

APPENDIX F.1

SITE SYNOPSES FOR DESIGNATED SITES

St. Gobnet's Wood SAC (Site Code: 000106)

Kilgarvan Ice House SAC (Site Code: 000364)

Killarney National Park, Macgillycuddy's Reeks and Caragh River
Catchment SAC (Site Code: 000365)

Slaheny River Bog NHA (Site Code: 000383)

Gouganebarra Lake pNHA (Site Code: 001057)

Lough Allua pNHA (Site Code: 01065)

Roughy River pNHA (Site Code: 001376)

Kilgarvan Wood pNHA (Site Code: 001787)

Derryclogher (Knockboy) Bog cSAC (Site Code: 001873)

Sillahertane Bog NHA (Site Code: 001882)

Ballagh Bog pNHA (Site Code: 001886)

Mullaghanish Bog SAC (Site Code: 001890)

Doughill Bog NHA (Site Code: 001948)

Old Domestic Building, Curraglass Wood SAC (Site Code: 002041)

Kenmare River SAC (Site Code: 002158)

Blackwater River (Cork/Waterford) SAC (Site Code: 002170)

Glanlough Woods SAC (Site Code: 002315)

Conigar Bog NHA (Site Code: 002386)

Boggeragh Mountains NHA (Site Code: 002447)

Mullaghanish to Musheramore Mountains SPA (Site Code: 004162)

Killarney National Park SPA (Site Code: 0004038)

SITE NAME: ST. GOBNET'S WOOD SAC

SITE CODE: 000106

St. Gobnet's Wood SAC includes St. Gobnet's Wood itself and an area of woodland to the north, called Cascade Wood. St. Gobnet's Wood is situated on the north-east side of a hill immediately south of Ballyvourney village in Co. Cork. Cascade Wood is situated immediately to the north of Ballyvourney. Together they form a relatively large but fragmented stand of woodland. The site supports old oak woodland, as well as a small area of alluvial woodland alongside the Sullane River. The underlying rock is Old Red Sandstone and the soil is a mosaic of acidic, shallow brown earths and brown podzolics, locally skeletal, mostly well-drained but with gleys associated with impeded drainage around flushes and watercourses. There is a distinct increase in fertility downslope.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[91A0] Old Oak Woodlands

In St. Gobnet's Wood the canopy is dominated by a mixture of birch (*Betula* sp.) and oak (*Quercus petraea*, *Q. robur* and *Q. x rosacea*), with abundant old Beech (*Fagus sylvatica*) and Rowan (*Sorbus aucuparia*). Ash (*Fraxinus excelsior*) and Sycamore (*Acer pseudoplatanus*) occur widely, especially on more fertile soils, and Alder (*Alnus glutinosa*) is occasional, particularly on wetter areas. The trees vary in height from 14 m to 17 m or more in height, although a few old Scots Pine (*Pinus sylvestris*) and fir (*Abies* sp.) occur as emergents. Coppicing has clearly occurred in the past and there are some very large oak and birch stools.

The shrub layer consists mainly of Hazel (*Corylus avellana*), Rusty Willow (*Salix cinerea* subsp. *oleifolia*), Holly (*Ilex aquifolium*), Hawthorn (*Crataegus monogyna*), along with regeneration of the canopy tree species, especially Ash, and locally oak and Rowan. There are also a few Rhododendron (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*) bushes. There is a patchy dwarf shrub layer of Bilberry (*Vaccinium myrtillus*).

The herb layer is species-rich, although Bluebell (*Hyacinthoides non-scripta*), Great Wood-rush (*Luzula sylvatica*) and Bramble (*Rubus fruticosus* agg.) in mosaic tend to dominate. Wood Anemone (*Anemone nemorosa*) is locally frequent. Other species include St. Patrick's-cabbage (*Saxifraga spathularis*) on rock outcrops, Herb-Robert (*Geranium robertianum*), Cleavers (*Galium aparine*), Yorkshire-fog (*Holcus lanatus*), Wood-sorrel (*Oxalis acetosella*), Enchanter's-nightshade (*Circaea lutetiana*), Honeysuckle (*Lonicera periclymenum*), Ivy (*Hedera helix*), Common Dog-violet (*Viola riviniana*) and Irish Spurge (*Euphorbia hyberna*). Ivy is common, both in the field layer and as a line. Ferns include Lady-fern (*Athyrium filix-femina*), Hard fern (*Blechnum spicant*), Scaly Male-fern (*Dryopteris affinis*), Hay-scented Buckler-fern (*D. aemula*), Broad Buckler-fern (*D. dilatata*) and Tonbridge Filmy-fern (*Hymenophyllum tunbridgense*) on rocks, Polypody (*Polypodium vulgare*) both on the ground and as an epiphyte, and Bracken (*Pteridium aquilinum*). Wet areas are characterised by the local abundance of Meadowsweet (*Filipendula ulmaria*), with Lesser Spearwort (*Ranunculus flammula*), Creeping Buttercup (*R. repens*) and Golden-saxifrage (*Chrysosplenium oppositifolium*). The ground layer is rich in bryophytes, with species such as *Dicranum majus*, *D. scoparium*, *Hylocomium brevirostre*, *Isoetecium myosuroides*, *Polytrichum formosum*, *Rhytidiadelphus triquetrus*, *Thuidium tamariscinum*, *Diplophyllum albicans*, *Pellia epiphylla* and *Scapania gracilis*. The bog moss *Sphagnum* cf. *quinquefarium* occurs in wet sites.

At the bottom of the hill on the northern edge of the wood is an area of alluvial woodland containing old river channels and hollows. A stand of planted young oak and Ash dominate here

with Alder and willow in the depressions. Large spreading Oaks occur on the margins. The field layer is characterised by species of wet ground such as Remote Sedge (*Carex remota*), Meadowsweet, Creeping Buttercup, Water Mint (*Mentha aquatica*) and Creeping Bent (*Agrostis stolonifera*). An area of wet meadow occurs near the car park, with Common Bent (*A. capillaris*), Bracken and Bramble. At the top of the hill, two fields are being invaded by birch and Gorse (*Ulex europaea*) scrub.

Throughout the wood there is a large amount of dead, wind-thrown and fallen timber. The wood is largely ungrazed, or only very lightly grazed, although signs of deer are present in the upper parts of the wood.

The main body of the woodland conforms to the phytosociological unit *Blechno-Quercetum* sub-association *coryletosum*, while the alluvial woodland is probably close to the *Corylo-Fraxinetum deschampsietosum*, with small pockets of *Carici remotae-Fraxinetum*, although this needs confirmation.

Cascade Wood is divided into two sections by a minor road. The eastern section, which is the largest, is an undulating, rocky site with several paths and tracks running through it. The Bohill River skirts the northern edge before flowing through an impressive, narrow defile that divides the wood into two unequal-sized sections. Several houses and gardens have been developed within the wood on both the western and eastern edges. The western section lies on a rocky slope containing numerous springs and seepage areas. As the two sections are very different in character they are described separately.

At Cascade Wood East the canopy consists of an intimate mixture of old Beech, oak (*Quercus robur* and *Q. x rosacea*) and Sycamore. Occasional clumps and individuals of old conifers - Scots Pine, Norway Spruce (*Picea abies*) and firs - emerge above this layer. Birch is common, locally forming almost pure stands, especially towards the western side of the wood. The shrub layer is dominated by dense thickets of Rhododendron and Cherry Laurel, up to 6 m or more in height. Native species, such as Hazel, Holly and Hawthorn are only occasional and chiefly confined to the vicinity of the river where the Rhododendron is more or less absent.

As a consequence of the dense shade cast by the Rhododendron and Cherry Laurel the herb layer is very poorly developed or absent over extensive areas. Like the shrubs, most of the species are confined to a narrow strip alongside the river before it enters the gorge, in the occasional light gaps and along the tracks where there is a certain amount of disturbance. Amongst these are elements typical of woods of the south-west that are also found in St. Gobnet's Wood, including Irish Spurge, St. Patrick's-cabbage and Tonbridge Filmy-fern. The stand of Birch towards the western side partly occurs on old cultivation ridges and is accompanied by Gorse, Heather (*Calluna vulgaris*), Bracken and Purple Moor-grass (*Molinia caerulea*). This area is shown as rough grazing on the O.S.I. six-inch map and is clearly reverting to woodland.

The moss layer is also poorly developed, except on relatively well-lit rock outcrops. Epiphytes are locally abundant, especially near the river, where there are pendulous curtains of mosses in places, a feature of extremely moist and sheltered areas. A recent survey of lichens found over 90 species to be present. There is a considerable amount of dead and fallen timber.

The remnants of the native vegetation here suggest that the wood was originally an example of acid Oak woodland within the phytosociological category *Blechno-Quercetum*.

Cascade Wood West is very different in structure and species composition, consisting of a mosaic of wet and dry stands. An area in the centre has been felled recently. The wet areas, influenced by seepages and small springs, are open and relatively light. Alder dominates with scattered Oak, Ash and Birch. The herb layer is grassy, being dominated by bent grasses (*A. capillaris* and *A. stolonifera*) and Creeping Buttercup with prominent clumps of Lady-fern. The drier areas are

dominated by Oak, with occasional Alder, Ash and Rowan. Under the heavier shade the herb layer is poorly developed, the most common species being Common Bent, Foxglove (*Digitalis purpurea*), ferns (mostly Broad Buckler-fern and Lady-fern) and Wood-sorrel. Throughout the wood the shrub layer is very poorly developed, with Holly the principal species. The moss layer is well developed, especially on rock outcrops, although in general epiphytes are less abundant than in the eastern section.

In the north-east corner of the wood there is a relatively young stand of Alder and Willow on very wet soil. Associated species include rushes (*Juncus* spp.), Marsh Violet (*Viola palustris*), Lesser Spearwort and abundant *Sphagnum* mosses.

Many of the Alders and some Oak are multi-stemmed, indicating past felling or coppicing. A number of trees, especially Holly, show signs of damage from bark stripping and there are numerous dead and moribund stems. This is undoubtedly a result of past heavy grazing pressure and the sparsely developed herb and shrub layers indicate continued heavy grazing; there were signs of recent cattle grazing in the northern part of the wood. Unlike the eastern section, however, Rhododendron is almost absent and Beech and Sycamore are far less prominent.

The vegetation on the drier sites falls into the acid Oak woodland category *Blechno-Quercetum* sub-association *coryletosum*; that on the wetter sites is harder to classify but it would appear to be closest to the association *Carici-remotae-Fraxinetum*.

The woodland stands support Kerry Slug (*Geomalacus maculosus*), a species listed in Annex II of the E.U. Habitats Directive, and parts of Cascade Wood are known to be frequented by at least seven species of bat: Soprano and Common Pipistrelle, Brown Long-eared, Leisler's, Daubenton's, Natterer's and Whiskered/Brandt's bat.

St. Gobnet's Wood is a good example of a native woodland typical of the south-west. It contains old oak woodlands, a habitat listed on the E.U. Habitats Directive, and also supports rich herb, bryophyte and lichen communities.

SITE NAME: KILGARVAN ICE HOUSE SAC

SITE CODE: 000364

This site consists of a small stone structure, an ice house, situated within a coniferous wood. The site is located on a fairly steep slope above the Roughty River, about 2 km west of Kilgarvan in County Kerry. It is used as a hibernating site by the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive.

