

Appendix 10.2: Terrestrial Ecology: Habitat Descriptions

Broad-leaved Woodland

A range of broad-leaved woodland habitats, both semi-natural and planted, are present within the study area, the semi-natural habitats being most frequently associated with river valleys. The commonest woodland communities recorded were W4 *Betula pubescens-Molinia caerulea* wet woodland, W7 *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* wet woodland and W17 *Quercus petraea-Betula pubescens-Dicranum majus* upland birchwood.

W17 upland birchwood stands were the most prevalent broadleaved woodland type within the study area. Large stands were located along the Kilfinnan burn, on slopes south-west of Kilfinnan and within areas of Glen Garry forest. These had no Oak constituent, and where they were semi-natural the stands were dominated by Downy Birch. The W17b typical and W17c *Anthoxanthum odoratum-Agrostis capillaris* sub-communities were recorded, but commonly the ground flora was dominated by Bracken (*Pteridium aquilinum*) and no sub-community was assigned to the community.

Stands of riparian W7 Alder (*Alnus glutinosa*) woodland were limited in extent and formed a constituent of some more extensive stands of W17 woodland. The largest continuous extent of W7 woodland was a narrow strip of Alder dominated woodland along the shores of Loch Lochy. This area is dominated by the W7c *Deschampsia cespitosa* sub-community, but the prevalence of Dog's Mercury (*Mercurialis perennis*) in drier areas suggested a partial shift towards W9 *Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* woodland, but Alder remained the dominant canopy species. Wild Cherry (*Prunus avium*) formed a part of the canopy in this stand. W4 *Betula pubescens-Molinia caerulea* bog woodland fragments were identified elsewhere. Fragments of willow scrub over Soft-rush (*Juncus effusus*) and/or Bog-moss (*Sphagnum*) species were assigned to W4b *Betula pubescens-Molinia caerulea* bog woodland, *Juncus effusus* sub-community. No classic W4 bog woodland stands were recorded; the closest stands consisted of small Alder and Downy Birch plantations over acid rush and Bog-moss within Glen Garry forest along the Allt Choire Bo Chailein.

Other small broad-leaved woodland elements in the study area were principally constituent parts of mixed woodland stands along exotic conifers Hybrid Larch (*Larix x marschlinsii*) and Sitka spruce (*Picea sitchensis*). Broad-leaved woodland elements did not generally conform to NVC communities and were commonly mixed stands of Rowan (*Sorbus aucuparia*), Sycamore (*Acer pseudoplatanus*), Birch and Willow. Mixed woodland stands were commonly associated with farms and buildings, often confined to small gullies or burn-sides.

Coniferous Woodland

Coniferous plantation habitats were common across the survey area: the most significant plantations were found in Glen Garry forest and South Laggan Forest. These plantations were typically monocultural, with Sitka Spruce (*Picea sitchensis*), Scots Pine (*Pinus sylvestris*), Japanese Larch (*Larix kaempferi*) and Hybrid Larch the most common species. Less frequently, Norway Spruce (*Picea abies*), Douglas Fir (*Pseudotsuga menziesii*), European Larch (*L. decidua*) and Lodgepole Pine (*Pinus contorta*) were used.

The majority of these plantations did not fit the NVC classification; however, older Scots Pine plantations and stands of semi-natural coniferous woodland with heathy ground floras corresponded to the W18 *Pinus sylvestris-Hylocomium splendens* pinewood. The commonest sub-communities that stands corresponded to were the W18d *Sphagnum capillifolium/quinquefarium-Erica tetralix* sub-communities, although many stands did not fit closely with these sub-communities. A sub-community W18di reflects wetter stands of Scot's pine over an understorey of Purple-moor grass *Molinia caerulea*. The most extensive stands of semi-natural coniferous woodland were found in Glen Garry Forest, and whilst there were several discrete stands of mature Scots Pine corresponding to W18 Caledonian pinewood within these areas, it was more typical to find extensive

stands of regenerating Birch woodland with occasional mature Scots Pine trees and a heath/bracken understorey. These woodlands have been mapped as coniferous woodland, albeit with a high percentage canopy cover of broadleaved tree species, due to the presence of regenerating coniferous woodland species.

