they are building their nests, or disturbing their young before they are fully independent.

In addition to species protected under statute, there are a number of species which are considered to be of principal importance in relation to the conservation of biodiversity in Scotland which are listed on The Scottish Biodiversity List (SBL). These include the currant shoot-borer *Lampronia capitella*, which is found at its only current Scottish location at Eshiels.

Baseline

Breeding birds

Although no systematic bird surveys have been undertaken, a wide range of common birds are likely to be breeding in the woodland. The only species of bird receiving special protection under Schedule 1 of the Wildlife and Countryside Act 1981 here is potential for kingfisher

Badger

Although no badger setts have been confirmed on the site to date, it is considered likely that they will regularly use the woodland for foraging. The risk of flooding makes the site sub-optimal for the establishment of setts, though the large number of rabbit warrens throughout the site, provide an easy option for badgers to excavate burrows and convert into setts.

Otter

Otter resting sites (holts, hovers and couches) are likely to be present along the banks of the River Tweed forming the southern boundary of the site, particularly in sections of undercut bank and amongst tree roots. Eshiels Woodland is one of the few stretches of the Tweed around Peebles which is relatively infrequently used by dog walkers and is consequently likely to assume higher value to otter populations than elsewhere locally. Anecdotal evidence suggests that otters are seen occasionally in the woodland.

Red squirrel

A number of squirrel dreys have been identified in mature trees throughout the woodland though it is unknown whether these have been created by red or grey squirrel *Sciurus carolinensis*. Red squirrel is present throughout the larger coniferous woodland blocks in the Upper Tweed Valley, though Eshiels may be too isolated and too small to support a population.

Bats

Several trees exhibiting bat roost potential (BRP) have been identified in the woodland. These are primarily older broad-leaved trees with splits and cavities, rather than the younger conifer species. Several bat boxes are also present in the woodland, though none of these have been found to hold bats to date.

Pine marten

Pine marten are well established in the larger blocks of coniferous plantation in the Middle and Upper Tweed Valley. Due to the lack of large cavities in trees or areas of rocky outcrops on the site, it is unlikely that there will be any pine marten dens on the site, with any animals quickly passing through.

Reptiles

The site offers sub-optimal habitat for common lizard which tend to prefer more open habitats with good exposure to the sun. Small numbers of lizards may be present along the river bank where the tree canopy is more open, but here they would be vulnerable to flood events. The removal of conifers from the woodland and the establishment of a more active management regime will result in lighter, more open woodland that would provide better habitat for common lizard.

Salmon

Salmon typically spawn in a mix of cobbles (grain size 22–256 mm), pebbles (2–22 mm) and finer material (<2 mm). As salmon fry grow, their preference for deeper and swifter parts of riffles increases, and by the time they reach 8–9 cm in length, 80–90% choose areas with cobble/boulder habitats (substrate size > 64 mm) with depths greater than 300 mm. The stretch of the River Tweed forming the southern boundary of the woodland is likely to offer good spawning areas and will be important for salmon parr (juvenile salmon).

Lampreys

Good lamprey nursery habitat is present where deep silt beds have developed in the margins of the river out of the main flow.

Invertebrates

The currant shoot-borer *Lampronia capitella* is a small moth with a wingspan of around 18mm. It is listed as a Priority Species for conservation on the UK Biodiversity Action Plan and appears on the Scottish Biodiversity List. Eshiels Woodland is its only extant locality in Scotland, with the previous site at Ballater in Aberdeenshire lost in 1988. Elsewhere in the UK, it has been only recorded at 11 sites since 2000. The moth larvae feed on gooseberry and redcurrant fruits before hibernation, and then feed on the new shoots of the plant in the spring. At Eshiels it has been recorded in redcurrant bushes adjacent to the cycle path and in redcurrant bushes along the river bank.

Mitigation for Protected and Notable Species

This section outlines mitigation measures to avoid, reduce or offset the adverse effects of forestry operations in accordance with best practice guidance and UK, Scottish and local government environmental impact, planning and sustainability policies.

Generic measures

Generic mitigation measures that apply to all protected and notable species on the site consist of:

- Pre-construction surveys will be undertaken as appropriate prior to the commencement of each project phase in order to confirm the location of protected species;
- All contractor work packages should include an ecological section which will be signed off by the Management Committee and Contractor(s) prior to commencement of works.

Specific measures

Breeding Birds

Site clearance of vegetation will be undertaken outside of the main bird breeding season where possible (typically mid-March - August inclusive).

A variety of bird nest boxes (both open fronted boxes and hole boxes) should be erected in trees scheduled for retention around the woodland to increase the number of nesting sites for breeding birds. Three owl boxes should be erected in mature trees to be retained in the woodland to attract breeding tawny owl *Strix aluco*.

Badger

Prior to commencement of site works, a badger survey will be undertaken of the site and a buffer zone extending to 30m beyond the site boundary. In the event that a badger sett(s) is found on the site, it may be necessary to apply for a badger licence from Scottish Natural Heritage (SNH) to enable works to proceed. Generally, SNH will only issue licences for works to be undertaken out-with the breeding season (1st December to 30th June inclusive).

Otter

Prior to commencement of site works, an otter survey will be undertaken of the site and 200m up and downstream on the River Tweed to identify any resting places used by otters. If any active otter resting sites are found within 30m of the proposed route, then it is likely that a licence would be required from SNH to enable the works to proceed. A licence application would require to be underpinned by an Otter Protection Plan.