The stone ice house, formerly used for storing food, satisfies the necessary temperature and humidity requirements of this species during hibernation.

The surrounding woodland, Glannaserha Wood, forms part of the site as it provides both suitable foraging habitat and shelter for bats as they commute to their nearby summer site on the outskirts of the wood. This wood comprises approximately 80% of commercial conifer species, with the remainder being a mix of Beech (*Fagus sylvatica*), Oak (*Quercus* spp.) and other species. A fringe of riverine habitat occurs along the northern boundary of the site and near the ice house.

The number of bats using the ice house has increased since a metal grille was fitted in 1987. 300 bats were recorded here in winter 1995/96 making this a site of international importance. This is probably one of the largest hibernating sites for the species in Europe.

Clear-felling of the woodland, which would lead to a decline in the number of bats, is the main threat to this site. This site is one of the important in the country for Lesser Horseshoe Bat.

SITE NAME: KILLARNEY NATIONAL PARK, MACGILLYCUDDY'S REEKS AND CARAGH RIVER CATCHMENT SAC

SITE CODE: 000365

This very large site encompasses the mountains, rivers and lakes of the Iveragh Peninsula, and the Paps Mountains which stretch eastward from Killarney towards Millstreet. The majority of the site is in Co. Kerry, with a small portion in Co. Cork. This is the most mountainous region in Ireland and includes Carrauntoohil, the highest peak in the country at 1,039 m. The underlying geology is almost entirely Old Red Sandstone, although Carboniferous limestone occurs on the eastern shores of Lough Leane, and rhyolitic lavas occur above Lough Guitane. The dramatic sandstone ridges and valleys have been shaped by glacial processes and many of the lakes are impounded by glacial moraines. Located close to the Atlantic in the south-west of Ireland, the site is subject to strong oceanic influences. Generally, Lusitanian flora and fauna is well-represented, while the high peaks and cliffs support arctic-alpine relicts.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[3110] Oligotrophic Waters containing very few minerals

[3130] Oligotrophic to Mesotrophic Standing Waters

[3260] Floating River Vegetation

[4010] Wet Heath

[4030] Dry Heath

[4060] Alpine and Subalpine Heaths

[5130] Juniper Scrub

[6130] Calaminarian Grassland

[6410] *Molinia* Meadows

[7130] Blanket Bogs (Active)*

[7150] Rhynchosporion Vegetation

[91A0] Old Oak Woodlands

[91E0] Alluvial Forests*

[91J0] Yew Woodlands*

[1024] Kerry Slug (*Geomalacus maculosus*)

[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)

[1065] Marsh Fritillary (*Euphydryas aurinia*)

[1095] Sea Lamprey (*Petromyzon marinus*)

[1096] Brook Lamprey (*Lampetra planeri*)

[1099] River Lamprey (*Lampetra fluviatilis*)

[1103] Twaite Shad (*Alosa fallax*)

[1106] Atlantic Salmon (*Salmo salar*)

[1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)

[1355] Otter (*Lutra lutra*)

[1421] Killarney Fern (*Trichomanes speciosum*)

[1833] Slender Naiad (*Najas flexilis*)

The Oak woodlands, occurring mostly around the Killarney lakes, are the habitat for which the area is perhaps best known. They form the most extensive area of native woodland remaining in Ireland and include Derrycunihy Wood, described as perhaps the most natural Sessile Oak (*Quercus petraea*) wood in the country. The woods are typically dominated by Sessile Oak, with an understorey of Holly (*Ilex aquifolium*). The Strawberry-tree (*Arbutus unedo*) is a notable component of the woods and there are scattered areas of Yew (*Taxus baccata*). The herb layer is not particularly species-rich, but the woods support perhaps the best developed Atlantic bryophyte community in Europe. Several rare species are present including *Lejeunea flava*, *Cyclodictyon laetivirens*, *Daltonia splachnoides*, *Sematophyllum demissum* and *Radula carringtonii*.

The only sizeable Yew woodland in Ireland is found on the limestone of the Muckcross peninsula. Here, some of the trees are up to 200 years old. The dense shade beneath the tree results in few herbs in the ground flora, but the bryophyte layer is well-developed and almost continuous.

Wet woodland, or carr, occurring on the low-lying limestone areas within the floodplain of Lough Leane, forms one of the most extensive areas of this woodland type in Ireland. The dominant canopy species are Alder (*Alnus glutinosa*), willows (*Salix* spp.), Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*), while the field layer is dominated by Remote Sedge (*Carex remota*) and Creeping Bent (*Agrostis stolonifera*).

Adding to the diversity of the woodland component of this site are a number of mixed woodlands, including those of Ross Island which support one of the richest herb layers of the Killarney woods.

The most common habitat types within the overall site are blanket bog, heath and upland grassland. The heath and grassland generally occur on areas with shallow peat and on the mineral soils of the steep mountain sides, while the blanket bog occurs on the more gentle slopes, plateaux and other level ground. Often the habitats occur in a mosaic, with exposed rock frequently occurring.

A variety of blanket bog types are represented from lowland valley to mountain blanket bog. Some of the best include: Cumberagh River Bog Nature Reserve, a domed bog which is perhaps the most southern intact blanket bog in the country; Ballygisheen, which contains one of the most extensive areas of intact lowland blanket bog in Co. Kerry; Coomacheo/Caherbarnagh, which combine to form the largest mountain blanket bog in the south-west; Eirk Bog Nature Reserve, a classic example of a bog intermediate between a raised and blanket bog; Mangerton Bog, an upland bog which grades into an unusual lichen heath seen at no other site; and Oolagh East, a quaking basin mire. Generally, the bogs have a characteristic flora. The Lusitanian species, Large-flowered Butterwort (*Pinguicula grandiflora*), is common. The bogs also support a number of unusual species, including mosses (*Sphagnum pulchrum*, *S. fuscum*, *S. platyphyllum*, *S. strictum*, *S. contortum* and *Calliergon stramineum*), liverworts (*Cladopodiella francisci* and *Calypogeia azurea*) and lichens (*Cladonia mediterranea*, *C. macilenta*, *C. rangiferina*, *C. arbuscula* and *Cetraria islandica*).

Rhynchosporion vegetation is confined to wet areas within the lowland blanket bogs, with one of the best areas for the habitat being to the north-east of the Ballygisheen Pass. On a portion of this

bog there is an extensive area of quaking flats and pools dominated by the bog mosses *Sphagnum cuspidatum* and *S. auriculatum*. These areas have a typically species-poor flora which includes Bogbean (*Menyanthes trifoliata*), White Beak-sedge (*Rhynchospora alba*), Bog Asphodel (*Narthecium ossifragum*), Common Cottongrass (*Eriophorum angustifolium*) and Great Sundew (*Drosera anglica*). Brown Beak-sedge (*R. fusca*), a locally rare plant of wet bog pools, is occasional within the site. Although the habitat is best developed in very wet areas of intact bog, it may also occur in wet areas of regenerating cutover blanket bog.

Wet heath often occurs in association with blanket bog and features Cross-leaved Heath (*Erica tetralix*). Dry heath is more frequent in this site, and is dominated by Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and Western Gorse (*Ulex gallii*), with occasional Bilberry (*Vaccinium myrtillus*). This habitat is well-developed on the Paps Mountains. Elsewhere it is often over-grazed, with upland grassland becoming more frequent. Some of the highest ridges support alpine heath (referable to the *Lycopodium alpinum* - *Racomitrium lanuginosum* association). Widespread plant species of the alpine heath include Bog-myrtle (*Vaccinium myrtillus*), Crowberry (*Empetrum nigrum*) and Fir Clubmoss (*Huperzia selago*), while species such as Juniper (*Juniperus communis* subsp. *nana*) and Dwarf Willow (*Salix herbacea*) have a much more restricted distribution.

The site contains many lakes, but these can be broadly divided into two types: small upland corrie lakes and larger lowland lakes. Examples of the first type are Lough Murtagh and Lough Gortavehy in the Paps Mountains. They are oligotrophic and typically species-poor, with Quillwort (*Isoetes lacustris*), Water Lobelia (*Lobelia dortmanna*) and Shoreweed (*Littorella uniflora*) occurring most commonly. The lowland lakes are mostly oligotrophic, although Lough Leane, the largest freshwater body in the region, has become somewhat mesotrophic as a result of pollution from Killarney town. These lowland lakes tend to be more species-rich than those at higher altitudes, with additional species such as Awlwort (*Subularia aquatica*), Six-stamened Waterwort (*Elatine hexandra*) and Alternate Water-milfoil (*Myriophyllum alterniflorum*). Good examples include Lough Caragh, Upper Lake and Muckcross Lake.

The rivers associated with these lakes are also of importance. The Caragh is relatively unpolluted from headwater to estuary, a rare phenomenon in Europe. The Flesk runs over Old Red Sandstone in its upper reaches and limestone as it nears Lough Leane. Both rivers support floating and submerged vegetation and rare invertebrates. Rocks around the smaller mountain streams often support a lush vegetation of ferns and bryophytes, most notably at Torc Waterfall.

Other habitats of note include: Juniper scrub found on islands in the Upper Lake and on dry ridges in nearby Newfoundland Bog; damp meadows, with Purple Moor-grass (*Molinia caerulea*), supporting scarce species such as Whorled Caraway (*Carum verticillatum*) and Ivy-leaved Bellflower (*Wahlenbergia hederacea*); and Calaminarian grasslands, associated with the old copper mines on Ross Island, with species such as Sea Campion (*Silene vulgaris* subsp. *maritima*) and Thrift (*Armeria maritima*).

A large number of plant and animal species of interest occur within the site. For example, two plant species listed on Annex II of the E.U. Habitats Directive occur. Slender Naiad (*Najas flexilis*) is found in some of the lakes at the site. The Killarney Fern (*Trichomanes speciosum*) is another listed and well-known rarity. An additional twenty-two Red Data Book plant species have been recorded, but only twelve of these have been seen recently. These are Pillwort (*Pilularia globulifera*), Kerry Lily (*Simethis planifolia*), Irish Lady's-tresses (*Spiranthes romanzoffiana*), Slender Cottongrass (*Eriophorum gracile*), Small Cudweed (*Logfia minima*), Betony (*Stachys officinalis*), Heath Cudweed (*Omalotheca sylvatica*), Alder Buckthorn (*Frangula alnus*), Alpine Saw-wort (*Saussurea alpina*), Hoary Whitlowgrass (*Draba incana*), Smooth Brome (*Bromus*

racemosus) and Holly Fern (*Polystichum lonchitis*). The first seven of these species are legally protected under the Flora (Protection) Order, 1999, as are Slender Naiad and Killarney Fern.

Additional plant species of interest include a fern (*Dryopteris affinis* subsp. *stilluppensis*) and a Whitebeam (*Sorbus anglica*), both at their only Irish locations.

The site is very important for oceanic bryophytes, particularly the woodland species. It also contains good representative examples of the Northern Atlantic Hepatic Mat community and other oceanic montane communities. Killarney Oak woods and mountains have been nominated as a site of international importance for bryophytes.