Mixed Woodland

Mixed woodland stands were mainly found along the north side of the road from North Laggan to Kilfinnan, where planted and apparently self-seeded conifers and broad-leaves were growing together over the dry heath and bracken stands located in gullies and burnsides between denser plantation blocks. Some of these were classed as W17, where Rowan was the dominant species.

Scrub

Scrub habitats were rare across the survey area. The most abundant was W23 *Ulex europaeus-Rubus fruticosus* agg. scrub, mostly consisting of species-poor Gorse (*Ulex europaeus*) stands. Broom (*Cytisus scoparius*) replaced Gorse in some smaller stands; however, Bramble (*Rubus fruticosus* agg.) was absent from this habitat. Large areas of dense W23 were present near Kilfinnan. These stands often contained scattered shrubs and trees, for instance Rowan, Downy Birch, Scots Pine and Elder (*Sambucus nigra*). Smaller W23 stands were present within habitat mosaics along the road from North Laggan to Kilfinnan, and Gorse also grew along field and road margins.

Acid Grassland

Acid grassland habitats were frequent in higher altitude sub-montane, in mosaic with dry heath habitats or as part of a shift from wet heath to grassland due to modification through grazing, and in enclosed grazing at lower altitudes. The most significant areas of acid grassland were recorded around mid-upper slopes of Coire Glas and at lower altitudes on slopes above Kilfinnan.

The U4 *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland was present in more grazed areas, typically on lower ground within enclosed grazing near Kilfinnan. Here the stands were dominated by the U4 typical sub-community, often in mosaic with U5 *Nardus stricta-Galium saxatile* grassland and U20 *Pteridium aquilinum* communities. U4 stands were also present in mosaic with dry heaths and wet heaths on slopes to the south of Loch a'Choire Ghlais, along upper reaches of Allt a'Choire Ghlais and Allt na Feadaige. Stands here were often a fine-scale patchwork of stands of dwarf shrub interspersed with more open grazed grassland fragments, each being too small to map individually.

U5 *Nardus stricta-Galium saxatile* grassland was probably the most extensive acid grassland community in the survey area, covering large areas of the slopes above Kilfinnan and in mosaic with heath and other grassland communities at higher altitudes. The U5a species-poor sub-community was prevalent in grazed areas, and was typically a short, heavily grazed sward consisting of tussocks of Mat-grass *Nardus stricta* interspersed with other acid grasses and often transitional to other grassland communities. The flushed U5c *Carex panicea-Viola riviniana* sub-community was also recorded in the survey area, in small stands on slopes and valley sides where more base-enriched water movement irrigated the vegetation. Sedge (*Carex*) species were common in these stands, which were typically more species-rich than other U5 grasslands. These stands were typically found in association with mesotrophic or basic sedge flushes, with which they intergraded. Within the Phase 1 classification for the study area these stands were coded as 'acid grassland – flushed'. U5 grassland also occurred in a mosaic with U6 *Juncus squarrosus-Festuca ovina* damp acid grassland, usually in areas where the habitat resulted from modification of wet heath, indicating that the grassland had probably developed from grazing of dry (and wet) heath. U5/U6 stands at higher altitudes were commonly flushed, eg. along the tributary of the Allt a'Choire Ghlais that flows north-east from Sean Mheall, and occasionally transitional to sedge or rush mires.

On summits and higher slopes U6 *Juncus squarrosus-Festuca ovina* grasslands were abundant, and whilst frequently present as stand-alone communities also formed mosaics or transitional habitats with montane heaths and high altitude mires. The stand-alone communities tend to be either heathy with a covering of heavily grazed and wind-clipped Blaeberry (*Vaccinium myrtillus*) and

pleurocarpous mosses, or grassier, with Sweet-vernal grass (*Anthoxanthum odoratum*), Mat-grass and Wavy-hair grass *Deschampsia flexuosa*). These reflect the U6c *Vaccinium myrtillus* and U6d *Agrostis capillaris-Luzula multiflora* sub-communities respectively. U6 communities were also frequent in mosaic with blanket mire communities, frequently M19 *Calluna vulgaris-Eriophorum vaginatum* blanket mires, and reflect a modified or eroded form of bog community with Heath rush (*Juncus squarrosus*) frequent on exposed peats and mineral soils. U6 grasslands were also frequent in mosaic with montane grassland and heath communities on higher summits and ridges.

