

Appendix 7

Phase I Habitat Survey Report

A68 SOUTRA SOUTH TO OXTON ROAD IMPROVEMENT SCHEME

PHASE I HABITAT SURVEY

<u>Final Report</u>

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1. INTRODUCTION

1.1 Background

- 1.1.1 As part of the proposed road improvement works on the A68 between Soutra South and Oxton, a desk study to obtain ecological baseline information was completed in May 2004 as part of a Design Manual for Roads and Bridges (DMRB) Stage 1 Environmental Assessment. Subsequent to this, as the proposed scheme options were developed, a DMRB Stage 2 Environmental Assessment was then completed in January 2005, the ecological aspects of which were based on the findings of an Extended Phase I Habitat Survey undertaken in April 2004.
- 1.1.2 A preferred scheme has now been identified and proposed, therefore during July and October 2005 the study area (500m boundary around the preferred scheme option) was re-visited to ground-truth and update the previous Extended Phase I Habitat Survey as part of a DMRB Stage 3 Environmental Assessment. At this time, elements of the preferred scheme that had been added to the scheme after the previous stage of assessment were also surveyed.
- 1.1.3 This report presents information on the results of the Extended Phase I Habitat surveys, which form part of the baseline conditions described within the Environmental Statement.

2. SURVEY METHODOLOGY

2.1 Phase 1 Habitat Survey

2.1.1 The site was surveyed, following the methods in the standard guidance *Handbook for Phase 1 Habitat Survey* (JNCC, 2003 reprint). Habitats, species and dominant plant community types present were described and recorded on a suitably scaled map of the site. Target notes linked to the Phase 1 habitat map were prepared to provide greater detail on specific habitats or features that have particular ecological interest. A list of plant species recorded during the survey was also prepared (higher plant species nomenclature follows Stace, 1997 and lower plant species nomenclature follows Watson, 1995).

3. BASELINE CONDITIONS

3.1 Introduction

3.1.1 A Phase I habitat map has been produced and is included as Figure 8.2 of the Environmental Statement. Table 1 provides details of the Target Notes shown in Figure 8.2, while a list of floral species recorded during the extended Phase I habitat survey are presented in Table 2.

3.2 Statutory/Non-Statutory Designated Sites

River Tweed Special Area of Conservation (SAC)/ Site of Special Scientific Interest (SSSI)

- 3.2.1 The watercourses within the survey area are the Headshaw Burn, Mountmill Burn, Kelphope Burn and the Leader Water. The Headshaw Burn and Mountmill Burn are header tributaries of the Leader Water and the confluence of these burns is located approximately 300m north west of Oxton, where they meet to form the Leader Water. Kelphope Burn joins the Leader Water approximately 1km to the south east of Oxton.
- 3.2.2 The Leader Water, which flows into the River Tweed approximately 19km south of Oxton, is designated as part of the River Tweed SSSI for its biological interest All are either are included within, or flow into, the River Tweed Special Area of Conservation (SAC) / Site of



Special Scientific Interest (SSSI). The primary reasons for the selection of the River Tweed as a SAC are its habitat quality as a watercourse of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation communities; for its large and high quality Atlantic Salmon *Salmo salar* population and for its value for otters *Lutra lutra*. Species that are present but are not a primary reason for site selection are the fish, river lamprey *Lampetra fluviatilis*, brook lamprey *Lampetra planeri* and sea lamprey *Petromyzon marinus*.

- 3.2.3 The Leader Water and Headshaw Burn are both located close to the proposed road improvements. The Headshaw Burn passes underneath the existing A68 immediately east of the D47/5 junction to Carfrae and also beneath the D47/5 itself. The Leader Water runs closest to the scheme extent between Netherhowden, where it passes under the C84, and Riggsyde.
- 3.2.4 There are no other statutory designated sites within or adjacent to the A68 Scheme, except for Airhouse Wood SSSI, which is approximately 1.3 km away from the scheme. This SSSI is not anticipated to be affected by the scheme due to its distance from the scheme proposals. Designated Woodland
- 3.2.5 There are no designated Ancient Woodlands within the survey area or the vicinity of the proposed scheme. The only Inventory Woodland (i.e. listed on the Scottish Natural Heritage Inventory of Ancient, Long-Established and Semi-Natural Woodland) present is an area of Long-Established plantation (see Environmental Statement, Figure 8.1), the majority of which is also Airhouse Wood SSSI, close to the disused quarries South of Kirktonhill, west of Airhouse. This woodland is located along the southern bank of the Mountmill Burn and will not be affected by the proposed scheme. It is therefore not further considered within this report. It is therefore not further considered within this report.