Red Squirrel

It is currently not known whether red squirrels are present in the woodland although squirrel dreys have been identified in a number of trees. A hair tube survey should be undertaken to establish whether red or grey squirrels are present in the woodland. The method uses specially adapted lengths of plastic drainpipe which are baited to attract squirrels. Hairs are collected on sticky tapes inside the tubes as the animals enter the tubes to get the food. Collected hair is removed from the tubes periodically for examination.

If grey squirrels are found in the woodland, a trapping programme should be initiated under the Trap Loan Scheme offered by Saving Scotland's Red Squirrels.

Bats

A Preliminary Ground Level Assessment (PGLA) should be undertaken of all trees in the woodland to assess their suitability for roosting bats:

1. All trees should be assessed from the ground using high-powered binoculars and a high-powered torch to shine on cavities and shaded areas of branches. Data will be compiled about any trees offering bat roost potential (BRP), with potential roost features and any evidence of bats noted. The inspections will be carried out systematically and consistently from all aspects around individual trees and recorded in a standard spreadsheet.
2. Any trees offering more than negligible BRP will be marked with a discrete spot of paint or a metal tree tag at 1.5m - 2m height on the northern side of the trunk.
3. A detailed spreadsheet containing all the tree information recorded during the PGLA should be maintained by the Group.

No trees offering bat roost potential should be felled or subject to cutting prior to further survey to confirm that bats are not present. If bats are present in trees requiring management, a licence would be required from SNH to enable the works to proceed.

There are currently a number of bat boxes attached to trees throughout the woodland; these will also need to be checked for bats prior to felling, and if empty should be relocated to trees that are scheduled for retention.

In view of the likely small numbers of trees offering BRP it would be desirable to erect further bat boxes throughout the woodland on trees scheduled for retention.

Invertebrates

The locations of all redcurrant bushes on the site will be recorded on a site plan. These will be protected during any forestry or other management operations by the installation of red/white hazard tape buffers prior to the commencement and during works.

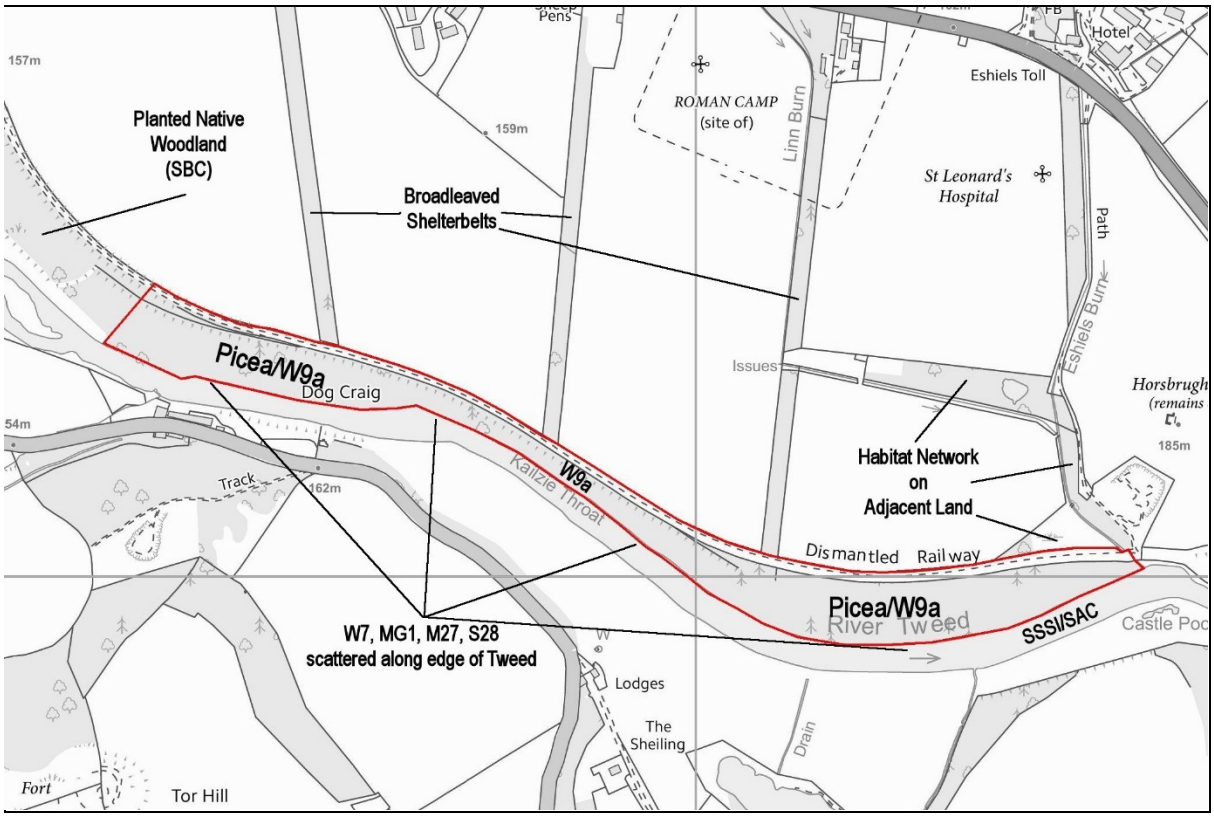
It would be desirable to propagate further redcurrant off site, either from cuttings or from fruit taken from the existing bushes, for planting out on the site to provide further food plants for the moth larvae.

Monitoring of the moth population should be undertaken annually counting the wilted shoots on redcurrant bushes on the site between mid-April and early May.

No specific measures are identified for reptiles or fish.