Neutral Grassland

Neutral or mesotrophic grassland was one of the most widespread habitats in enclosed field systems on lower ground alongside the road between North Laggan and Kilfinnan. Stands consisted of unimproved field margin and road verge rank grassland, unimproved or re-seeded neutral grassland, semi-improved pasture, inundation habitats in semi-improved grassland, and grazed marshy grassland.

The majority of the agricultural land in the survey area consisted of mesotrophic grassland, of which much consisted of the MG6 *Lolium perenne-Cynosurus cristatus* community, used as semi-improved grazing pasture. This was often found in tandem with grazed MG10a *Holcus lanatus-Juncus effusus* rush-pasture, *Juncus effusus* sub-community, around the damper areas of the fields. When ungrazed this habitat classes as B5 Marshy Grassland (see below), but these heavily grazed stands are included in B2.2 Semi-improved Neutral Grassland.

Calcareous Grassland

Calcareous grasslands were found on slopes above Kilfinnan, on slopes to the north of Ben Tee and also in small areas on slopes above the Kilfinnan burn and around Loch a'Choire Ghlais. Generally calcareous grasslands on slopes above Kilfinnan were flushed and reflect CG10b *Festuca ovina-Agrostis capillaris-Thymus polytrichus* grassland *Carex pulicaris-Carex panicea* sub-community, with abundant sedges on damper soils and in mosaic with basic flush and flushed U5 acid grassland communities. The drier CG10a *Festuca ovina-Agrostis capillaris-Thymus polytrichus* grassland *Trifolium repens-Luzula campestris* sub-community was found on rockier slopes in Coire Glas and Ben Tee, often in mosaic with heath and acid grassland communities and in areas with modest base-rich flushing from scree and rock slopes higher up. On some rocky outcrops around Loch a'Choire Ghlais, Alpine lady's-mantle (*Alchemilla alpina*), Alpine meadow-rue (*Thalictrum alpinum*), Flea sedge (*Carex pulicaris*) and Purple saxifrage (*saxifraga oppositifolia*) are found in Thyme-rich grasslands and the community reflects the CG11b *Festuca ovina-Agrostis capillaris-Alchemilla alpina* grass-heath community. This community is present only at very low frequencies within the study area.

Improved Grassland

Where grazing pastures had undergone significant improvement, these habitats were classed as Improved Grassland. This habitat covered more heavily improved examples of the MG6 *Lolium perenne-Cynosurus cristatus* community. In these, Perennial Rye-grass was frequent, with other seeded grass species also present.

Marsh/Marshy Grassland

Marsh and marshy grassland communities were frequent in wetter areas of lower ground, along ditch lines and on field margins, as rush-pastures in damper fields and valley floors, and where general groundwater movement occurred down slopes. These were typically dominated by rush species, Yorkshire-fog (*Holcus lanatus*), Tufted Hair-grass and, more locally, Purple Moor-grass (*Molinia caerulea*) and Yellow Iris (*Iris pseudacorus*).

The most frequently occurring marshy grassland habitat on site was MG10 *Holcus lanatus-Juncus effusus* rush-pasture, with most stands representing the MG10a *Juncus effusus* sub-community.

Where the rush sward became less grassy and damper, these often transitioned to M23a *Juncus effusus/acutiflorus* rush-pasture, *Juncus acutiflorus* sub-community.

The M23 *Juncus effusus/acutiflorus* rush-pasture community was present in poorly drained valley sides and valley bottoms, but rare within the study area. Where this mesotrophic rush-mire encountered a more acidic influence, it transitioned to M6c/d *Carex echinata-Sphagnum fallax/denticulatum* mire, *Juncus effusus/Juncus acutiflorus* sub-communities.