3.3 Habitats and Vegetation

3.3.1 The results of the extended Phase I habitat survey area given below. Habitat descriptions should be read in conjunction with Figure 8.2 of the Environmental Statement.

General Character of the Site

3.3.2 The survey area comprises a mixture of habitat types and land use. Woodland occurs across the area, in both coniferous and mixed stands, though deciduous woodland does occur in one small area. Wooded habitats offer both foraging and burrowing opportunity for badger *Meles meles*, fox *Vulpes vulpes* and also squirrel *Sciurus* species. Agricultural land forms of the majority of the habitat, with a mixture of arable and grazing land forming potential habitat for a range of species, including a number of farmland birds, such as the small passerine species e.g. the finches *Carduelis sp*. The headwater streams within the area, of which there are several burns of high quality in terms of both aquatic and riparian habitat, and are shown to support a varied fish biology with salmonids, lamprey and cottis species present.

Habitats Associated with Agricultural Land Use

3.3.3 As shown in Figure 8.2 of the Environmental Statement, the majority of the land that lies adjacent to the existing A68 and along Hillhouse Road consists of intensively farmed land, mainly improved grassland. Areas of arable land are mainly located around Headshaw Farm to the north of the scheme extent with a small area near Mountmill and Netherhowden, to the north and the south of the A68. These areas could offer potentially suitable habitat for breeding wader species, depending on crop sowing times. Semi-improved grassland occurs along the road from Carfraemill Roundabout to Hillhouse, mainly to the east and dominated



by Yorkshire-fog *Holcus lanatus*, with abundant creeping thistle *Cirsium arvense*, lesser stitchwort *Stellaria graminea* and yarrow *Achillea millefolium*.

- 3.3.4 Modern post and wire fencing encloses the majority of the lowland farmland in the area, with a single stretch of dry stone wall, north of Netherhowden. Hedgerows of hawthorn *Crataegus monogyna* and/or beech *Fagus sylvatica* and with scattered mature trees are abundant throughout the area. Some are in a poor state of repair and at present, represent low biodiversity value, including the hawthorn hedge adjacent to the A68 between the D47/5 junction and the avenue of common lime (*Tilia x vulgaris*) trees at the southern end of the scheme between Netherhowden and Carfraemill Roundabout.
- 3.3.5 There are two areas of set-aside within the survey area. The first (Target Note A1) is bounded to the east by the minor road D47/5 and is fenced to the west and north, consisting mainly of bare earth and stubble, it is dominated by red dead-nettle *Lamium purpureum* with abundant common chickweed *Stellaria media* and Yorkshire-fog, with other species such as wavy bitter-cress *Cardamine flexuosa* and ribwort plantain *Plantago lanceolata*. At the time of survey there was also a ploughed arable field immediately north of this field and east of Headshaw Farm by the D47/5 to Carfrae, which provides suitable breeding habitat for lapwing and oystercatcher.
- 3.3.6 The second set-aside area (Target Note A8) is surrounded on two sides by conifer plantation, located between Headshaw and Carfrae. This area is dominated by broad-leaved dock *Rumex obtusifolius*, with frequent red dead-nettle, creeping buttercup *Ranunculus repens*, common chickweed, common couch *Elytrigia repens* and occasional greater plantain *Plantago major* and Yorkshire-fog.