Adjacent Land/Habitat Networks

The land to the immediate west of the site along the edge of the Tweed is owned by Scottish Borders Council (SBC) and was planted with native woodland circa twenty years ago. The land immediately to the north of the site is a mixture of improved grassland, mature broadleaved woodland shelterbelts and a small area of wet semi-natural woodland along the Eshiels Burn below Horsbrugh Castle. There is also a disused quarry below the castle. The land to the immediate east of the site is a mixture of rough grassland and riparian woodland along the banks of the Tweed. The River Tweed SSSI/SAC is situated immediately to the south of the site. There is potential to create more formal habitat networks with much of this land, especially the SBC ground to the west and the small strip of wet woodland to the north.



Vegetation/NVC Map. Site boundary in red. Showing habitat networks on adjacent land.

Key

Picea Spruce (Norway and Sitka)

W7 *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* woodland

W9 *Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* woodland

a) Typical sub-community

MG1 *Arrhenatherum elatius* grassland

M27 *Filipendula ulmaria-Angelica sylvestris* mire

S28 *Phalaris arundinacea* tall-herb fen

SSSI Site of Special Scientific Interest (River Tweed)

SAC Special Area of Conservation (River Tweed)

SBC Scottish Borders Council

Photographs

Stand Types. Left, main area of spruce *Picea* (Plot 3). Right, NVC W9a *Fraxinus-Ulmus-Dryopteris filix-mas* (ash-elm-male fern) stand.

Stand Types. 'Wildwood' (NVC W7/9) at far eastern end of the site by Eshiels Burn. Left, tangled, contorted growth, Right, wild strawberry *Fragaria vesca* on rotting log.

Natural Regeneration. Ash *Fraxinus excelsior* and wych elm *Ulmus glabra* seedlings. Seedlings and saplings of both these key character species are quite common throughout the site, especially ash. Younger broadleaved trees/poles beyond browsing height are also common throughout the stand and will fill any gaps left in the canopy after thinning and patch clear-felling of the spruces.


Riparian Edges. Left, prone veteran grey willow *Salix cinerea* at immediate western end of the site. Right, open area of neutral grassland, mire and fringe reed canary-grass *Phalaris arundinacea* immediately below the prone willow (visible at the top of the open area).


Invasive Species. Left, Himalayan balsam *Impatiens glandulifera.* The latter is not yet overwhelming dominant and could be controlled with relative ease. Right, giant butterbur *Petasite***s** *japonicus* dominating a relatively small area but nevertheless, potentially problematic and suppressing the native woodland flora. The latter will require much 'elbow grease' to remove but the resulting disturbance to the ground will help promote natural regeneration.

Mature Spruce. Main areas of mature spruce *Picea* spp. (S= spruce).

Mature Spruce. Main areas of mature spruce *Picea* spp. (S=spruce).

Management Suggestions

The Eshiels Community Woodland Group's (ECWG) mission statement for the site is:

"a place where biodiversity and woodland production meet, as part of a wider vision for education in sustainable community living."

The Group have three main objectives:

1. Improve **biodiversity** and the River Tweed corridor – by diversifying the species and bringing more light into the wood

2. Improve sustainable **productive** management of our local woodlands through community ownership

3. Resurrect coppice management skills and provide a space for further **skills training and nature learning**

Methods

To convert the current stand to the desired model will require a mixture of traditional thinning and patch clear-felling of the spruce *Picea* spp. following the principles of continuous cover forestry (CCF) as far as is possible. There are only about three or four fairly small purer stands of spruce that would require clear-felling which would have little impact on the stand over all, the rest of the spruces can be lightly thinned over time[4] ultimately leaving a largely mixed broadleaved stand which can then be subject to a selective form of coppice with standards. In such a small, linear stand (and so close to an internationally designated site such as the Tweed), more traditional forms of coppice, whereby significant coupes are cut in one fell, may not be acceptable to the public, and indeed, may conflict with the stated goal of improving the stand for biodiversity.

In terms of increasing the species diversity of the tree and shrub flora of the stand certain species can be established (mainly through planting but potentially also by broadcasting of seed). The natural ash-elm community of the area would be suitable for enrichment with hazel *Corylus avellana,* which appears to be missing from the site, is a key species for biodiversity and would be ideal for any coppicing regime. Common oak *Quercus robur* and rowan *Sorbus aucuparia,* although both present, could certainly be increased substantially, the former ideal for standards, the latter present but very scarce. Sessile oak *Q. petraea,* aspen *Populus tremula* and holly *Ilex aquifolium* could also be added to the flora. Both bird cherry *Prunus padus* and wild cherry *P. avium*, again though already present, could be thickened up as could both birch *Betula* species, especially downy birch *B. pubescens* which is quite poorly represented. Bearing in mind the low altitude of the site, species such as crab apple *Malus sylvestris,* blackthorn *Prunus spinosa* and in damper areas, alder *Alnus glutinosa,* grey willow *Salix cinerea* and goat willow *S. caprea* and guelder rose *Viburnum opulus* could be added to the mix. It may also be desirable to increase red currant in the woodland to provide additional foodplants for the currant shoot-borer moth. Honeysuckle *Lonicera periclymenum* and ivy *Hedera helix* could also be established, both species are typical species of ancient woodland, excellent for biodiversity and good indicators of the level of deer pressure. Hawthorn *Crataegus monogyna,* common elder *Sambucus nigra* and sycamore *Acer pseudoplatanus* are already common and are likely to regenerate freely.