Marshy grassland communities were also frequent in forest rides and fire-breaks where modification of mire communities had occurred as a result of commercial planting of coniferous tree species. Fragments of M25 *Molinia caerulea-Potentilla erecta* mire consisting of Purple Moor-grass, sometimes in mosaic with heathland and modified bog habitats were frequent within open areas of Glen Garry forest.

Dry Heath and Dry Heath/Acid Grassland

Dry heaths were abundant in the higher areas of the study area on moderate-steep slopes of hillsides, for example along upper slopes of Coire Glas, upper banks of Kilfinnan burn, and northern slopes of Ben Tee. They were also found in mosaic with acid grassland, for instance on lower slopes above Loch a'Choire Ghlais, with a range of mires and grassland fragments in Coire Buidhe, and in clearings in Bracken stands (often in mosaic with acid grassland) along slopes above the road from North Laggan to Kilfinnan.

The most frequently encountered dry heath was H12 *Calluna vulgaris-Vaccinium myrtillus* heath, specifically the more species-poor H12a *Calluna vulgaris* sub-community which was found most commonly on gentle slopes and burn-sides, frequently in mosaic with acid grassland and other heath communities. The H10 *Calluna vulgaris-Erica cinerea* heath community was most frequently found on steeper slopes on rockier, shallower soils, and was frequently transitional or in mosaic with H12 heath communities. Herbivore impacts on these communities was observed to be moderate to high, except on steeper topography.

The damper H21 *Calluna vulgaris-Vaccinium myrtillus-Sphagnum capillifolium* heath was common on north-facing slopes, particularly in less well drained areas, and especially in sub-montane areas. Most stands were assigned to the H21a *Calluna vulgaris-Pteridium aquilinum* sub-community, albeit with Bracken generally absent. Commonly the community was transitional to, or in mosaic with, the drier M19c *Calluna vulgaris-Eriophorum vaginatum* blanket mire *Vaccinium vitis-idaea-Hylocomium splendens* sub-community. In these areas the Phase 1 community was assigned a 'dry dwarf shrub heath – oceanic' coding to reflect the damper, more montane characteristics of the community mosaic.

A single stand of H16b *Calluna vulgaris-Arctostaphylos uva-ursi* heath, *Vaccinium myrtillus-Vaccinium vitis-idaea* sub-community was identified on knolls above the Allt na Cailliche at the edges of Glen Garry forest, with Heather, Bearberry (*Arctostaphylos uva-ursi*) and Cowberry (*Vaccinium vitis-idaea*).

Wet Heath

M15 *Trichophorum germanicum-Erica tetralix* wet heath was recorded across much of the open ground within the study area, and wet heath was the most frequent Phase 1 community recorded across the study area. The M15c *Cladonia* sub-community was the most abundant wet heath community within the study area, frequent across knolls and ridges on low-mid slopes of Coire Glas, and often in mosaic with or transitional to other wet heath or modified bog communities. The M15c sub-community was generally found on shallower soils and is a 'drier' form of wet heath with *Cladonia* generally present at high percentage cover. On some slopes, particularly on the northern slopes of Meall nan Dearcag and to the north of Loch a'Choire Ghlais, wet heath communities were 'flushed', irrigated by water movement from rainfall and snowmelt from higher ground. These communities were typically dominated by Bog asphodel (*Narthecium ossifragum*) and Deergrass (*Trichophorum germanicum*) and frequently found in a fine-scale mosaic with the drier M15c sub-community, which occupied drier ridge lines and knolls, and basic sedge-rich flushes, which are

detailed below. The M15b typical wet heath sub-community was recorded quite sparsely within the study area, and was most frequently recorded as a component part of larger mosaic communities with other heath types or acid grasslands. Herbivore impacts on wet heaths were observed to be moderate-high with the sward generally subject to moderate browsing pressure on dwarf shrubs by herbivores and frequent poaching/tracking by herbivores present.