Woodland

- 3.3.7 Small areas of mainly coniferous and mixed woodland are present throughout the survey area, although generally not directly alongside the existing A68. The woodland areas are fairly fragmented and on the whole, do not represent significant wildlife corridors, though hedgerows connect some areas of woodland. The largest area of mixed woodland lies south of Kirktonhill in the southwest extreme of the study area, alongside the Mountmill Burn and dismantled railway. Other areas of mixed woodland are present north of Netherhowden (Target Note A12) including a woodland shelterbelt edged with a mix of mature beech, hawthorn and a mix of young and mature coniferous and deciduous trees including beech. sycamore Acer pseudoplatanus, hawthorn, Sitka spruce Picea sitchensis, wild cherry Prunus avium and ash Fraxinus excelsior. The woodland also has patches of bracken Pteridium aquilinum, regeneration and some open areas. The ground layer is dominated by Yorkshirefog with hogweed Heracleum sphondylium, common nettle Urtica dioica, cleavers Galium aparine, raspberry Rubus idaeus, common dog-violet Viola riviniana, creeping soft-grass Holcus mollis, common comfrey Symphytum officinalis, common knapweed Centaurea nigra, field forget-me-not Myosotis arvensis, common field-speedwell Veronica persica and dandelion Taraxacum officinale. Mixed woodland and plantation was found adjacent to the road from Carfraemill Roundabout to Hillhouse, with conifer plantation being around 5 years old.
- 3.3.8 Individual mature trees (beech) are located within the area at Hillhouse and there are many individual beech trees located along the edge of the D47/5 Hillhouse Road.
- 3.3.9 A coniferous woodland shelterbelt (Target Note A11) south of the A68 and Netherhowden is dominated by Sitka spruce with a mixed deciduous edge of occasional hawthorn, beech, elder *Sambucus nigra*, hazel *Corylus avellana* and sycamore.



- 3.3.10 A mature deciduous woodland strip (Target Note A7) dominated by ash and wych elm *Ulmus glabra* with frequent standing dead elm is situated to the south east of the D47/5 and leads into a woodland block of abundant Sitka spruce, frequent European larch *Larix decidua* and elm and occasional Scots pine *Pinus sylvestris* and sycamore. The Sitka plantation understory is dominated by raspberry, common nettle, Yorkshire-fog, common couch, cleavers, bracken and hard-fern *Blechnum spicant* while the deciduous strip has a mainly open canopy with areas dominated by creeping soft-grass and common bent *Agrostis capillaris*. Within both areas the ground layer is grazed and therefore species poor.
- 3.3.11 There is an area of rough ground at Henry's Wood (Target Note A4) by Headshaw Burn, adjacent to the A68, with an area of deciduous planting. The trees are approximately 11 years old with a mix of oak *Quercus* species, alder *Alnus glutinosa*, rowan *Sorbus aucuparia*, ash, holly *Ilex aquifolium*, hawthorn, wych elm and sycamore. The ground layer is dominated by Yorkshire-fog, common nettle, a moss *Rhytidiadelphus squarrosus* and ribwort plantain, with abundant rosebay willowherb *Chamerion angustifolium*, occasional gorse *Ulex europaeus*, water avens *Geum rivale*, cat's-ear *Hypochaeris radicata*, creeping thistle and small amounts of hogweed and colt's-foot *Tussilago farfara*.
- 3.3.12 An avenue of common lime trees is situated at the southern end of the scheme extents and adjacent to the A68. Mature lime trees provide suitable feeding habitat for bat species, together with suitable roosting opportunities, where there are cracks, rot holes and crevices.

River Habitats

- 3.3.13 Within the survey area, the watercourses are generally natural in character, with no obvious engineering of the river channel such as artificial banks or weirs, except for bank protection works (stone walls) at Headshaw Bridge and a weir on the Leader Water (Appendix 8, Target Note 16). The Leader Water is formed at the confluence of the Headshaw Burn and the Mountmill Burn and flows in a southerly direction through Lauderdale and the settlements of Lauder, Birkhill and Earlston before joining the River Tweed at Leaderfoot, 2 miles (3 km) east of Melrose, approximately 19 km from the extent of the scheme. The Kelphope Burn feeds into the Leader Water by the existing A68 south east of Netherhowden, though this area will not be directly affected by the proposal. The Headshaw Burn is a relatively fast flowing watercourse, of varying depth, averaging 2m in width, with a gravel and silt substrate and abundant riffles, pools and small rapids, and a single waterfall. There is also a small burn running parallel to the D47/5, which feeds into the Headshaw Burn. The Mountmill Burn, which merges with the Headshaw Burn (Target Note A6), is approximately 1-2m wide and has a gravel bed with deep pools.
- 3.3.14 SEPA has advised that the Water Quality Classification of Mountmill Burn is Class A1 (excellent) and that of the Leader Water below the confluence of the Mountmill Burn is Class A2 (very good). The Leader Water upstream of the Mountmill Burn confluence is not classified but SEPA indicates that the water quality is likely to be A1/A2. SEPA has advised that, in terms of the Water Framework Directive criteria, given the high water quality and the remoteness of the watercourses from population centres, they must be assumed to be of high/pristine status.
- 3.3.15 There is a specific Habitat Action Plan (HAP) for rivers and streams in the Scottish Borders Local Biodiversity Action Plan (LBAP), which principally aims to maintain and enhance the ecology of river habitats. The River Tweed SAC system is included as one of its key sites. This HAP integrates with the Species Action Plan (SAP) for protected species that depend on river and stream habitats, most notably otter and water vole. Habitat evaluation of the survey