The Killarney Woods are notable for the number of rare species of Myxomycete fungus that have been recorded, namely *Collaria arcyronema*, *Craterium muscorum*, *Cribraria microcarpa* (only known Irish site), *C. rufa*, *C. violacea*, *Diderma chondrioderma*, *D. lucidum*, *D. ochraceum*, *Fuligo muscorum* and *Licea marginata*.

The site has six bird species which are listed on Annex I of the E.U. Birds Directive. A small flock of Greenland White-fronted Goose, which winters on the boglands within the National Park, is now the only regular flock in the south-west. The site has one of the highest concentrations of breeding Peregrines in the country, as well as some breeding Merlin. Chough is found both in the coastal and inland areas of the site, with possibly up to 30 pairs breeding. Kingfisher is a species associated with the lakes and rivers, especially in the National Park and probably breeds. Finally, a few pairs of Common Tern breed within the site.

The woodlands provide habitat for a variety of breeding birds, most notably Garden Warbler, Blackcap, and probably a few pairs each of the rare Redstart and Wood Warbler. Lough Leane is a site for wintering wildfowl with the following average counts for the two winters 1995/96 and 1996/97: Teal (208), Mallard (350), Pochard (81), Tufted Duck (323) and Coot (169).

The site supports most of the Irish mammal species. Of particular note is the occurrence of two E.U. Habitats Directive Annex II species: Lesser Horseshoe Bat, with a total population of about 300 individuals distributed at several locations, including both nursery and hibernation sites, and Otter. Perhaps the best known mammals of the Killarney National Park are the Red Deer, which form the only remaining native herd in Ireland, comprised of around 600 animals. Sika Deer also occur. Pine Marten is another notable species.

The site is valuable for its rare fish species, five of which are listed on Annex II of the E.U. Habitats Directive: Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Sea Lamprey (*Petromyzon marinus*), Atlantic Salmon (*Salmo salar*) and Killarney Shad (*Alosa fallax killarnensis*). The Killarney Shad is a unique land-locked subspecies confined to the Killarney lakes. Also of note is the glacial relict, Arctic Char (*Salvelinus alpinus*), a Red Data Book species, a unique form of which is found in Lough Coomasaharn.

There are numerous rare invertebrates within the site. These include three E.U. Habitats Directive Annex II species: Kerry Slug (*Geomalacus maculosus*), the Freshwater Pearl Mussel (*Margaritifera margaritifera*) and the Marsh Fritillary (*Euphydryas aurinia*). The Kerry Slug and Pearl Mussel populations are of particular importance in a national context. Other species of note include: three chironomids of international importance found in the River Flesk; a wood ant (*Formica lugubris*) at one of only four Irish sites; a snail (*Limnaea involuta*), in Lough Crincaum, at its only known location; two dragonflies (*Cordulea aenea* and *Somatochlora arctica*), the former at one of only two known sites in Ireland and the latter at its only known Irish location; and several other aquatic and woodland species at their only known Irish locations.

The main land use within the site is grazing by sheep. In and around the National Park deer grazing is also common. The extensive grazing has caused damage to many of the terrestrial

habitats, resulting in degradation of heath and blanket bogs and prevention of woodland regeneration. In the upland habitats the erosion caused by grazing is exacerbated by the exposed nature of the terrain. Apart from grazing, the woodlands are particularly threatened by Rhododendron (*Rhododendron ponticum*) invasion: approximately two thirds of the Oak woodlands are affected, although a Rhododendron removal programme is underway in the National Park. The Yew wood has been adversely affected by heavy grazing for many years, but it is intended to control this in the near future by erection of a deer fence. The bogs are sensitive to grazing and are also threatened by turbary, burning and afforestation. Most of the lakes are very acid-sensitive and therefore vulnerable to afforestation within the catchment areas. Lough Leane has been subject to some eutrophication, although water quality appears to have improved since phosphates were removed from the sewage in 1985.

A management plan was drawn up for the Killarney National Park in 1991. The park is managed primarily for conservation purposes although recreation is also provided for.

Overall, the site is of high ecological value because of the diversity, quality and extensiveness of many of the habitats, and impressive list of rare species of flora and fauna. In recognition of its importance the Killarney National Park has been designated a World Biosphere Reserve.

SITE NAME: SLAHENY RIVER BOG NHA

SITE CODE: 000383

Slaheny River Bog is in south-east Kerry near to the Kerry/west Cork border. It is located about 5km south of Kilgarvan on the Bantry road some 18km north of Bantry town. The site is 130ha, bounded on its western edge by the Bantry road and sloping south-east down to the Slaheny river, its eastern boundary. The under-lying bedrock is Old Red Sandstone.

From the Bog report of 1991 it can be seen that this upland site comprises a variety of habitats. These include:

- (i) broadleaved mixed woodland - along the upper slopes by the Bantry road and adjacent to the river Slaheny, Birch (*Betula jengescens*) appears to be one of the dominant species (*ranger photogsyh*).
- (ii) wet heath-land which in former times was used for agriculture, has reverted to heathland dominated by Bog Myrthe (*Mynca gale*), Purple Moor-grass (*Molinia canulea*) and Sharp-flowered rush (*Juncas anitiflorium*).
- (iii) sinus woodland adjacent to the river banks and streams in the site, mainly of Willow (*Salix* species) and Birch (*Betula pubescens*) with the odd Alder (*Alnns glutinosa*); the vegetation in these areas is often vry tall with large tussocks of Purple Moor-grass (*Mohnia caemlea*) and Bog Myrtle (*Mynca gale*).
- (iv) valley basin doomed blanket bog. The area is not quaking but is very spongy with a continuous deep layer of *Sphagna* with Purple Moor-grass (*Mohnia coenlea*), Cottongrasses (*Enaphomum* species), Cross-leaved Heath (*Erica tetralix*) and Deergrass (*Surjus aespitosins*), this grades into scrub woodland.
- (v) old cutaway bog, found in the south-west of the site. It is regenerating well with shallow pools infilling with *Sphagna* and Oblong-ceased sundew (*Droscera intermedia*).

There are also areas of dry lowland grassland and upland grassland on a peaty soil recorded within the site.

Sheep grazing is common in the area along with some cattle grazing. Some small scale peat

cutting by hand across in the site and some isolated domestic dumping, as well as some scrub and woodland clearance, though some of these activities are thought to be extensive enough to cause any major damage to the identity of the site. There has been some agricultural improvement to the north of the former ASI and so this is excluded from the NHA.

The large-flowered Butterwort (*Pinguicula grandiflora*) is seconded in this site, although it is a species frequently found in Counties Kerry and Cork, in Ireland as a whole it is uncommon, being recorded in less than 10 counties.

The site is recommended for designation of a NHA because it is relatively undisturbed in a scenic location and has a diversity of habitats which are naturally regenerating. The former agricultural land is reverting to heath and scrub, the cutaway bog is unfiling with *Sphagna* and there is regeneration of the trees in the older, more established woodland bordering the Bantry road.

SITE NAME: GOUGANEBARRA LAKE pNHA

SITE CODE: 001057

Gouganebarra Lake is situated about 20km. north-west of Dunmanway. The An Foras Forbartha County Report of 1986 provided the basis for the following description of the site.

The lake is glacial and lies in lower part of a corne cut into the eastern flanks of the Sheehy Mountains. Conifer plantations occur to the west and south of the lake, while the northern shore is more open with balder scree and grassland occurring beneath steep cliffs. The lake is large, acid and at least 15m. deep.

The lake is fringed with rushes (*Juncus* spp.) and sedges (*Carex* spp.) but the high level of acidity, combined with peat-stashing of the water, means there is little aquatic vegetation except for two specialised plants. The scarce Awlwort (*Subularia aquatica*) and six stamend water-rat (*Elatine hexandra*), also a scarce species, although locally frequent in the south-west.

Birdlife of the lakeshore includes grey wagtail, common sandpiper and snipe. The recent N.H.A. survey indicates the lake is used by ducks and swans, while Peregrine Falcon breed on the cliffs.

The invertebrate life of the lake has been studied with plankton records existing for 1954 and ridge larvae for 1970. Further records are scattered through the literature.

The main land uses around the lake are forestry, sheep grazing and tourism. Nutritionally poor lakes, such as this one, are very susceptible to pollution and acidification so all of the above activities may pose a threat to the interest of the lake.

This site is described as of interest in the A.F.F. County Report "because it is a fairly large acid lake, better documented than some and therefore of value in the study of habitat change over the years". The more recently recorded presence of Peregrine Falcon, a species listed in Annex I of the E.U. Birds Directive, adds to the interest of the site.

SITE NAME: ROUGHTY RIVER pNHA

SITE CODE: 001376

This site is located in a valley approximately 4km north-east of Kilgarvan.

In 1986, An Foras Forbartha provided the following description on the site : The river has cut a shallow gorge through the sandstone for this part of its course and several unusual plant species grow on the exposed soil. Above it blanket bog and acid grassland occur.

A Hawkweed (*Hieracium scullyi*) occurs here at its only known site in the world.

The main threats to the site are afforestation and plant collecting.

The site is of interest because of the presence of an endemic Hawkweed.

SITE NAME : KILGARVAN WOOD pNHA

SITE CODE: 001787

Kilgarvan Wood is situated on a hillside approximately 1.5km east of Kilgarvan. The following description of the site is largely based upon the one provided by An Foras Forbartha in 1972.

This area, broadleaved semi-natural woodland is thought to be of recent origin. The dominant tree species is Sessile Oak (*Quercus petraea*), although Rowan (*Sorbus aucuparia*) and Common Birch (*Betula pubescens*) regularly occur along with a few large individuals of Ash (*Fraxinus excelsior*). The thin understory is comprised of Hazel (*Comylus avellana*) and Holly (*Ilex aquifolium*), with Alder (*Alnus glutinosa*) becoming prominent towards the base of the slope.

The Wood is situated on boulder clay with a moderately rich, characteristic ground flora. The most commonly occurring species are Wood-sorrel (*Oxalis acetosella*) and Great Wood-rush (*Luzula sylvatica*), with common Dog-Violet (*Viola riviniana*), Barren Strawberry (*Potentilla sterilis*), Bugle (*Ajuga reptans*), Sanicle (*Sanicula europaea*) and Buckler-ferns (*Dryopteris aemula* and *D. dilatata*) also frequent. Among the more occasionally occurring species are Irish Spurge (*Euphorbia hyberna*) and Lady Fern (*Athyrium filix-femmina*), while the bryophyte layer contains a range of mosses (*Plagiothecium undulatum*, *Hookeria lucens*, *Polytrichum formosum* and *Hylocomum brevirostre*).

The recent NHA Survey notes that a variety of birds and mammals use the Wood, including kestrels, Sparrowhawks, Deer and Badgers.

SITE NAME: DERRYCLOGHER (KNOCKBOY) BOG cSAC

SITE CODE: 001873

Derryclogher (Knockboy) Bog is situated under the summit of Knockboy Mountain (707 m). The western boundary is marked by the ridge which runs from the summit northwards to a subsidiary summit (695 m) and a further ridge which runs westwards to Lough Boy (578 m). These ridges run along the county border. The extreme southern point of the site falls to 240 m while the extreme eastern point falls sharply to less than 150 m.