Lichen/Bryophyte Heath

On rockier knolls and summit ridges on the highest ground around Sean Mheall and Meall nan Dearcag, H13a *Calluna vulgaris-Cladonia arbuscula* heath, *Cladonia arbuscular-Cladonia rangiferina* sub-community is frequent. The lichen-rich heath consisted of wind-clipped Heather with *Cladonia arbuscula* underneath, plus scattered Crowberry (*Empetrum nigrum*), Cowberry, Bell Heather (*Erica cinerea*), Heath Plait-moss and *C. uncialis* ssp. *biuncialis*. H14 *Calluna vulgaris-Racomitrium lanuginosum* and H15 *Calluna vulgaris-Juniperus commuis* ssp. *nana* heath are also present but at low frequencies on rockier outcrops in the bealach between Sean Mheall and Meall nan Dearcag.

Montane Heath/Dwarf-herb

Away from summit tops and rockier ridges which were dominated by lichen heaths, montane areas are generally dominated by montane grasslands on slopes, bealachs and in hollows, often interspersed with upland mire and acid grassland. The U7 *Nardus stricta-Carex bigelowii* grass-heath was abundant in such areas, and typically present as the U7a *Empetrum nigrum* ssp. *hermaphroditum-Cetraria islandica* sub-community and less frequently as the U7b typical sub-community. The habitat is dominated by Mat-grass, with Stiff sedge (*Carex bigelowii*) generally co-dominant but sometimes less frequent and replaced by Crowberry (*Empetrum nigrum*), Deergrass and Heath rush. Woolly-fringe moss (*Racomitrium lanuginosum*) was occasional throughout. A less frequent community U10 *Carex bigelowii-Racomitrium lanuginosum* was present where Woolly-fringe moss and Stiff sedge were present at higher frequencies, with the species-poor U10b typical sub-community the most frequent community type present.

Blanket Bog and Modified Bog

Blanket bog habitats in the study area were mainly found in the bealach between Coire Glas and Ben Tee, the area around Lochan Diota, and on slopes above Allt na Cailliche. The intact, less modified E1.6.1 Blanket Bog stands here consisted of M17b *Trichophorum germanicum-Eriophorum vaginatum* blanket mire *Cladonia* sub-community, with the community constants abundant. These mires were frequently hagged and bog pool communities M1 *Sphagnum denticulatum* bog pools, M2 *Sphagnum cuspidatum/fallax* bog pools and M3 *Eriophorum angustifolium* bog pools were frequent, albeit at low ground coverage, within peaty hollows and pools. The nationally scarce Dwarf birch (*Betula nana*) was occasionally found within this community. Smaller fragment of wetter, more intact M17a *Drosera rotundifolia-Sphagnum* species sub-community bog were located on slopes around Meall nan Dearcag site, with some of the better quality M19a blanket bog. Another form of intact mire community was recorded frequently around north and west slopes of Meall nan Dearcag, with higher coverage of pleurocarpous mosses and in mosaic with oceanic H21 dry heath communities. The M19c *Calluna vulgaris-Eriophorum vaginatum* blanket mire *Vaccinium vitis-idaea-Hylocomium splendens* sub-community was prevalent in these areas.

Dry Modified Bog stands tended to appear on shallower peat, and were tussocky in nature with Hare's-tail Cottongrass co-dominant with or more abundant than Heather. These stands were relatively species-poor and Bog-moss coverage was low. Generally these communities would also show some transition to U6 acid grasslands, as described above. These modified bogs were frequent at higher altitudes within Coire Glas.

Wet modified bog communities were dominated by mire communities transitional to wet heath communities, mires dominated by Purple-moor grass and those where M20 *Eriophorum vaginatum* blanket mires and M25a *Molinia caerulea-Potentilla erecta* mire, *Erica tetralix* sub-community were dominant.

Bog pools were generally small, and included as percentages in wider mosaic communities, although larger pools have been mapped. Larger areas of bare peat have also been mapped where feasible, but are also generally included as percentages in wider mosaic communities.