area suggests that it provides suitable otter habitat for feeding, the creation of holts and suitable habitat for water vole.

3.3.16 With regard to the botanical interest of the river habitats within the survey area, primrose (*Primula vulgaris*) was recorded by the Headshaw Burn, with water mint (*Mentha aquatica*), brooklime (*Veronica beccabunga*), butterbur (*Petasites hybridus*), lesser celandine (*Ranunculus ficaria*), broad-leaved dock (*Rumex obtusifolius*), rosebay willowherb, common nettle, colt's-foot, garlic mustard (*Alliaria petiolata*), water avens, creeping soft-grass, viola species, lady's-mantle (*Alchemilla vulgaris*), spear thistle (*Cirsium vulgare*) and marsh-marigold (*Caltha palustris*).

Locally Important / Nationally Important Species

- 3.3.17 No locally or nationally important plant species were recorded during surveys. However, juniper (*Juniperus communis*) appears on SBBRC records (at NT4854 in 1999) by the Mountmill Burn and is included on the UK Biodiversity Action Plan. Other species of conservation concern recorded in the vicinity of the proposed scheme by SBBRC comprise greater tussock-sedge (*Carex paniculata*) close to the Mountmill Burn at NT4854 and a lichen (*Bacidia incompta*) at Oxton (NT4954).
- 3.3.18 No invasive plant species were noted during the Phase 1 habitat survey, nor have any such species been previously recorded within the survey area by SBBRC.

Habitats Associated with Built Structures

3.3.19 The survey area contains several road bridges, which provide potential habitat for bat species. A stone bridge over the Headshaw Burn, close to the existing D47/5 junction to Carfrae may provide suitable roosting habitat for bats though the water level is likely to rise to roof level in high flow conditions. The Annfield Bridge (carrying the Headshaw Burn under the existing A68) may support bats and the stone bridge over the Mountmill Burn on the minor road between Mountmill and Oxton provides some cracks and crevices suitable for roosting bats. Another that spans the Hillhouse Burn also shows potential for bat species. An old stone tunnel adjacent to the unnamed burn flowing through Oxton into the Leader Water may provide shelter to wildlife. The dry stone wall located directly west of the minor road from Carfraemill Roundabout to Hillhouse may provide shelter for small mammals. The dismantled railway located in the south west of the survey area, close to the Leader Water in the Oxton area and alongside the Mountmill Burn south of Kirktonhill, may provide additional habitat and is likely to act as a habitat link between sites. Hillhouse and nearby buildings are a complex of old and new structures which are of high value with regard to potential for bat roosts. Riggsyde, adjacent to the existing A68, also has potential for bat species.

4. **REFERENCES**

JNCC (2003). Handbook for Phase I Habitat Survey. Field Manual. Reprint.

Stace (2001). New flora of the British Isles. Second Edition. Reprint.

Young Associates (2004). A68 South Soutra to Oxton Improvement Scheme. Stage 1 Environmental Update Report. Final Report. May 2004. Submitted to the Scottish Executive.

Young Associates (2005). A68 South Soutra to Oxton Improvement Scheme. Stage 2 Environmental Report. Draft submitted to Scottish Executive January 2005.