The Cummeendarrig River rises on the eastern flank of the Knockboy ridge as a series of parallel streams which coalesce and flow southwards to the head of Bantry Bay as the Coomhola River. The southern part of the site contains the headwaters of the Derryduff River. Two medium sized lakes occur, Lough Nambrackderg and Curramore Lough, as well as several small loughs.

The main conservation interest of the site is the active mountain blanket bog, an EU Habitats Directive Annex I priority habitat. The bogs occur as a complex mosaic with other upland habitats, namely grassland, heath, stream flushes and exposed rock. The bogs are mostly small (1-2 ha) but they occur with regularity on a series of gently sloping shelves across the mountainside. The largest expanses of bog are beneath the two lakes. Slope appears locally to define the composition of the bog vegetation, with the flattest areas being the wettest. The vegetation is dominated by Deer Sedge (*Trichophorum cespitosus*), Purple Moor-grass (*Molinia caerulea*), Bog Cottons (*Eriophorum angustifolium* and *E. vaginatum*) and a good diversity of mosses including

Campylopus atrovirens, *Racomitrium lanuginosum*, and a variety of *Sphagnum* spp. The *Racomitrium* forms hummocks in the drier places. Some linear pools occur, with *Sphagnum cuspidatum* and *S. tenellum*, and White Beak-sedge (*Rhynchospora alba*) around the margins.

The more nutrient-rich areas which surround the bogs are dominated by *Molinia*, often with *Sphagnum palustre*, the Soft Rush (*Juncus effusus*), Star Sedge (*Carex echinata*) and the moss *Polytrichum commune*. *Sphagnum auriculatum* and *S. recurvum* are a feature of many of the flushed areas, with Bulbous Rush (*Juncus bulbosus*), Bogbean (*Menyanthes trifoliata*) and White Beak-sedge, particularly at the lower levels. Nearer the stream banks species such as Sharp-flowered Rush (*Juncus acutiflorus*), Common Sedge (*Carex nigra*), Sweet Vernal-grass (*Anthoxanthum odoratum*) and Common Sorrel (*Rumex acetosa*) occur, with Blinks (*Montia fontana*), Bog Pimpernel (*Anagallis tenella*) and the moss *Campylium stellatum* close to springs. The Kerry Butterwort (*Pinguicula grandiflora*) occurs locally.

This site is largely in a natural state. Although sheep grazing occurs throughout, it is at low density and has only caused some localised damage to an area south of Curramore Lough. The site has not been burnt in the recent past. Some afforestation occurs outside of the site boundary and this is probably the main threat to the site.

This site is of conservation interest for its blanket bog habitat, which shows gradations to heath, grassland and stream flushes.

SITE NAME: SILLAHERTANE BOG NHA

SITE CODE: 001882

Sillahertane Bog is located approximately 12 km east of the town of Kilgarvan, towards the southern end of the Derrynasaggart mountains. The Cork/Kerry border forms the south-eastern boundary of the site. The site is underlain by Old Red Sandstone and is at an altitude of 310-480 m.

Although not recently surveyed, the site has been described as comprising a flat valley surrounding a tributary of the Roughty River. The site is, for the most part, flushed, as indicated by the predominance of Purple Moor-grass (*Molinia caerulea*). This appears to be a function of the shallow covering of peat on the site.

The site includes a variety of vegetation types. Heath occurs on the north-eastern side and comprises Viviparous Fescue (*Festuca vivipara*), Heath Rush (*Juncus squarrosus*), Bilberry (*Vaccinium myrtillus*), Wavy Hair-grass (*Deschampsia flexuosa*) and Great Wood-rush (*Luzula sylvatica*). Hillside slopes are dominated by Purple Moor-grass with an understory of Bog Moss (*Sphagnum capillifolium*), Cross-leaved Heath (*Erica tetralix*) and Tormentil (*Potentilla erecta*). Close to the headwaters of the stream a large flush dominated by Greater Tussock-sedge (*Carex paniculata*), Bottle Sedge (*Carex rostrata*), Bog-sedge (*Carex limosa*), Common Sedge (*Carex nigra*), Sharp-flowered Rush (*Juncus acutiflorus*) and Bog Moss (*Sphagnum recurvum*) occurs. On flatter ground communities of Hare's-tail Cottongrass (*Eriophorum vaginatum*) and Heather (*Calluna vulgaris*) or Deergrass (*Scirpus cespitosus*), Purple Moor-grass and Cross-leaved Heath predominate.

Overall, this site is very intact, with little damage from drains and peat-cutting apparent. It is a large, natural site with an extensive area of intact peat, some well-developed flushes at the stream headwaters and some lenses of deeper peat which show features of lowland peatland sites. □

SITE NAME: BALLAGH BOG pNHA

SITE CODE: 001886

Ballagh Bog is located 9 km south-east of the village of Kilgarvan on the east side of Carran mountain, at an altitude of 375-450 m. The site, which comprises a high-level river plain and surrounding mountain slopes, is underlain by Old Red Sandstone.

Although not re-surveyed a recent report described the site as comprising a series of small, slightly raised valley bogs situated in the bends of a mountain stream, merging with mountain slopes dominated by Purple Moor-grass (*Molinia caerulea*). The valley bogs are reasonably wet, but do not have quaking surfaces; isolated large rocks occur on these valley bogs. On the south side of the valley the hill slope is fairly even, while the northern side has many protruding rocks.

The vegetation of the site is dominated by Purple Moor-grass and Deergrass (*Scirpus cespitosus*). The moss *Rhacomitrium lanuginosum* is common in the bryophyte layer and forms both small hummocks and a carpet below the vascular plants. Overall, the cover of Bog Moss (*Sphagnum spp.*) is poor, but one species, *Sphagnum compactum*, along with another moss, *Campylopus atrovirens*, is common in the barer areas. Greater Tussock-sedge (*Carex paniculata*) occurs in one place by a stream. The uncommon moss, *Calliergon sarmentosum* has been recorded from the site. □

SITE NAME: MULLAGHANISH BOG SAC

SITE CODE: 001890

Mullaghanish Bog is located approximately 5 km north-east of the village of Ballyvourney, and is centred around the summit of Mullaghanish Mountain on the Cork/Kerry border. The summit of the mountain itself is the location of a television transmitter station. The site is underlain by Old Red Sandstone and is at an altitude of 575-650 m.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[7130] Blanket Bogs (Active)*

Mullaghanish Bog comprises a small area of mountain blanket bog which extends towards a col in the north-east and a small way down the north-west slope of Mullaghanish Mountain. Despite its small size the site is particularly interesting because of its intact surface. The summit itself is typically ombrotrophic, but lower down some flushing occurs.

About the summit of the mountain there is a very uniform blanket peat cover, with vegetation dominated by Heather (*Calluna vulgaris*), Common Cottongrass (*Eriophorum angustifolium*), Hare's-tail Cottongrass (*E. vaginatum*) and Crowberry (*Empetrum nigrum*). Bog mosses, largely *Sphagnum capillifolium*, form an even, spongy understorey. The north-west facing slopes of the site have a tussocky vegetation dominated by Heather, Bilberry (*Vaccinium myrtillus*), Hare's-tail Cottongrass, Common Cottongrass and the moss *Polytrichum commune*. Occasional flushing occurs in this area, as indicated by the presence of several other species, such as the bog moss *Sphagnum recurvum* and Cuckooflower (*Cardamine pratensis*).

The ridge running north-east from Mullaghanish is well vegetated and includes a number of interesting stream headwater flushes which contain uncommon species such as Large-flowered Butterwort (*Pinguicula grandiflora*) and the moss, *Calliergon sarmentosum*, as well as the more common moss, *Drepanocladus revolvens*. A species of liverwort, *Barbilophozia atlantica*, which

occurs on the site is otherwise known only from Co. Donegal.

There appears to be only minimal disturbance caused by sheep, fire or erosion at the site.

Mullaghanish Bog is a good quality, small, mountain blanket bog, a habitat type which is listed with priority status on Annex II of the E.U. Habitats Directive. It is remarkable for its intactness, and is one of the few such sites in the country where the vegetation has not been damaged by over-grazing or erosion.

SITE NAME: DOUGHILL BOG NHA

SITE CODE: 001948

Doughill Bog NHA consists primarily of upland blanket bog and is located approximately 5 km south-south-west of the village of Kilgarvan, on the western slopes of Knockbrack mountain, Co. Kerry. It lies within the townlands of Doughill, Lackaroe and Derrylahan. The site is bounded by fenced, townland boundaries to the north, east and south, by a stream to the north-west and by field systems to the southwest. It consists primarily of blanket bog habitat and includes both intact and cutover areas. Areas of heath and the headwaters of the Glashanamuck stream are also included within the site. Altitude range is between 250 m and 440 m and bedrock geology consists of Old Red Sandstone. This site consists of an undulating plateau with occasional rock outcrops and is characterised by low hummocks and wet flats.

The blanket bog vegetation is relatively uniform, dominated by expanses of Purple Moor-grass (*Molinia caerulea*) and Deergrass (*Scirpus cespitosus*) with Ling Heather (*Calluna vulgaris*), Crossleaved Heath (*Erica tetralix*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Common Cottongrass (*Eriophorum angustifolium*) and Bog Asphodel (*Narthecium ossifragum*) as associates. Bog moss (*Sphagnum* spp.) cover is patchy but in wetter areas *Sphagnum capillifolium*, *S. subnitens*, *S. papillosum*, *S. cuspidatum* and *S. tenellum* occur with almost full cover. Other mosses, liverworts and lichens that occur on the site include *Campylopus atrovirens*, *Racomitrium lanuginosum*, *Pleurozia purpurea* and *Cladonia uncialis*. The uncommon bog moss, *Sphagnum imbricatum*, occurs locally. The wetter areas tend to have more Hare's-tail Cottongrass, sometimes with patches of Black Bog-rush (*Schoenus nigricans*). Wet lawns and hollows are dominated by *S. auriculatum* and White Beaked-sedge (*Rhynchospora alba*). Areas flushed ground or surface water movement support vegetation dominated by Soft Rush (*Juncus effusus*), Heath Rush (*Juncus squarrosus*), Compact Rush (*Juncus conglomeratus*), Tormentil (*Potentilla erecta*), Purple Moor-grass, occasional Common Butterwort (*Pinguicula vulgaris*) and bog mosses *Sphagnum recurvum* and *S. cuspidatum*. Blanket bog habitat grades into a mosaic of wet heath and rocky outcrops, dominated by Ling Heather, Purple Moor-grass and Crossed-leaved Heath, in areas with thinner peat soils. Clumps of Western Gorse (*Ulex gallii*) and short Ling Heather line the stream banks along the stream corridors, together with Soft Rush, Compact Rush, Sweet Vernal-grass (*Anthoxanthum odoratum*), Tormentil and Carnation Sedge.

Landuse on the site is primarily agriculture. Activities associated with agriculture include grazing by sheep and burning of vegetation. There are many sheep tracks and overgrazed areas. Burning and overstocking has resulted in a predominance of Purple Moor-grass. These activities have resulted in habitat change and damage to the hydrological condition of the site.

Doughill Bog NHA is a site of considerable conservation significance containing upland blanket bog. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high

elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.

SITE NAME: OLD DOMESTIC BUILDING, CURRAGLASS WOOD SAC

SITE CODE: 002041

This site consists of a small, two-roomed, stone dwelling situated in Rossacruie Wood, approximately 6 km north of Kilgarvan, County Kerry. It is used as a nursery site by the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive.