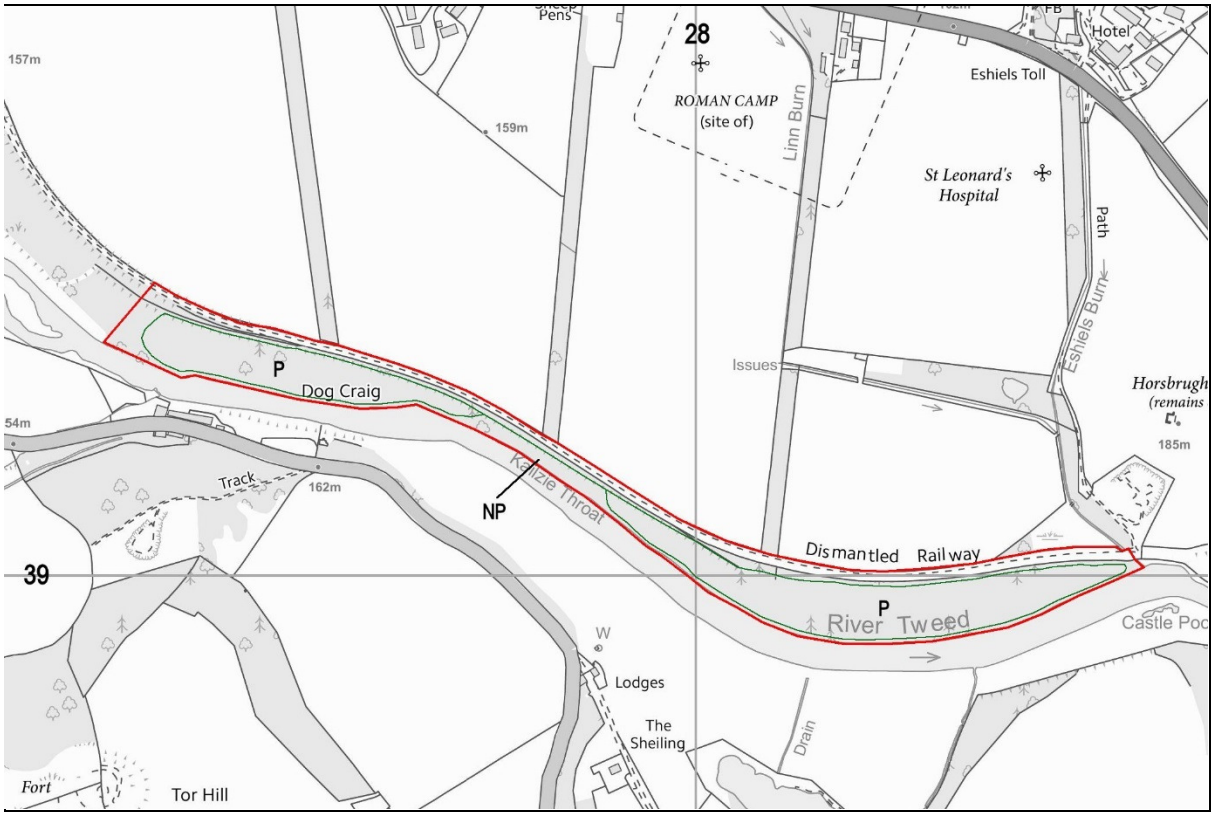
Ash *Fraxinus excelsior* would be ideal for planting and under natural circumstances would be the dominant tree in this stand but is currently under a moratorium on planting due to ash dieback. As noted above though, both ash and wych elm *Ulmus glabra* are common throughout as saplings and young poles as well as seedlings and both are likely to regenerate and fill gaps left in the canopy by thinning and patch clear-felling of the spruces. The longer-term viability of the ash will clearly depend on the extent of ash dieback but, currently, it is the commonest form of natural regeneration on the site.

[4] Note: Retaining the more mature specimen spruces in-line with the principles of CCF.

Invasive non-native species such as Himalayan balsam *Impatiens glandulifera* and giant butterbur *Petasites japonicus* should be controlled. Herbivores such as rabbit *Oryctolagus cuniculus* and roe deer *Capreolus capreolus* may also need to be controlled to promote natural regeneration and protect any planted trees.

Suggested Internal Boundaries

The site can be divided with internal boundaries reflecting the intended productive and non-productive areas. The strip along the edge of the Tweed SSSI/SAC is an obvious non-productive area. I would suggest a similar strip along the outer edge from the internal stone wall to the edge of the cycle track as another obvious non-productive area providing a screen for any forestry operations and retaining a 'wild' edge in-line with the stated aim of improving the site for biodiversity. I would also suggest that the narrow area opposite Kailzie Throat as another obvious non-productive area which would also provide a habitat link with the outer and inner edges. These non-productive areas would still be subject to management, at least initially, with the idea of creating/maintaining a 'wild' edge with the management aim here following the principles of ecological restoration or ecosystem recovery. Management in these areas would be restricted to light felling/thinning of exotics, planting of suitable native species and control of invasive non-native species such as Himalayan balsam *Impatiens glandulifera* and giant butterbur *Petasites japonicus.*



Suggested Internal Boundaries. Boundary of site in red; internal boundaries in green. **P** = productive; **NP** = non-productive.

Other Management Options

Another option for managing the site would be ecological restoration (or ecosystem recovery; rewilding) whereby the aim is to restore the native habitats, flora and fauna of the area for biodiversity and educational and recreational use. This aim would involve much of what is already described above (e.g. removing exotic conifers, restocking with native species, encouraging natural regeneration, controlling invasive species etc) but excluding productive use of the site. This would

complement the River Tweed and its internationally designated biodiversity status and provide a rare example of natural ecosystems within the corridor of the Upper Tweed.

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Donald McPhillimy, *Donald McPhillimy Associates Ltd.*

Appendix

Sample Plots

Methodology

The methodology follows Rodwell (2006) whereby the aim is to identify homogenous blocks of vegetation which are then subject to random quadrat sampling. Quadrats (or sample plots) of 10x10m were used for the canopy and shrub layers and plots of 4x4m were used for the field/ground layers.