Table 1.	Phase 1	Habitat Survey	- Target Notes.
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Target Note	Description
A1	NT4952855148 . Fenced, stubble, set-aside field with a good diversity of plants dominated by red dead-nettle with abundant chickweed and Yorkshire-fog with other species including wavy bitter-cress and ribwort plantain and a lot of bare earth.
A2	NT4934154629 . Small burn running parallel with the D47/5 to Carfrae. Well-vegetated channel with abundant creeping buttercup and brooklime. It is up to 20 cm deep with a silt, stone and gravel substrate and rocky/stony banks dominated by butterbur, with abundant hedge bedstraw. It joins Headshaw Burn at the bridge.
A3	Headshaw Burn is about 2 m wide and more than 100 cm deep with a rocky substrate and steep banks. It is fast flowing with abundant rifles, pools and small rapids and a waterfall with a 60 cm drop. The stream contains water crowfoot, with sweet-grass, water mint and water forget-me-not. The banks are dominated by butterbur and rosebay willowherb. There are varying grassy strips to 5 m either side of the burn with creeping buttercup and soft-rush. Two large field drains enter the burn opposite Channelkirk Hill. This was the only burrow found along the Headshaw Burn. There was evidence of field and bank voles, but not of water voles. An oystercatcher, lapwing and pied wagtail were recorded.
A4	NT4926854659 . Rough ground in Henry's Wood with deciduous tree planting. The trees are approximately 11 years old with a mix of species, including silver birch, willow species and horse chestnut. The rough grassland is dominated by Yorkshire-fog, ribwort plantain, common nettle and <i>Rhytidiadelphus squarrosus</i> .
A5	NT4918454413. 1 m wide road verge dominated by creeping soft-grass, bent species and Yorkshire-fog with other species including hedge bedstraw and cow parsley. There is a mature, well-managed hedgerow with potential for nesting birds and rabbit burrows. Fox droppings were recorded.
A6	NT4931854189 . Mountmill Burn joins Headshaw Burn at this point. Mountmill Burn has a gravel substrate with deep pools, which are more than 1 m deep, and is about 1-2 m wide with abundant brooklime. There is an area of rough ground between the two burns with dominant common reed and abundant meadowsweet. There is a stone-built bridge with some potential for roosting bats.
A7	NT4951254674 . Mature mixed woodland strip, mainly deciduous with some Scots pine, a sporadic understorey and a lot of dead wood. It is dominated by ash and elm with a small amount of beech. There is a long strip which leads into a woodland block which contains abundant Sitka spruce, frequent larch and elm, occasional Scots pine and small amounts of sycamore. The open canopy areas are grazed, are species-poor with no herbs and are dominated by creeping soft-grass and bent species. There is a dense Sitka plantation with the ground layer including raspberry, common nettle, bracken and soft-rush. There is a mixed wood shelterbelt with ash, hawthorn, Sitka spruce, beech, fir species, snowberry and sycamore. There is a rookery in the wood. Rabbit burrows, a hare and a roe deer were also recorded.
A8	Field in set-aside with many rank species, including dominant broad-leaved

Target Note	Description		
	dock and frequent red dead-nettle, creeping buttercup and chickweed.		
A9	Mixed woodland shelterbelt south of Hillhouse Burn, surrounded by improved grassland, with hawthorn hedge at south west edge. A pair of buzzard <i>Buteo buteo</i> was observed.		
A10	Sheep grazed rush pasture on low land adjacent to burn with large pebble beach area adjacent to the bridge. The rush pasture has an area of planted trees at NT5015153599 and a variety of species including white clover and <i>Rhytidiadelphus squarrosus</i> . The pebble beach contains abundant common nettle and broad-leaved dock and frequent to occasional amounts of other species, including cow parsley and chickweed. There is a very steep bank up to the track area with sheep grazing leaving exposed soil. This area extends along parallel to the A68 to the roundabout with mixed stands of gorse and hawthorn. Burrows were recorded on the banks, but no sign suggesting presence of water voles. Rabbits were also recorded. The burn is very good habitat for salmonids.		
A11	Conifer woodland shelterbelt dominated by Sitka spruce with a mixed deciduous edge. It is very dense with no understorey, leaf litter on the ground with a few patches of common nettle.		
A12	Mixed woodland shelterbelt with beech, sycamore, hawthorn and Sitka spruce seedlings with the ground layer dominated by Yorkshire-fog. There are areas of mature and newly planted Sitka spruce and mature Scots pine and larch plantation edged by mature beech and hawthorn. There are various open areas within the Sitka plantation.		
A13	NT4945554429. Headshaw Burn with fast flowing water, varying depths, a gravel and rock substrate and a lot of riffles. The species on the banks include water mint, brooklime, butterbur, lesser celandine and sweet-grass. There is a steep, improved grassland bank on one side with sporadic hawthorn and ash.		