The building is derelict and the bats gain access through an opening over a doorway at the rear of the building and through a window leading to a small loft. The bats hang from the roof timbers in the loft.

The surrounding wood provides suitable foraging habitat within a small radius of the day roost site - this is of paramount importance to this species which avoids flying across open areas.

Since its discovery in 1991, remedial work on the building has been carried out to secure the site and make it more suitable for breeding bats. In addition, part of the ground floor was modified to create an artificial hibernating site which was used by 15 bats during December 1995.

In July 1996, approximately 100 Lesser Horseshoe bats were counted at this site, which makes it of international importance. 143 bats were recorded here in August 1999.

The site appears not to be threatened at present, though any future removal of the surrounding woodland would be detrimental to the bats.

SITE NAME: KENMARE RIVER SAC

SITE CODE: 002158

Kenmare River SAC in Co. Kerry, is a long, narrow, south-west facing bay. It is a deep, drowned glacial valley and the bedrock is mainly Old Red Sandstone which forms reefs along the middle of the bay throughout its length. Exposure to prevailing winds and swells at the mouth diminishes towards the head of the bay. Numerous islands and inlets along the length of the bay provide further areas of additional shelter in which a variety of habitats and unusual communities occur.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1160] Large Shallow Inlets and Bays

[1170] Reefs

[1220] Perennial Vegetation of Stony Banks

[1230] Vegetated Sea Cliffs

[1330] Atlantic Salt Meadows

[1410] Mediterranean Salt Meadows

[2120] Marram Dunes (White Dunes)

[2130] Fixed Dunes (Grey Dunes)*

[4030] Dry Heath

[6130] Calaminarian Grassland

[8330] Sea Caves

[1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)

[1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)

[1355] Otter (*Lutra lutra*)

[1365] Common (Harbour) Seal (*Phoca vitulina*)

Kenmare River SAC has a wide range of marine communities from exposed coast to ultra-sheltered areas. The site contains three marine habitats listed on Annex I of the E.U. Habitats Directive, namely reefs, large shallow bay and marine caves. There is also a very high number of rare and notable marine species present and some uncommon communities. Kenmare River is the only known site in Ireland for the Northern Sea-fan (*Swiftia pallida*) and is the only known area where this species and the Southern Sea-fan (*Eunicella verrucosa*) co-occur.

In the more exposed areas within Kenmare River SAC the sublittoral sediment is composed mainly of coarse shelly sand and gravel forming small dunes frequently with sparse bivalves, including *Lutraria* sp. In sheltered areas the muddy sand has communities characterised by burrowing megafauna. Some areas have the Norwegian Prawn (*Nephrops norvegicus*) and others the burrowing sea cucumber *Neopentadactyla mixta*. Kenmare River SAC is one of only four known locations in Ireland for the burrowing anemone *Pachycerianthus multiplicatus*. Communities characterised by burrowing brittlestars including the uncommon *Ophiopsila annulosa* also occur. Red calcareous free living algae generally termed 'maerl' (also known as 'coral') occur in the sheltered bays and at one site the rare burrowing brittlestar *Amphiura securigera* occurs.

Beaches in outer parts of Kenmare River SAC are composed of coarse, mobile sand and have sand hoppers in the high shore and polychaete worms in the low shore. More sheltered coves, sometimes backed by sand dunes, have sandhoppers in the upper shore, Lugworm (*Arenicola marina*) in the mid shore and Razor Shell (*Ensis arcuatus*) and the burrowing sea-urchin *Echinocardium cordatum* in the lower shore.

Midway along the south coast of Kenmare River SAC, a series of sea caves stretch back into the cliff. They typically support encrusting sponges, ascidians and bryozoans.

At the mouth of the bay, Kenmare River SAC contains very good examples of littoral, infralittoral and circalittoral reef communities that are typically found in extremely exposed areas. The characteristic shifts that occur in community composition with depth are very strong. Likewise, the shifts that occur with exposure are well represented along the length of the bay.

Perennial vegetation of stony banks is well represented at two locations within Kenmare River SAC - Pallas Harbour and Rosdohan Island. Characteristic species recorded here include Thrift (*Armeria maritima*), Common Scurvygrass (*Cochlearia officinalis*), Rock Samphire (*Crithmum maritimum*) and Sea Campion (*Silene vulgaris* subsp. *maritima*).

Within the Derrynane Bay area on the south side of the Iveragh Peninsula there are good examples of a number of habitats listed on Annex I of the E.U. Habitats Directive including dry heath, fixed dunes, Marram dunes, sea cliffs and salt meadows (both Atlantic and Mediterranean types). Of particular note within the dry heath habitat here is the occurrence of the rare Red Data

Book species, Kerry Lily (*Simethis planifolia*). This species, which is protected under the Flora (Protection) Order, 1999, is unknown as a native in Britain, and in Ireland it is restricted to the Kenmare River SAC area. Another protected plant, Betony (*Stachys officinalis*), is found on rocky knolls in the site. Several other locally uncommon plant species add to the importance of this area, for example, Chaffweed (*Anagallis minima*), Crowberry (*Empetrum nigrum*), Wild Madder (*Rubia peregrina*) and Roseroot (*Rhodiola rosea*).

Salt meadows are well distributed in sheltered areas from Derrynane Bay to Kilmakilloge Harbour. Six of these have been surveyed in detail, and five are of the fringe type on peat. The saltmarsh at Derrynane is of the bay type and is found on mud on sand, and is associated with a sand dune system. Species which have been recorded from saltmarshes at this site include Sea Rush (*Juncus maritimus*), Sea-milkwort (*Glaux maritima*), oraches (*Atriplex* spp.), Thrift, Red Fescue (*Festuca rubra*), Sea Plantain (*Plantago maritima*), Common Saltmarsh-grass (*Puccinellia maritima*) and Sea Aster (*Aster tripolium*).

Heath also occurs along the extensive coastal strips within the site, from sea level to the higher slopes. Dry heath is especially well represented, and occurs in association with wet heath, coastal grassland and exposed rock. Widespread species of the heath habitat are Heather (*Calluna vulgaris*), Western Gorse (*Ulex gallii*) and Bell Heather (*Erica cinerea*). Also present are species such as Gorse (*Ulex europaeus*), Bracken (*Pteridium aquilinum*), Bilberry (*Vaccinium myrtillus*), Sheep's-bit (*Jasione montana*), Creeping Willow (*Salix repens*), Mat-grass (*Nardus stricta*) and Purple Moor-grass (*Molinia caerulea*). In places Juniper (*Juniperus communis*), Burnet Rose (*Rosa pimpinellifolia*) and the protected Kerry Lily and Betony are components of the heath.

Sea cliffs occur in places along the length of the site and are often well vegetated, supporting plant species typical of the habitat, including Thrift, Sea Campion, Rock Sea-spurrey (*Spergularia rupicola*), Rock Samphire and Sea Spleenwort (*Asplenium marinum*).

Excellent examples of Calaminarian grassland occur in association with old mine workings about Allihies. The habitat is particularly notable for the range of rare bryophytes that it supports.

Within this site fixed dune is largely confined to Derrynane where a small area occurs on the northern shores. The most common species include Red Fescue, Common Bird's-foot-trefoil (*Lotus corniculatus*), Smooth Meadow-grass (*Poa pratensis*), Lady's Bedstraw (*Galium verum*), Bulbous Buttercup (*Ranunculus bulbosus*) and Ribwort Plantain (*Plantago lanceolata*). The moss species *Homalothecium lutescens* can be locally abundant, while *Rhytidiadelphus squarrosus* and *Hypnum cupressiforme* are also found.

A reasonably extensive area of white dune dominated by Marram (*Ammophila arenaria*) occurs at the mouth of Derrynane bay. Species such as Sea Bindweed (*Calystegia soldanella*), Ribwort Plantain, Yorkshire-fog (*Holcus lanatus*), Red Fescue, Sea-holly (*Eryngium maritimum*), Portland Spurge (*Euphorbia portlandica*), Kidney Vetch (*Anthyllis vulneraria*) and Common Ragwort (*Senecio jacobaea*) are also found here.

Kenmare River SAC holds an important population of Common Seal (maximum count of 391 in the all-Ireland survey of 2003). The seals frequent rocky islets near Sneem, Templenoe and Castle Cove, as well as Brennel Island, Illaunsillagh, Kilmackilloge Harbour and Ballycrovane Harbour. Otter also uses the site.

Both Seal and Otter are listed on Annex II of the E.U. Habitats Directive. Two internationally important roosts for Lesser Horseshoe Bat, another Annex II species, are included in the site: approximately 100 bats were recorded hibernating in a souterrain near Dunkerron in 2001, while over 100 bats have been counted in recent summers in a two-storey cottage near Killaha. In damp slacks amongst the sand dunes at Derrynane, the rare Narrow-Mouthed Whorl Snail (*Vertigo angustior*), also an Annex II species, has been found. The nationally endangered and

protected Red Data Book species, Natterjack Toad, has also been recorded from this area and, following a re-introduction programme, has re-established itself at the site.

Common/Arctic Tern (95+ pairs in 2008) have been recorded breeding on rocky islands in Derrynane Bay and on other islands within the site including Eyerics Island, Spanish Island and Brennel Island. In 1995 two pairs of the scarce Little Tern bred, and Sandwich Tern occasionally breed.

Impacts arising from aquaculture, fishing, dumping of wastes and water pollution are the principal threats to the nature conservation interests of Kenmare River. There are several resorts for water sports and a number of popular beaches within this large coastal site and impacts associated with such recreational activities may also pose a threat. Bait digging is also a potential threat in some areas. Housing developments within the areas of dry heath present another possible threat to the integrity of the site. The seals and bats may be vulnerable to disturbance. Grazing at Derrynane is managed for the conservation of the dune habitats and the rare species they contain.

Kenmare River SAC contains an exceptional complement of marine and terrestrial habitats, many of which are listed on Annex I of the E.U. Habitats Directive, as well as four species that are listed on Annex II of this Directive. The presence of populations of rare Red Data Book species, in particular of Kerry Lily, together with the ornithological interest of the area, adds to the conservation significance of the site.

SITE NAME: BLACKWATER RIVER (CORK/WATERFORD) SAC

SITE CODE: 002170

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. In times of heavy rainfall the levels can fluctuate widely by more than 12 feet on the gauge at Careysville. The peaty nature of the terrain in the upper reaches and of some of the tributaries gives the water a pronounced dark colour. The site consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which include the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The portions of the Blackwater and its tributaries that fall within this SAC flow through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Nearby towns include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1130] Estuaries

[1140] Tidal Mudflats and Sandflats

[1220] Perennial Vegetation of Stony Banks

[1310] *Salicornia* Mud

[1330] Atlantic Salt Meadows

[1410] Mediterranean Salt Meadows

[3260] Floating River Vegetation

[91A0] Old Oak Woodlands

- [91E0] Alluvial Forests*
- [91J0] Yew Woodlands*
- [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1103] Twaite Shad (*Alosa fallax*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)
- [1421] Killarney Fern (*Trichomanes speciosum*)

The Blackwater rises in boggy land in east Kerry, where Namurian grits and shales build the low heather-covered plateaux. Near Kanturk the plateaux enclose a basin of productive Coal Measures. On leaving the Namurian rocks the Blackwater turns eastwards along the northern slopes of the Boggeragh Mountains before entering the narrow limestone strike vale at Mallow. The valley deepens as first the Nagles Mountains and then the Knockmealdowns impinge upon it. Interesting geological features along this stretch of the Blackwater Valley include limestone cliffs and caves near the villages and small towns of Killavullen and Ballyhooly; the Killavullen caves contain fossil material from the end of the glacial period. The associated basic soils in this area support the growth of plant communities which are rare in Cork because in general the county's rocks are acidic. At Cappelquin the river suddenly turns south and cuts through high ridges of Old Red Sandstone. The Araglin valley is predominantly underlain by sandstone, with limestone occurring in the lower reaches near Fermoy.