Key to Domin Scale

Domin (cover) **Values**

10 = 91-100%
9 = 76-90%
8 = 51-75%
7 = 34-50%
6 = 26-33%
5 = 11-25%
4 = 4-10%
3 = < 4% (many individuals)
2 = < 4% (several individuals)
1 = < 4% (few individuals
+1 = outside of sample but part of community

Sample Plots. Location of sample plots at Eshiels Long Wood.

Plot 1
NVC code: W9a
Grid ref: NT 27403 39268 (154m a.s.l)
Size: 10x10m (canopy); 4x4m (field layer)
Date: 12/09/17

Species	**Cover**
Acer pseudoplatanus	4 (2 x individuals; multi-stemmed)
Quercus robur	2 (1 x individual; multi-stemmed)
Betula pubescens	1 (1 x individual)
Betula pendula	1 (1 x individual)
Mercurialis perennis	9
Urtica dioica	7
Plagiomnium undulatum	7
Stachys sylvatica	6
Arrhenatherum elatius	6
Geum urbanum	5
Eurhynchium praelongum	5
Dryopteris filix-mas	4
Veronica montana	4
Geranium robertianum	3
Silene dioica	3
Dactylis glomerata	3
Luzula sylvatica	3
Angelica sylvestris	1

Plot 2
NVC code: Spruce/W9a
Grid ref: NT 27448 39255 (156m a.s.l)
Size: 10x10m (canopy); 4x4m (field layer)
Date: 12/09/17

Species	**Cover**
Picea abies	9
Betula pendula	2 (2 x individuals)
Sorbus aucuparia	1 (1 x individual)
Sambucus nigra	6
Bare ground	6
Mercurialis perennis	6
Urtica dioica	6
Oxalis acetosella	6
Silene dioica	6
Eurhynchium praelongum	5
Plagiomnium undulatum	5
Dryopteris dilatata	4
Geum urbanum	4
Geranium robertianum	4
Cruciata laevipes	4
Veronica montana	4
Ranunculus repens	4
Stachys sylvatica	3
Thuidium tamariscinum	3
Prone dead *Betula* logs	3
Arrhenatherum elatius	3
Holcus mollis	2
Scrophularia nodosa	2
Prone dead *Picea* logs	2
Dryopteris filix-mas	1
Luzula sylvatica	1

Plot 3
NVC code: Spruce Plantation with scattered W9a field layer
Grid ref: NT 27516 39236 (153m a.s.l)
Size: 10x10m (canopy); 4x4m (field layer)
Date: 12/09/17

Species	**Cover**
Picea abies	10
Sambucus nigra	1
Bare ground	8
Mercurialis perennis	4
Urtica dioica	3
Eurhynchium praelongum	3
Thuidium tamariscinum	3
Oxalis acetosella	2
Geum urbanum	2
Arrhenatherum elatius	2
Geranium robertianum	2
Cruciata laevipes	2
Silene dioica	1
Prone dead *Betula* logs	1
Prone dead *Picea/Larix* logs	1

Plot 4
NVC code: W9a
Grid ref: NT 27793 39151 (149m a.s.l)
Size: 10x10m (canopy); 4x4m (field layer)
Date: 12/09/17

Species	**Cover**
Fraxinus excelsior	8 (young poles; saplings)
Ulmus glabra	6 (young poles)
Crataegus monogyna	4
Larix kaempferi/L. x *eurolepis*.	3
Picea sp.	3 (poles – mature)
Betula pendula	2 (mature)
Picea abies	1 (mature)
Rosa canina	1
Luzula sylvatica	9
Geum urbanum	4
Dryopteris dilatata	3
Dryopteris filix-mas	3
Silene dioica	3
Plagiomnium undulatum	3
Eurhynchium praelongum	3
Arrhenatherum elatius	3
Agrostis capillaris	3
Mercurialis perennis	2
Oxalis acetosella	2
Dactylis glomerata	2
Urtica dioica	1

Plot 5
NVC code: W9a with mature spruce
Grid ref: NT 27895 39080 (141m a.s.l)
Size: 10x10m (canopy); 4x4m (field layer)
Date: 13/09/17

Species	**Cover**
Larix kaempferi/L. x eurolepis.	4 (mature)
Picea abies	2 (mature)
Acer pseudoplatanus	2 (multi-stemmed by Tweed)
Ulmus glabra	6 (poles)
Crataegus monogyna	6
Fraxinus excelsior	5 (poles)
Mercurialis perennis	8
Luzula sylvatica	7
Dryopteris filix-mas	6
Plagiomnium undulatum	6
Geum urbanum	4
Arrhenatherum elatius	4
Silene dioica	4
Fraxinus excelsior seedlings	4
Viola riviniana	4
Eurhychium praelongum	3
Veronica montana	3
Geranium robertianum	3
Agrostis capillaris	3
Dryopteris dilatata	2
Thuidium tamariscinum	2
Potentilla sterillis	2
Cruciata laevipes	2
Urtica dioica	2
Brachythecium rutabulum	2
Hypericum spp.	2

Plot 6
NVC code: W9a
Grid ref: NT 27992 39013 (150m a.s.l)
Size: 10x10m (canopy); 4x4m (field layer)
Date: 13/09/17