Acid/Neutral Flush

Acid and neutral flushes were found in a variety of locations, mostly on valley and stream sides towards the south of the survey area. The most frequent flush type was the M6 *Carex echinata-Sphagnum fallax/denticulatum* mire, which was present in various forms and sub-communities.

The M6c *Juncus effusus* and M6d *Juncus acutiflorus* rushy flushes were found within Glen Garry forest and on slopes above Kilfinnan. The M6a *Carex echinata* sub-community was also recorded, but more commonly was transitional to M25 marshy grassland or wet modified bog communities and as a component of flushed acid grassland.

Basic Flush

Basic flushes were found in several locations, often in discrete runnels and in association with flushed grassland or heath habitats. The most frequently encountered basic flush vegetation was classified as M10 *Carex dioica-Pinguicula vulgaris* mire, although some stands were not typical. All such stands shared base-enrichment characteristics, with mosses such as Rusty Hook-moss (*Scorpidium revolvens*) and Yellow Starry Feather-moss (*Campylium stellatum*), and sedges such as Common Yellow-sedge (*Carex demissa*) present. Some stands with Common Yellow-sedge, Bulbous Rush (*Juncus bulbosus*) and occasionally Common Butterwort (*Pinguicula vulgaris*) were classed as the M10a *Carex demissa-Juncus bulbosus* sub-community. These M10 basic flushes occurred on the north side of Meall nan Dearcag, around Loch a' Choire Ghlais and on slopes above Kilfinnan. M11b *Carex demissa-Saxifraga aizoides* mire *Palustriella commutata-Eleocharis quinqueflora* sub-community flushes were recorded along northern slopes of Meall na Dearcag, and were generally stoney flushes with Yellow saxifrage (*Saxifraga aizoides*) present. In some M11b flushed Scottish Asphodel (*Tolfieldia pusilla*) was recorded. Some flush communities were too small to map and were recorded as target notes.

Bryophyte-dominated Spring

M32 *Philonotis fontana-Saxifraga stellaris* springs were recorded on slopes above Kilfinnan burn. The M32 spring/flush habitats were recorded here where water emerged from a spring and were dominated by Marsh Forklet-moss (*Dichodontium palustre*), Marsh Bryum (*Bryum pseudotriquetrum*) and Compressed Flapwort (*Nardia compressa*). No Starry Saxifrage (*Saxifraga stellaris*) was recorded.

Swamp

A small pool of S9 *Carex rostrata* swamp was recorded on eastern slopes of Meall nan Dearcag, and comprised a stand of Bottle sedge (*Carex rostrata*) within a small pool of open water. This pool was too small to map but is included as a target note.

Open and Running Water

Several small lochans were recorded in the study area. All were considered to be oligotrophic, or dystrophic, and none supported any vegetation type. The study area also contained several sizeable rivers and numerous smaller streams. These were typically fast flowing, stony-bedded, and without emergent vegetation. Several aquatic bryophyte species were recorded in stream channels and emergent rocks during the survey, including Yellow Fringe-moss (*Racomitrium aciculare*) and River Feather-moss (*Brachythecium rivulare*). Bryophyte cover was generally better in wooded gorges.

Quarries

A large quarry was recorded within Glen Garry forest. At the time of survey this was not noticeably well vegetated, and was considered to be in active use. Natural rock faces on higher crags and slopes

were also recorded, being particularly prevalent in the higher parts of Coire Glas. These were often inaccessible to detailed survey but were observed from afar using binoculars. Vegetation types were generally considered to be mosaics of oceanic dry heath and acid grasslands on ledges, with little evidence of crevice/ledge cliff vegetation. Other rock habitats recorded included shingle banks on some of the larger rivers.

Built Up Areas, Bare Ground and Other Habitats

Houses and their associated gardens, infrastructure including farmsteads, ruined buildings, roads, tracks, bare mud areas trampled by livestock, and silage and manure storage areas were recorded in the survey area. Additionally exposed areas of ground on higher slopes at the crest of Coire Glas were disturbed by (presumably) historic avalanche events. Bare soil and rock was exposed and unvegetated in these areas, bar a few displaced turfs of surrounding vegetation.