Wet woodlands are found where river embankments have broken down and channel edges are subject to daily inundation. This is particularly evident in the steep-sided valley of the River Bride, between Cappelquin and Youghal. The river side of the embankments was often used for willow growing in the past (most recently at Cappelquin) so that the channel is lined by narrow woods of White and Almond-leaved Willow (*Salix alba* and *S. triandra*), with isolated Crack Willow (*S. fragilis*) and Osier (*S. viminalis*). Rusty Willow (*S. cinerea* subsp. *oleifolia*) spreads naturally into the sites and occasionally, as at Villierstown on the Blackwater and Sapperton on the Bride, forms woods with a distinctive mix of woodland and marsh plants, including Gypsywort (*Lycopus europaeus*), Guelder-rose (*Viburnum opulus*), Bittersweet (*Solanum dulcamara*) and various mosses and algae. These wet woodlands form one of the most extensive tracts of the wet woodland habitat in the country.

A small stand of Yew (*Taxus baccata*) woodland, a rare habitat in Ireland and in Europe, occurs within the site. This is on a limestone ridge at Dromana, near Villierstown. While there are some patches of the wood with a canopy of Yew and some very old trees, the quality is generally poor due to the dominance of non-native and invasive species such as Sycamore (*Acer pseudoplatanus*), Beech (*Fagus sylvatica*) and Douglas Fir (*Pseudotsuga menziesii*). However, the future prospect for this Yew wood is good as the site is proposed for restoration under a Coillte E.U. Life Programme. Owing to its rarity, Yew woodland is listed with priority status on Annex I of the E.U. Habitats Directive.

Marshes and reedbeds cover most of the flat areas beside the rivers and often occur in mosaic with the wet woodland. Common Reed (*Phragmites australis*) is ubiquitous and is harvested for

thatching. There is also much Marsh-marigold (*Caltha palustris*) and, at the edges of the reeds, the Greater and Lesser Pond-sedge (*Carex riparia* and *C. acutiformis*). Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Reed Canary-grass (*Phalaris arundinacea*), Meadowsweet (*Filipendula ulmaria*), Common Nettle (*Urtica dioica*), Purple Loosestrife (*Lythrum salicaria*), Common Valerian (*Valeriana officinalis*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*) are all also found.

At Banteer there are a number of hollows in the sediments of the floodplain where subsidence and subterranean drainage have created isolated wetlands, sunk below the level of the surrounding fields. The water rises and falls in these holes depending on the water table and several different communities have developed on the acidic or neutral sediments. Many of the ponds are ringed with Rusty Willow, rooted in the mineral soils but sometimes collapsed into the water. Beneath the densest stands are woodland herbs like Yellow Pimpernel (*Lysimachia nemorum*), with locally abundant Common Water-starwort (*Callitriche stagnalis*) and Marsh Ragwort (*Senecio aquaticus*). One of the depressions has Silver Birch (*Betula pendula*), Ash (*Fraxinus excelsior*), Crab Apple (*Malus sylvestris*) and a little Pedunculate Oak (*Quercus robur*) in addition to the willows.

Floating river vegetation is found along much of the freshwater stretches within the site. The species list is quite extensive, with species such as water-crowfoots, including Pond Water-crowfoot (*Ranunculus peltatus*), Canadian Pondweed (*Elodea canadensis*), pondweed species, including Broad-leaved Pondweed (*Potamogeton natans*), water-milfoil species (*Myriophyllum* spp.), Common Club-rush (*Scirpus lacustris*), water-starwort species (*Callitriche* spp.), Lesser Water-parsnip (*Berula erecta*) particularly on the Awbeg, Water-cress (*Nasturtium officinale*), Hemlock Water-dropwort, Fine-leaved Water-dropwort (*O. aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica* all occurring.

The grasslands adjacent to the rivers of the site are generally heavily improved, although liable to flooding in many places. However, fields of more species-rich wet grassland with species such as Yellow Iris (*Iris pseudacorus*), Meadowsweet, Meadow Buttercup (*Ranunculus acris*) and rushes (*Juncus* spp.) occur occasionally. Extensive fields of wet grassland also occur at Annagh Bog on the Awbeg. These fields are dominated by Tufted Hair-grass (*Deschampsia cespitosa*) and rushes.

The Blackwater Valley has a number of dry woodlands; these have mostly been managed by the estates in which they occur, frequently with the introduction of Beech and a few conifers, and sometimes of the invasive species Rhododendron (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*). Oak woodland is well developed on sandstone about Ballinatray, with the acid oak woodland community of Holly (*Ilex aquifolium*), Bilberry (*Vaccinium myrtillus*), Great Wood-rush (*Luzula sylvatica*) and the ferns *Dryopteris affinis* and *D. aemula* occurring in one place. Irish Spurge (*Euphorbia hyberna*) continues eastwards on acid rocks from its headquarters to the west, but there are also many plants of richer soils, for example Wood Violet (*Viola reichenbachiana*), Goldilocks Buttercup (*Ranunculus auricomus*), Broad-leaved Helleborine (*Epipactis helleborine*) and Red Campion (*Silene dioica*). Oak woodland is also found in Rincrew, Carrigane, Glendine, Newport and Dromana. The spread of Rhododendron is locally a problem, as is over-grazing. A few limestone rocks stand over the river in places showing traces of a less acidic woodland type with Ash, False Brome (*Brachypodium sylvaticum*) and Early-purple Orchid (*Orchis mascula*).

In the vicinity of Lismore, two deep valleys cut in Old Red Sandstone join to form the Owenashad River before flowing into the Blackwater at Lismore. These valleys retain something close to their

original cover of oak with Downy Birch (*Betula pubescens*), Holly and Hazel (*Corylus avellana*) also occurring.

The oak wood community in the Lismore and Glenmore valleys is of the classic upland type, in which some Rowan (*Sorbus aucuparia*) and Downy Birch occur. Honeysuckle (*Lonicera periclymenum*) and Ivy (*Hedera helix*) cover many of the trees while Great Wood-rush, Bluebell (*Hyacinthoides non-scripta*), Wood-sorrel (*Oxalis acetosella*) and, locally, Bilberry dominate the ground flora. Ferns present on the site include Hard Fern (*Blechnum spicant*), Male Fern (*Dryopteris filix-mas*), the buckler-ferns *D. dilatata* and *D. aemula*, and Lady Fern (*Athyrium filix-femina*). There are many mosses present and large species such as *Rhytidiadelphus* spp., *Polytrichum formosum*, *Mnium hornum* and *Dicranum* spp. are noticeable. The lichen flora is important and includes 'old forest' species which imply a continuity of woodland here since ancient times. Tree Lungwort (*Lobaria* spp.) is the most conspicuous and is widespread.

The Araglin valley consists predominantly of broadleaved woodland. Oak and Beech are joined by Hazel, Wild Cherry (*Prunus avium*) and Goat Willow (*Salix caprea*). The ground flora is relatively rich, with Pignut (*Conopodium majus*), Ramsons (*Allium ursinum*), Garlic Mustard (*Alliaria petiolata*) and Wild Strawberry (*Fragaria vesca*). The presence of Ivy Broomrape (*Orobancha hederæ*), a local species within Ireland, suggests that the woodland, along with its attendant Ivy, is long established.

Along the lower reaches of the Awbeg River, the valley sides are generally cloaked with mixed deciduous woodland of estate origin. The dominant species is Beech, although a range of other species are also present, e.g. Sycamore, Ash and Horse-chestnut (*Aesculus hippocastanum*). In places the alien invasive species Cherry Laurel dominates the understorey. Parts of the woodlands are more semi-natural in composition, being dominated by Ash, with Hawthorn (*Crataegus monogyna*) and Spindle (*Euonymus europæa*) also present. However, the most natural areas of woodland appear to be the wet areas dominated by Alder and willows (*Salix* spp.). The ground flora of the dry woodland areas features species such as Pignut, Wood Avens (*Geum urbanum*), Ivy and Soft Shield-fern (*Polystichum setiferum*), while the ground flora of the wet woodland areas contains characteristic species such as Remote Sedge (*Carex remota*) and Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium*).

In places along the upper Bride, scrubby, semi-natural deciduous woodland of willow, oak and Rowan occurs, with abundant Great Wood-rush in the ground flora. The Bunaglanna River passes down a very steep valley, flowing in a north-south direction to meet the Bride River. It flows through blanket bog to heath and then scattered woodland. The higher levels of moisture here enable a vigorous moss and fern community to flourish, along with a well-developed epiphyte community on the tree trunks and branches.

At Banteer a type of wetland occurs near the railway line which offers a complete contrast to the others. Old turf banks are colonised by Royal Fern (*Osmunda regalis*) and Eared Willow (*Salix aurita*), and between them there is a sheet of Bottle Sedge (*Carex rostrata*), Marsh Cinquefoil (*Potentilla palustris*), Bogbean (*Menyanthes trifoliata*), Marsh St. John's-wort (*Hypericum elodes*) and the mosses *Sphagnum auriculatum* and *Aulacomnium palustre*. The cover is a scraw (i.e. floating vegetation) with characteristic species like Marsh Willowherb (*Epilobium palustre*) and Early Marsh-orchid (*Dactylorhiza incarnata*).

The soil high up the Lismore valleys and in rocky places is poor in nutrients but it becomes richer where streams enter and also along the valley bottoms. In such sites Wood Speedwell (*Veronica montana*), Wood Anemone (*Anemone nemorosa*), Enchanter's-nightshade (*Circaea lutetiana*), Barren Strawberry (*Potentilla sterilis*) and shield-fern (*Polystichum* sp.) occur. There is some Ramsons, Three-nerved Sandwort (*Moehringia trinervia*) and Early-purple Orchid (*Orchis*

mascula) locally, with Opposite-leaved Golden-saxifrage, Meadowsweet and Bugle (*Ajuga reptans*) in wet places.

The estuary and the habitats within and associated with it form a large component of the site. Very extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. The main expanses occur at the southern end of the site, with the best examples at Kinsalebeg in Co. Waterford, and between Youghal and the main bridge north of it across the river in Co. Cork. Other areas occur along the tributaries of the Licky in east Co. Waterford, and Glendine, Newport, Bride and Killahaly Rivers in Waterford west of the Blackwater. There are also large tracts along the Tourig River in Co. Cork. There are narrow bands of intertidal flats along the main river as far north as Camphire Island. Patches of green filamentous algae (*Ulva* sp. and *Enteromorpha* sp.) occur in places, while fucoid algae are common on the more stony flats, even as high upstream as Glenassy or Coneen.