Species	**Cover**
Acer pseudoplatanus	8 (mature multi-stemmed & poles)
Fraxinus excelsior	6 (mature & poles)
Crataegus monogyna	5
Ulmus glabra	4 (poles)
Betula pendula	2 (mature)
Picea abies	1
Larix kaempferi/L. x eurolepis.	1
Geum urbanum	7
Mercurialis perennis	6
Silene dioica	6
Dryopteris filix-mas	5
Luzula sylvatica	5
Urtica dioica	5
Plagiomnium undulatum	5
Stachys sylvatica	4
Arrhenatherum elatius	4
Eurhychium praelongum	4
Agrostis capillaris	4
Dryopteris dilatata	3
Potentilla sterillis	3
Veronica montana	3
Geranium robertianum	3
Chrysosplenium oppositifolium	3
Achillea ptarmica	*3*
Deschampsia cespitosa	2
Viola riviniana	2
Fraxinus excelsior seedlings	2
Prunus padus seedling	1
Scrophularia nodosa	1

Plot 7
NVC code: W9a with spruce
Grid ref: NT 28330 38974 (147m a.s.l)
Size: 10x10m (canopy); 4x4m (field layer)
Date: 13/09/17

Species	**Cover**
Betula pendula	7
Picea abies	4
Acer pseudoplatanus	2
Larix kaempferi/L x eurolepis.	1
Crataegus monogyna	5
Ulmus glabra	2 (poles)
Sambucus nigra	2
Fraxinus excelsior	1 (sapling)
Prunus padus	+1
Mercurialis perennis	9
Oxalis acetosella	8
Plagiomnium undulatum	7
Dryopteris filix-mas	6
Urtica dioica	5
Geranium robertianum	5
Scrophularia nodosa	3
Dryopteris dilatata	3
Chrysosplenium oppositifolium	3
Fraxinus excelsior	3
Silene dioica	3
Geum urbanum	3
Agrostis capillaris	3
Viola riviniana	3
Eurhychium praelongum	3
Thuidium tameriscinum	3
Glechoma hederacea	3
Arrhenatherum elatius	2
Luzula sylvatica	2
Fraxinus excelsior seedlings	1

Field/Target Notes

A serious of field (or target) notes taken in March, August and September 2017.

Date: 16/03/17

1) NT 27408 39315 (167m a.s.l) West entrance. Quite open with scattered *Betula pendula, B. pubescens, Acer pseudoplatanus, Sorbus aucuparia, Prunus avium, Sambucus nigra, Mercurialis perennis, Dryopteris filix-mas, D. dilatata, Galium aparine, Geum urbanum, Urtica dioica, Geranium robertianum, Luzula sylvatica, Ranunculus ficaria, Thuidium tamariscinum, Plagiothecium undulatum, Eurhynchium praelongum* and *Brachythecium rutabulum.* Leaf-litter is quite abundant here.

2) NT 27408 39268 (155m a.s.l). Start of mature Norway Spruce *Picea abies.* Quite open stand with scattered mature multi-stemmed *A. pseudoplatanus* (5-6), frequent *S. nigra* (6-7) and occasional *Rubus fruticosus* (3) and circa 10% dead wood. Ash-elm (NVC W9) field layer with *Allium ursinum, D. dilatata, D. filix-mas, M. perennis, G. urbanum, G. robertianum, R. ficaria, G. aparine, U. dioica, Alchemilla ptarmica, Silene dioica, Conopodium majus, L. sylvatica, Rumex obtusifolius, Veronica chamaedrys, Prunella vulgaris, Alliaria petiolata, P. undulatum, E. praelongum, B. rutabulum, T. tamariscinum* and *Usnea* spp. Lichen on twigs. Leaf-litter quite abundant.

3) NT 27419 39224 (152m a.s.l). Largish patch of *A. ursinum* on open ground by River Tweed directly opposite Scot's Mill with *Phalaris arundinacea* by river.

4) NT 27488 39219 – NT 27594 39208. *P. abies* becomes thicker here (8-9) casting more heavy shade. *A. pseudoplatanus* (4), *S. nigra* (7). Field layer grassier here with less *M. perennis. D. dilatata, D. filix-mas G. urbanum, S. dioica, G. aparine* and *V. chamaedrys* still quite common.

5) NT 27594 39208 (157m a.s.l). Stand becomes more open here with mature *A. pseudoplatanus* occasional *B. pendula, Ulmus glabra, Crataegus monogyna, S. aucuparia, S. nigra* and *Fraxinus excelsior* saplings. Obvious footpath here.

6) NT 27537 39194 (158m a.s.l). *Salix* spp. scrub and *P. arundinacea* on banks of the Tweed.

7) NT 27635 39212 (147m a.s.l) Stand remains fairly open with young *P. abies, A. pseudoplatanus* and *B. pendula* dominating the scene. Deadwood and brash piles quite common here.

8) NT 27669 39178 (160m a.s.l). Sand bank on margins of the Tweed with *Salix* spp., *A. pseudoplatanus, F. excelsior* and *U. glabra.* Field layer dominated by *L. sylvatica.*

9) NT 27717 39178 (153m a.s.l). Kailzie Throat starts here with *Alnus glutinosa* on banks and large erosion scar opposite on Kailzie side of river. Scarce *Quercus* spp. and *F. excelsior* here, *L. sylvatica* dominant in the field layer.

10) NT 277739 39176 (154m a.s.l). Youngish *P. abies* stand with *L. sylvatica* dominant in the field layer. Occasional *Potentilla sterilis, Oxalis acetosella* and *T. tamariscinum.* Spruce starts to thin out a little at foot of shelter belt at (**10a**) **NT 27815 39140** (160m a.s.l) and stand is co-dominated by *A. pseudoplatanus, Betula* and *Quercus.* Mixture continues until (**10b**) **NT 27913 39070** (159m a.s.l) where there is a small open area with few *P. abies. L. sylvatica, D. dilatata* and *D. filix-mas* dominant at (**10c**) **NT 27977 39022** (169m a.s.l). *P. abies* starts to thicken up again at foot of shelter belt at (**10d**) **NT 28039 38985** (170m a.s.l). *M. perennis* is also abundant in the latter situation.