Common Name	Scientific Name
Alder	Alnus glutinosa
Ash	Fraxinus excelsior
Beech	Fagus sylvatica
Bracken	Pteridium aquilinium
Broad-leaved dock	Rumex obtusifolius
Broad-leaved willowherb	Epilobium montanum
Brooklime	Veronica beccabunga
Bur Chervil	Anthriscus caucalis
Butterbur	Petasites hybridus
Buttercup species	Ranunculus sp.
Cat's-ear	Hypochaeris radicata
Cleavers	Galium aparine
Clover	Trifolium
Cock's-foot	Dactylis glomerata
Colt's-foot	Tussilago farfara
Common bistort	Persicaria bistorta
Common chickweed	Stellaria media
Common chickweed	Stellaria media
Common comfrey	Symphytum officinale
Common dog-violet	Viola riviniana
Common knapweed	Centaurea nigra
Common mouse-ear	Cerastium fontanum
Common nettle	Urtica dioica
Common-reed	Phragmites australis
Common sorrel	Rumex acetosa
Common couch	Elytrigia repens
Cow parsley	Anthriscus sylvestris
Crane's-bill species	<i>Geranium</i> sp.
Creeping bent	Agrostis stolonifera
Creeping buttercup	Ranunculus repens
Creeping soft-grass	Holcus mollis
Creeping thistle	Cirsium arvense
Crested dog's-tail	Cynosurus cristatus
Crosswort	Cruciata laevipes
Daisy	Bellis perennis
Dandelion	Taraxacum
Elder	Sambucus nigra
Elm species	Ulmus sp.
Fennel	Foeniculum vulgare
Field forget-me-not	Myosotis arvensis
Field pansy	Viola arvensis
Field-speedwell	Veronica persica
Garlic mustard	Alliaria petiolata
Germander speedwell	Veronica chamaedrys
Gorse	Ulex europaeus
Greater plantain	Plantago major
Ground elder	Aegopodium podagraria

Table 2. Phase I Flora Species List.



Common Name	Scientific Name
Hard-fern	Blechnum spicant
Hawthorn	Crataegus monogyna
Hazel	Corylus avellana
Hedge bedstraw	Galium mollugo
Hedge woundwort	Stachys sylvatica
Henbit dead-nettle	Lamium amplexicaule
Hogweed	Heracleum sphondylium
Holly	Ilex aquifolium
Horse chestnut	Aesculus hippocastanum
Sea-kale	Crambe maritima
Lady's-mantle	Alchemilla vulgaris
Large bitter-cress	Cardamine amara
Large white buttercup	Ranunculus plataniflorus
Lesser celandine	Ranunculus ficaria
Marsh-marigold	Caltha palustris
Meadow buttercup	Ranunculus acris
Meadowsweet	Filipendula ulmaria
Oak species	Quercus sp.
Opposite-leaved golden-saxifrage	Chrysosplenium oppositifolium
Parsley-piert	Alchemilla arvensis
Pineappleweed	Matricaria discoidea
Primrose	Primula vulgaris
Raspberry	Rubus idaeus
Red dead-nettle	Lamium purpureum
Ribwort plantain	Plantago lanceolata
Rosebay willowherb	Chamerion angustifolium
Rowan	Sorbus aucuparia
Sea plantain	Plantago maritima
Silver birch	Betula pendula
Sneezewort	Achillea ptarmica
Soft-rush	Juncus effusus
Spear thistle	Cirsium vulgare
Sycamore	Acer pseudoplatanus
Water avens	Geum rivale
Water forget-me-not	Myosotis scorpiodes
Water mint	Mentha aquatica
Wavy bitter-cress	Cardamine flexuosa
White clover	Trifolium repens
White dead-nettle	Lamium album
Wild carrot	Daucus carota
Wild cherry (Gean)	Prunus avium
Willow species	<i>Salix</i> sp.
Willowherb	<i>Epilobium</i> sp.
Yorkshire-fog	Holcus lanatus
Moss	Pleurozium schreberi
Moss	Rhytidiadelphus squarrosus