The area of saltmarsh within the site is small. The best examples occur at the mouths of the tributaries and in the townlands of Foxhole and Blackbog. Those found are generally characteristic of Atlantic salt meadows. The species list at Foxhole consists of Common Saltmarsh-grass (*Puccinellia maritima*), small amounts of Greater Sea-spurrey (*Spergularia media*), glasswort (*Salicornia* sp.), Sea Arrowgrass (*Triglochin maritima*), Annual Sea-blite (*Suaeda maritima*) and Sea Purslane (*Halimione portulacoides*) - the latter a very recent coloniser. Some Sea Aster (*Aster tripolium*) occurs, generally with Creeping Bent (*Agrostis stolonifera*). Sea Couch (*Elymus pycnanthus*) and small isolated clumps of Sea Club-rush (*Scirpus maritimus*) are also seen. On the Tourig River additional saltmarsh species found include sea-lavenders (*Limonium* spp.), Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvygrass (*Cochlearia officinalis*) and Sea Plantain (*Plantago maritima*). Oraches (*Atriplex* spp.) are found on channel edges. Species such as Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*J. maritimus*) are found in places in this site also, and are indicative of Mediterranean salt meadows. Areas of *Salicornia* mud are found at the eastern side of the townland of Foxhole above Youghal, at Blackbog, along the Tourig and Kinsalebeg estuaries.

The shingle spit at Ferrypoint supports a good example of perennial vegetation of stony banks. The spit is composed of small stones and cobbles and has a well developed and diverse flora. At the lowest part, Sea Beet (*Beta vulgaris* subsp. *maritima*), Curled Dock (*Rumex crispus*) and Yellow Horned-poppy (*Glaucium flavum*) occur, while at a slightly higher level Sea Mayweed (*Matricaria maritima*), Cleavers (*Galium aparine*), Rock Samphire (*Crithmum maritimum*), Sea Sandwort (*Honkenya peploides*), Spear-leaved Orache (*Atriplex prostrata*) and Babington's Orache (*A. glabriuscula*). Other species present include Sea Rocket (*Cakile maritima*), Herb-Robert (*Geranium robertianum*), Red Fescue and Kidney Vetch (*Anthyllis vulneraria*). The top of the spit is more vegetated and supports lichens and bryophytes, including *Tortula ruraliformis* and *Rhytidiadelphus squarrosus*.

The site supports several Red Data Book plant species, i.e. Starved Wood-sedge (*Carex depauperata*), Killarney Fern (*Trichomanes speciosum*), Pennyroyal (*Mentha pulegium*), Bird's-nest Orchid (*Neottia nidus-avis*), Golden Dock (*Rumex maritimus*) and Bird Cherry (*Prunus padus*). The first three of these are also protected under the Flora (Protection) Order, 1999, while the Killarney Fern is also listed on Annex II of the E.U. Habitats Directive. The following plants, relatively rare nationally, are also found within the site: Toothwort (*Lathraea squamaria*) - associated with woodlands on the Awbeg and Blackwater; Summer Snowflake (*Leucojum aestivum*) and Flowering Rush (*Butomus umbellatus*) on the Blackwater; Common Calamint (*Calamintha ascendens*), Red Campion, Sand Leek (*Allium scorodoprasum*) and Wood Club-rush (*Scirpus sylvaticus*) on the Awbeg.

The site is also important for the presence of several E.U. Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl Mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Salmon (*Salmo salar*). The Awbeg supports a population of White-clawed Crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in Otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers. The Blackwater is noted for its enormous run of salmon over the years. The river is characterised by significant pools, streams, glides, and generally, a good push of water coming through except in very low water. Spring salmon fishing can be carried out as far upstream as Fermoy and is highly regarded especially at Careysville. The Bride, main Blackwater upstream of Fermoy, and some of the tributaries are more associated with grilse fishing.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. The bat species Natterer's Bat, Daubenton's Bat, Whiskered Bat, Brown Long-eared Bat and Pipistrelle, can be seen feeding along the river, roosting under the old bridges and in old buildings.

Common Frog, a Red Data Book species that is also legally protected (Wildlife Act, 1976), occurs throughout the site. The rare bush cricket *Metrioptera rosellii* (Order Orthoptera) has been recorded in the reed/willow vegetation of the river embankment on the Lower Blackwater River.

Several bird species listed on Annex I of the E.U. Birds Directive are found on the site. Some use it as a staging area, others are vagrants, while others use it more regularly. Internationally important numbers of Whooper Swan (average peak 174, 1994/95-95/96) and nationally important numbers Bewick's Swan (average peak 5, 1996/97-2000/01) use the Blackwater Callows. Golden Plover occur in regionally important numbers on the Blackwater estuary (average peak 885, 1984/85-86/87) and on the River Bride (absolute maximum 2,141, 1994/95). Staging Terns visit the site annually, with >300 Sandwich Tern and >200 Arctic/Common Tern (average peak 1974-1994). The site also supports populations of the following: Red Throated Diver, Great Northern Diver, Barnacle Goose, Ruff, Wood Sandpiper and Greenland White-fronted Goose.

The site holds important numbers of wintering waterfowl. Both the Blackwater Callows and the Blackwater Estuary Special Protection Areas (SPAs) hold internationally important numbers of Black-tailed Godwit (average peak 847, 1994/95-95/96 on the callows, average peak 845, 1974/75-93/94 in the estuary). The Blackwater Callows also hold Wigeon (average peak 2,752), Teal (average peak 1,316), Mallard (average peak 427), Shoveler (average peak 28), Lapwing (average peak 880), Curlew (average peak 416) and Black-headed Gull (average peak 396) (counts from 1994/95-95/96). Numbers of birds using the Blackwater Estuary, given as the mean of the highest monthly maxima over 20 years (1974-94), are Shelduck (137 +10 breeding pairs), Wigeon (780), Teal (280), Mallard (320 + 10 breeding pairs), Goldeneye (11-97), Oystercatcher (340), Ringed Plover (50 + 4 breeding pairs), Grey Plover (36), Lapwing (1,680), Knot (150), Dunlin (2,293), Snipe (272), Black-tailed Godwit (845), Bar-tailed Godwit (130), Curlew (920), Redshank (340), Turnstone (130), Black-headed Gull (4,000) and Lesser Black-backed Gull (172). The greatest numbers (75%) of the wintering waterfowl of the estuary are located in the Kinsalebeg area on the east of the estuary in Co. Waterford. The remainder are concentrated along the Tourig estuary on the Co. Cork side.

The river and river margins also support many Heron, non-breeding Cormorant and Mute Swan (average peak 53, 1994/95-95/96 in the Blackwater Callows). Heron occurs all along the Bride and Blackwater Rivers: 2 or 3 pairs at Dromana Rock; approximately 25 pairs in the woodland opposite; 8 pairs at Ardsallagh Wood and around 20 pairs at Rincrew Wood have been recorded.

Some of these are quite large and significant heronries. Significant numbers of Cormorant are found north of the bridge at Youghal and there are some important roosts present at Ardsallagh Wood, downstream of Strancally Castle and at the mouth of the Newport River. Of note are the high numbers of wintering Pochard (e.g. 275 individuals in 1997) found at Ballyhay quarry on the Awbeg, the best site for Pochard in Co. Cork.

Other important species found within the site include Long-eared Owl, which occurs all along the Blackwater River, and Barn Owl, a Red Data Book species, which is found in some old buildings and in Castlehyde, west of Fermoy. Reed Warbler, a scarce breeding species in Ireland, was found for the first time in the site in 1998 at two locations.

Land use at the site is mainly centred on agricultural activities. The banks of much of the site and the callows, which extend almost from Fermoy to Cappoquin, are dominated by improved grasslands which are drained and heavily fertilised. These areas are grazed and used for silage production. Slurry is spread over much of this area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within it. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the Blackwater and its tributaries, and there are a number of angler associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. Other recreational activities such as boating, golfing and walking are also popular. Water skiing is carried out at Villierstown. Parts of Doneraile Park and Anne's Grove are included in the site: both areas are primarily managed for amenity purposes. There is some hunting of game birds and Mink within the site. Ballyhay quarry is still actively quarried for sand and gravel. Several industrial developments, which discharge into the river, border the site.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, over-grazing within the woodland areas, and invasion by non-native species, for example Rhododendron and Cherry Laurel.

Overall, the River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively. Furthermore it is of high conservation value for the populations of bird species that use it. Two Special Protection Areas, designated under the E.U. Birds Directive, are also located within the site - Blackwater Callows and Blackwater Estuary. Additionally, the importance of the site is enhanced by the presence of a suite of uncommon plant species.

SITE NAME: GLANLOUGH WOODS SAC

SITE CODE: 002315

Glanlough Woods is situated 4 km south of Kilgarvan, Co. Kerry. The site consists of a two storey, derelict, stone farmhouse and its adjacent out-buildings. It is a candidate Special Area of Conservation because it contains an important maternity roost of the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive.

The bats roost in the ceiling and roof apex of the old farmhouse and approximately 150 bats were counted using this breeding site in July 2000, making it a site of international importance.

Adjacent habitat includes deciduous woodland which provides suitable foraging areas for the bats. However, the exact feeding areas and the winter roost of this population remain unknown.

The building used by the bats is in a state of disrepair, the floors have collapsed and slates are missing from part of the roof. However careful renovation could improve the conservation status of the bat population here and in general the conservation potential of the site is good.

SITE NAME: CONIGAR BOG NHA

SITE CODE: 002386

Conigar Bog NHA consists of an upland blanket bog and heath in the Shehy Mountains, located 2 km south-west of Gougane Barra in the townlands of Currakeal and Lackavane, Co. Kerry. It is situated on a plateau overlooking Gouganebarra Lake and Gouganebarra Forest Park and spans an altitude range of between 250 m and 566 m. It is bounded by townland boundaries and streams to the north, east and southwest, by roads and forestry tracks to the west and by field systems to the south-east. The site contains the summit of Conigar and six oligotrophic lakes including Lough Naman, Lough Fada and Lough Nabrade. Bedrock geology consists of Old Red Sandstone.

The blanket bog vegetation is overgrazed at present and is dominated by Purple Moorgrass (*Molinia caerulea*) and Deer Sedge (*Scirpus cespitosus*), with some Hare's-tail Cottongrass (*Eriophorum vaginatum*) and Ling Heather (*Calluna vulgaris*). Purple Moor-grass is overgrowing the Ling Heather but is not forming dense tussocks. Overall bog moss (*Sphagnum* spp.) cover is patchy (0-30%), but where wet depressions occur, cover reaches 60% with *Sphagnum capillifolium*, *S. papillosum* and *S. subnitens*. Round-leaved Sundew (*Drosera rotundifolia*) and Common Butterwort (*Pinguicula vulgaris*) are also present. Large hummocks of the moss *Racomitrium lanuginosum* occur in erosion channels.

The shallower peats on sloping ground are heavily grazed, with tussocks of Purple Moor-grass and Mat Grass (*Nardus stricta*) dominating. Rocky outcrops support Ling Heather and Purple Moor-grass on thin peat, with occasional Crowberry (*Empetrum nigrum*).