11) NT 28130 38958 (164m a.s.l). Birch *Betula* thickens up here.

12) NT 28242 38922 (160m a.s.l). Telecom line crosses through wood and over the Tweed here. Spruce thickens up below (east) of here and small open area under lines at the top of Castle Pool by the Tweed opposite Kailzie fishing pond.

13) NT 28340 38969 (146m a.s.l). Spruce thickens up here and much heavier shade cast. Needs thinned, brashed.

14) NT 28475 39026 (156m a.s.l). East entrance to wood by Castle Pool and disused quarry.

Date: 31/08/17

1) NT 27366 39266 (164m a.s.l) Prone deadwood. *Salix cinerea, Acer pseudoplatanus, Ulmus glabra, Picea abies, Rubus fruticosus, Luzula sylvatica, Mercurialis perennis, Valeriana officinalis, Urtica dioica, Silene dioica, Stachys sylvatica, Dactyls glomerata, Arrhenatherum elatius, Deschampsia cespitosa, Dryopteris dilatata, D. filix-mas, Tussilago farfara, Impatiens glandulifera.*

2) NT 27424 39223 (156m a.s.l) Open area by Tweed opposite Scotsmill. Mature *Acer pseudoplatanus* around woodland edge. *Salix cinerea, Prunus avium* at top and bottom of open area. *Phalaris arundinacea* emergent along Tweed. *Convolvulus arvensis, Urtica dioica, Galium aparine, Angelica sylvestris, Valeriana officinalis, Filipendula ulmaria, Mercurialis perennis, Geranium pratense, Stachys sylvatica, S. palustris, Symphytum officinale, Glechoma hederacea, Cruciata laevipes, Chamerion angustifolium, Scirpus sylvaticus., Phalaris arundinacea, Tussilago farfara.*

3) NT 27467 39214 (152m a.s.l) *Ulmus glabra* at edge of woodland with *Salix cinerea* by the Tweed. *Acer pseudoplatanus, Picea abies, Fraxinus excelsior, Urtica dioica, Mercurialis perennis, Luzula sylvatica, Silene dioica.*

4) NT 27530 39203 (153m a.s.l) Open Area by Tweed. *Picea, Fraxinus excelsior* at edge of woodland here, *Salix* by Tweed. End of open area/start of Kailzie at NT27590 39190 (152m a.s.l).

Phalaris arundinacea	9 (by Tweed).
Urtica dioica	9
Filipendula ulmaria	7
Chamerion angustifolium	5
Arrhenatherum elatius	5
Geranium pratense	5
Scirpus sylvaticus	5
Convolvulus arvensis	4 (8 at bottom of open area)
Angelica sylvestris	4
Valeriana officinalis	4
Galium aparine	4
Holcus mollis	4
Stachys palustris	4
Cirsium arvense	3
Silene dioica	3
Cruciata laevipes	3
Symphytum officinale	3

5) NT 27621 39198 (161m a.s.l) *Acer-Larix-Crataegus* edge with W9 flora. Rabbits.

6) NT 27659 39185 (161m a.s.l) *Impatiens glandulifera* on sand bar with *Acer pseudoplatanus, Fraxinus excelsior, Ulmus glabra. Luzula sylvatica* become dominant here.

7) NT 27698 39184 (154m a.s.l) Start of Kailzie Throat. W9 *Acer-Fraxinus-Ulmus* woodland dominates edge of Tweed from here downstream. *Larix* spp.*, Betula pendula, Crataegus monogyna, Dryopteris filix-mas, D. dilatata. Quercus robur, Picea abies, Luzula sylvatica* on edge of Tweed at NT 27720 39174 (161m a.s.l).

8) NT 27768 39156 (155m a.s.l) *Alnus glutinosa, Fraxinus excelsior, F. excelsior* seedlings, *Crataegus monogyna, Luzula sylvatica, Teucrium scorodonia, Valeriana officinalis, Stachys sylvatica. Picea, Larix* spp. and occasional *Quercus robur* (inc. coppice regrowth) on edge of Tweed.

9) NT 27864 39101 (153m a.s.l) *Betula pendula, Larix* spp.*, Rosa canina, Mercurialis perennis, Luzula sylvatica, Dryopteris filix-mas, Dactyls glomerata, Stachys sylvatica.*

10) NT 27922 39061 (154m a.s.l) *Prunus padus. Geum urbanum.*

11) NT 27953 39034 (151m a.s.l) Large stand of *Petasites japonicus. Acer pseudoplatanus, Fraxinus excelsior, Larix* spp.*, Ulmus glabra, Betula pendula, Hypericum* spp.

12) NT 28124 38942 (141m a.s.l) Smaller stand of *Petasites japonicus. Fraxinus excelsior, Betula pendula, Acer pseudoplatanus, Ulmus glabra, Crataegus monogyna, Prunus padus/avium.*

Date: 12/09/17; 13/09/17

1) NT 27474 39250 (149m a.s.l). *Sambucus nigra* thicket with *Dryopteris filix-mas, D. dilatata, Mercurialis perennis, Urtica dioica.*

2) NT 2764339207 (141m a.s.l). Multi-stemmed *Fraxinus excelsior* with *Betula pendula, Crataegus monogyna, Sambucus nigra, Larix* spp., *Picea abies, Acer pseudoplatanus, Dryopteris filix-mas, D. dilatata, Mercurialis perennis, Geum urbanum, Urtica dioica.*

3) NT 27668 39205 (143m a.s.l). Mixed *Picea-Betula* stand with *Acer pseudoplatanus, Fraxinus excelsior, Ulmus glabra, Luzula sylvatica, Polytrichum commune.*

4) NT 27724 39182 (152m a.s.l). *Picea-Larix* stand with scattered *Acer pseudoplatanus, Fraxinus excelsior, Ulmus glabra*. Bare ground.

5) NT 27792 39151 (149m a.s.l). Plot 4. W9a *Fraxinus-Ulmus-Crataegus* stand with scattered *Picea* spp.

6) NT 27924 39060 (146m a.s.l). *Acer pseudoplatanus, Ulmus glabra, Prunus padus, Petasites japonicus.*

7) NT 27996 39007 (149m a.s.l). *Acer pseudoplatanus, Fraxinus excelsior, Ulmus glabra, Crataegus monogyna.*

8) NT 28056 38977 (145m a.s.l). *Picea abies* thickens up here but still W9a field layer.

9) NT 28386 39016 (153m a.s.l). *Picea abies* thickens up here (edge of cycle track).

10) NT 27989 39053 (165m a.s.l). W9a *Fraxinus excelsior, Ulmus glabra, Crataegus monogyna, Salix caprea* on edge of cycle track between track and internal stone wall.

11) NT 27880 39117 (154m a.s.l). *Alnus glutinosa* with abundant *Fraxinus excelsior* saplings on edge of cycle track by bench, *Acer pseudoplatanus, Ulmus glabra, Crataegus monogyna, Salix cinerea*.

12) NT 27754 39195 (156m a.s.l). *Prunus spinosa* on edge of cycle track.

13) NT 28003 39011 (170m a.s.l). W9a *Fraxinus excelsior, Ulmus glabra, Acer pseudoplatanus, Betula pendula, Crataegus monogyna, Ribes rubrum, Geum urbanum, Dryopteris filix-mas, D. dilatata, Mercurialis perennis, Stachys sylvatica, Potentilla sterillis, Fragaria vesca, Urtica dioica, Veronica montana, Arrhenatherum elatius, Plagiomnium undulatum, Eurhychium praelongum.*

14) NT 28080 38981 (157m a.s.l). W9a *Fraxinus excelsior, F. excelsior* seedlings, *Ulmus glabra, Prunus avium, Crataegus monogyna, Ilex aquifolia, Oxalis acetosella, Rhytidiadelphus triquetrus, Thuidium tameriscinum, Polytrichum commune, Rhizomnium punctatum* on ruins of stone wall.

15) NT 28168 38969 (164m a.s.l). Damper W7/9 stand with *Prunus padus, Chrysosplenium oppositifolium.*

16) NT 28240 38922 (155m a.s.l). Open area by Tweed under power lines with *Alnus glutinosa, Betula pendula, Fraxinus excelsior, Acer pseudoplatanus, Crataegus monogyna, Prunus padus, Picea abies, Sambucus nigra* along edge of woodland and *Filipendula ulmaria, Cirsium arvense, Arrhenatherum elatius, Phalaris arundinacea, Convolvulus arvensis, Chamerion angustifolium, Urtica dioica, Impatiens glandulifera, Stachys palustris, Geum rivale, Holcus mollis, Geranium pratense, Dactylus glomerata, Angelica sylvestris, Ranunculus repens, Teucrium scorodonia, Symphytum officinale, Cruciata laevipes* in open small haugh along the edge of the Tweed.

17) NT 28421 38989 (151m a.s.l). Mature *Ulmus glabra* with *Larix* spp, *Picea abies.* Mature multi-stemmed *Fraxinus excelsior* at NT 28446 39005 (146m a.s.l).

Species List (Trees & Shrubs)

Scientific Name	Common Name	Comments
Acer pseudoplatanus	Sycamore	Non-native, frequent throughout
Aesculus hippocastanum	Horse-chestnut	Non-native (one single tree noted)
Alnus glutinosa	Alder	Mainly along Tweed, some by cycle track
Betula pendula	Silver Birch	The most abundant birch
Betula pubescens	Downy Birch	Occasional
Crataegus monogyna	Hawthorn	Frequent throughout
Fraxinus excelsior	Ash	Frequent throughout as mature and sapling
Ilex aquifolium	Holly	Scarce (one single tree noted)
Larix kaempferi/L, x eurolepis.	Japanese/Hybrid Larch	Non-native
Picea abies	Norway spruce	Non-native
Picea sitchensis	Sitka spruce	Non-native
Populus spp.	Poplar	Non-native (one single tree noted)
Prunus avium	Gean/Wild cherry	Occasional
Prunus padus	Bird Cherry	Scarce
Prunus spinosa	Blackthorn	Scarce on edge of cycle track
Quercus petraea	Sessile Oak	Recorded by D. McPhillimy
Quercus robur	Common Oak	Relatively scarce but scattered throughout
Ribes rubrum	Red Currant	Possibly native (widespread from cultivated)
Rosa canina	Dog Rose	Occasional
Rubus fruticosus	Bramble	Occasional
Rubus idaeus	Raspberry	Occasional
Salix caprea	Goat Willow	Including some veterans
Salix cinerea	Grey Willow	Mainly along Tweed
Salix fragilis	Crack Willow	Non-native, mainly along Tweed
Sambucus nigra	Common Elder	Scattered throughout
Sorbus aucuparia	Rowan	Occasional
Tilia spp.	Lime	Non-native. Recorded by D. McPhillimy
Ulmus glabra	Wych elm	Frequent throughout as small tree/shrub