Lough Narca supports nutrient-poor plant communities typical of all the lakes within the site. It has large open areas of deep water and emergent vegetation in sheltered areas, consisting of Bogbean (*Menyanthes trifoliata*), Branched Bur-reed (*Sparganium erectum*), Broad-leaved Pondweed (*Potamogeton natans*) and Pipewort (*Eriocaulon aquaticum*).

The site supports the Irish Red Data Book species Red Grouse.

Landuse on the site consists of agriculture. Activities associated with agriculture include grazing by sheep and burning of vegetation. These activities have resulted in habitat loss and damage to the hydrological condition of the site.

Conigar Bog NHA is a site of considerable conservation significance containing upland blanket bog. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.

SITE NAME: BOGGERAGH MOUNTAINS NHA

SITE CODE: 002447

Boggeragh Mountains NHA consists primarily of upland blanket bog habitat and is located 10 km south-west of Mallow in Co. Cork. The site consists of three sub-sites extending across the Boggeragh Mountains: Seefin to the west; Inchamay South and Annagannihy in the centre; and Glenaknockane in the east. All three sub-sites are mainly surrounded by mature forestry, with cutover bog, streams, roads or tracks forming the remaining boundaries. The site lies at an altitude range of between 300 m and 486 m. Bedrock geology is Old Red Sandstone. Blanket bog habitat is found across the three sub-sites on peat depths of at least 2 m..

At the Seefin site, the blanket bog vegetation is characterised by Purple Moor-grass (*Molinia caerulea*) with Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Tormentil (*Potentilla erecta*), frequent Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). There are large, intact hummocks of the moss *Racomitrium lanuginosum* together with the lichen *Cladonia portentosa* and a liverwort *Pleurozia purpurea*. Occasional hummocks of bog mosses (*Sphagnum capillifolium* and *S. papillosum*) occur in this area. Bog moss cover is low – less than 10% – but in general the bog surface is wet and intact. Bilberry (*Vaccinium myrtillus*), Heath Bedstraw (*Galium saxatile*) and the moss *Hypnum jutlandicum* also occur. Heath Milkwort (*Polygala serpyllifolia*), Great Wood-rush (*Luzula sylvatica*) and *Polytrichum commune* (a moss) are present on the northern side of the ridge where grazing pressure is low. In the south of the site, towards the track, a mosaic of wet heath and upland grassland dominated by rushes (*Juncus* sp.) has formed on shallower peat.

At Annagannihy and Glenaknockane, Purple Moor-grass and Bog Asphodel with occasional Ling Heather, Cross-leaved Heath, Tormentil and Bog Pimpernel (*Anagallis tenella*) dominate the vegetation. Other species present include Bilberry, Common Cottongrass (*Eriophorum angustifolium*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Broad Buckler-fern (*Dryopteris dilatata*), Devil's-bit Scabious (*Succisa pratensis*) and Goldenrod (*Solidago virgaurea*). In this area, bog moss cover is < 5% with sparse hummocks of Bog Moss *Sphagnum papillosum*. To the north of the sub-site at Inchamay South bog moss cover increases to 70% and in places to 100% with hummocks of *Sphagnum papillosum* and *S. capillifolium*. Other mosses present include *Hypnum jutlandicum*. The vegetation here is dominated by Ling Heather and occasionally reaches 30 - 40 cm in height; in places Purple Moorgrass is locally dominant. Streams occur at the north-western boundary of this subsite.

Golden Plover, a Red Data Book species, occurs on the site. Landuse on the site includes peat cutting: this is extensive in the area around Knockcraugh Mountain with some also within the site at Seefin. There are deep drains through the bog at Knockcraugh. Intensive grazing by sheep occurs at Seefin. An anemometer is installed at Seefin indicating an investigation into the possibility of a future windfarm at the site. Most of the adjoining lands are under mature conifers or have extensive peat cuttings.

Boggeragh Mountains NHA is a site of considerable conservation significance. It contains excellent blanket bog habitat on peat depths of at least 2 m. Other habitats present include heath on the slopes of the hills, headwaters and a number of small flushes and streams. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently

undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.

SITE NAME: MULLAGHANISH TO MUSERAMORE MOUNTAINS SPA

SITE CODE: 004162

The Mullaghanish to Museramore SPA comprises a substantial part of the Boggeragh/Derrynasaggart Mountains. It is divided roughly into two sectors by the R582 road between Macroom and Millstreet. Most of the site is over 200 m in altitude, rising to heights of 475 m in the eastern sector (Muserabeg) and 462 m in the western sector (Knockullane). Several important rivers rise within the site, notably the Foherish and Awboy. The site is underlain by Old Red Sandstone.

The site consists of a variety of upland habitats, though approximately one-third is afforested. The coniferous forests include first and second rotation plantations, with both pre-thicket and post-thicket stands present. The principal trees are sitka spruce (*Picea sitchensis*) and lodgepole pine (*Pinus contorta*). Almost one-third of the site is unplanted blanket bog and heath, with both wet and dry heaths present. The vegetation is characterised by such species as ling heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), bilberry (*Vaccinium myrtillus*), common cottongrass (*Eriophorum angustifolium*), deergrass (*Scirpus cespitosus*) and purple moor grass (*Molinia caerulea*). The remainder of the site is largely rough grassland that is used for hill farming. This varies in composition, with some wet areas with rushes (*Juncus* spp.) and some areas with scrub encroachment.

This SPA is a stronghold for Hen Harriers. A survey in 2005 resulted in 5 confirmed breeding pairs, which represents over 3% of the national total. A similar number had been recorded in the 1998-2000 period. The mix of forestry and open areas provides optimum habitat conditions for this rare bird, which is listed in Annex I of the Birds Directive. The early stages of new and second-rotation conifer plantations are the most frequently used nesting sites, though some pairs may still nest in tall heather of unplanted bogs and heath. Hen harriers will forage up to c.5 km from the nest site, utilising open bog and moorland, young conifer plantations and hill farmland that is not too rank. Birds will often forage in openings and gaps within forests. In Ireland, small birds and small mammals appear to be the most frequently taken prey.

The site also supports a breeding population of Merlin, a further Annex I listed species. The population size is not well known but is likely to be one or two pairs.

The main threat to the long-term survival of Hen Harriers within this site is further afforestation which would reduce the amount of foraging habitat, with a possible reduction in breeding density and possibly productivity (as foraging areas become further fragmented).

Overall this site provides excellent nesting and foraging habitat for breeding Hen Harriers and is an important stronghold for the species.

SITE NAME: KILLARNEY NATIONAL PARK SPA

SITE CODE: 0004038

This large site encompasses the lakes and part of the Macgillycuddy's Reeks in the vicinity of Killarney. The underlying geology is Old Red Sandstone, although Carboniferous Limestone occurs on the eastern shores of Lough Leane. Lough Leane is the most important and largest (8.6 km along long axis) of the lakes, and is classified as a mesotrophic system. Muckross Lake and the Upper Lake are both high quality oligotrophic systems. Aquatic vegetation includes such species as Quillwort (*Isoetes lacustris*), Water Lobelia (*Lobelia dortmanna*) and Shoreweed (*Littorella uniflora*)

The oak woodlands are the habitat for which the area is best known. They form the most extensive area of native woodland remaining in Ireland and include Derrycunihy Wood, described as perhaps the most natural Sessile Oak wood in the country. The woods are typically dominated by Sessile Oak (*Quercus petraea*) with an understorey of Holly (*Ilex aquifolium*). The Strawberry Tree (*Arbutus unedo*) is a notable component of the woods and there are scattered Yew (*Taxus baccata*). The herb layer is not particularly species-rich, but the woods support perhaps the best developed Atlantic bryophyte community in Europe. Yew, which favours the limestone of Muckross peninsula, forms the only sizeable Yew woodland in Ireland and some of the trees are up to 200 years old. The dense shade beneath the tree results in few herbs in the ground flora, but the bryophyte layer is almost continuous. Wet woodland or carr, occurring on the low-lying limestone areas within the flood plain of Lough Leane, forms one of the most extensive areas of this woodland type in Ireland. The dominant canopy species are Alder (*Alnus glutinosa*), willows (*Salix* spp.), Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*). Mixed woodland also occurs, as well as some conifer plantations.

The higher areas of the site are dominated by blanket bog and wet heath. Generally, the bogs have a characteristic flora, with such species as Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and Western Gorse (*Ulex gallii*), with occasional Bilberry (*Vaccinium myrtillus*). The Lusitanian species, Large-flowered Butterwort (*Pinguicula grandiflora*) is common. The bogs also support a number of unusual species, including mosses (*Sphagnum pulchrum*, *S. fuscum*, *S. platyphyllum*, *S. strictum*, *S. contortum* and *Calliergon stramineum*), liverworts (*Cladopodiella francisci* and *Calypogeia azurea*) and lichens (*Cladonia mediterranea*, *C. macilenta*, *C. rangiferina*, *C. arbuscula* and *Cetraria islandica*). Outcropping rock, cliffs and crags are features of the site.

The site is of ornithological importance as it supports a good diversity of upland and woodland birds, as well as wintering waterfowl. It is a traditional site for a population of Greenland White-fronted Geese - while the numbers are now very low (<20), the population is still of importance as it is the most southerly in the country and also one of the remaining populations that feeds entirely on bogs. Upland species which breed within the site include Peregrine (at least 1 pair), Merlin (up to 5 pairs), Red Grouse and Ring Ouzel (1-2 pairs). Both Red Grouse and Ring Ouzel are Red listed species in Ireland. The extensive woodlands support some scarce breeding birds, notably Redstart (1-2 pairs), Wood Warbler (1-2 pairs) and Garden Warbler (possibly up to 10 pairs). Lough Leane, and to a lesser extent the other lakes, support a variety of wintering waterfowl species, though all in relatively low numbers. The following counts are the average peaks for three of the five winters in the period 1995/96-1999/00 : Cormorant 86, Teal 184, Mallard 361, Pochard 54, Tufted Duck 271, Goldeneye 23 and Coot 124. Several research programmes have been carried out on the birds in the site, including studies on the communities associated with the yew woodlands and the wildfowl associated with the lakes.

A large number of plant and animal species of interest occur within the site, including most of the Irish mammal species, several important fish species including Arctic Char, and a range of scarce and rare plant species.

The main landuse within the site is grazing by sheep and deer. The extensive grazing has caused damage to some of the habitats, resulting in degradation of heath and blanket bogs and prevention of woodland regeneration. In the upland habitats the erosion caused by grazing is exacerbated by the exposed nature of the terrain. Apart from grazing, the woodlands are particularly threatened by Rhododendron (*Rhododendron ponticum*) invasion, although a Rhododendron removal programme is underway in the National Park. Lough Leane has been subject to eutrophication (mainly from sewage) in the past and remains vulnerable. A management plan was drawn up for the Killarney National Park in 1991. The park is managed primarily for conservation purposes although recreation is also provided for.

Overall, this SPA site is of importance because it supports good diversities of birds typical of upland and woodland habitats. Several nationally rare woodland species are present, and notably Redstart. Two species, Red Grouse and Ring Ouzel, are Red listed species of high conservation concern. Of note is that three of the species which occur regularly are listed in Annex I of the Birds Directive: Peregrine, Merlin and Greenland White-fronted Goose. The goose population is also significant as it is the most southerly in Ireland.